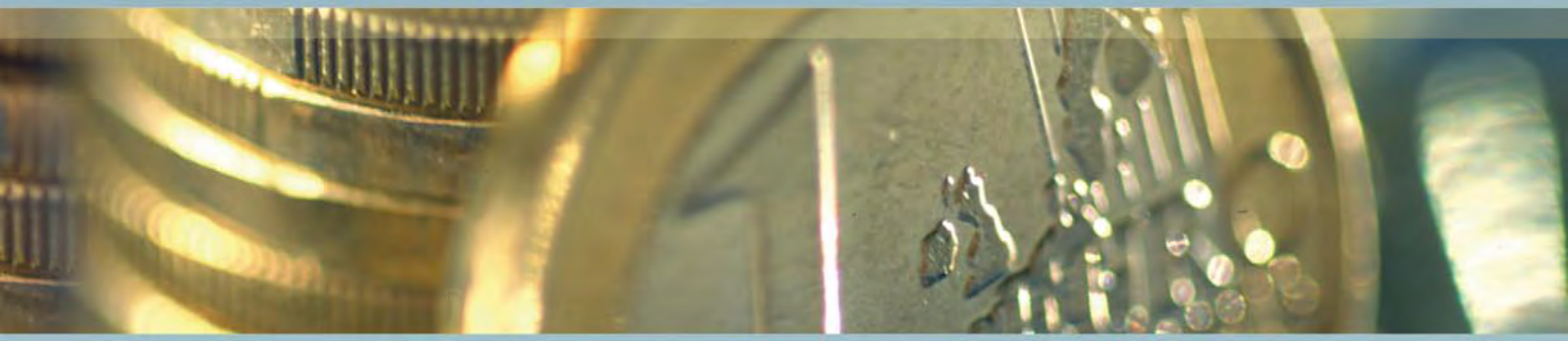
EUROPEAN ECONOMY

Occasional Papers 58 | February 2010



Cross-country study
Economic policy challenges in the Baltics

Directorate-General for Economic and Financial Affairs

Economic and Financial Affairs
DIRECTORATE-GENERAL

EUROPEAN COMMISSION

Occasional Papers are written by the Staff of the Directorate-General for Economic and Financial Affairs, or by experts working in association with them. The "Papers" are intended to increase awareness of the technical work being done by the staff and cover a wide spectrum of subjects. Views expressed do not necessarily reflect the official views of the European Commission. Comments and enquiries should be addressed to:

European Commission
Directorate-General for Economic and Financial Affairs
Publications
B-1049 Brussels
Belgium
E-mail: mailto:Ecfin-Info@ec.europa.eu

This paper exists in English only and can be downloaded from the website
ec.europa.eu/economy_finance/publications

A great deal of additional information is available on the Internet. It can be accessed through the Europa server (ec.europa.eu)

ISBN 978-92-79-15024-1
doi: 10.2765/13626

European Commission
Directorate-General for Economic and Financial Affairs

Cross-country study: Economic policy challenges in the Baltics

Rebalancing in an uncertain environment

EUROPEAN ECONOMY Occasional Papers No. 58

ACKNOWLEDGEMENTS

This study was prepared in the Directorate-General for Economic and Financial Affairs under the direction of Marco Buti, Director-General.

The study was supervised by a Steering Group formed by Servaas Deroose, Director of the Directorate Macroeconomy of the Euro Area and the EU, Elena Flores, Director of the Directorate Economies of Member States II, and István Pal Székely, Director for the Directorate of Economic Studies and Research.

The contributors were Julda Kielytė, Dalia Grigonytė, Peter Lohmus, Julia Lendvai (Chapter 2), Nikolay Gertchev, Aurora Mordonu, Corina Weidinger Sosdean (Chapter 3), Ingrid Toming, Julia Lendvai, Alessandro Turrini (Chapter 4), Uwe Böwer, Dalia Grigonytė, Agnė Geniušaitė, Alexander Hobza, Kieran McMorrow, Matteo Salto, Alessandro Turrini (Chapter 5).

Alessandro Turrini co-ordinated and supervised the study.

The study benefited from the comments by collegues in the Directorate-General for Economic and Financial Affairs, in particulas Gabriele Giudice, Paul Kutos, Peter Lohmus, Jose-Luis Robledo Fraga, Massimo Suardi, and Ralph Wilkinson.

Comments were also provided by Andrus Säälik, Märt Kivine, Martin Põder from the Estonian Ministry of Finance, Maris Leemets, Märten Ross and Katrin Kask from the Central Bank of Estonia, Inta Vasaraudze from the Ministry of Finance of Latvia, Raimonda Žutautienė and Ričardas Kasperavičius from the Finance Ministry of Lithuania, and Ramunė Vilija Zabulienė from the Central Bank of Lithuania. An extended set of useful comments were provided by Christoph Rosenberg, Catriona Purfield, Mark Lutz, Valerie Herzberg, Jacques Miniane and Jerome Vacher from the International Monetary Fund.

George Alexakis and Adam Kowalski contributed to the editing of the publication.

Comments on the report would be gratefully received and should be sent by email to Gabriele.Giudice@ec.europa.eu

FOREWORD

This study comes after a long gestation period. The initiative to launch a study on the Baltic economies was taken in mid-2008. It was clear at that stage that the boom period for Estonia, Latvia and Lithuania had ended and that a possibly difficult phase of adjustment had begun. Shortly after their transition to market economies, the Baltics entered into a process of economic integration with more advanced economies and real, financial, and institutional convergence which was largely unrivalled by other emerging economies. This unique convergence experience was paralleled by remarkable growth rates over an extended period, but also formed the basis for growing macroeconomic imbalances and unprecedented boom-bust dynamics. At the time when the study was launched, it was perceived that a reflection was needed in preparation for difficult times ahead, and with a view to learn lessons how to avoid past mistakes.

The study was born with an original format. Rather than focusing on a country in isolation or being a full-fledged "horizontal" report, it was judged that the format of a "cross-country" study was the most suited for the Baltic economies. These countries share to a large extent a common recent economic history, are characterised by broadly similar economic structures and institutions, and the developments in their main macroeconomic variables exhibit a remarkable degree of co-movement. Yet, policy choices made since transition differed in some respects. Analysing the three economies in a comparative perspective permitted highlighting in which respect and to what extent policy choices could make a difference.

In light of the unfolding of the global financial crisis, the focus of the study nevertheless had to be adjusted. The economies of Estonia, Latvia, and Lithuania were hit by very severe recessions, financial markets went through turbulent times, public finances suffered. After the storm, more recently, signs of stabilisation and recovery followed. For some time, the drafting of the study was like "shooting at a moving target", and its finalisation ended up being well beyond the foreseen deadline.

During the process, a lot has been learnt. It became increasingly clear that different policies actually do make a big difference, and the crisis proved to be a major test in this respect. The economy of Latvia had to struggle for some time with balance of payment difficulties that eventually led to a financial assistance programme by the European Union, the IMF, and other international lenders. Since the start of the acute phase of the crisis, reassuring markets as to the credibility of their commitment to their currency pegs was among the major concern of Latvia, and to some extent also of Lithuania. The considerable tensions which had accumulated, especially on Latvia, in the summer of 2009 seem to be over by now, reflecting the significant adjustment made by these countries. In the case of Latvia, this is largely thanks to a successful policy dialogue between Latvia and the institutions providing financial assistance that helped identify policy priorities and design a package of consistent measures in support of the maintenance of the peg. Lithuania managed to rapidly regain access to international market after the worst of the crisis had passed, backed by the significant consolidation undertaken since the end of 2008 and its commitment to a reform programme. Estonia, largely in virtue of well-functioning markets and more prudent fiscal and financial policies before the unfolding of the crisis, had no major difficulty in financing its external position. The measures it took before and after the crisis went beyond that of ensuring the stability of the peg, since the country has been taking the necessary steps to become a credible candidate for euro adoption in the coming years.

The study reaches a series of conclusions of interest. Some concern the challenges ahead for the Baltic economies. In particular, the analysis indicates that, although the rebalancing of the economies could imply subdued growth for some time, in the longer run the objectives of adjusting external imbalances in a sustainable manner and restoring the growth potential could be complementary objectives if the appropriate policy frameworks are put in place. Some of the findings allow lessons to be drawn for countries facing a process of rapid catching-up and rapid financial convergence as the Baltics did in the past. In this respect, the study underscores the importance of correct market signals to ensure an efficient allocation of capital and keep wage growth in line with productivity and the key role that can be played by prudent fiscal and financial sector policies to prevent overheating and the accumulation of imbalances.

Marco Buti
Director-General, DG Economic and Financial Affairs, European Commission

CONTENTS

LIST OF TABLES

LIST OF GRAPHS

LIST OF BOXES

1. THE PARABLE OF THE BALTICS: EXPERIENCES, CHALLENGES AHEAD AND MAIN LESSONS

1.1. INTRODUCTION

The Baltic countries, Estonia, Latvia and Lithuania, are currently rebalancing their economies in a very uncertain environment. After having experienced unusually high growth rates among emerging economies at mid-2000s, they are now undergoing recessions among the sharpest in Europe, and their prospects appear to be subject to a series of risks.

The story of the Baltic economies since their transition is one-of-a-kind. The combination of extremely rapid real and financial convergence, institutional improvements, and fast integration with more advanced economies, has been largely unrivalled by other medium-income countries. This unique experience of rapid convergence generated remarkable growth rates over a protracted period of time, but this came at the price of increasing macroeconomic and financial imbalances and led to unprecedented boom-bust cycle dynamics.

The aim of this study is to take stock of the *past experience of the Baltic economies* and draw a series of *lessons for the future and other countries*. The similarity of the historical background and the present challenges calls for a *cross-country approach*. At the same time, *relevant differences among the Baltic countries* are highlighted for what concerns both economic structure and policy approaches, notably regarding fiscal policy, structural reforms and financial market supervision and regulation.

Rather than trying to address all features of the Baltic economies, this study investigates *selected aspects* of particular relevance.

- This chapter provides a synthesis of the *main findings and conclusions* from the study;
- the second chapter presents the main characteristics of the Baltic economies and reviews the major *macroeconomic developments* since transition;
- the third chapter focuses on the role of *financial markets*, which were both a major driver of convergence and a source of risks for macroeconomic stability;
- the fourth chapter is devoted to the role of *fiscal policy*;
- the fifth chapter embarks on the assessment of *medium-term prospects and challenges* for the Baltic economies.

This remainder of this chapter is articulated according to the main steps in the economic development of the Baltic countries after transition: the restructuring and catching up phase; the period during which the Baltic economies underwent a major overheating process and cumulated large current account imbalances; the unravelling of the credit crunch and the unfolding of the current recession. The chapter ends with a forward-looking assessment of the policy challenges and priorities ahead for the Baltics and with main lessons drawn from their experience.

1.2. RAPID CATCHING-UP: FROM TRANSITION TO EU INTEGRATION

As other former communist countries, the Baltic countries underwent sharp output contraction and rampant inflation in the *early stage of transition* to a market economy. The recovery, however, was relatively fast, and led to a sustained growth path which was interrupted only by the short-lived slowdown in 1999-2000 due to the Russian crisis.

A series of reasons underlie the very successful *catching up* process of these economies. First of all, the economic structure of the Baltics provided opportunities for rapid growth, in several respects over and above those offered to other New Member States. In light of the need for large-scale economic restructuring, ample room for sectoral reallocation of resources, and scope for the adoption of modern technologies, the Baltics presented the potential for major gains in terms of total factor productivity (TFP). Additionally, relatively low-per capita incomes coupled with a comparatively qualified labour force and the need

for major restructuring after transition contributed to high investment returns and sustained capital accumulation. Consistently, growth accounting analysis shows that catching-up in the Baltics was fuelled by TFP gains of a size among the largest recorded by emerging economies in recent times and that investment rates were also very sustained and rising until 2007 (section 5.2 of the study). In light of transition-related restructuring, the performance of the labour market was initially rather weak as reflected in high unemployment rates and outward migration, but starting from the early 2000s, increased labour inputs into production were also among the factors contributing to catching up.

Rapid growth was also underpinned by a successful trade re-orientation towards the West associated with *EU integration*, which contributed to sustain the demand of exports from the Baltic economies. As regards sectoral transformations of the economy, the shrinking of the agricultural sector and, to a more limited extent, of the manufacturing sector, was accompanied by a major expansion of services, which gave a major contribution to GDP growth not only in terms of labour inputs but also in terms of rising productivity. Within those broad aggregates, sectoral reallocation was very substantial. In particular, services' growth was concentrated in a handful of industries, notably trade, transport, real estate activities, and construction; financial services grew at a much higher pace compared with other transition countries of recent EU accession. Compared with the other Member States which joined the EU in 2004, the contribution to growth of high-tech manufacturing was instead quite limited (section 5.2).

The *reform process* aimed at reducing the role of the state and reconverting the Baltic economies towards a market system was profound and effective, as was the process aimed at achieving eligibility for EU accession in line with the Copenhagen criteria. Overall, institutional convergence was more rapid for the Baltic countries compared with the average of the rest of the New Member States, as revealed by available indicators of governance and institutional quality (section 3.2).

On the front of *macroeconomic governance*, all Baltic States introduced their own currencies and adopted hard peg exchange rate arrangements relatively early after transition. These, together with low government debt and tight fiscal policy were an important factor contributing to the macro stabilisation process after transition. Public finances were geared to support catching up. Government gross fixed capital formation grew well above the EU average, while the tax burden was kept relatively low, notably as far as direct taxes on capital income are concerned. In spite of relatively low debt levels, pension reforms enacted in past years, shifting government pension liabilities into private pillars, have catered for the impact of ageing populations on government finances.

Economic structures offering possibilities of rapid catching up, the prospect of EU accession, successful institutional convergence, stability-oriented macroeconomic frameworks, were all factors contributing to sustained *capital inflows*, which in the case of the Baltics took place especially in terms of inward FDIs and intra-bank loans. The coincidence of the very rapid development of the financial sector with financial integration was among the most notable features of the catching up process in the Baltic economies. In all Baltic economies, the financial sector remained largely bank-dominated also after its expansion during catching up, while direct finance has been playing only a minor role. Rapid bank credit expansion was fuelled by FDIs in the banking sector mostly operated by parent companies located in the Nordic countries. Financial integration and convergence became manifest through rising financial market participation of the private and public sector, a visible reduction in interest rates towards euro-area levels and falling risk premia, increased holdings of foreign assets and liabilities.

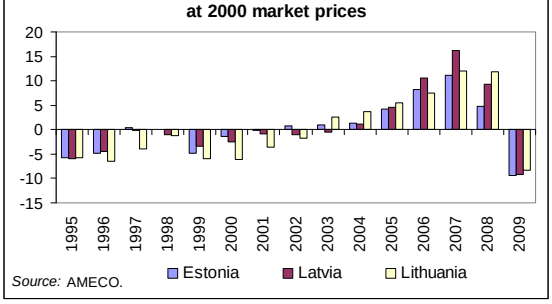
1.3. BUILDING IMBALANCES

By the mid-2000s the protracted strong growth in the three Baltic economies started being accompanied by signs of *overheating* and by growing imbalances.

Current estimates of potential output indicate that by 2004 all three Baltic economies recorded positive output gaps and that by 2007 those gaps were of a very large magnitude, reaching double digit figures for Estonia and Latvia. Inflation also

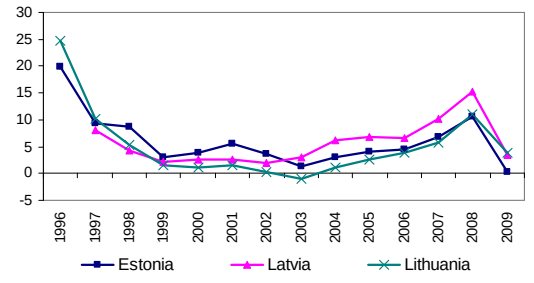
picked up in the three Baltic economies after 2004, reaching double digit levels in Latvia in 2007. The acceleration in consumer price dynamics was outpaced by wage dynamics ensuing from tightening labour markets.

Graph 1.1: **Gap between actual and potential GDP at 2000 market prices**



Source: AMECO.

Graph 1.2: **Annual average HICP inflation (in %)**



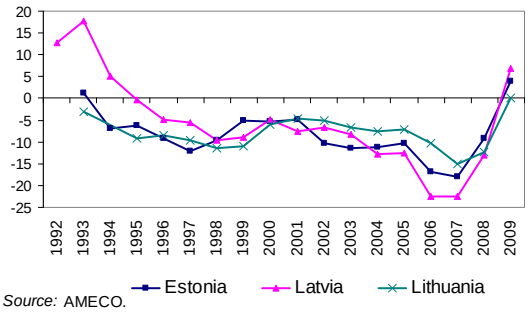
Source: AMECO.

Financial convergence was among the key factors that ultimately contributed to the overheating. Falling risk premia on interest rates and improved access to cross-border bank finance permitted large and sustained investment rates and fuelled consumption expenditure. Private credit, starting from a relatively low position, began growing close or above levels justified by fundamentals (section 3.2). This had major implications for asset prices, notably real estate. Easy credit fuelled fast dynamics in housing demand which in spite of a housing investment boom led, especially in Estonia and Latvia, to skyrocketing housing prices. FDIs, tilted towards non-tradable activities and real estate, gave an additional impetus to the housing bubble.

Strong dynamics in domestic demand financed from abroad resulted in large *current account imbalances* and in the accumulation of substantial net foreign liabilities. Current account deficits, which averaged relatively high levels throughout the whole catching up period, by 2007 went above 15% of GDP in Estonia and Lithuania and 20% in Latvia.

The deterioration in current account balances was accompanied by a progressive *real appreciation of the currencies*. Real effective exchange rates increased at very fast rates in all the Baltic economies since the mid-nineties, albeit starting from positions of "undervaluation", where nominal exchange rates were well below purchasing power parity equivalents. Real currency appreciation was accompanied by rising import penetration, which was also partly driven by cyclical factors and structural transformations during catching-up. In spite of rising real exchange rates, the share of Baltic countries' exports of goods and services in world exports rose until 2006 for Estonia and 2008 for Latvia and Lithuania, mostly thanks to successful export re-orientation to the EU and fast-rising export markets.

Graph 1.3: **Balance on current transactions with the rest of the world (% of GDP at market prices)**



Source: AMECO.

In spite of significant gains in aggregate productivity measures in all Baltics, the evidence does not support the view that Balassa-Samuelson effects (which would imply a rise in relative price levels without a corresponding weakening of cost competitiveness) were the main explanation for the significant real appreciation in the Baltics (section 5.4). Productivity growth was indeed relatively strong in the non-tradable sector rather than among tradables (as would be predicted by the Balassa-Samuelson argument). The growth of the non-tradable sector, however, resulted in overheating, notably in the housing sector, as a factor that contributed to raise the price level in the Baltic economies compared with competitors. The rising price level fed into wage dynamics out of line with productivity and into rising unit labour costs.

The respective roles of strong productivity growth after transition, soon replaced by financial convergence feeding external imbalances and housing investment, is corroborated by model-based analysis (section 2.4). Simulations by means of Dynamic Stochastic General Equilibrium models show that TFP-driven catching-up forces alone can account for a large part of the developments in macroeconomic variables until 2001, while after that period a major role seems to be played by shocks in risk premia and in access to credit.

Regarding *policy action to counter overheating* pressures, it appears that the tools in the hands of policy authorities could have been used in a more effective way.

With monetary policy oriented to the maintenance of hard exchange rate pegs, and in light of the relatively limited role of automatic stabilisers in economies like the Baltics, characterised by a small government size and a low degree of tax progressivity, discretionary fiscal policy and prudential and supervisory policies on financial markets were left as the major tools for macroeconomic stabilisation to counter overheating pressures. However, discretionary fiscal policy delivered only partly on its assignments. Although empirical analysis show that in the past fiscal policy in the Baltics was not significantly more pro-cyclical compared with other New Member States, leaning against the wind was particularly unconvincing during the overheating phase, with clearly pro-cyclical episodes during the years where output gaps were largest (section 4.5). It is worth stressing the difficulty of correctly tracking the cycle and measuring the fiscal stance in volatile economies that underwent significant fiscal reforms like the Baltics. This clearly made policy making more complicated. Nevertheless, fiscal pro-cyclicality was very substantial in 2007 in the three countries, with clear signs of pro-cyclicality in Latvia already in 2006.

As regards prudential and supervisory policies, action with a view to managing rising financial stability risks and counter the formation of asset price bubbles was taken by the authorities in all the Baltic States. Starting from 2005, minimum reserve requirements have been raised and the rules for the computation of capital adequacy for banks have been tightened. In light of the largely foreign-owned banking sector of Baltic economies, the cooperation among supervisory authorities in the Baltics and in countries home to parent banks was gradually and successfully strengthened. Moreover, several measures on the fiscal side, aimed at reducing the incentives to borrow, were adopted. In spite of non-negligible efforts, the measures taken, partly due to both a belated implementation and the strong cross-border links of the banking sector in the Baltics, were not sufficient to ensure smooth developments in credit supply and a gradual cooling of the economy.

1.4. THE CRISIS

By 2007, the overheating phase in the Baltic economies reached its peak. The accumulation of current account imbalances was compounded by additional *elements of vulnerability*. Growing private credit, mostly in euro, was increasingly financing unsustainably-priced housing via mortgage loans. Financing to the private sector was increasingly taking place cross-border through the predominantly foreign-owned banking sector, whose liquidity became therefore increasingly dependent on the liquidity situation of a small number of foreign lenders, notably Scandinavian banks, with implications for external adjustment during the crisis. Although the concentration of credit among a small number of foreign institutions could potentially imply risks for potential contagion via a "common lender" channel, it turned out that the foreign lenders' willingness to provide liquidity assistance rather acted in the sense of facilitating an orderly deleveraging (as opposed to significant rollover problems faced by some domestic banks, notably Parex in Latvia).

At the peak of the boom, most of the typical ingredients observed in economies undergoing "boom-bust" cycles were present, to differing degrees, in the three Baltic economies. Awareness of growing credit risks amidst an unsustainable domestic demand boom led foreign and domestic banks to tighten lending standards. Tighter lending conditions contributed to the slowing of the housing market which in turn led to an increase of mortgage loan-to-value ratios and deteriorating credit quality, which fed back into to a further

tightening of lending standards in a self-reinforcing spiral.

The adjustment phase, which started already before the financial turmoil began to unfold in September 2008, was considerably reinforced by global developments. The process of financially-driven *economic contraction* was indeed accelerated by falling asset prices, widespread deleveraging, and flight to safety in financial markets following the global financial crisis. The increase in risk aversion in global financial markets, soon reinforced by the fall in international trade and external demand, hit particularly hard small-open economies highly dependent on foreign financing like the Baltics, leading to a very deep and sudden drop in GDP growth in the Baltic economies. Falling exports were accompanied by a major drop in domestic demand, possibly triggered by a major revision in expectations regarding growth potential by the private sector at large (from over-optimistic to more pessimistic). The latter hypothesis appears corroborated by model-based analysis and could be part of the explanation for the very deep and sudden drop in GDP growth (section 2.5). The economic contraction was initially particularly hard in Estonia and Latvia, reaching year-on-year rates of about 10% in the fourth quarter of 2008, while the contraction in Lithuania worsened at a later stage. In 2009, according to the Autumn 2009 European Commission Forecasts, GDP was expected to contract by 13.7% in Estonia, 18.0% in Latvia and 18.1% in Lithuania.

In light of the *worsening access to foreign credit* and the global reassessment of risk, returns on financial assets denominated in local currencies soared, especially for Latvia, amid downgrading by rating agencies. The financial account reversal in Latvia coupled with large losses suffered by Parex, the major domestic bank, which required recapitalisation by the government, led to a protracted balance of payment financing gap that required international financial assistance in December 2008, from the European Union, the IMF and other lenders.

As a result of the combination of muted dynamics for government revenues with expenditures still growing in line with strong growth projections underlying the 2008 budget, the budgetary position in 2008 worsened by 5.7 percentage points of GDP in Estonia, 3.6 percentage points in Latvia, and 2.2 percentage points in Lithuania. However, in light of existing budget surpluses before the crisis, the level of the deficit remained more moderate in Estonia. Budget surpluses accumulated by the Estonian government also permitted setting up a fund which helped avoiding tensions in financial markets associated with the government deficit financing during the acute phase of the financial crisis. The *rapidly deteriorating fiscal position* coupled with the largely financially-driven current account reversal left the authorities with little choice but to undertake consolidation measures. Supplementary budget measures were introduced in the three Baltic economies by end 2008, and additional very large consolidation measures were introduced by mid-2009. The size of these measures was about 8 and 7% of GDP in Estonia and Lithuania respectively, while in Latvia – which faced the largest fiscal deterioration – the adjustment between December 2008 and June 2009 amounted to about 11% of GDP. In light of still high wage inflation until end 2008 and the need to regain price competitiveness to foster external adjustment, as well as to reverse recent large and unjustified increases in wages and employment levels, the fiscal packages in all three Baltic economies included cuts in the government sector wage bill.

The Baltic countries are currently rebalancing their economies in an uncertain environment. They are undergoing recessions among the sharpest in Europe, and their prospects, while improving, appear subject to a series of economic, financial, and socio-political risks of both domestic and foreign origin. The situation is the most critical in Latvia, which is undergoing a hefty adjustment in line with the programme agreed with lenders. While significant steps – including important reforms – have been taken in order to overcome the crisis that erupted at the end of 2008, it has not yet regained access to finance on international markets. The successful sales by Lithuania of government bond issues on international capital markets signal these markets' positive assessment of consolidation efforts. The risk perception is considerably lower in the case of Estonia due to fiscal buffers accumulated in years of high growth and due to the high capitalisation of the banking sector. Even though the situation is very different across the three countries, strong economic inter-dependency and transmission remain an issue.

The governments of the Baltic economies remain strongly committed to the *maintenance of* their long-standing monetary and *exchange rate arrangements*, including in view of euro adoption as a key strategic objective. The fixed exchange rate regimes have been a core part of the Baltic model since transition: credible pegs fostered policy discipline and were among the attractive features for foreign investors. The crisis has shown how critical is to have in place consistent policies in other domains to corroborate the choice of the currency peg. Firm policy action will be required going forward, including in terms of enforcing prudent wage policies and foster productivity growth to restore export price competitiveness; keeping a tight fiscal stance to stabilise debt with a view to preventing sustainability risks; and promoting reforms which foster a more balanced dynamics of domestic demand. The implementation of painful and protracted adjustment packages obviously raises the issue of social and political sustainability. However, the flexibility of the Baltic economies, the resilience exhibited in previous crisis periods, and the fact that double digit negative growth rates are more tolerable after almost a decade of very strong growth, need to be taken into account in assessing the feasibility of the current strategies. Furthermore, to contain the social impact of the crisis, significant measures have been taken by the three countries.

1.5. PROSPECTS AND CHALLENGES AHEAD

Looking forward, the Baltics will have to face major policy challenges. A primary goal for policy will be that of *restoring growth* on a sustainable basis. Based on alternative approaches, potential growth is expected to remain positive in the medium term, although lower compared with past years if policies and structural conditions are unchanged. There are however policy frameworks that can help supporting the growth potential.

Regarding the contribution of investment to growth, restoring a normal functioning of financial markets is key in ensuring an adequate supply of capital in the coming years, while the re-emergence of boom-bust dynamics needs to be avoided. Margins for sustaining TFP growth can be found by shifting resources towards technology-intensive activities, adopting up-to-date production technologies and strengthening innovation performance. In this respect, tax structure supportive of investments in new technologies, stronger incentives towards R&D activities, enhanced investment in physical infrastructure and human capital, including via frontloading and full absorption of EU funds, and improved governance and effectiveness of education systems, appear to be key ingredients of appropriate policy frameworks.

Tackling the challenge of *adjusting external imbalances* may imply subdued dynamics of domestic absorption for some years. In particular, external adjustment could imply low investment rates compared with past trends, including in light of tightening financial conditions from abroad. While some of the sizeable investment over the past years was fuelling asset bubbles rather than enhancing the economy's growth potential – and hence part of the ongoing correction is a necessary element of rebalancing the economy – constraints to investment activity could also impinge on potential growth for some years ahead. Additionally, fiscal tightening, a necessary ingredient of the ongoing rebalancing, could reduce the room for supporting the growth potential via government budgets. However, while rebalancing the external positions of the Baltics may coincide with subdued potential growth in the short term, the associated structural adjustment could exert a positive role in the longer term. First, wage moderation and the ensuing disinflation process would help restoring not only export price competitiveness but also the attractiveness of Baltic economies to FDIs. More generally, many of the structural policies that help restoring price competitiveness and upgrade the export mix also help fostering potential growth in the medium-to-long run via improved TFP growth rates. The process of external adjustment implies shifting resources towards tradable activities, namely those activities where the prospects for demand growth are larger and where durable TFP gains are more likely. Econometric analysis included in the present study supports these arguments: real exchange rate overvaluation is on average associated with depressed growth rates controlling for other factors. However, the effect of currency overvaluation on growth is not persistent, and actually appears to reverse after some years, possibly as a result of adjustment measures taken

in the meantime to tackle external imbalances and competitiveness.

At the current juncture, a tight *fiscal stance* is a key ingredient to bring down budgetary imbalances, that reached very high levels particularly in Latvia and Lithuania, and overcoming external imbalances. Although protracted fiscal tightening would be pro-cyclical in light of the deep recession and would possibly reduce the room for supporting potential growth via public budgets, vanishing windfall revenues require a structural adjustment of budget balances. Structural adjustment of current expenditure would help preventing the crowding out of government investment. Moreover, successful and durable budgetary adjustment is a key ingredient for steering market expectations towards macroeconomic stability. In light of a relatively low government size and of long-term tendencies operating in middle-income countries towards rising government size, national-level fiscal rules and medium-term fiscal frameworks could be helpful in ensuring that these public finance developments remain consistent with fiscal discipline objectives.

1.6. THE PARABLE OF THE BALTICS: SOME LESSONS

In a nutshell, the parable of the Baltics is one of countries that, after having benefited like few others from the opportunities offered by catching up, economic integration, and financial convergence, are currently paying a high price in terms of macro-financial stability and severity of the recession following past policy errors and the accumulated vulnerabilities. What is remarkable in the experience of the Baltics is the sheer size of the fluctuations in macroeconomic aggregates associated with their boom-bust cycle. A series of lessons can be drawn from their experience up to now, which hopefully can support more appropriate policies in future and a more favourable evolution of the economic conditions in the Baltic countries.

First, the parable of the Baltics provides a further confirmation of how *pervasive* and quantitatively *relevant* the *effects of financial convergence* can be on small open emerging economies. The Baltic experience shows that this is even truer for countries starting from relatively low income levels and financial development, undergoing institutional catching up, and subject to a fast process of integration with neighbouring advanced economies. This experience does not challenge the positive balance on the effects of financial integration among EU economies. Downhill capital movements are a major driver of economic growth in catching-up countries both directly, via improved opportunities to finance investment, and indirectly, by fostering governance and institutional convergence. However, the experience of the Baltics underscores the growing consensus that enhanced growth prospects allowed by rapid financial convergence could find an inevitable counterpart in wider scope for macro-financial stability risks, especially in countries with more limited room for efficiently channelling capital inflows towards investments with high returns in the future.

Second, the parable of the Baltics shows that it is essential for countries which enjoy a significant inflow of capital – reflecting notably the very favourable prospects of economic and political integration in the EU – to put in place all available *policies to direct* such *capital towards productive investment*, notably in the tradable sector. Policy frameworks supporting the allocation and re-allocation of resources towards higher technology activities, the promotion of a favourable business environment, the adoption of advanced technologies, and innovation, would allow building up a sustainable productive base thus reducing the risk of boom and bust cycles. Moreover, the progressive loss of price competitiveness witnessed by the Baltics during their boom phase underscores the relevance of appropriate wage policies, including by the government sector, and policies aimed at easing possible labour market bottlenecks.

Third, with hindsight, the experience of the Baltics shows that boom-bust dynamics could be to some extent mitigated by appropriate *policy action targeted to financial markets and asset prices*. In particular, a main lesson is that financial convergence and integration leading to rapid financial development also requires a parallel equally rapid catching up in terms of prudential policies and financial regulation and supervision, notwithstanding the clear limits that such policies have, notably in contexts of high cross-border

integration. In this respect, the key role played by cross-border financial intermediation for the Baltics stresses the importance of supra-national co-ordination and co-operation in financial supervision and surveillance and adequate macro-financial surveillance at the international and EU level. Progress in the latter respect is an agreed priority among EU Member States. The experience of the Baltics appears encouraging, in light of the overall fruitful co-operation with supervisory authorities in parent banks' countries. The Baltics also provided an in interesting test case of enhanced multilateral surveillance for countries undergoing balance of payments difficulties. The Balance of Payments Assistance programme for Latvia revealed that, on top of providing financial assistance, a role of the programme was that of fostering a policy dialogue which proved critical for the identification of priorities for the adjustment strategy.

Fourth, the parable of the Baltics underscores the importance of an *effective use of fiscal policy*, this being a key tool for macroeconomic stabilisation in countries adopting hard pegs and being subject to massive capital inflows. The different performance of the Baltic economies since the acute phase of the financial crisis reveals that a prudent fiscal policy stance in good times can make a difference in testing times. As opposed to Latvia and Lithuania, Estonia managed to keep a substantial government budget surplus from 2003 and maintained a less pro-cyclical fiscal stance during the boom years. This financial buffer, on top of central bank reserves above the minimum for the currency board arrangement and relatively high capital ratios for the banking sector, contributed to contain financial market tensions in Estonia after the unfolding of the crisis. The Baltic experience also hints the necessity of more aggressively exploiting the available scope for designing tax systems that help prevent the formation of bubbles in the housing market. Looking forward, adequate methodologies for tracking of the cycle and adjusting fiscal variable for the impact of the cyclical fluctuation would help in calibrating an appropriate fiscal stance. However, with uncertainty on structural budget balances unlikely to be dispelled fully, fiscal policy should follow a prudent, precautionary approach with respect to estimates of potential growth and revenue elasticities. Improved governance, including via the introduction of properly-designed numerical fiscal rules and medium-term frameworks, could help in strengthening the control of budgetary aggregates in a counter-cyclical fashion, especially in good times.

2. SETTING THE SCENE: FROM TRANSITION TO THE SLOWDOWN VIA OVERHEATING

2.1. INTRODUCTION

During the 1990s the Baltic States underwent a rapid process of economic and political transformation. Comprehensive structural and institutional reforms fostered the re-orientation towards European markets and attracted foreign investment which facilitated the catching-up process. As a result the Baltic economies were growing at a remarkable pace of 8-9% on average over the period of 2001-2007. Acknowledging the success of their economic and political restructuring the Baltics were invited to join the European Union in May 2004. However, an outstanding performance gave away in 2005-2007 to a credit led boom that fuelled private demand and investment into non-tradable sectors. This resulted in a steep increase of inflation and widening current account imbalances. The cyclical downturn in the Baltics started in early 2008 and was considerably aggravated by the global financial crisis. Rapid deterioration of economic activity in 2009 posed acute policy challenges with respect to preserving macroeconomic and financial stability, containing external and internal imbalances, improving competitiveness and facilitating the adjustment towards export-oriented sectors.

This chapter starts with an overview of institutional changes and the transition process from a centrally planned to free market economy and moves on to presenting the main economic developments related to EU integration. The third section of the chapter focuses on the overheating trends after mid 2000s that led to domestic and external imbalances. The fourth section analyses the main channels leading to the recent major recession. The last section concludes.

2.2. TRANSITION TO AN OPEN MARKET ECONOMY

After regaining independence in 1991, the governments of the Baltics embarked upon comprehensive programmes of *economic and political reform*. In their quest to achieve economic growth and improve living standards, the Baltics followed a rapid shift from a planned economy to an open market system by establishing the relevant legal framework and economic institutions. The priority was given to the liberalisation of prices, external trade and a stable exchange system, as well as to the privatisation of small and medium-size enterprises. Compared to other transition countries, the Baltic countries liberalised their capital accounts relatively quickly, and most transactions were already unrestricted by 1994-1995. ([1])

The economic situation in early 1990s was very difficult as *real output contracted sharply* and prices soared. The economic and political collapse of the Soviet Union led to *hyper-inflation* that sharply eroded living standards. ([2]) The trade and financial links between the independent Baltic States and CMEA countries were disrupted, resulting in a number of demand and supply shocks such as major adjustment in the administered and relative prices of tradable goods (in particular higher energy and raw materials from Russia), loss of traditional export markets in the East, dis-functioning of payment and monetary arrangements, as well as gradual elimination of subsidies. ([3]) Under these conditions the Baltic States had little scope for a gradualist approach in policy response.

The Baltics introduced their *own currencies with fixed exchange rates* relatively early during transition. A number of considerations led to establishing fixed exchange rate regimes eventually in all three countries, with Estonia introducing a currency board arrangement in 1992 and Lithuania in 1994. The primary consideration for opting for a currency board was the transparency of the chosen arrangement and stability of the currency. ([4]) Furthermore it was believed that fixed exchange rate arrangements were more suited also in light of lack of

([1]) Some minor limitations such as restrictions on pension funds' investments in non-government securities of certain countries and in foreign real estate were eliminated later, but these were irrelevant in terms of managing capital flows.

([2]) Some authors e.g. Staehr (2007a) argue that the official figures might to some extent overestimate the actual drop due to such factors as insufficient statistical coverage of production in the new emerging private sector.

([3]) Council for Mutual Economic Assistance, the economic organization of communist states.

([4]) See Camilleri Gilson (2002).

accumulated experience with independent central banking. ([5]) Latvian authorities first adopted a floating exchange rate regime; however, the float became managed in late 1992. From early-1994, the Bank of Latvia de facto pegged its currency to the SDR. Lithuania introduced an interim currency, the talonas, in 1992; a permanent replacement, the litas, was introduced in 1993. In 1994, currency board was introduced and the litas was pegged against the U.S. dollar. During the first stage of transition, fixed exchange rate regimes, supported by tight fiscal policies and structural reforms, helped to restore macroeconomic stability and contain inflation in the region. ([6])

Thereafter, *output stabilised* relatively rapidly and economic recovery started in Estonia and Latvia in 1993 and in Lithuania in early 1994. GDP growth turned positive in 1995 in Estonia and Lithuania and in 1996 in Latvia. During 1995-1998 average GDP growth ranged from 6.6% in Estonia to 4% in Latvia. Despite the liberalisation of most prices, *inflation was quickly brought under control*. CPI inflation dropped from almost 1000% in 1992 to below 30% in all three countries by 1996 and declined to a single digit by 1998. On the other hand, the current account deficit started to increase rapidly from 1994, and amounted to 5.5% of GDP in Latvia, 10% in Lithuania and 11% in Estonia by 1997. The privatisation-related FDI inflows covered a part of the domestic saving-investment gap, e.g. in 1993-1997 average annual FDI inflows amounted to 6% of GDP in Estonia, and Latvia, but only 2% in Lithuania. ([7])

Privatisation of small enterprises was completed in the early years of transition using insider and voucher privatisation. In Estonia, most small enterprises were privatised by the end of 1994 and large enterprises by the end of 1996, mainly via auctions and open tenders, to the highest bidder for cash. In Latvia and Lithuania small enterprises were also privatised relatively rapidly, however, privatisation of medium and large enterprise was slower, and achieved by 1996-1997. With large-scale privatisation, Estonia and Latvia emphasised the importance of strategic partners in the newly privatised companies. Lithuania relied more heavily on vouchers but also used tenders for strategic investors. However while privatisation was important for enhancing economic performance and restructuring, improved bankruptcy procedures and modernised legal and regulatory framework also played an important role in reforming the economies. Estonia was slightly ahead of the other two Baltics in this area. The adoption of an effective Bankruptcy Law in Estonia in 1992 was regarded as one of the most important factors which facilitated a more rapid restructuring of the corporate sector compared to Latvia and Lithuania. ([8]) In 1997-98, all three countries stepped up effort to boost privatisation of public utilities and some still public large enterprises, mostly in energy, transport and telecommunication sectors, as well as in shipbuilding, maintenance and air transport. In this phase Latvia and Lithuania also opened up the process for foreign participation for the privatisation of strategic enterprises. Compared to other transition economies, the Baltics made faster progress in reducing the role of the state in the economy and creating a business-friendly environment. ([9])

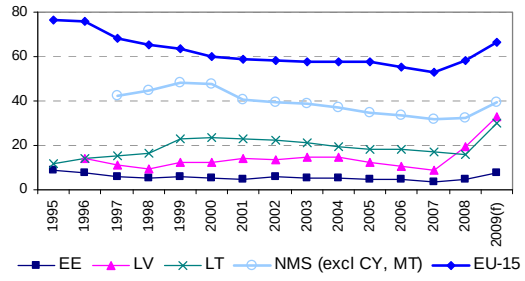
Tight *fiscal policy* was a very important factor contributing to the stabilisation and reform process. The level of government spending and public debt was lower in the Baltics than in the EU-15 and other transition economies. It is worth noting that the Baltic countries started their transition with zero levels of public debts. As a result of the prudent fiscal policies in the Baltics the debt remained very low by international standards. In 1995 Estonian debt equalled 9% of GDP and declined to 3.5% in 2007. Latvian debt remained rather low until 2007, close to 9% of GDP. In Lithuania, the debt-to-GDP ratio was on an increasing trend until 2000 but started to decline afterwards mainly due to strong GDP growth and in 2007 was equal to 17% of GDP (see Graph 2.1).

During a period of *financial liberalisation* and before a market-based financial system was fully established, all Baltic countries underwent banking sector crises. Financial and capital account liberalisation in the absence of an effective regulatory framework, coupled with corporate

([5]) See Knöbl et al. (2002) and Nenovsky et al. (2001).
([6]) See De Grauwe and Schnabl (2004).
([7]) Based on EBRD data.
([8]) Berengaut et al. (1998).
([9]) See EBRD Transition report (2008).

governance problems inherited from the Soviet times, set the stage for the Baltic banking crises (the financial intermediation was very low at that time, e.g. in 1993 banking sector assets to GDP amounted to 20% in Estonia). Problems in the banking sector emerged first in Estonia in late 1992, then in Latvia in 1995, and finally in Lithuania in late 1995 and early 1996. Central banks reacted by closing non-compliant banks, implementing tighter prudential standards, strengthening supervision, and progressing with the adoption of international accounting standards. The restructuring of the banking sector also involved stepping up the privatisation of state-owned banks. A positive effect of the banking crises was a consolidation of the banking system and the emergence of more cautious and prudent behaviour among surviving banks, as the financial system retrenched before resuming financial deepening.

Graph 2.1: **General government debt (% of GDP)**



Source: AMECO.

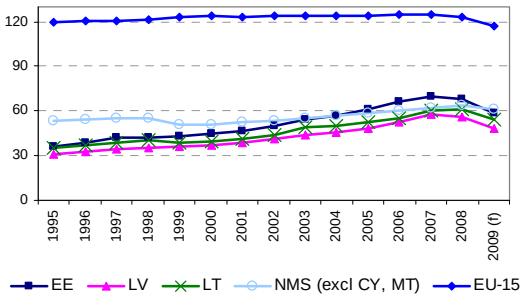
The first real economic shock for the Baltic economies after the collapse of the planned economy occurred with the *Russian financial crisis* of August 1998. The crisis triggered a recession in Lithuania and Estonia and a sharp slowdown in Latvia in 1999. This was accompanied by a collapse in trade and losses in the financial system. On the real side, Baltic exporters, which were dependent on Russian markets, were confronted with a very sharp deterioration in terms of trade following the devaluation of the rouble by more than 70% from August 1998 to March 1999, while imported Russian commodities were linked to the U.S. dollar. Although Russia's share of the Baltics' external trade had declined even before the crisis, it remained at around one-fifth of exports for Estonia and Latvia, and around one third in Lithuania. The full effect of the crisis followed in 1999, when growth turned negative in Estonia and Lithuania, and plummeted in Latvia. Unemployment started to rise rapidly, reaching 16.4% in Lithuania, almost 14% in Latvia and 13% in Estonia in 2000. In all three countries the budget surpluses also turned into sizeable deficits. In parallel with the trade crisis, the financial sector faced loan losses from their exposures to companies which were dependent on the Russian market (or directly to Russian enterprises).

2.3. INTEGRATION AND CONVERGENCE WITH THE EU

2.3.1. Economic, institutional and financial convergence

The economic slowdown linked to the Russian crisis was short-lived and very strong *growth rates quickly resumed*. Annual growth rates ranged between 6% and 10% in 2001-2004 and accelerated further after the EU accession reaching 12% in 2006 in Latvia. All three economies managed to restructure their foreign trade and redirect exports to the West. The rapid growth led to a fast catching-up process and narrowed the income gap with the EU average. For instance, GDP in purchasing power standards increased from about 30% of the EU-15 average in 1995 to above 50% in 2007 (see Graph 2.2).

Graph 2.2: **GDP per capita in PPP (EU-27=100)**



Source: Elaborations on Eurostat.

Looking at the key determinants of catching-up and growth, growth accounting analysis suggests that TFP growth made a very significant contribution to GDP growth in the Baltics up to the mid-2000s (see Chapter 5). ([10]) Even though estimating the exact magnitude of the contribution of TFP growth involves difficulties (see Chapter

([10]) See also Arratibel et al. (2007), Iradian (2007b).

5), a high TFP contribution in the Baltics is consistent with the swift restructuring of the Baltic economies, the large extent of sectoral reallocation, the adoption of more advanced technologies, better managerial practices, all captured by TFP.

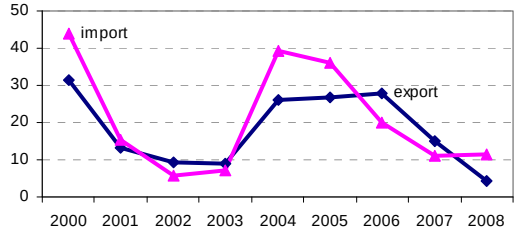
Investment also played a prominent role in the catching-up process in the Baltics. Partly because of a low level of capital stock in the 1990s, investment grew at double digit rates in the period 2001-2007. The share of total investment (GFCF) in GDP reached above 35% of GDP in Estonia and Latvia, and 25% in Lithuania in 2007.

Preparation to the EU accession and joining the EU led to *structural reforms*, further contributing to the economic performance. The countries made fast progress in implementing the EU's acquis-linked reforms in the area of privatisation, enterprise restructuring and competition policies. The index of economic freedom and its sub-components show more progress in structural reforms in the Baltics and other NMS than in the rest of emerging Europe. In terms of the business environment and the legal system, the Baltics compare very well with the euro area, and even outperform other NMS, (e.g. World Bank – Ease of Doing Business Index 2009 ranked Estonia 22nd, Lithuania 28th and Latvia 29th, see also Table 3.2 in section 3.2.3).

The 1998 crisis opened the door for rapid *financial sector consolidation and growth* and foreign banks' expansion into the region. Several factors facilitated and reinforced the acquisitions and mergers, including bank failures and lower market values in the aftermath of the Russian crisis, continuing privatisation efforts, and strengthened regulation. This consolidation, together with a parallel regional recovery, led to similar developments in all three Baltic markets. Financial sector consolidation took place first in Estonia, followed by Latvia and then by Lithuania. This development was supported by the entry of foreign banks, mainly from Sweden. ([11]) The concentration in the banking system increased rapidly in all Baltic countries, particularly in Estonia, where in 2001-2005 five largest banks accounted for 99% of total assets of the banking sector (64% in Latvia, 82% in Lithuania, see also Chapter 3). This compares with an EU-average concentration ratio of around 42%, masking low concentration ratios in large countries and higher concentration ratios in small countries (e.g., Finland or Sweden around 80%). ([12]) As a result of the rapid restructuring, the banking sector became an important channel for investment flows after 2000. A large part of direct foreign borrowing by the corporate sector was replaced by bank lending. Declining interest margins in corporate lending prompted banks to turn to households and small and medium-size enterprises which had very low indebtedness at the time. The ongoing competition for market shares in retail banking led to credit expansion.

All three Baltic countries became very open economies in terms of trade and capital flows. *Capital inflows* financed the current account deficits which were above the NMS average since the beginning of transition. The contraction of current account deficits after the Russian crisis in 2000 was short-lived and from 2002 to 2008 the Baltics witnessed a steep widening of their deficits driven by the trade balance (see Graphs 2.3 and 2.4).

Graph 2.3: **Annual trade growth (Baltic States' average, %)**



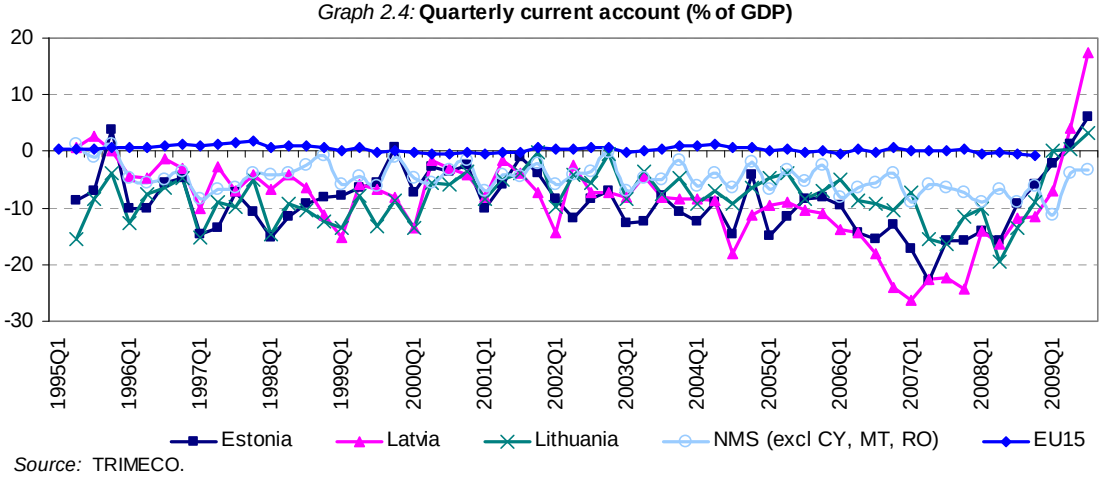
Source: Comext database and Estonian BoP.

Although the Baltic market share in global exports almost doubled between 1999 and 2006, the growth of imports was much stronger over the same period.

([11]) Two large rival regional banking groups emerged: on the one hand the Hansabank group, which was taken over completely by Swedbank in 2005, on the other hand a pan-Baltic alliance of banks created by Swedish Skandinavska Enskilda Banken (SEB). In 2001, these two groups represented more than two thirds of the banking sector in the Baltic region in terms of assets.

([12]) ECB data.

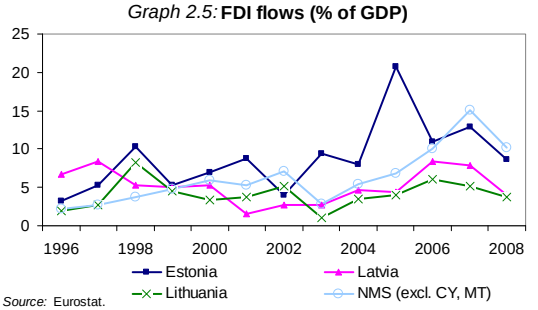
Graph 2.4: **Quarterly current account (% of GDP)**



Source: TRIMECO.

Foreign direct investment inflows were also relatively high among the Baltics, particularly in Estonia (see Graph 2.5), in light of a relatively low cost of capital, high profitability of investment, and favourable taxation of capital income. ([13]) In the 1990s, FDIs were primarily driven by large-scale privatisation across the sectors.

Graph 2.5: **FDI flows (% of GDP)**



Source: Eurostat.

After 1998 however, FDI started to flow into non-tradable sectors, such as real estate and financial services, particularly in Latvia and Estonia (see Graph 3.9 in section 3.2.2). Inflows of foreign investment to Lithuania were smaller than to Estonia, partly related to slower progress in banking sector and enterprise reform in Lithuania.

2.3.2. Trade re-orientation, industrial transformation, labour market re-structuring

The three Baltic countries became increasingly integrated with the rest of the EU and among themselves. *Trade integration* and re-orientation resulted from the Baltic free trade agreements in 1994 (agriculture in 1997) and intensified after the accession to the EU in 2004. In 2007, around one third of Latvia's export was directed to Estonia and Lithuania, while Estonia and Lithuania exported around 20% of their goods and services to the other Baltics. Investment between the Baltics has also been increasing: around 60% of Estonia's total outward FDI, 40% of Lithuania's and 20% of Latvia's was directed to the other two Baltic countries. ([14])

The *trade structure* of the Baltics became relatively similar, with low to medium value added products such as food, timber, textiles, chemical products, machinery and equipment accounting for a substantial share of their exports, imports from Western Europe consisting mainly of higher value products, and imports from CIS countries dominated by energy products (oil, gas). Estonia was ahead of its neighbours with respect to the share of high-tech products in its exports (see Chapter 5). Even though trade flows became increasingly oriented towards the EU (with average shares from Estonia and Latvia above 80%

([13]) The Baltic countries together with Slovakia had very high profitability figures (the ratio of operating surplus to GDP) reaching around 40% of GDP in 2005. See Arratibel et al. (2007). See also European Commission (2009b).

([14]) Estonian direct investment to its neighbours was strongly influenced by the activities of the Swedbank, i.e. in 2007-2008 the share of Swedbank amounted to 45% of total Estonian FDI in Lithuania and 48% in Latvia.

and from Lithuania around 75% of total exports in 2002-2007), trade with Russia and other CIS countries remained relatively significant, as average shares ranged from 15% of total Estonian exports to 17% of Latvian and 24% Lithuanian during 2002-2007.

Fifteen years of transition to a free market economy resulted in a rapid *industrial restructuring* process in the Baltic States. Similarly to other catching-up countries, the Baltics faced a considerable change of their economic structure, as a diminishing share of manufacturing marked a strong re-orientation towards non-tradable sectors. In terms of output and employment, industry and agriculture experienced significant declines in all three countries. A stronger decline in the manufacturing sector took place in Latvia and Estonia, while it declined more moderately in Lithuania. The rising sectors, in general, were domestic trade and transport, financial intermediation and real estate, and construction. The Latvian economy underwent more pronounced changes compared to the other two Baltics with the largest increases in shares of output and employment being in the service sector. Compared to other Central Eastern European countries (see Table 2.1), the Baltics were more advanced than Bulgaria or Poland with respect to reducing the share of agricultural employment that contributed to productivity gains. On the other hand, the share of industrial output and employment in 2008 was much smaller in Baltics than in the Czech Republic or Hungary. The shift of the productive structure to services drove up overall productivity levels and contributed to the very substantial TFP gains in the Baltics (see also Chapter 5 for an industry-level analysis of the contribution to growth value added and labour input growth).

The process of rapid economic restructuring taking place in the 1990s, resulted in substantial *reallocation of labour* across sectors. The share of services in total employment increased by more than 10% over the period 1995-2008, while the share of manufacturing fell by 5-6% in Estonia and Latvia and 3% in Lithuania. Industrial restructuring coincided with declining employment in industry and agriculture. Moreover, shifts in output structure took place more rapidly than the adaptation of labour force skills, and skill mismatches were partly reflected in a rising share of unemployed with primary and secondary schooling, a low exit rate from unemployment, as well as in a high share of long-term unemployed. These tendencies led to unemployment levels amounting to 10% and more during the 1995-2004 period.

Table 2.1:
Gross value added and employment by economic activity (% of total)

		GVA		Employment	
		1995	2008	1995	2008
Estonia	Agriculture	5.8	2.6	10.1	3.9
	Industry	26.3	20.6	28.7	23.5
	Construction	6.7	8.4	5.4	11.2
	Trade	25.0	25.7	25.2	26.4
	Finance	18.5	24.2	6.0	9.6
	Public service	17.7	18.6	24.6	25.3
Latvia	Agriculture	9.1	3.1	17.7	7.9
	Industry	25.8	13.8	22.5	16.7
	Construction	4.6	8.9	4.9	11.3
	Trade	25.4	29.8	23.4	29.2
	Finance	15.0	23.9	5.1	10.1
	Public service	20.2	20.5	26.4	24.9
Lithuania	Agriculture	11.4	4.5	19.3	7.9
	Industry	25.5	22.2	22.8	19.5
	Construction	7.3	10.0	6.4	10.8
	Trade	27.0	30.8	21.9	27.4
	Finance	12.6	15.6	4.7	8.0
	Public service	16.2	17.0	24.8	26.3
Bulgaria	Agriculture	15.6	7.3	22.5	19.3
	Industry	27.7	21.9	26.2	21.5
	Construction	4.8	8.6	5.1	6.8
	Trade	17.3	23.5	19.0	25.5
	Finance	23.4	23.5	3.8	7.1
	Public service	11.2	15.1	23.4	19.8
Czech Republic	Agriculture	5.0	2.3	6.4	3.4
	Industry	31.7	31.3	30.7	29.3
	Construction	6.6	6.3	9.8	8.6
	Trade	24.4	25.4	24.6	25.4
	Finance	16.8	17.8	9.2	12.7
	Public service	15.5	16.9	19.3	20.5
Hungary	Agriculture	6.7	4.3	8.2	4.6
	Industry	26.3	24.9	27.1	25.9
	Construction	4.6	4.6	6.0	8.0
	Trade	22.3	22.2	24.8	27.0
	Finance	19.6	21.9	5.9	10.9
	Public service	20.5	22.2	28.1	27.2
Poland	Agriculture	8.0	4.5	26.9	14.7
	Industry	28.4	23.1	24.2	23.8
	Construction	6.7	8.0	5.5	6.8
	Trade	25.7	27.3	19.0	23.1
	Finance	12.6	19.4	5.2	8.7
	Public service	18.6	17.8	19.3	22.8

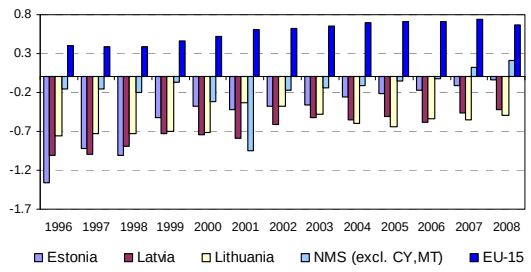
Source: Eurostat

On the social side, the process of economic restructuring was reflected by increasing inequalities in all three countries with Gini coefficients being equal to 0.37 in Estonia, 0.34 in Lithuania and 0.32 in Latvia in 1996-1999. ([15]) However, after 2000 this pattern changed. Inequalities continued to rise in Lithuania and notably in Latvia (Ginis reaching 0.35 and 0.39 in 2006), but in Estonia, where the free-market related reforms were more advanced, the coefficient dropped to 0.33.

([15]) World Bank calculations based on EU-SILC data.

The *demographic* situation deteriorated in the Baltics throughout the 1990s (Graph 2.6). Because of the natural decline of the population and sizable migration outflows, the Baltics had one of the lowest population growth rates in the world over the last two decades. In particular, in the 1990s the Baltics experienced a period of intensive emigration of the so-called "Russian speaking" population returning to their countries of origin. After the accession to the EU during 2004-2006, Latvia and Lithuania experienced the most significant outflow of workers compared to total labour force (around 9-10%) from all new Member States ([16]), Estonia recorded lower, but still significant emigration (around 4.5%). ([17]) In order to counteract the demographic decline, during the years of growth all three countries launched policies aimed at increasing fertility rates (e.g. higher maternity and child benefits).

Graph 2.6: **Population growth (annual % change)**



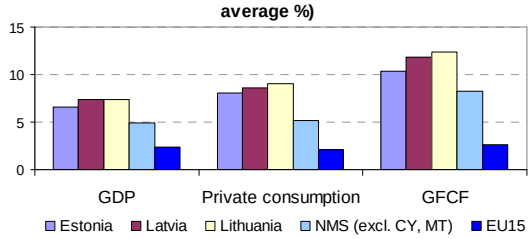
Source: Eurostat.

Given the above mentioned factors, in aggregate the *contribution of labour to GDP growth* was very modest or even negative during the first phase of catching up. ([18]) Hence, the gains in labour productivity came at the cost of lower labour utilisation (sections 5.2 and 5.3 in Chapter 5 present a detailed growth accounting exercise and the analysis of potential growth factors in the Baltics).

2.4. ACCUMULATING IMBALANCES

Following EU accession in 2004, the Baltic economies grew at a very fast pace until the end of 2007. Rapid GDP growth was mainly driven by *domestic demand*, with the average growth rate of domestic consumption and investment far exceeding that of GDP (see Graph 2.7). Domestic demand was supported by easy and affordable credit. The consumption and construction boom led to mounting domestic and external imbalances such as accelerating inflation and increasing current account deficits and external debt.

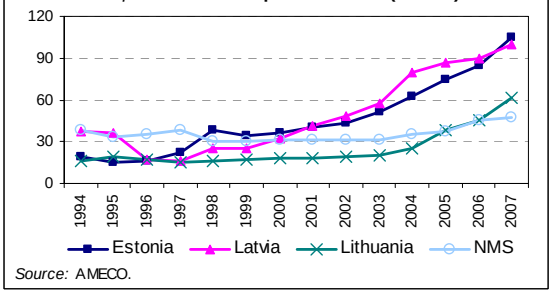
Graph 2.7: **Real growth in 2001-2008 (annual average %)**



Source: AMECO.

The pace of *credit expansion* to the private sector was very high in the Baltic countries over the past decade. Estonia and Latvia displayed relatively steady annual average rates of credit expansion starting from 2000 while credit growth accelerated visibly in Lithuania only after 2004 (Graph 2.8).

Graph 2.8: **Credit to private sector (% GDP)**



Source: AMECO.

The annual average growth rates of credit to the private sector reached around 30-40% over 2004-2007, strongly outpacing other new Member States. Although starting from relatively low levels, the credit-to-GDP ratios increased rapidly and in 2007 credit to non-financial corporations and households reached over 100% of GDP in Latvia and Estonia, and around 75% in Lithuania. Strong credit expansion contributed to real convergence in the Baltic economies by financing investment and smoothing consumption, but the overestimation of income prospects and economic risks may explain why credit growth went above prudential levels thereby contributing to the build-

([16]) See Tirpak (2007).
([17]) However, actual labour outflows from Estonia might be underestimated because many workers going to work to Finland stay for relatively short periods and are not captured well by statistics.
([18]) See European Commission (2004b), Schadler et al. (2006).

up of macro-financial vulnerabilities (see section 3.2.4 in Chapter 3 for further analysis).

The impact of financial developments on the Baltic economies is illustrated by means of Dynamic Stochastic General Equilibrium (DSGE) simulations performed with the European Commission QUEST III model, presented in Box 2.1. ([19]) The simulations show that since the early 2000s TFP growth-driven catching up was not sufficient to explain macroeconomic developments in the Baltics, while falling risk premia and easy access to credit are shown to have played an increasing role in driving the observed behaviour of the main macroeconomic variables. Capital inflows to the banking sector were related to high profitability of investment in the Baltics and declining capital costs in the whole EU. After EU accession the credit expansion was reinforced by the market anticipations of an early entry of the Baltics to the euro zone which contributed to reduced risk premia.

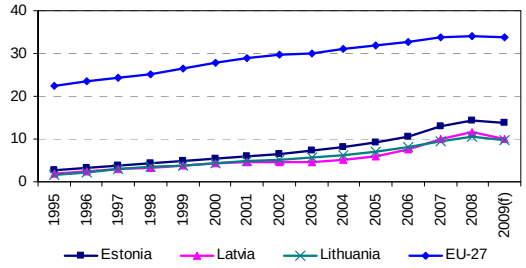
Credit growth was largely financed through *banks' external borrowing*, mostly through their parents. Given the high foreign bank share in total banking sector assets (around 99% in Estonia, 85% in Lithuania, and 55% in Latvia in 2007), most banks could easily rely on parent bank financing. While the banks' foreign currency positions were hedged by on-lending funds in foreign currency, a large share of those loans were extended to borrowers who remained un-hedged, increasing the foreign-exchange related credit risk for the banks. The Baltic authorities undertook a number of supervisory and prudential measures (discussed in detail in the section 3.3.4) but their success in limiting the credit growth was rather marginal.

A particular feature of the credit boom in the Baltics was *borrowing in foreign currencies*. In 2008 the share of credit denominated in foreign currency ranged from 64% of total private sector loans in Lithuania to 85% in Estonia and 88% in Latvia. The foreign currency borrowing was fostered by the interest rates differentials in domestic and foreign currency and the regulatory policies that did not impose stricter rules. ([20]) Furthermore, borrowing in foreign currency was influenced by the existing fixed exchange rate arrangements which diminished the perceived exchange rate risk and supported credit demand via perceived negative interest rates. The domestic monetary policy tools under fixed exchange rates were largely ineffective given the dominance of the Nordic banks and immense arbitrage opportunities (See also the sections 3.2.3 and 3.3.3).

Starting from 2003 the accumulated imbalances started being reflected in nominal developments. *Inflation* rose again in all three countries and peaked at double-digit levels in mid-2008 (see the previous chapter).

The price increases were strongly influenced by positive expectations concerning the future increase of private wealth, the availability of cheap credit, inertial movements and alignment of prices with the level of the EU. Price dynamics were particularly strong in the *housing sector*. According to national statistics, between 2003 and 2007 real house prices more than tripled in Latvia, and more than doubled in Estonia and Lithuania. ([21]) Rising prices of non-tradables and cost of living gave increased impetus to *wage dynamics* that were on an accelerating trend in light of tightening labour markets (Graph 2.9).

Graph 2.9: **Nominal compensation per employee, total economy (thousand euros - 1995 to 2008)**



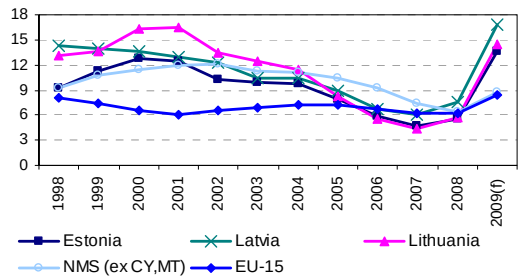
Source: AMECO.

Strong economic growth translated into rising labour demand and into a considerable reduction of unemployment in all three countries. The decline in unemployment accelerated around 2002, and was particularly strong in Lithuania where it declined from 16.5% in 2001 to 4.3% in 2007 (Graph 2.10). Moreover, after EU accession, the free movement of labour exerted pressure on the

([19]) See Ratto, Roeger and in't Veld (2008).
([20]) See Rosenberg and Tirpak (2008).
([21]) See Lamine (2009) for an analysis of the Estonian housing market during the boom.

Baltic labour markets and contributed to skill mismatch due to the emigration of better qualified and flexible labour force. ([22])

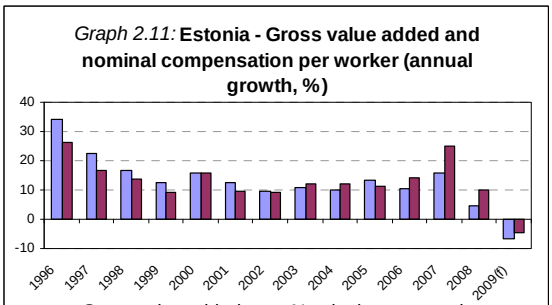
Graph 2.10: **Unemployment rate (%)**



Source: AMECO.

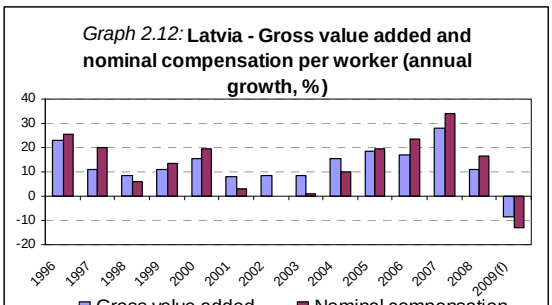
During 2004-2008 the average growth of wages outpaced productivity growth with implications for external competitiveness. The gap between wages and productivity growth was substantial in Estonia and Latvia but rather moderate in Lithuania (Graphs 2.11 to 2.13).

Graph 2.11: **Estonia - Gross value added and nominal compensation per worker (annual growth, %)**



Source: AMECO.

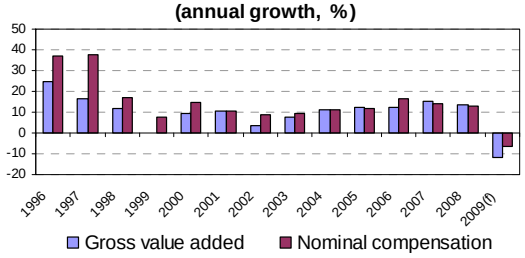
Graph 2.12: **Latvia - Gross value added and nominal compensation per worker (annual growth, %)**



Source: AMECO.

([22]) The United Kingdom, Ireland and Sweden were the first to open their labour markets immediately after the EU enlargement in May 2004 and attracted therewith the most of the Eastern European migrants. See European Commission (2004a).

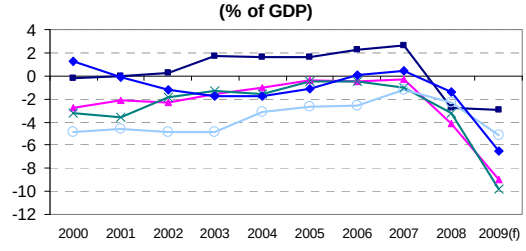
Graph 2.13: **Lithuania - Gross value added and nominal compensation per worker (annual growth, %)**



Source: AMECO.

Fiscal policies also did not contribute effectively to offset the overheating of the economy (see Chapter 3) although developments differed across the three countries. During 2001-2007, Latvia and Lithuania ran small general government deficits while Estonia had surpluses and managed to accumulate a fiscal reserve (see Graph 2.14).

Graph 2.14: **General government balance (% of GDP)**



Source: AMECO.

However, after 2004, a counter-cyclical fiscal stance would have required a more significant improvement in budgetary positions (see section 4.5). ([23]) In addition, fiscal policy did not help in preventing or significantly braking the real estate bubbles. In Estonia and Lithuania, deductions of mortgage interest payments from personal taxable income on housing loans were in place. ([24]) In Latvia there was no favourable tax treatment of interest payments, but the income from real estate sales was not taxed until 2007.

([23]) Over 2004-2007, general government expenditure increased by more than 60% in Estonia and Lithuania and by 90% in Latvia as large revenue windfalls were almost fully spent and expenditure overruns amounted to several per cent of GDP, see European Commission (2008a).

([24]) Lithuania abolished the deductibility of interest payments for new loans taken after 1 January 2009. In Estonia, the deductibility of interest payments has been gradually lowered.

Box 2.1: Economic developments in the Baltics 1995-2007 – Real versus financial convergence

This box studies economic developments in the Baltic States between 1995 and 2007. ([1]) The Commission services' QUESTIII Dynamic Stochastic General Equilibrium (DSGE) model is used to assess the contribution TFP growth, risk premia and access to credit in driving observed macroeconomic trends.

The QUESTIII small-open-economy version used in the simulations is calibrated to the aggregate Baltic region. The model features three production sectors (traded goods, non-traded goods and housing) and heterogeneous households (credit-constrained and unconstrained). The detailed specification of trade linkages can well capture foreign-trade-related developments. In addition, the extension for the financial accelerator, specified as a collateral constraint for a fraction of agents, allows studying the impact of balance sheet effects on the economy.

The three driving factors are calibrated as follows: (1) Exogenous TFP growth in both sectors is calibrated such that the implied trajectories of labour productivity match their empirical counterparts in 1995-2007; (2) The foreign risk premium is reduced by 100 basis points permanently starting from 2001; this roughly matches the observed average fall of the uncovered-interest-rate-parity based risk premium of the Baltic countries with respect to the euro area between the years before and after the Russian crisis, i.e. until 1998 and starting from 2001;([2]) (3) The increasing access to credit is captured by an institutional loan-to-value (LTV) ratio in the model. For the simulations, this ratio is calibrated so that the increase in households' gross debt-to-GDP ratio is matched over the sample period. The calibration of each factor assumes the continuation of the observed trends after the sample period.

1995 to 2001: Real convergence

Productivity growth and growth differentials are found to reasonably well track developments in the Baltic economies until around 2001 both qualitatively and quantitatively (see Graph 1, left-hand-side panel). These results suggest that the period 1995 to 2001 can be considered as a classical catching-up phase of the Baltic economies. In particular, TFP growth trends appear to well explain the evolution of value added in the traded and non-traded sectors. Rising income and the assumed positive future growth outlook lead to consumption growth in the simulation which matches the observed data well in the first half of the sample. Productivity growth also leads to investment growth in the model; however, the simulated investment growth lags behind the empirical figures. This mechanism also generates sizable trade deficits in the model which roughly match the observed data in the first half of the sample.

2002 to 2007: Financial convergence

Starting from early 2000, productivity trends *per se* fall short of explaining the evolution of Baltic economic aggregates. Specifically, growing external deficits, increasing reorientation of production towards non-traded sector as well as the acceleration of households' consumption and housing investment do no longer seem to be justified by the observed TFP developments. At the same time, simulation results confirm that the two other factors, i.e. the fall in external risk premium and the easier access to credit, have played a significant role in the second half of the sample (see Graph 1, right-hand-side panel). The *fall in risk premia* reflects growing demand for Baltic States' assets leading to capital inflows and rising investment and production. The positive future income prospects along with the cheaper access to foreign funds also contribute to an increase in households' consumption. In parallel, higher demand along with enhanced consumption smoothing also leads to persistent current account deficits.

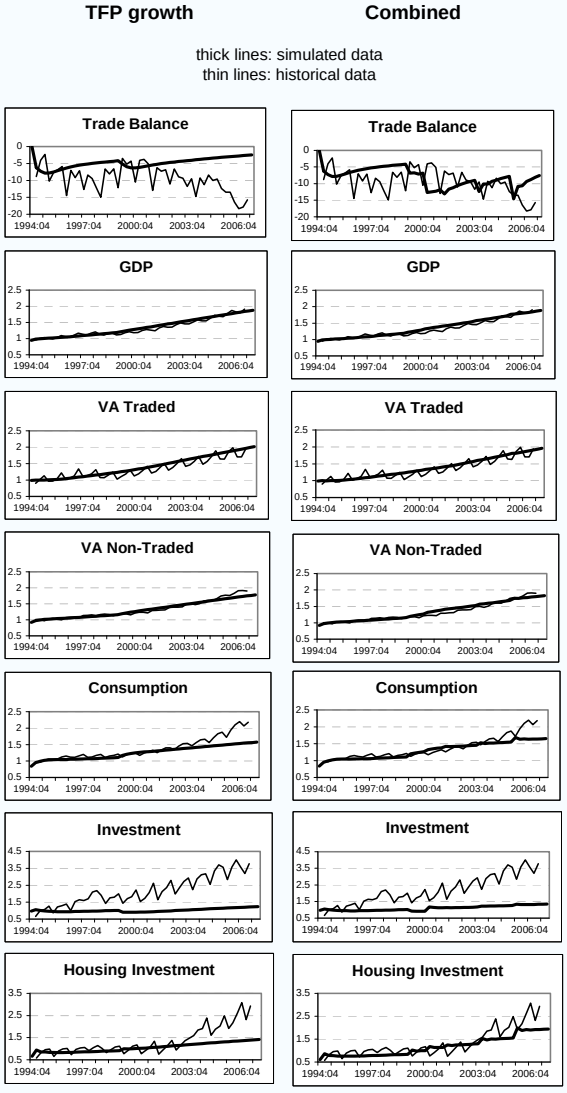
([1]) This note is based on Lendvai & Roeger (2009).
([2]) It is also in line with other recent studies, e.g. Luengnaruemitchai and Schadler (2007), Bems and Hartelius (2006).

(Continued on the next page)

Box (continued)

Easier access to credit permits credit-constraint households to increase both their consumption and their housing investment. This leads to a reorientation of production towards the housing sector and contributes to growing trade deficits.

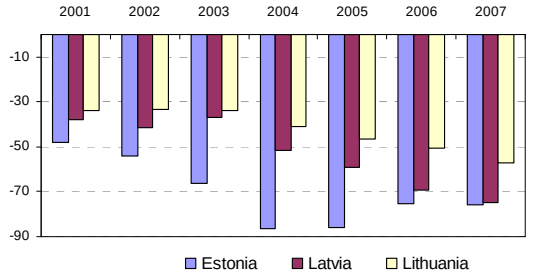
Graph 1 **Evolution of macroeconomic aggregates in the Baltic Economies**



Notes:
Left-hand-side panel figures show the contribution of TFP growth to macroeconomic aggregates between 1995 and 2007 based on QUEST III calibrated to the Baltic States. Exogenous TFP set such that the implied labour productivity in the traded and non-traded sectors match observed labour productivity in the data.
Right-hand-side panel figures show the combined contribution of TFP growth (1995 - 2007), a 100bp permanent fall in foreign risk premium (from 2001) and easing access to credit (from 2001) to macroeconomic aggregates in the Baltic States. Calibration of risk premium in line with values estimated by Lungnemitcherai & Schadler (IMF, 2007). Access to credit: implied households' debt to GDP ratio matches gross households' liabilities-to-GDP in the data.

As a result of fast domestic demand growth largely financed from abroad, the Baltics accumulated *external imbalances* over and above those of other capital-importing Central and Southern European countries. During 2005-2008 average current account deficits ranged from 11% of GDP in Lithuania to 14% in Estonia and 18% in Latvia. ([25]) Over the same period net FDI inflows on average amounted to 7% of GDP in Estonia, 6% in Latvia and 4% in Lithuania. ([26]) Net financial assets were increasingly negative in all three countries (Graph 2.15).

Graph 2.15: **Net foreign assets (% GDP)**



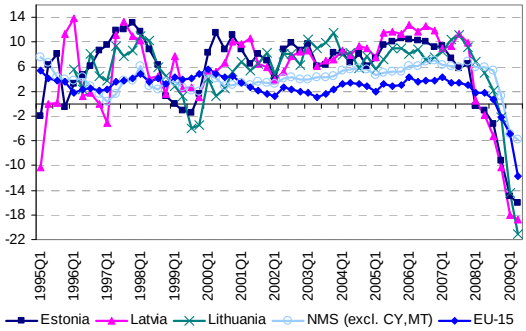
Source: AMECO.

External debt exceeded 120% of GDP in Latvia and Estonia and 70% in Lithuania in 2008. Lower imbalances in Lithuania can be explained by a lag in financial deepening. Despite some mitigating factors (a substantial role of FDI inflows and borrowing from the Nordic parent banks with long-term interest in the Baltic region), large foreign borrowing needs exposed the Baltics to the risk of sudden capital stops. ([27])

2.5. HARD LANDING IN A DIFFICULT EXTERNAL ENVIRONMENT

The economic boom reached its peak by the end of 2007. The adjustment phase in the Baltics had started before the global financial crisis which exploded in late 2008 with the collapse of Lehman Brothers. The domestic contraction was considerably reinforced by the global financial turbulences. In 2008, annual GDP growth turned negative in Latvia and Estonia, amounting to -4.6% and -3.6%, while in Lithuania it decelerated to 3% from 9% in 2007 (Graph 2.16).

Graph 2.16: **GDP growth (yoy % change)**



Source: TRIMECO.

The *downturn* in the Baltic countries during 2008 was prompted by excessive real estate prices and contracting private demand given the level of indebtedness reached. High private sector debt made Nordic banks reassess the economic outlook of the Baltics and impose tighter credit rules. The demand for housing loans fell, which led to a deceleration of real estate transactions and diminishing real estate prices. Also the weakening overall economic sentiment added to the slowdown in the real estate market. The result was declining output and employment in the sectors of construction, real estate and financial services. All these factors were exacerbated when the international climate deteriorated in the second half of 2008, leading to a significant economic contraction by the end of the year and in the first half of 2009.

The picture for 2009 is very negative for all three countries and positive growth seems unlikely in 2010. The magnitude of internal and external imbalances at the beginning of the financial crisis and the degree of openness with respect to the flows of trade, capital and labour played a key role in explaining the extent of the economic contraction. Moreover, expectations about future potential growth changing from excessively optimistic to much more pessimistic could have added to the severity of the slowdown. Box 2.2 presents Dynamic Stochastic General Equilibrium (DSGE) model simulations with QUEST III supporting this argument. The simulations show that a sudden reversal in future growth expectations requires an adjustment in investment

([25]) In March 2007 Latvia's government adopted the anti-inflation plan which increased taxes on real estate transactions and expensive vehicle purchases, though this measure affected the overheating trends to a limited extent.
([26]) IMF data.
([27]) See Calvo (1998).

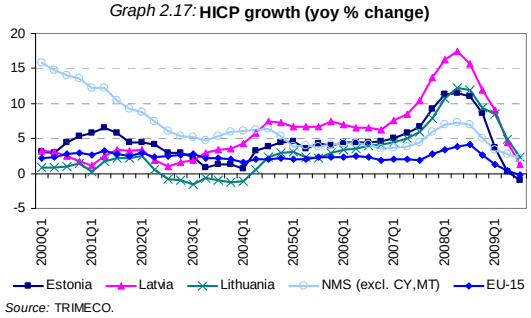
and consumption behaviour, in order to accelerate the rate of reduction in accumulated levels of external debt a process with strong repercussions on the real economy.

The high openness of the Baltic economies exposed them to rapidly falling global demand and capital inflows. Trade volumes are expected to contract severely in 2009 in the Baltic countries. The data of the first half of 2009 show that, compared to 2008, exports contracted by more than 25% in all three countries. The drop in imports ranged from slightly below 40% in Estonia to more than 40% in Latvia and Lithuania, with most of the contraction taking place at the beginning of 2009. Although current account imbalances have recently turned into surpluses, the concern remains to ensure a roll over of short term external debt.

Contracting domestic and global demand is causing a deep surge in *unemployment* rates, which can feed back into the economic downturn via falling household demand and raise social tensions.

On the positive side, due to rapidly falling incomes and contracting international commodity prices, *inflationary pressures* started recently exhibiting a moderating pace in the Baltic economies (Graph 2.17), with positive effects on external competitiveness in perspective.

Graph 2.17: **HICP growth (yoy % change)**



Source: TRIMECO.

The deteriorating economic situation will inevitably cause an erosion of the quality of the loan portfolio in the *financial sector*. During 2008 the Baltic banking sector remained stable and well capitalised. However, falling asset prices in 2009 are expected to reduce the loan collateral values and to increase the portfolio of bad loans. The countries should therefore carefully assess the weaknesses of their banking systems and elaborate debt restructuring plans that would address the general insolvency problems and legal bankruptcy procedures. ([28]) The authorities also need to ensure that sound prudential requirements and supervisory standards are in place and followed, in order to provide the banking sector with adequate liquidity and capital buffers. ([29]) Strengthening the crisis management framework and intensifying the cross-border co-operation of regulatory and supervisory authorities pose further policy challenges for the Baltics.

Public finances came under severe strain in all three countries. The bursting of the real estate bubble, diminished availability of credit and falling export revenues resulted in a severe contraction of economic activity and reduced public revenues. At the same time, adjusting macroeconomic imbalances pushed the Baltic governments to adopt fiscal austerity measures. Borrowing on international capital markets became problematic, in particular for Latvia, and to a much lesser extent in Estonia, as the deteriorating economic situation resulted in widening credit default swap (CDS) spreads. Given the more critical situation in Latvia at the end of 2008, the government applied for financial assistance from the European Union and IMF, which helped to avoid more serious tensions and provided breathing space for undertaking significant consolidation measures.

In the current juncture, the Baltic governments, and notably Latvia and Lithuania, have no space for fiscal manoeuvre to stimulate their domestic economies. The three Baltic countries indeed foresee frontloading of EU cohesion funds co-financed by means of EIB loans as the main instrument to support export growth and infrastructure-related investment. Consolidation measures will have to be taken to structurally adjust budgets, stabilise rapidly rising stocks of government debt, and steer financial market expectations.

([28]) Baltics are already taking steps in this direction, e.g. in August 2009 the Lithuanian government adopted the Financial Sustainability Law which foresees tools for strengthening financial stability and credibility of banks in case of extraordinary circumstances.

([29]) From 2011 onwards financial supervision of EU countries will be guided by the Capital Directive (CRD2). Member States will not have a right to set more stringent requirements than foreseen by the Directive.

Box 2.2: **Explaining abrupt downturns: the role of expectation reversals**

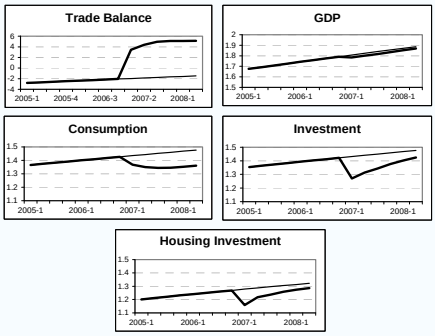
This box studies the role of expectations in the current economic downturn using the Commission services' QUESTIII dynamic stochastic general equilibrium model calibrated to the Baltic economies. ([1]) While the increase in the Baltic States' external indebtedness may potentially have been driven by various factors (e.g. productivity growth, a fall in the foreign risk premium and increasing access to credit), optimistic expectations about future growth and/or risk assessment are likely to have contributed to the observed trends. As the outlook is being reversed, this may also be expected to affect the economy.

We use the QUEST III small open economy version calibrated to the aggregate Baltic region to illustrate the impact of a sudden reversal of expectations. Two scenarios are compared. The 'optimistic scenario' expects the undisrupted continuation of productivity growth trends and permanently low corporate risk premia for the future. The 'expectation-reversal' scenario starts off with the optimistic outlook; expectations are reversed in 2007Q3: at this date, expectations about productivity growth after 2008Q3 decline and corporate risk premia return to higher levels.

Simulation results show that a sudden deterioration in the growth outlook and in the market sentiment implies a sizable and costly correction of the external debt, housing stock and capital stock positions taken up based on the previous optimistic outlook (see Graph 1). In particular, a turnaround in expectations after several years of optimism is shown to lead to a quick reversal of the trade balance. On the production side, this requires a swift restructuring of production towards the traded sector. On the demand side, households' consumption, housing investment and capital investment are found to fall significantly. Total GDP also declines on impact. It should be emphasized that the economic reversal takes place already before the pessimistic expectations are realised.

These changes are driven by two mechanisms. First, future growth outlook has a significant impact on the composition of GDP and on the trade deficit. In particular, if agents expect higher income levels for the future, they tend to spend more on external-debt-financed demand items at the expense of higher debt services later on. Therefore, when the optimistic growth outlook is reversed, they are caught in too high an external debt position which needs to be corrected downward. Second, positive market risk assessment as reflected in low corporate risk premia tends to channel expenditure towards capital investment. When risk premia suddenly rise, investment expenditure declines. This partly offsets the fall in consumption and housing investment as implied by the change in productivity growth expectations only.

Graph 1 **Reversal of expectations and market sentiment**
thin lines: optimistic scenario; thick lines: reversal scenario



Note: The figures compare two scenarios. Optimistic scenario (thin lines): productivity over 1995-2007 calibrated to match data, corporate risk premium decreases by 100 basis points over the period; expectations for the period after 2007 assume continuation of the growth trends. Reversal scenario (thick lines): same as optimistic scenario until 2007Q2. In 2007Q3, expectations for the period after 2008Q2 change from the optimistic to zero productivity growth from 2008Q2; risk premium increases by 100 bp in 2007Q3. Simulations start in 1995 (beginning not displayed).

([1]) The same model is used as for Box 2.1. The discussion is based on Lendvai and Roeger (2009).

2.6. CONCLUSIONS

The successful transition process to a free market economy resulted in strong GDP growth in the Baltic States. In the course of EU integration the three countries became very open economies, depending on external trade and capital flows. Foreign investment inflows gave a strong contribution to productivity growth and accelerated the catching-up process of the Baltic countries with the EU. However, the catching up process derailed in the second half of the 2000s and turned into overheating coupled by large external imbalances. Due to the high openness of the Baltic countries, the domestic downturn, which was prompted by the excessive imbalances, was further aggravated by the global financial crisis.

The current economic outlook poses demanding policy challenges for the Baltic countries. First, the authorities should strengthen the regulation and supervision of the financial sector and prepare debt restructuring plans while taking into account the lack of fiscal room for manoeuvre. Second, public finances need to be put on a consolidation path to ensure debt sustainability and facilitate the working out of external imbalances. Third, potential growth should be restored and made compatible with external rebalancing, which requires not only the adjustment of unit labour cost to recover price competitiveness but also measures to facilitate the shift of resources from the non-tradable to the tradable sector, to foster productivity growth, and to upgrade the export mix. The following chapters of the study dig deeper on the above aspects, with a view to sharpen the analysis and its policy implications.

3. FINANCIAL SECTOR DEVELOPMENTS

3.1. INTRODUCTION

As stressed in the second chapter of this study, rapid financial development and integration was a key driver of the catching up process of the Baltic economies and was at the centre of the exceptionally strong growth performance in the past decade. At the same time, large capital inflows contributed to overheat Baltic economies, had been driving asset price bubbles, and were the counterpart of mounting external imbalances.

The financial sector of the Baltic economies was severely hit by the world financial crisis like that of most other EU countries. However, the problems of the financial sector of the Baltics manifested themselves already before the onset of the current crisis, notably in light of the emerging vulnerabilities related to growing exposures by the private sector and the dynamics of housing bubbles. Additionally, the financial sector of the Baltics presents distinguishing features. In particular, it is largely foreign-owned and bank-based. A correct and complete picture of the most significant features and developments of the financial sector is key to a proper understanding of the recent macroeconomic developments in the Baltic economies and to the identification of appropriate policy responses.

The aim of this chapter is to go deeper in analysing the role of the financial sector for the macroeconomic developments in the Baltic economies following transition. The second section provides a description of the main developments in the financial sector of the Baltics and highlights a series of stylised facts. The analysis covers both aspects of financial development and financial integration. In the latter respect, the main reasons driving capital inflows are discussed. Analytical focus is devoted to the determinants of the growing exposure of the private sector in the Baltic countries and whether private credit has grown above level that can be justified on the basis of fundamentals.

The third section of the chapter identifies the challenges brought about by financial development and integration and discusses policy responses. In particular, it reconstructs the build-up of vulnerabilities in the financial sector, provides information on available indicators of financial soundness, and reviews concrete steps taken so far by policy authorities in the domain of prudential policy and financial surveillance to tackle the perceived growing financial risks.

3.2. FINANCIAL MARKET DEVELOPMENTS IN THE BALTIC COUNTRIES

The transition of the Baltics to decentralised economic decision-making as well as the recent EU-accession implied two distinct, though related, financial processes. On the one hand, domestic financial intermediation witnessed substantial growth, which is referred to as the financial sector's *development*. On the other hand, the growing domestic markets for financial services have been becoming more and more integrated globally, and especially with the old Members States, which is referred to as the financial sector's *integration*. This part of the study will present and analyse both of these processes. Particular emphasis will be put on two issues. First, how did financial sector development and integration relate to EU-accession and in particular to the EU's institutional framework? Second, did they follow a sustainable path in march with similar developments in other countries, or can we rather identify a disequilibrium tendency?

3.2.1. Stylised facts of the Baltics' financial sector development

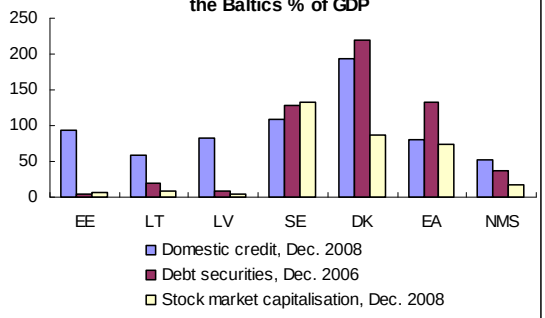
Main features of the financial sector in the Baltics

Financial sector development in the Baltics was initiated by a process of bank restructuring, privatisation and deregulation, i.e. the removal of government control on credit markets. However, direct and indirect financial intermediation did not develop equally. Stock and bond markets remain still at an early stage of development, while most of the financial intermediation is carried out by commercial banks. Even though this is a common feature of all Baltic economies, some country differences are noticeable, in terms of credit growth, ownership structure of the banking sector, or relevance of direct finance.

A key characteristic of the Baltics is that financial intermediation is strongly *bank-dominated*, while

direct finance plays a minor role only (Graph 3.1). In the euro area, as well as in other Nordic countries, financing through the issuance of marketable debt is as important as financing through bank loans. By contrast, in the Baltics it remains relatively insignificant. In Estonia and Latvia, where bank credit has reached close to 100% of GDP, the debt securities/GDP ratio stands respectively at 5% and 8%, while it has reached 16% in Lithuania. This big discrepancy may be due not so much to the relative underdevelopment of financing through debt securities in the Baltics than to the much lower levels of public debt in these countries.

Graph 3.1: **Structure of the financial sector in the Baltics % of GDP**



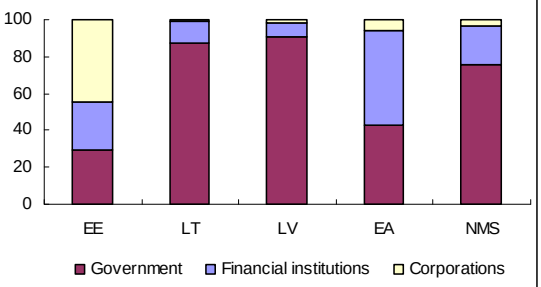
Note: NMS stands for the non-euro area new members states, except the Baltics. *Source:* ECB and national sources.

The *debt securities* market also presents a structure that differs substantially between Baltic countries (Graph 3.2). While in Lithuania and Latvia government issues dominate completely the market, private issuance covers 70% in Estonia, which is even higher than the euro area average. The relatively low stage of development of direct intermediation accounts for the limited domestic investment opportunities for insurance corporations and other institutional investors whose assets remain still very narrow.

Regarding *stock markets*, their role for financing economic activity has remained incontestably very restricted so far. Stock markets in Baltic countries have been boosted initially by public offerings in the context of privatisation, but then their liquidity has decreased substantially in recent times despite the integration of the Baltics' stock exchanges into the broader Nordic stock market.

The development of the Baltics' financial sector is tantamount therefore to the development of their banking sector. Accordingly, it will be presented in substantially further detail.

Graph 3.2: **Structure of the debt securities market (% of total)**



Source: ECB.

Banking sector development and structure in Baltic countries

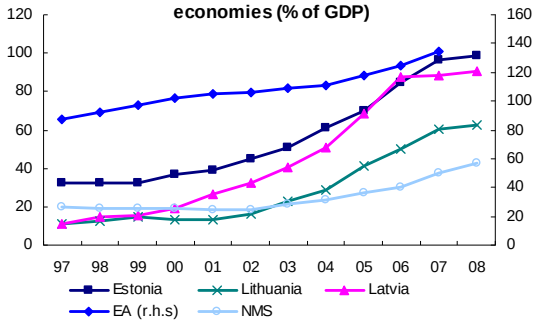
Banking sector development in the Baltics went through two *phases*. The first phase, which encompassed the very first years of transition, consisted in centralised credit distribution orchestrated by the domestic central banks that ended in very high inflation rates and the demise of the currency in use. Following monetary reforms, currency boards were established in Estonia in 1992 and in Lithuania in 1994, while a newly born central bank started issuing the Latvian lat in 1993, to be pegged to the SDR in 1994. ([30]) These monetary reforms mark the beginning of the second phase of development of the banking sector in the Baltics. The high credibility of pegs offered by the currency boards and the fixed exchange rate mechanism in Latvia stimulated both the penetration of the market by foreign financial institutions and the smooth growth of bank credit expansion. Despite the stabilising impact induced by the monetary reforms, the economies of Latvia and Lithuania underwent major banking crises in 1995 and 1996 that were rooted in capital misallocation and lack of sufficient reserves to accommodate all deposit withdrawals.

Bank credit expansion did not start at the same level and did not have the same pace in all three Baltics. Looking at the respective credit/GDP

([30]) The Lithuanian currency board used the dollar as reserve currency initially, before switching to the euro in 2002. Since they joined the EU, all three countries are part of the ERM II and have their domestic currencies firmly pegged to the euro.

ratios, it appears that during the 10-year period starting in 1997, credit was multiplied by three in Estonia, by six in Lithuania, and by nine in Latvia (Graph 3.3). Credit in Estonia started at a three times higher level than in the other Baltics, and began expanding in 2000. The expansion of the banking sector in Latvia started at about the same time, but at a substantially stronger rate that allowed for catching-up with Estonia already in 2006. Interestingly, the bank credit expansion in Lithuania has been significantly slower than in the other two Baltics, and started only in 2001-2002, i.e. at the time of the reserve currency switch. Even though the average euro area levels of outstanding credits to GDP have not yet been reached, the convergence process has been gradual and continuous. If in 2001, credit in the euro area was 2.7, 7.8 and 4 times higher than in Estonia, Lithuania and Latvia, the proportions went down to 1.4, 2.2 and 1.4 respectively by the end of 2007.

Graph 3.3: **Domestic credit in the Baltic economies (% of GDP)**

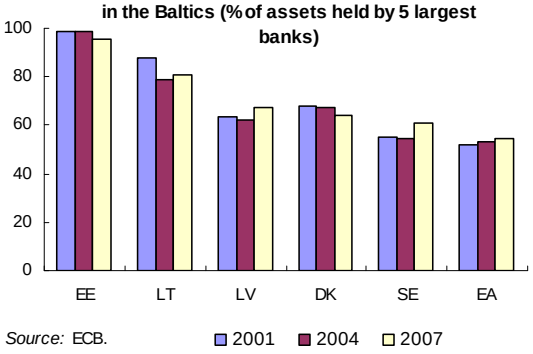


Note: NMS stands for the non-euro area new members states, except the Baltics. Source: AMECO and IMF, IFS.

This quick bank credit expansion has been characterised by two prominent features. First, *banking sector concentration* is significantly higher than in other economies (Graph 3.4). The five largest banks hold almost all of the assets in Estonia, about 80% in Lithuania, and almost 70% in Latvia. While the concentration level in Latvia is comparable to that in other Nordic countries, banks in all three Baltics appear to be definitely more concentrated than banks in the euro area. ([31])

It is worthwhile noting that concentration did not increase with credit expansion, but has already been in place before 2001.

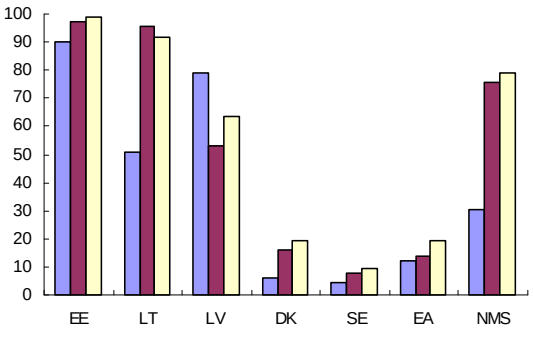
Graph 3.4: **Concentration of the banking sector in the Baltics (% of assets held by 5 largest banks)**



Source: ECB.

Second, the *foreign ownership* in the domestic banking sector is extremely elevated by all standards (Graph 3.5). Banks in Estonia are almost entirely under foreign control, only ten per cent of banks' assets are domestically controlled in Lithuania, while that is the case for slightly more than 30% in Latvia.

Graph 3.5: **Foreign ownership in the banking sector (% of bank assets under foreign control)**



Source: EBRD.

These levels of foreign ownership are from three to ten times higher than in other Nordic countries and the average for the euro area. Important differences between the Baltics themselves can be noted. Estonia and Lithuania have been marking a clear tendency toward stronger foreign ownership of the banking sector for the last 10 years. By contrast,

([31]) At least two factors could account for this phenomenon. First, to the extent that a bank's higher market share limits its liquidity outflows toward competitors, thereby facilitating its credit expansion, any single bank aims naturally at increasing its market share. This individual tendency brings about, on the industry level, higher levels of concentration. Second, to the extent that a major share of inward foreign direct investment consisted in acquiring state-owned banks or in opening subsidiaries, the high concentration is also explained by the presence of only small domestic banks.

no such trend is observable in Latvia, where domestic banks have specialised in servicing foreign neighbouring clients from Russia, Ukraine and Belorussia. ([32]) These specific country differences aside, the average very high level of foreign ownership in the Baltic banks raises specific regulation and supervision issues to be addressed in Section 3.3.

3.2.2. Baltics' financial integration in the global market

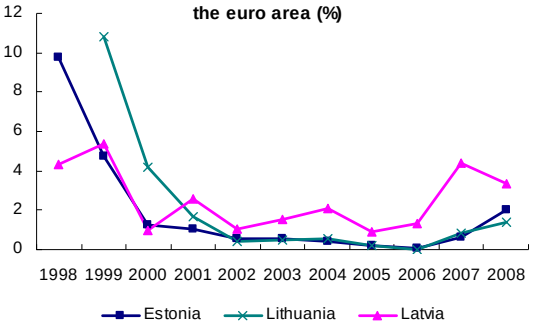
The development of the financial sectors in the Baltics was accompanied by their global financial integration, in particular into the EU market for financial services, and associated with substantial capital inflows. There are two broad ways to gauge financial integration: using price-based indicators or looking at cross-border holdings of financial assets.

Financial integration as gauged by price convergence

Financial integration was among the reasons for interest rate convergence in the Baltic economies to rates in the euro area (Graph 3.6). An integrated market allows market participants to seize arbitrage opportunities, and convergence of prices for similar financial services is a typical outcome of an integrated financial market. ([33]) Other reasons for interest rate convergence include low risk perception given the credibility of the exchange rate regimes, euro accession expectations, competition between domestic and foreign currency lending as well as low risk aversion at the global level.

Although the trend towards falling interest spread was common to all Baltic economies, some differences are to be highlighted. The convergence process was somehow delayed in Lithuania, and fully occurred only after 2001. Convergence in Latvia appears to be less pronounced, and in any case substantially more volatile than in the other two Baltics: the short-term money market in last exhibits a risk premium that is persistently higher than that of other currencies (reaching 4.4% in 2007) and that could partly be attributed to the different exchange rate arrangement for this country. ([34])

Graph 3.6: **Short-term interest rates spreads to the euro area (%)**



Source: AMECO.

Existing empirical evidence corroborates the view that financial market integration in the Baltics has been strong and considerably boosted by the enlargement process, even though it did not follow a linear path. ([35]) In particular, the rising competitive pressure brought about by increased cross-border integration appears to have come to an end and to be even reversed in some cases as gauged by the spread between lending and deposit rates (Graph 3.7). The decrease in this spread has been most visible in Estonia and Lithuania and concerned mostly the period before EU accession. The spread has actually inverted its trend after EU accession and reached the euro area average in 2007. The joint action of two factors may explain the reversed trend since 2004. On the one hand, the very high concentration in the banking sector, as already reported, could have been reasonably expected to counter the beneficial effects of competition. On the other hand, the high expectations brought about by the enlargement

([32]) These country differences could partly be accounted for based on the monetary regime in the economies: in Estonia and Lithuania, where the currency board system precludes the existence of a lender of last resort, a systemic need for liquidity can be satisfied only from abroad.

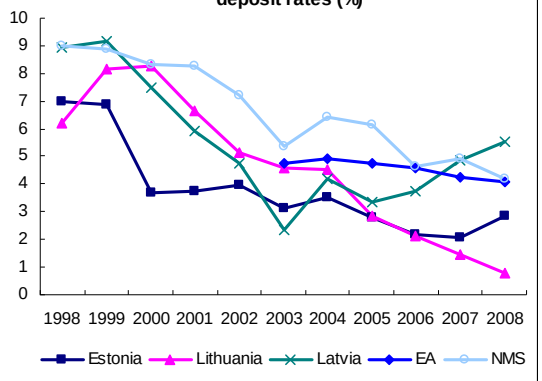
([33]) To the extent that direct financial intermediation is not systemically important in the Baltic economies, more sophisticated measures of financial market integration, such as correlations between asset prices, are not relevant in the case under study where interest rate spreads are a sufficient measure. On financial market integration measures, see ECB (2008a).

([34]) Currency boards in Estonia and Lithuania, as opposed to the hard peg arrangement in Latvia might have brought about the higher reduction in the risk premia of these currencies.

([35]) Similar evidence has already been reported in previous studies, (e.g., Baltzer et al., 2008).

process and prospects for euro are entry may have initiated an overshooting process that is now under correction.

Graph 3.7: **Spreads between annual lending and deposit rates (%)**



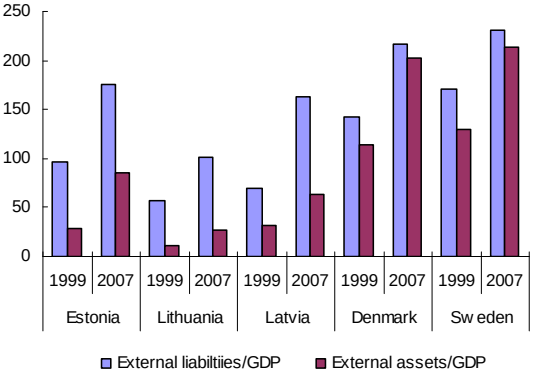
Source: IMF, IFS.

Financial integration as gauged through cross-border holdings of financial assets

A common measure of a country's financial openness is the outstanding amounts in its *external investment position*, which captures cross-border holding of financial assets and liabilities, i.e., a measure of cumulated cross-border financial flows. From this point of view, the Baltics' openness has more than doubled since 1999, even though it lags substantially behind other Nordic countries (Graph 3.8). Notable differences between countries are to be reported however. Estonia seems to be the most open to capital mobility, not only because the ratio external liabilities/GDP is the highest there, but also because of the rapid progression of claims upon foreigners that Estonians have acquired. Lithuania appears the least open.

Analysing the break-down of these aggregate stock measures requires looking into the decomposition of cross-border financial flows. *Foreign direct investment inflows* have been a substantial source of capital, especially in Estonia, where it reached 80% of gross fixed capital formation in 2005. On average over the period 1995-2006 incoming FDI accounted for 30%, 18% and 22% of fixed capital formation respectively in Estonia, Lithuania and Latvia. At the same time, Estonia appears also to be heavily investing abroad since 2006, with outgoing FDI reaching 60% of the incoming foreign investments. Lithuania and Latvia also have begun to invest abroad, but to a much lower extent. This means that the region has recently started to export capital.

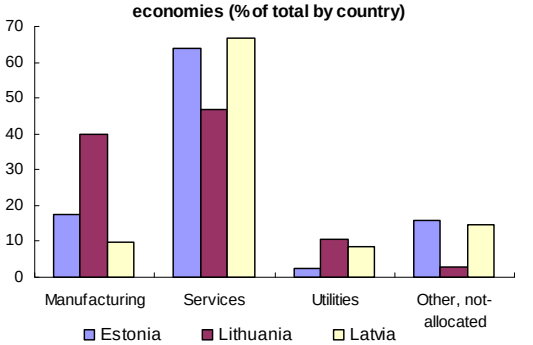
Graph 3.8: **Financial openness (%)**



Source: Eurostat.

Important differences between the Baltics have to be acknowledged also when it comes to the structure of the accumulated incoming FDI. Most of the accumulated stock of FDI in Estonia and Latvia went to the services sector, while the industry and utilities have been dominant in Lithuania (Graph 3.9). Further differences as far as the capital distribution among service subsectors exist. Thus, financial intermediation accounts for 56%, 32% and 27% of the accumulated FDI in services respectively in Estonia, Latvia and Lithuania. ([36])

Graph 3.9: **Structure of FDI stock in the Baltic economies (% of total by country)**



Source: Eurostat.

Portfolio investment in the Baltics has played a minor role, as it could be expected on the ground

([36]) The general conclusion that a substantial part of FDI in the Baltic economies went to the financial, rather than to the industrial, sector is further elaborated in chapter 5 of the present study.

Table 3.1:
Net foreign debt (% GDP)

		General government	Monetary authority	Banks	Other sectors	Intercompany lending
Estonia	2000	-1.6	16.2	-9.0	-5.0	-8.7
	2008	4.9	17.7	-49.7	-9.5	-2.9
Lithuania	2000	-17.0	11.4	1.1	-9.8	-4.5
	2008	-8.4	13.7	-28.4	-6.0	-6.2
Latvia	2000	-6.6	10.3	-0.3	-7.9	-8.3
	2008	-8.2	13.0	-51.0	-3.1	-7.2

Source: National Central Banks

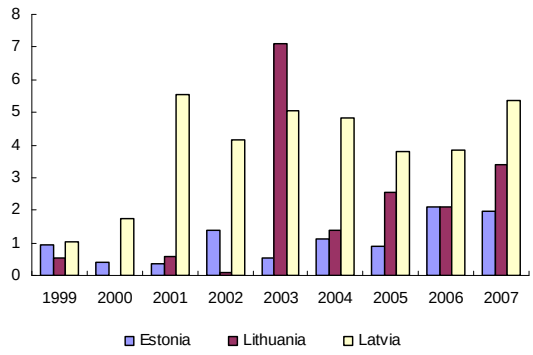
of the low stage of development of direct financial intermediation. It is also to be noted that the Baltics have been acquiring portfolio assets abroad more than they sell assets to foreigners. Accordingly, the net balance of portfolio investment in the financial accounts of the balance of payments has been negative in recent years, especially in Estonia. Portfolio investment played therefore mostly a role in investing domestic savings and diversifying the source of income for residents in the Baltics.

The most striking feature of capital flows developments in recent years refers to the dynamics of investments other than FDI and portfolio, which comprise *loans to banks and to other sectors*. ([37])

These other investments in the Baltics have become significantly more important than FDIs (Graph 3.10). This is especially true for Latvia, where they are five times larger than FDI, and in Lithuania, where substantial volatility can be noted. Hence, there is evidence that shorter-term loans to the banking sector are increasingly replacing longer-term stakes in the capital structure of these economies.

Regarding the decomposition of the *net foreign debt* in terms of the *different sectors of the economy* (Table 3.1), it appears that government indebtedness towards the rest of the world has been decreasing in all Baltic economies, while assets held by the monetary authorities in order to back the domestic currencies have either remained broadly unchanged or even increased, as well as intercompany lending and other sectors' indebtedness. Conversely, banking sector indebtedness has increased out of proportion relatively to the other sectors, especially in Estonia and Latvia.

Graph 3.10: **Ratio of other investment to FDI flows**



Source: Eurostat.

3.2.3. Explaining capital flows to the Baltic economies

This quick integration of the Baltics into the global financial market can be accounted for on the basis of several arguments.

First of all, the economic structure of Baltic countries presented opportunities for investment, in light of their relatively *low per-capita income* levels coupled with a relatively *qualified labour force*, and the need for capital restructuring following *transition*. Low absolute levels of *domestic savings* at the beginning of transitions also implied large room for foreign financing.

Second, preparation for *EU accession* and subsequent EU membership triggered investment and capital inflows by anchoring expectations towards a stable macro-financial environment and in light of the prospects offered by trade integration.

Third, EU accession was coupled by rapid *institutional convergence*, notably related with the

([37]) Inter-company loans are included in the foreign direct investment.

need for the Baltic economies to comply with the "acquis communautaire", which further contributed to reassure international investors and attract foreign capital. There is growing consensus that better institutions, notably in terms of property rights protection, law and contract enforcement, less cumbersome bureaucracy, and incentive-compatible taxation play a key role in economic development (e.g., Klein, 2005; Acemoglu et al., 2005). The perspective of joining the EU favoured more economic freedom and guaranteed legal protection for the international investors. Table 3.2 displays three indicators of institutional quality for the Baltics and a comparator group of other emerging economies. The "Ease of Doing Business"- indicator of the World Bank shows that the business environment in the Baltics is significantly compared with the comparator group of other emerging economies. It also appears that in the past decade economic freedom has increased substantially more in the Baltics compared with other emerging economies. Corruption also appears to have fallen somewhat in the Baltics, while it remains unchanged among the countries of the comparative set. It also appears that institutions have been converging among the Baltics, as shown by a decreasing dispersion between the indicator values, while the differences among the other emerging economies have been intensifying.

Fourth, the *currency board arrangements and hard pegs* adopted in the Baltics could have provided an increased incentive for economic agents to actively increase their openness and relations with foreign correspondents. Under such arrangements, the domestic monetary authority does not participate actively in banks' liquidity management. Hence, the search for improved room for liquidity management could have been an additional incentive for the banking sector to integrate abroad.

Finally, the Baltics exhibited characteristics contributing to the *expectation of a likely early euro adoption*, notably stable currencies, very low government debt, and relatively low deficits. This further contributed to reduce risk premia and foster capital inflows.

3.2.4. Assessing the sources of credit growth in the Baltic countries

A series of reasons underlay the integration-driven financial development of the Baltic countries, and appear to justify the massive increase of private credit in these economies in a relatively short time span. However, the sheer size of the credit expansion experienced in the past decade and the recent collapse of private credit growth raises the question to what extent credit growth may have been sustained by fundamentals and to what extent was it instead the result of an unsustainable "bubble-like" expansion.

To answer this question, this section of the study analyses empirically the determinants of the expansion of private credit in the Baltic countries and compares actual credit with credit levels that would have resulted only on the basis of these basic determinants.

Table 3.2:
Quality of institutions in the Baltic countries

	Average of Baltics	Dispersion among Baltics	Average of OEE	Dispersion among OEE
Rank in Ease of Doing Business (World Bank)				
2006	19.0	6.1	65.3	33.1
2009	26.3	3.8	68.3	35.3
Index of Economic Freedom (Heritage Foundation)				
1999	66.5	6.5	64.5	6.3
2009	71.0	5.0	63.4	9.3
Corruption Perception Index (Transparency International)				
1999	4.3	1.2	4.4	1.4
2008	5.4	1.1	4.6	1.5

Note: Ease of Doing Business: the lower, the more favourable; adjusted for changes in the sample, so that data cannot only be compared between countries, but also through time; Index of Economic Freedom (between 0 and 100): the higher, the better; Corruption Perception Index (between 0 to 10): the higher, the lower corruption; OEE (Other emerging economies): 16 countries with an income level similar to that in the new Member States (Argentina, Botswana, Chile, Costa Rica, Croatia, Lebanon, Malaysia, Mauritius, Mexico, Oman, Panama, Palau, South Africa, Turkey, Uruguay and Venezuela) classified as "upper middle income by the World Bank. Averages are unweighted; dispersion is measures by the standard deviation.

Source: World Bank, Heritage Foundation and Transparency International.

The determinants of private credit in the Baltic countries

Most studies explain credit growth on the basis of the estimation of "reduced form" specifications of both supply and demand side determinants. Among the explanatory variables considered there are usually real GDP, prices, and interest rates. ([38]) Specifications rich on the supply side attempt to model alternative credit channels – the bank lending channel and the balance sheet channel – and to analyse how these channels affect the availability of credit in the real economy.

Drawing on Egert *et al.* (2006), Table 3.3 displays results of regressions of private credit/GDP ratios on a series of explanatory factors. ([39]) Results are summarised as follows:

- The elasticity of real GDP is above 1, implying that a 1% increase in real GDP is responsible for an increase of approximately 1.20-1.36% in the private credit-to-GDP ratio. This is as expected, given that the development of economic activity involves higher private sector demand for funds, mainly ensured by the banking sector since capital markets are underdeveloped in most new EU Member States.

- Bank credit to the government sector appears to crowd out bank credit to the private sector, as illustrated by its negative sign. A 1% increase in bank credit to the government sector (expressed as percentage of GDP for reasons of consistency with the dependent variable) contributes between 0.3-0.4% to the decline in private credit. ([40])

- Government bond yields are used as a proxy for the cost of financing. Short-term interest rates are not available for the required time period and are not reported in a harmonised manner. The results show that an increase in the cost of financing by 1% determines a decrease in private credit-to-GDP ratio of about 0.21-0.35%.

- Inflation is also found to be a very significant determinant, with a positive contribution of 0.10-0.12% increase in private credit-to-GDP ratio. This influence may be evidence of a strong demand driven credit growth, given the fact that higher inflation favours debtors. Interesting to note is that in a sample including euro area countries, inflation does not always appear to be significant or to display a consistent sign (it may be either positive or negative).

- The degree of financial liberalisation is also expected to have an impact on private credit growth. Several proxies are used, among which the two most significant are reported in Table 3.3. ([41]) The capital control index, a component of the Economic Freedom of the World Index, which measures international capital market controls, i.e. foreign ownership/investment restrictions and capital controls, is highly significant, and its magnitude indicates that private credit is highly affected by a change in this index. Another way to approximate the measure of financial liberalisation is via the spread between the lending rate and the deposit rate. A decrease in the spread (1%) has thus a boosting effect on private credit to GDP ratio (0.10%). ([42])

([38]) For a comprehensive literature review see Egert *et al.* (2006).

([39]) Although the empirical specification includes most of the relevant demand-side variables, as it is the case in analogous exercises, relevant supply side determinants could be missing due to the lack of available valid proxies. For the Baltics, this seems especially be the case regarding changing norms and institutions underlying the development of the real estate market and its financing.

([40]) In order to capture crowding out effects, Cottarelli *et al.* (2005) use public debt instead. But as public debt also includes loans taken abroad and funds attracted on the securities markets, Egert *et al.* (2006) argue that bank credit to the government sector is a more appropriate measure.

([41]) The EBRD banking reform indicator; an indicator calculated by Fraser Institute for Credit market regulations including ownership of banks, foreign bank competition, private sector credit, interest rate controls/negative real interest ratek; a Word Bank index from the set Worldwide Governance Indicators for Regulatory Quality: the ability of the government to provide sound policies and regulations that enable and promote private sector development; the spread between lending and deposit rates.

([42]) However, spreads may not be the best proxy for the degree of liberalisation of the banking sector for two reasons. First, spreads had declined due to global low interest rates. Second, the financial crisis may have blurred the power of this indicator to measure liberalisation of the financial sector.

- Finally, the magnitude and significance of country fixed effects suggests that Estonia and Latvia share specific country characteristics that put private credit-to-GDP ratios at a higher level than Lithuania, *ceteris paribus*.

All in all, the econometric analysis performed shows that bank credit to the domestic sector in the Baltics is notably influenced by real GDP and by the degree of financial liberalisation approximated by the capital control index. Bank credit to the government sector had a crowding out effect on bank credit to the private sector and the decrease in the cost of funding (long-term government bond yields) prior to the financial crisis had a stimulating effect on credit. In contrast to other studies, inflation was found to have a positive impact on domestic credit, indicating strong demand-driven credit growth.

Equilibrium credit in the Baltics

The empirical analysis of credit determinants permits one to gauge “equilibrium credit”, namely, the credit level that would be observed due only to the operation of the basic fundamentals. Technically, the estimate consists of “in-sample” predictions of credit using the estimated coefficients and the observed values for explanatory variables. Subsequently, a comparison with the realised levels of private credit may reveal positive deviations (overshooting) or negative ones (undershooting). ([43])

However, in-sample results in the transition economies present a problem in light of low initial levels of credit-to-GDP ratios that introduce an upward bias in the constant term and coefficient estimates. ([44]) Therefore, to overcome this problem a "two-stage out-of-sample strategy" is used whereby the relationship between private credit and economic fundamentals is estimated first for a sample of benchmark economies and then the obtained coefficients are used to predict equilibrium values for credit in the Baltic economies.

The benchmark for the Baltic economies is chosen to be the initial group of twelve euro-area countries, and the specification is the same as in specification (I) in Table 3.3. The lowest and largest fixed effect coefficients among the euro area countries are used in order to obtain an interval for equilibrium credit rather than a single value. This reduces to some extent the arbitrariness of choosing the specific fixed effect and provides for a generous interpretation of equilibrium credit, though at the expense of a more precise choice.

The results of the out-of-sample extrapolation are illustrated by the charts above. Significant differences can be noticed for the three Baltic economies between 1998 and 2007 (Graphs: 3.11-3.13). Estonia seem to have gone beyond the estimated equilibrium level, Latvia is at the upper limit of the estimated interval while in Lithuania private credit appeared to be contained and not exceed the equilibrium level. ([45])

([43]) An alternative methodology, is to estimate trend credit growth using a Hodrick-Prescott filter and assess whether actual credit exhibits high deviations from the trend. However, the short time series for the Baltic states as well as the fact that these countries are still in transition plaqy against the use of such approach.

([44]) Maeso-Fernandez, F., C. Osbat and B. Schnatz (2005) put forward this argument for the estimation of equilibrium exchange rates for New EU Member States.

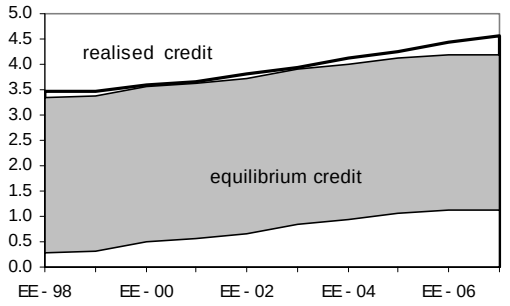
([45]) Boissay, Calvo-Gonzalez and Kozluk (2006) find that credit growth in the Baltic economies was above levels that could be justified on the basis of fundamentals. Kiss, Nagy and Vonnak (2006) found that only Estonia and Latvia may had come close to equilibrium and the risk of a credit boom was high in both Estonia and Latvia. Egert et al. (2006) conclude that the three Baltic countries were below long-run equilibrium credit-to-GDP for the period 1990-2004.

Table 3.3:
Estimations results - Log of private credit-to-GDP ratio as dependent variable

Explanatory variables	Log (real GDP)	Log (government credit as % of GDP)	Log (long term government bond yield)	Log (inflation)	Log (Capital control index)	Log (Spread)
I	1.36*** *(0.00)*	-0.30* (0.01)	-0.21* (0.01)	0.10** (0.00)	-1.30*** (0.00)	
II	1.20*** (0.00)	-0.40** (0.02)	-0.35** (0.02)	0.13** (0.02)		-0.19 (0.11)

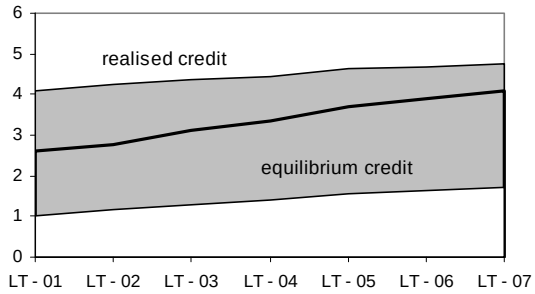
Note: *** significant at 1%, **significant at 5%, *significant at 10%; p-values in parentheses. Sample: annual frequency, 1998-2007, estimation method, Fixed Effects OLS.

Graph 3.11: **Equilibrium credit-Estonia**



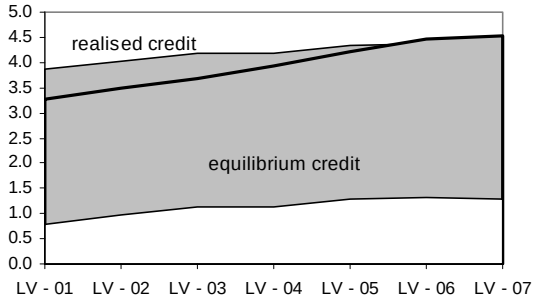
Note: Realised and equilibrium credit are expressed in logarithms.

Graph 3.12: **Equilibrium credit-Lithuania**



Note: Realised and equilibrium credit are expressed in logarithms.

Graph 3.13: **Equilibrium credit-Latvia**



Note: Realised and equilibrium credit are expressed in logarithms.

These results are to be read as complementing those obtained in previous work, assessing credit developments in the Baltic economies up to the mid-2000s, and reaching contrasting conclusions.

3.3. FINANCIAL SECTOR CHALLENGES AND POLICY RESPONSES

While the first part focused on the main features and determinants of financial sector development and integration, the focus in this section shifts on its impact on the economy and on policy responses.

3.3.1. The dynamics of the boom-bust cycle

The previous section argued that credit expansion triggered by financial integration was very rapid among the Baltics and may have reached levels above those explained by fundamentals. While credit expansion and larger scope for financial intermediation represents a desirable outcome for converging economies (e.g., King and Levine, 1993; Rajan and Zingales, 1998; Beck et al. 2000), an increase in the level of credit above equilibrium levels can be harmful for the macroeconomic and financial stability of a country.

A salient feature of most economies experiencing periods of financial deepening and catching-up, lending booms are associated with important challenges and risks at both macroeconomic and microeconomic level. At macroeconomic level, rapid credit growth may lead to a surge in domestic absorption not matched by a corresponding supply response thus leading to overheating and current account imbalances that may be unsustainable in the long run.

At microeconomic level, rapid credit expansion may change the lending behaviour of banks both towards corporate clients and households. During a lending boom, banks tend to adopt a pro-cyclical behaviour by underestimating potential risks and consequently engaging in more risky projects in the search for higher returns. As a result, they loosen credit standards and facilitate access to credit to lower quality borrowers. The easing of lending standards may be particularly dangerous for the stability of the banking sector, as it increases the probability of deteriorating asset quality in times of economic contraction when borrowers face difficulties with debt burden repayments (e.g., Hilbers et al., 2005)

Experience shows that lending booms triggered by financial liberalisation can lead either to soft landings, during which credit growth decelerates and self-correcting mechanism work relatively smoothly, or to the appearance of boom-bust cycles. Fuelled by over-optimistic expectations over future economic developments in the real economy, rapid credit expansion contributes to buoyant consumer confidence and expenditure, increased investment in physical capital and surging asset prices that can determine undesirable real estate and asset price bubbles. As the demand

for credit expands surpassing the level of domestic deposits, domestic banks may tend to borrow from abroad in foreign currency and lend on the domestic market in local currency resulting in currency mismatches in their balance sheets. (Enoch and Otker-Robe, 2007)

The described scenario supports the build-up of financial and real imbalances that may become dangerous when the cycle goes into reverse, as expectations realign again with fundamentals. A bust can be triggered by causes related either to the financial or real side of the economy or to the perceptions of economic agents about future developments. An increase in interest rates, a correction of asset price misalignments, an adverse economic shock (e.g. sharp decline in exports, increases in oil and commodity prices) or a sudden reversal in short-term capital inflows induced by a change in investor confidence may determine the unwinding of imbalances accumulated during the boom phase. As the economy contracts, lending activities decelerate significantly, asset prices decrease sharply, output slows down and real currency depreciation takes place. It has been shown that house price busts tend to be longer lasting and associated with more severe output loss than other market corrections (IMF, 2009). For countries favouring flexible exchange rates or soft pegs, the real depreciation of the currency influences negatively the ability of indebted borrowers to meet their obligations as the debt burden in domestic currency increases significantly. While the macroeconomic fundamentals (e.g. real exchange rate appreciation, aggregate output, investment and consumption patterns) along the boom-bust cycles do not seem to be significantly different in countries with fixed exchange rate regimes in comparison to countries with more flexible exchange rate regimes, the adjustment mechanism *after* a bust phase is different, in light of the different scope for adjusting price competitiveness via the nominal exchange rate (Tornell and Westermann, 2002).

3.3.2. The financial boom-bust cycle in the Baltics

In the Baltic countries, strong credit growth mostly triggered by the cross-border integration of the banking sector led to a growth in the exposure of the private sector (close to or even above equilibrium levels in Estonia and most likely in Latvia according the analysis above) that found a counterpart in current account deficits and fuelled a bubble in asset prices, notably real estate prices. The increased awareness of investors of diminishing investment opportunities, inflated asset prices, and deteriorating asset quality led to a progressive tightening of lending standards by banking institutions, which opened the way for an adjustment in real estate prices. The slowing of the housing market, in turn, led to an increase of mortgage loan-to-value ratios and deteriorating credit quality. The process of financially-driven economic meltdown was accelerated by falling asset prices, widespread deleveraging, and flight to safety in financial markets following the global financial crisis. Access to foreign credit for the Baltic countries worsened and risk premia on financial assets denominated in local currencies soared. The capital account reversal in Latvia coupled with large losses suffered by the domestic Parex bank, which required recapitalisation by government, led to a protracted balance of payment financing gap that required international financial assistance, including by the European Union and the IMF.

The bursting of the real estate bubble in the Baltics took place in an environment characterised by a series of vulnerabilities, discussed in the next section, that contributed to magnify the impact on the real economy and the severity of the current recession.

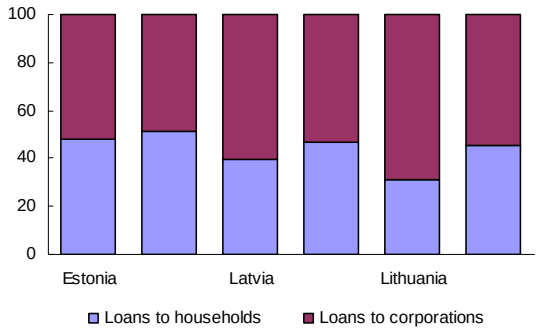
3.3.3. Accumulated vulnerabilities

The rapid credit expansion, especially in the booming real estate sector, the increased exposure of both households and non-financial corporations to foreign-currency denominated loans, and the worsening credit quality have contributed to the build-up of financial sector vulnerabilities that tend to unwind in crisis situations. Moreover, the rapid expansion of cross-border lending, which in the Baltic countries comes from a relatively small number of foreign banks, has created the conditions for potential contagion through the "common lender" channel in times of crises.

As mentioned in section 3.1.1, credit to the private sector has expanded at double-digit rates in the Baltic countries over the last decade, albeit from low initial levels of financial intermediation. Except for Estonia, credit to corporations

constitutes the bulk of total credits to the private sector, but its share in the total outstanding loans to the private sector has steadily declined (Graph 3.14). At the end of 2008, credit to households exceeded 45% of total outstanding loans to the private sector in all Baltic countries.

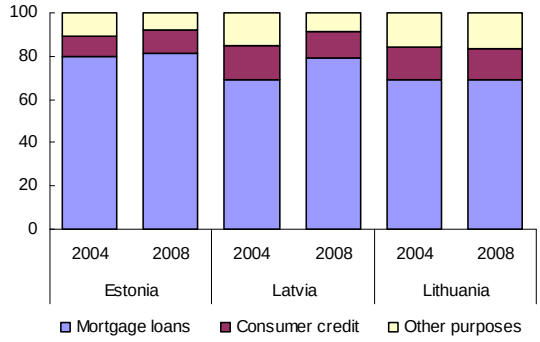
Graph 3.14: **Loans to private sector in the period 2004-2008 (% of total loans)**



Source: Elaborations on ECB data.

Within credits to households, *mortgage loans* have had the most dynamic growth, with growth rates among the highest recorded in emerging economies in recent times. In light of the risk of bubble formation and capital misallocation associated with fast growth in the mortgage stock, this was one of the most notable elements of vulnerability in the Baltics. Estonia and Latvia recorded a share of more than 78% of mortgage loans in the total outstanding loans to households at the end of 2008 (Graph 3.15). Lithuania was the only Baltic country in which the share of mortgage loans in total loans to households decreased in 2008 compared to 2004.

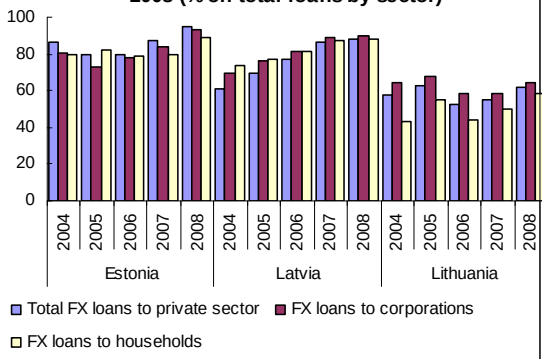
Graph 3.15: **Loans to households by purpose in the period 2004-2008 (% of total loans)**



Source: Elaborations on ECB data.

One of the distinctive features of credit expansion in the Baltic countries has been the marked increase in the exposure of households and non-financial corporations to *foreign currency denominated loans*, mostly in euros**.** All Baltic countries have been confronted with an increase in the exposure of households to foreign currency loans in 2008 compared to 2004 (Graph 3.16).

Graph 3.16: **FX loans in the period 2004-2008 (% on total loans by sector)**



Source: National central banks.

At the end of June 2008, Estonia and Latvia recorded a considerably higher exposure to foreign currency denominated loans than Lithuania. In all Baltic countries, the share of foreign currency loans to both corporations and households has picked up since the end of 2007. This increased reliance on borrowing in foreign currencies implied growing currency risks for residents of the Baltic economies. However, it needs to be pointed out that with euro-denominated borrowing the accommodative monetary stance in the euro area in response to the crisis was effectively transmitted to end-customers in the Baltic countries and that interest rate risk was in this way kept relatively low.

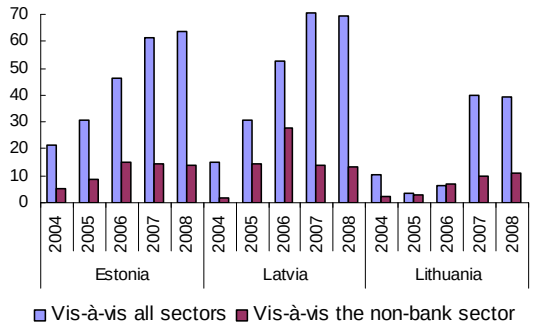
Credit growth in the Baltic countries has been sustained not only by domestic credit expansion but also by increasing *cross-border financing*. ([46]) As stressed previously, the sector that accumulated the largest stock of net foreign liabilities was the banking sector. To the extent that most of these foreign liabilities are in the form of demand deposits or short-term loans, the liquidity of the

([46]) Although this could be per-se a vulnerability factor, the experience with the willingness of parent banks to provide liquidity assistance to their Baltic operations during the most critical stages of the crisis was overall positive.

banking sectors in the Baltic economies has become increasingly dependent on the liquidity situation of external creditors and therefore on external developments.

Cross-border banking loans have increased significantly in all Baltic countries during the post-accession period. At the end June 2008, Estonia and Latvia recorded a significantly higher GDP share of external loans vis-à-vis all sectors (bank and non-bank) compared to Lithuania (Graph 3.17).

Graph 3.17: **External loans of BIS reporting banks in the period 2004-2008 (% GDP)**

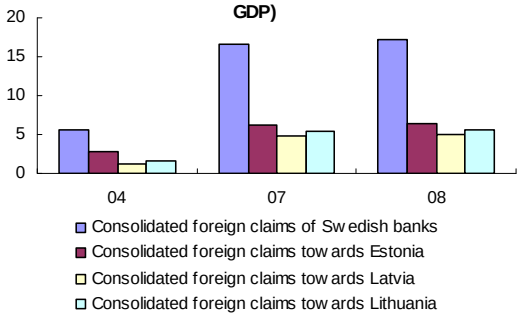


Note: Loans as % of GDP. *Source:* BIS.

Data on cross-border lending to the non-banking sector as percentage of GDP highlights the fact that the corporate sector in the Baltic countries has attracted a relatively small fraction of cross-border loans. It also appears that between 2004 and 2008, cross-border lending to the non-banking sector expanded most rapidly in Estonia and Latvia and to a lesser extent in Lithuania.

An additional typical feature of cross-border lending in Baltic countries is the heavy dependence on funding from a relatively small number of foreign banks, notably from Nordic countries. The exposure of Sweden to financial developments in the Baltic countries has increased over the last years. One of the related indicators – foreign claims of the BIS reporting banks (Swedish banks reporting to BIS) against the Baltic countries – has picked up significantly between 2004 and 2008 (Graph 3.18). Sweden has steadily increased its exposure over time and at the end of March 2008 had the highest exposure towards Estonia and the lowest towards Latvia. This reliance of the private sector of the Baltic economies on a relatively small number of foreign banks creates vulnerabilities associated with so-called *common-lender contagion* risks (Calvo, 1998).

Graph 3.18: **Consolidated foreign claims of Swedish banks against Baltic countries (% GDP)**



Note: Foreign claims refers to the exposure of Swedish banks that report their exposures to BIS. *Source:* BIS.

3.3.3. Tracking indicators of financial soundness

The indicators of banking sector soundness are key for assessing the conditions of the financial system in the Baltics. In particular, the evolution of these indicators permits one to gauge the progressive deterioration in bank assets and the risks in bank' balance sheets.

Capital adequacy, calculated as regulatory capital to risk-weighted assets, declined in Lithuania and Latvia between 2004 and 2007, but still remained above the regulatory threshold of 8% (Table 3.5). ([47]) Available data for 2008 suggest an improvement in the capital adequacy ratios for all Baltic countries. Asset quality improved as the ratio of non-performing loans to total loans decreased significantly in 2007 compared to 2004 in the Baltic countries except for Estonia. For 2008, available data shows an increase in the ratio of non-performing loans compared to the end of 2007 in all Baltic countries.

The *ratio of total assets to the number of employees*, which is a good proxy for the management soundness (amount of assets managed by one employee) in the banking sector, improved between 2004 and 2007, but the amount of assets managed by one bank employee in the Baltic countries is still much lower than in the euro

([47]) In Estonia, the regulatory threshold for capital adequacy amounts to 10%.

Table 3.5:
Financial soundness indicators for the Baltic countries

	Capital adequacy (%)			Non-performing loans (%)			Management soundness (EUR Mio.)	
	2004	2007	2008	2004	2007	2008	2004	2007
Estonia	13.4	14.8	18.3	0.3	0.4	1.9	4.4	3.3
Lithuania	12.4	10.9	12.9	2.2	1.0	4.6	1.9	2.3
Latvia	11.7	11.1	11.8	1.1	0.4	2.4	1.9	2.4
	Return on assets (%)			Return on equity (%)			Liquidity (%)	
	2004	2007	2008	2004	2007	2008	2004	2008
Estonia	2.1	2.6	1.2	20.0	30.0	13.2	22.3	17.6
Lithuania	1.3	2.0	1.2	13.4	27.3	16.1	16.1	21.9
Latvia	1.7	2.0	0.3	21.4	24.3	3.6	33.7	19.3

Source: IMF, ECB, National central banks and own calculations; Note: Capital adequacy data for LT excludes foreign branches; For 2007, NPLs in LT are loans with payments overdue past 60 days; from 2008 onwards, NPLs are impaired loans plus non-impaired loans overdue more than 60 days; ROA for LV is after tax; ROA for LT is calculated as net income before extraordinary items and taxes to average total assets; ROE for LV is after tax; ROE for LT is calculated as net income before extraordinary items and taxes to capital. Financial soundness indicators should be treated with caution due to differences between countries in the definition of indicators.

area. At the end of 2007, in Estonia a bank employee managed assets amounting to only some 3 million EUR, significantly below the average level of roughly 12 million EUR managed by a bank employee in the euro area.

Returns on assets improved in Lithuania and Latvia and declined in Estonia in 2007 compared to 2004. Data for 2008 shows a slight decrease in both Estonia and Lithuania and a greater decline in Latvia compared to 2007. *Return on equity* perked up in all Baltic countries, albeit more markedly in Lithuania, over the same period. Signs of deterioration are evident when looking at the data for 2008, which show a large decline in the return on equity for all Baltic countries compared to the end of 2007. The *liquidity ratio* (i.e. liquid assets to total assets), which indicates the ability of the banking sector to withstand shocks to cash flows, followed a declining trend in all Baltic countries with Estonia recording the lowest level as of 2007.

However, the analysis of these financial soundness indicators should not be interpreted as providing a full picture of the health of the banking system due to their backward-looking nature.

The picture can be complemented by looking at the systemic risk and vulnerability of the banking sector to shocks, using for instance, the *Fitch indicators* for the analysis of bank soundness (see Table 3.4). ([48]) According to this approach, Lithuania and Latvia have a low strength of the banking system as of April 2008, as the majority of banking system assets are with low-rated credit institutions. Among the Baltic countries, Estonia appeared to be the only country with a higher strength of the banking sector as of April 2008. However, as a consequence of the current global financial and economic crisis, individual ratings of the Swedish banks with important subsidiaries in the Baltic countries also deteriorated. This influenced the banking system indicator for the Baltic countries, which deteriorated more markedly in Estonia (from B to D) and also in Latvia (from C to D) in October compared to April 2008. The macro-prudential risks have remained constant for all Baltic countries in 2008 compared to 2005.

([48]) Fitch Ratings uses a similar approach to the one employed by Moody's.

Table 3.4:
Fitch approach on banking system soundness for the Baltic countries

	MPI 1	MPI 2	MPI 3		MPI 1	MPI 2	MPI 3		MPI 1	MPI 2	MPI 3
BSI		2005		BSI		April 2008		BSI		October 2008	
B	-	EE	-	B	-	EE	-	B	-	-	-
C	-	-	-	C	-	LV	-	C	-	-	-
D	-	LT, LV	-	D	-	LT	-	D	-	EE, LT, LV	-

Source: Fitch Ratings; Note: Intrinsec bank system risks range from A (very high quality) to E (very low quality), with all Baltic countires fitting in "B", "C" and D"; MPI (macro-prudential indicator) indicates the vulnerability of the banking system to adverse amcroeconomic shocks on a scale from 1(low) to 3 (high).

3.3.4. Prudential policies and supervisory measures

Prudential and supervisory measures are an *important toolkit* for policymakers when confronted with episodes of rapid credit growth. Prudential measures can prevent the deterioration of asset quality and keep potential systemic risks under control. Specific measures are for instance: higher capital requirements; tighter collateral and eligibility requirements for certain types of loans (e.g. foreign exchange denominated and mortgage loans); stricter rules on credit concentration (e.g. limits against large exposures to a single borrower); closer monitoring and assessment of loan procedures as well as more frequent on-site inspections targeting credit institutions of systemic importance.

Although an important policy tool, especially in countries missing monetary instruments for credit control due to the adoption of hard pegs or currency boards, there are a series of *limitations* concerning the effectiveness of prudential and supervisory measures notably relating to imperfect information available to policy makers and non-aligned incentives on the part of financial institutions. Additionally, in the Baltic countries, prudential and supervisory measures aiming at maintaining credit growth are subject to additional constraints as follows. First, under the currency board arrangements in Estonia and Lithuania and the hard peg in Latvia, the main monetary policy tool – interest rate measures – cannot effectively influence lending activities. Second, the high foreign ownership in the banking sector in all three Baltic countries provides banks with easy access to funding from their parent banks. Third, the structure of the financial sector allows banks to circumvent restrictions by shifting to other forms of credit, for instance, through leasing companies. ([49]) Fourth, the increasing competition between banks as well as the robust profitability of the banking sectors provide a favourable base for further credit market deepening and increase the difficulties of keeping credit growth at sustainable levels. Against the backdrop of the above-mentioned constraints, the Baltic countries have adopted a wide range of macroeconomic, prudential and supervisory measures aimed at keeping credit growth in check.

Minimum reserve requirements have been used by the central banks in all Baltic countries as an instrument for influencing the lending capacity of banks. Over the last years, the parameters of minimum reserves requirements and the eligible liability base associated with these requirements have been changed several times. In 2005, Latvian authorities decided to include short-term liabilities of banks to foreign banks in the reserve requirements base and in 2006 further increased the minimum reserve base by including liabilities with a maturity of over two years. In 2006, similar measures were also implemented in Estonia, where the reserve requirement base was extended to half the amount of mortgage loans to residents with a risk weighting below 100% and to liabilities of banks to foreign banks on a gross basis. The parametric changes to the minimum reserves requirements introduced by the central banks in the Baltic countries led to minimum reserve levels above those in the euro area. In Estonia, which has the tightest rules, minimum reserve requirements currently amount to 15%. In Latvia, the central bank has gradually increased minimum reserve requirements for banks and foreign bank branches. Minimum reserve requirements were increased from 4% in July 2004 to 6% in August 2005 and eventually peaked at 8% from December 2005 until February 2008. ([50]) In Lithuania, minimum reserve requirements are currently at 4%.

([49]) In the Baltic countries, banks are often part of a financial conglomerate, which also includes leasing companies. In Lithuania, leasing companies are supervised on a consolidated basis. Leasing companies which are part of a bank group are subject to the same requirements as credit institutions.

([50]) As credit growth started to slow down, the Central Bank of Latvia considered that banks need additional funds to cope with the current financial turmoil. Accordingly, in February 2008, the central bank decided to reduce the minimum reserve requirements for banks from 8% to 7% for bank liabilities with a maturity of over 2 years. In April 2008, the reserves for bank liabilities with a maturity of over 2 years were further reduced from 7% to 6%. In October 2008, the minimum reserve requirement for banks were lowered from 6% to 5% for bank liabilities with a maturity of over 2 years and from 8% to 7% for the rest of the liabilities included in the reserve base. In November 2008, the Central Bank of Latvia decided to further reduce the minimum reserve ratio for bank liabilities with a maturity of over 2 years from 5% to 3% while the reserve ratio for all other liabilities included in the reserve base was lowered from 7% to 5%.

Over the last few years, the supervisory authorities in the Baltic countries have adopted measures aimed at influencing the *capital base* of banks by tightening the rules for the calculation of capital adequacy. In 2006, Estonia decided to increase the risk weight for mortgage loans to residents from 50% to 100% when calculating capital adequacy. ([51]) In 2006, a similar measure was taken by Lithuania, which increased the risk weight of property-secured loans (from 50% to 100% for separate loans group). Moreover, the Bank of Lithuania introduced restrictions on the capital base calculation by limiting the inclusion of the current year profit (after deduction of taxes and dividends to be paid) into the capital base. ([52])

Along with macroeconomic and prudential measures, the Baltic countries have also made use of several *supervisory measures to control credit* growth. First, the supervisory authorities have enhanced the surveillance of credit institutions through an increase in the number of onsite inspections. Second, they have stepped up offsite analysis and monitoring of credit developments. Third, the risk management of credit institutions has been improved *inter alia* by applying the new framework for credit risk assessment foreseen in the Capital Requirements Directive, which implements the Basel II rules in the EU legislation. Fourth, the supervisory authorities decided to use moral suasion to attract the attention of the parent banks and supervisory authorities from the Nordic countries to the macroeconomic and stability risks induced by unfavourable credit developments in the Baltic countries. ([53])

Prudential and supervisory measures can contribute to a certain extent to limiting credit growth and preventing the quality of the assets of banks from deteriorating. However, they have to be supported by sound fiscal policies, which can considerably improve the effectiveness of prudential and supervisory measures, considering the limited number of monetary policy instruments available. Over the last years, several *fiscal policy measures aimed at reducing the incentives to borrow* have been adopted in the Baltic countries. In Estonia, for instance, the tax deductibility of interest rate payments on mortgage loans was limited to address the issue of real estate related borrowing of households. Similar restrictions were adopted in Lithuania, which restricted the possibilities for residents with mortgage loans to benefit from tax reliefs.

The large foreign ownership in the banking sectors of all Baltic economies underscores the importance of cross-border cooperation, especially home-host supervisory cooperation. As mentioned above, the subsidiaries and branch offices of foreign banks that dominate bank intermediation in the Baltic countries have benefited from relatively easy access to funding from their parent banks. This has limited the efficiency of domestic prudential and supervisory norms. As a consequence, home-host supervisory co-operation constitute a key prerequisite for the efficient implementation of prudential and supervisory measures in the Baltic countries. For the host supervisors in the Baltic countries, an enhanced information exchange on the financial performance of parent banks is of major relevance due to the fact that foreign subsidiaries are players of systemic importance in their banking sectors. For home supervisors in the Nordic countries, the regular exchange of information is of outmost importance as well, due to the increased exposure of these countries to macroeconomic and financial sector developments in the Baltic countries.

Home-host supervisory co-operation between home supervisors in the Nordic countries and host supervisors in the Baltic countries has unfolded on the basis of a whole range of bilateral, institution-specific and multilateral memoranda of understanding between central banks and supervisory authorities. Memoranda of understanding (MoUs) constitute a common platform for cooperation and information exchange between supervisors (see Table 3.6).

Bilateral MoUs include general principle concerning the exchange of information between supervisory authorities, co-operation in special fields of supervision (e.g. prudential assessment of market risks, liquidity supervision), as well as co-

([51]) Borio E., Shim I. (2007), 'What can macro-prudential policy do to support monetary policy?', BIS Working paper, No 242, pp. 22-26.
([52]) Bank of Lithuania (2006), Financial Stability Review, p. 58.
([53]) Moral suasion letters were sent to banks and supervisory authorities requesting a more cautious approach and pointing to the risks associated with the continuation of providing their subsidiaries in the Baltic countries with easy access to funding.

Table 3.6:
Memoranda of understanding (MoU) in the banking sector

Bilateral MoU	*General*	Estonia – Finland
		Estonia – Sweden
		Estonia – Latvia
		Estonia – Lithuania
		Latvia – Lithuania
		Latvia – Sweden
		Latvia – Denmark
	Specific	Latvia – Finland (supervision of Nordea branch)
		Estonia – Finland (supervision of Sampo Group)
		Estonia – Finland (supervision of Nordea Group)
		Estonia – Sweden (supervision of SEB Group)
		Estonia – Denmark (supervision of AS Sampo Pank)
		Lithuania – Finland (supervision of Sampo Bank Group)
		Lithuania – Finland (supervision of Nordea Bank Finland)
	Crisis management	None
Multilateral MoU	*General*	EU level, financial supervisory authorities, central banks and finance ministries
	Specific	Estonia, Latvia, Lithuania and Sweden (supervision of Swedbank Group)
		Denmark, Latvia, Lithuania, Estonia, Germany and Sweden (supervision of SEB Group)
		Latvia, Lithuania and Estonia (supervision of SNORAS Group)
	Crisis management	EU level, central banks, banking supervisory authorities
		EU level, finance ministries, central banks, banking supervisory authorities
		Central banks of Estonia, Latvia, Lithuania and Sweden
		Relevant ministries, central banks and financial supervisory authorities of Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Norway and Sweden (in final draft stage)[a)]

Source: National central banks and financial market supervisory authorities; Note: a) The MoU also covers issues related to cross-border financial stability

operation in onsite inspections and owner control. Institution-specific MoUs lay down more specific rules on exchange of information, onsite inspections, joint group-wide risk identification and assessments as well as crisis management provisions for a specific banking group. ([54])

The MoU on crisis management (between the central banks of Sweden and the central banks of the Baltic countries) includes general principles on the scope of cross-border co-operation in crisis situations, provisions on the creation of a crisis management structure (e.g. contract group which becomes a crisis management group in crisis situations) and exchange of information on financial stability issues. ([55])

Although the aforementioned MoUs have certain limitations, they have fostered the exchange of information between the supervisors in the Baltic countries and have worked well under normal circumstances. The associated limitations are related primarily to the issues of legal enforceability and burden sharing between supervisors in cross-border crisis situations. As "soft law" instruments, memoranda of understanding are not legally binding and lack the necessary mechanisms for dispute resolutions between signatory parties. Moreover, they do not include provisions on possible fiscal costs of a crisis resolution and on how to deal with insolvent credit institutions. Consequently, further improvements need to be made in the area of crisis management and burden sharing arrangements to increase the reactive capacity of supervisors in cases of financial distress.

([54]) Memorandum of understanding between the Financial Supervision Authority of Finland (Rahoitustarkastus) and Estonian Financial Supervision Authority (Finantsinspektsioon) regarding co-operation in the supervision of Nordea Bank Finland Plc's branch in Estonia, 2 February 2006; Memorandum of understanding between the Financial Supervision Authority of Finland (Rahoitustarkastus) and Estonian Financial Supervision Authority (Finantsinspektsioon) regarding co-operation in the supervision of the Sampo Bank Group, 24 March 2006.

([55]) For further details, see Memorandum of understanding between the central banks of Estonia, Latvia, Lithuania and Sweden, 18 December 2006.

3.4. CONCLUSIONS

The development of the financial sector in the Baltic countries was driven by their integration in the world capital markets. Foreign capital inflows also shaped the structure of financial intermediation in the Baltics, which is predominantly bank-based. High levels of foreign ownership and concentration have been identified as the most salient features of the banking sector. The latter's high degree of competition has resulted in a reduction of interest rate premia and of the spread between deposit and lending rates, which is more pronounced in Estonia and Lithuania where the currency board arrangements benefit from higher credibility than the fixed exchange rate in Latvia. EU accession, together with the improvement of institutions it has brought about, is found to have played a role in attracting foreign capital inflows.

Strong and rapid financial convergence brings benefits in terms of higher growth but also risks in term of macro-financial stability. In the Baltics, strong credit growth mostly triggered by the cross-border integration of the banking sector led to a growth in the exposure of the private sector (close to or even above equilibrium levels in Estonia and in Latvia according to the analysis contained in this study) that found a counterpart in current account deficits and fuelled a bubble in real estate prices. The increased awareness of investors of diminishing investment opportunities, inflated asset prices, and deteriorating asset quality led to a progressive tightening of lending standards by banking institutions, which opened the way for an adjustment in real estate prices which triggered in turn a downturn in economic activity with relevant feed-backs on the financial sector.

The measures taken in the area of monetary, prudential and supervisory policy suggest that the authorities in the Baltic countries attempted to keep credit expansion in check. However, notably in light of a possibly belated tightening of regulatory and prudential measures and strong cross-border links of their financial sector, the measures taken had limited effectiveness.

Although home-host supervisor co-operation proved useful in terms of information sharing, the experience of the Baltics shows that in perspective there appears to be room for further improvements in the area of cross-border co-operation in crisis management and burden sharing arrangements to increase the reactive capacity of supervisors in cases of financial distress.

Looking forward, in light of the progressive deterioration of bank assets, a key issue for policy authorities will be that of matching possible recapitalisation needs and ensuring an orderly deleveraging.

4. THE ROLE OF PUBLIC FINANCES FOR STABILISATION AND GROWTH

4.1. INTRODUCTION

After transition, public finances in the Baltic countries underwent a substantial transformation. Following the Russian crisis, all Baltic economies embarked on fiscal consolidation, which led to a decline of the share of the public sector in the economy in the early years of the present decade. This was followed by a period in which the public sector was brought in line with EU requirements and eventually by accession to the EU and NATO. The inflow of EU financing, which played a relevant role in this trend, started already before accession and subsequently expanded.

The period of above-potential growth in 2004-2008 brought buoyant revenue and marked a reversal of fiscal policy trends. Public expenditure grew more rapidly than the overall economy – partly due to an intensified absorption of EU cohesion policy funds – and several structural tax cuts were adopted. To some extent, these trends are linked to the considerable efforts to improve administrative capacity and upgrade infrastructures and public services. However, the cyclical component of revenue was largely underestimated and the extent of the fiscal expansion over those years became apparent only in the current downturn, when the financing of the previously planned level of public expenditure became unsustainable in face of the lower revenue. Coupled with rising risk aversion in global financial markets and, in case of Latvia, support measures for the banking sector, the Baltic countries were left with few available options apart from a prompt and extensive fiscal consolidation.

The role of public finances in the recent cycle poses many questions. To what extent has fiscal policy been pro-cyclical and how much did it contribute to the recent overheating? Are there some intrinsic features of the public sector in the Baltics that reinforce this apparent tendency to a pro-cyclical fiscal behaviour? Can this be avoided in the future? Do the size and structure of public finances correspond to the needs of these economies? This chapter seeks to shed some light on these issues. The rest of the chapter is organised as follows. The next section reviews main developments in public finances since transition. The third section focuses on the role of public finances in the catching up process. The fourth section is devoted to automatic stabilisation, while the fifth focuses on the role of discretionary fiscal policy in stabilising output. The sixth section reviews the main developments in fiscal policy since the start of the current crisis. The last section concludes.

4.2. OVERVIEW OF PUBLIC FINANCES IN THE BALTIC COUNTRIES

4.2.1. Government expenditure

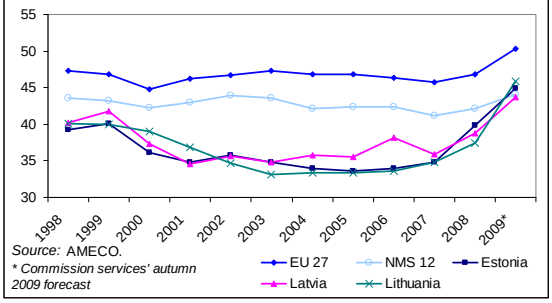
The *government size* relative to the whole economy in the Baltics was, until the recent downturn, one of the lowest in the EU. ([56]) The share of public expenditure over GDP declined over the first half of the last decade and started increasing in the second half, with the increase accelerating in the current downturn. Although the share of the government sector in the economy in the Baltics was low by EU standards it was still higher than in many other emerging markets, in particular those in Asia and South America, where public expenditure is below or just above 20% of GDP (IMF 2007).

The trend of a declining public expenditure ratio in the first half of the past decade was due to the consolidation of public finances following the Russian crisis in 1998/99. This consolidation was underpinned by precautionary IMF programmes and involved cuts in expenditure either in nominal or real terms in all three countries, albeit to different extents. The decline was, however, reversed in the second half of the decade (Graphs 4.1 and 4.2), partly due to the accession to the EU and NATO, as some taxes, mainly excises, were brought in line with the EU minima, while efforts to raise administrative capacity and meet international obligations boosted expenditure.

([56]) However, economic literature predicts a relatively large size of governments for small open economies like the Baltics. Rodrik (1998) emphasizes that a large government sector is demanded to insure incomes from risks of foreign origin. Alesina and Wacziarg (1998) emphasizes the role of fixed costs in establishing an effective public sector.

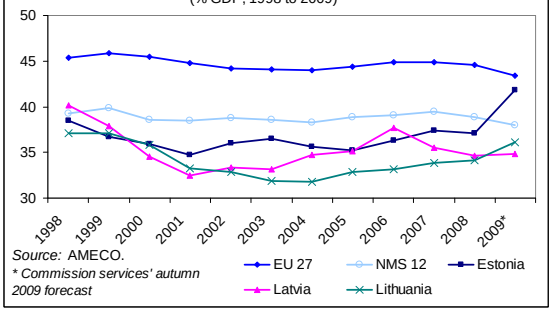
More recently, EU structural funds channelled through the budget have raised levels of both revenue and expenditure. Consolidation efforts implemented in 2009, as well as an intensifying use of EU structural funds, helped to increase the level of revenue compared to GDP in Estonia and to a lesser extent in Lithuania and to keep the level stable in Latvia (Graph 4.2). At the same time, plummeting levels of GDP increased the share of public expenditure to a greater extent than in the rest of the EU and new Member States (Graph 4.1). A more detailed discussion on fiscal policy in the Baltics during the current downturn, is found in section 4.6.

Graph 4.1: **General government expenditure**
(% GDP, 1998 to 2009)



Source: AMECO.
** Commission services' autumn 2009 forecast*

Graph 4.2: **General government revenue**
(% GDP, 1998 to 2009)

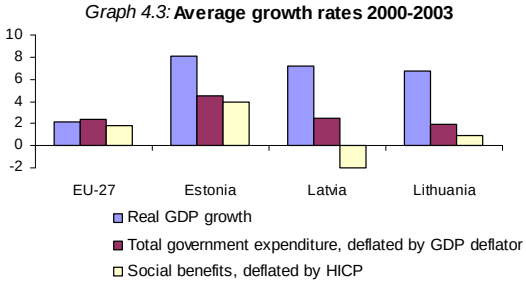


Source: AMECO.
** Commission services' autumn 2009 forecast*

Looking at expenditure shares on GDP, however, conceals a remarkable growth of the public sector in recent years in both nominal and in real terms. On average over 2000-2008, general government expenditure grew in real terms (deflated by GDP deflator) by 6.3% annually in Lithuania, 6.5% in Latvia and 6.9% in Estonia, before the consolidation of public finances reversed those trends sharply in 2009. Social security systems expanded rapidly in all three countries during recent years, including in 2009 against a reversal of macroeconomic trends (Graphs 4.3-4.4).

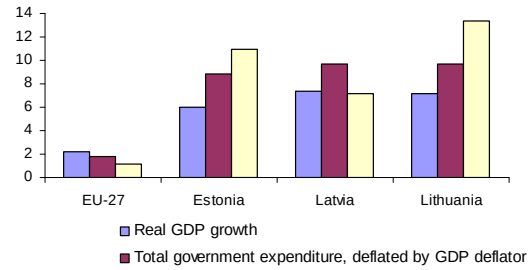
Economic theory and empirical evidence suggest that in the long run an increase in GDP could be associated with a more than proportional increase in government expenditure. The "Wagner's law" refers to the tendency for the demand for public goods to expand faster than income, consistently with the measured elasticity of government expenditure with respect to income that often exceeds one. A supply-side explanation for a more than proportional growth in government expenditure with respect to income is known as "Baumol's disease", and is based on the tendency for wages in the public sector to increase faster than productivity in the presence of a relatively price-inelastic demand for public services (see, e.g., European Commission 2008b for overview of literature).

Graph 4.3: **Average growth rates 2000-2003**



Source: AMECO.

Graph 4.4: **Average growth rates 2004-2008**



Source: AMECO.

Recent analysis (Arpaia and Turrini, 2008) shows that high income elasticities for government expenditure mostly pertain to catching-up countries, to countries with an ageing population, to countries with a lower level of public debt and to countries with weak expenditure rules. All the factors mentioned, as discussed in further detail below, apply to the Baltic countries, suggesting a potential for the public sector to expand in proportion to the whole economy also in the future.

Table 4.1:
Structure of public expenditure in EU-27 and the Baltics for available years, % of GDP, 2000-2007

	EU	Estonia		Latvia		Lithuania	
	2007	2000	2007	2000	2007	2000	2007
General public services	6.1	3.7	3.3	6.1	3.8	5.5	4.0
Defence	1.5	1.4	1.3	1.0	1.5	1.3	1.9
Public order and safety	1.8	2.7	2.3	2.3	2.7	2.1	1.7
Economic affairs	3.8	3.8	4.5	3.2	4.9	6.1	4.4
Environment protection	0.8	0.6	0.9	1.0	0.6	0.1	0.9
Housing and community amenities	1.0	0.5	0.7	0.8	1.3	0.4	0.3
Health	6.6	4.3	4.5	3.3	4.6	4.1	4.6
Recreation, culture and religion	1.1	1.9	2.1	1.0	1.9	0.9	1.0
Education	5.1	6.7	6.2	5.5	5.8	6.0	5.2
Social protection	18.0	10.8	9.8	13.2	8.4	12.6	11.1
o.w. unemployment	:	0.5	0.4	:	0.3	0.2	0.4
Total	**45.8**	**36.5**	**35.5**	**37.3**	**35.5**	**39.1**	**35.2**
O.w. compensation of employees	*10.4*	*10.9*	*10.0*	*10.8*	*10.6*	*12.1*	*10.0*
O.w. gross fixed capital formation	*2.5*	*3.8*	*5.4*	*1.3*	*5.7*	*2.4*	*5.2*

Source: Eurostat

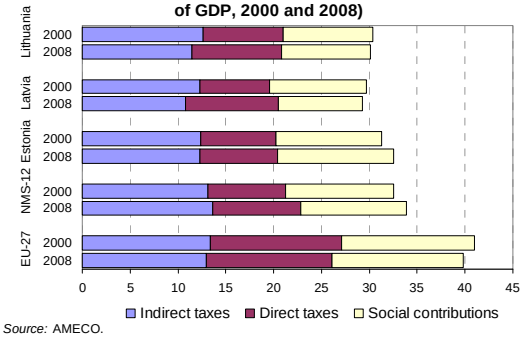
Moreover, in coming years the use of EU structural funds channelled through the budget will further increase the state's share in the economy.

The evolution of the *composition of expenditure* in the Baltic countries suggests that promoting economic catching-up received priority over the redistributive function of the government as compared with other EU countries (Table 4.1). In particular, investments of the general government have been above the EU average in most recent years, reflecting considerable infrastructure upgrades, partly financed from the EU structural funds. Regarding the social security system, its expenditure share has been almost twice as low in the Baltic countries in 2000 and 2007 compared with the EU average. The share of health-related spending has also been substantially lower. ([57]) However, high nominal economic growth during the boom years concealed rapidly increasing levels of social security system spending, which became apparent in the current downturn. As a result, with nominal growth decelerating in 2008 and reversing in 2009, the ratio of social benefits to GDP increased between 2007 and 2009 by over 5 percentage points in Estonia and Latvia and by over 6 percentage points in Lithuania.

4.2.2. Government revenue

Taxation levels are relatively low in the Baltics, although currently rising due to consolidation measures adopted in 2008-2009. Their structure broadly reflects the same priorities highlighted regarding government expenditure. The overall tax burden declined most noticeably between 1998 and 2001 as a result of the revenue slump following the Russian crisis. While the share of indirect taxes in GDP is broadly similar to the EU average, the share of direct taxes is below that of the EU-27 (Graph 4.5). A distinguishing feature of personal income taxes in the Baltics is the relatively low degree of *progressivity* (see Box 4.1).

Graph 4.5: **Structure of tax revenue by type of tax (% of GDP, 2000 and 2008)**



Source: AMECO.

However, the share of direct taxes somewhat increased in Latvia and Lithuania between 2000 and 2008. More recently, a shift from direct to indirect taxes took place in Latvia and the reliance on indirect taxes increased in Lithuania and Estonia.

([57]) 2007 is the latest year for which information regarding distribution of expenditure on the basis of COFOG functions was available at the time of writing. It should be kept in mind that 2007 was a peak year for all three countries, when nominal GDP grew by close to 20% in Estonia and Lithuania and by over 30% in Latvia.

Box 4.1: Flat personal income taxes in the Baltics

One characteristic feature of the personal income taxation in the Baltics is an application of a flat personal income tax rate. A flat tax rate was adopted by Estonia and Lithuania in 1994 and by Latvia in 1997. In Estonia, the personal income tax reform was accompanied by lowering the highest marginal rate from 33% to 26% and an increase in the personal allowance; the applicable rate has been gradually lowered since then and was 21% in June 2009; a lower rate of 10% is applied to payments from 2nd and 3rd pension pillars. In Lithuania, the flat rate was initially introduced at the highest pre-reform rate of 33%, while the personal allowance was decreased substantially; since then the tax rate was lowered to current 15%, except for dividends which are subject to 20% income tax (from January 2009). Latvia is a more unusual case, since prior to the reform it had a regressive taxation with very high personal allowance; as a result of the reform the personal income tax was set at 25% and lowered to 23% in end-2008, while the personal allowance was initially scaled back but gradually increased again over recent years.

The impact of the flat tax rate appears difficult to assess, firstly due to the scarcity of statistics for earlier years of transition when the reforms were introduced, and secondly due to parallel, often substantial, changes in tax rates and/or basic allowances. Keen et al. (2006) provide an analysis of the flat tax concept, which concludes that flatness as such (unlike changes to tax rates and allowances) does not appear to have a major impact on work incentives, while there is some evidence of an increase in tax compliance. The latter is confirmed by a more recent study analysing Russia's experience with the 2001 flat rate income tax reform (Gorodnichenko et al. 2008).

Nicodème (2007), by reviewing experience of the Slovak Republic tax reform, which substantially decreased the top tax rate and considerably increased allowance, notes that while the tax wedge due to the personal income tax expectedly decreased for low- and high-wage workers, it has at the same time increased for average wage-earners. The gradual decrease in personal income tax rates in recent years has been relevant as an employment incentive in the Baltics as well: Staehr (2008) estimated the employment and welfare effects of marginal changes in the labour income taxation in Estonia using 2005 Labour Force Survey data. He found that there are sizeable effects on labour participation from changes in net-of-tax labour income. Moreover, there are substantial differences in labour response across income groups, with the labour participation elasticity the highest at around 0.65 in middle-income groups and 0.3-0.35 in low and high income groups. For the full sample, a 10% lowering of the basic exemption was estimated to decrease employment by 0.5%, while a 1 percentage point increase of the tax rate decreases employment by 0.35%. The marginal cost of public funds (the private cost of the government raising an additional 1 EEK in tax revenue) was found to be rather modest in the high income group, due to the lack of progressivity in personal income taxation and modest labour supply response, but very substantial in lower income groups. This suggests that an increase in the personal income tax rate or redistributing the tax burden as compared to the existing tax system would result in higher efficiency gains than a lowering of the basic exemption.

Keen et al. observe that the flat tax has usually been adopted by governments anxious to signal a fundamental regime shift. From that perspective the experience of the Baltics with the flat taxes can be considered positive, since it certainly contributed to an image of low-tax and business-friendliness that subsequently helped to attract considerable foreign investments.

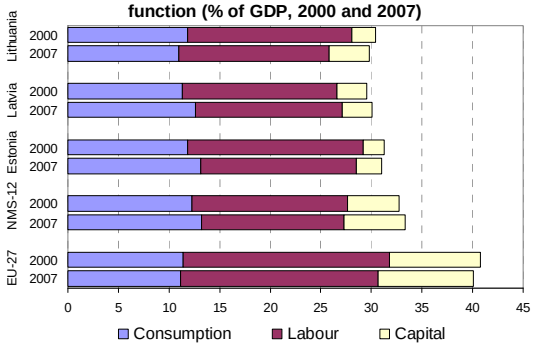
Top *statutory tax rates* for both personal and corporate tax income in the Baltics are among the lowest in the EU. ([58]) Low statutory rates are found especially on personal income, where the top rates (21% in Estonia, 23% in Latvia, and 20% in Lithuania in June 2009) are much lower compared that applied on average in EU countries (37.8%). ([59]) Although top statutory rates on corporate income (15% in Latvia, 20% in Lithuania, and 21% in Estonia) are closer to the EU average (23.5%), the scope of application of

([58]) The top statutory rate applies to dividends while the regular tax rate is 15% in Lithuania.

([59]) In 2007, see European Commission 2009b.

capital taxes is narrower and the number of taxes applied on capital lower. ([60]) The breakdown of the tax burden according to the economic function shows that taxation of factors of production, capital and labour, is much lower in the Baltics than in the rest of the EU and in some of the other New Member States (Graph 4.6). ([61]) This taxation structure could be expected in very small and open economies like the Baltics.

Graph 4.6: **Structure of tax revenue by economic function (% of GDP, 2000 and 2007)**

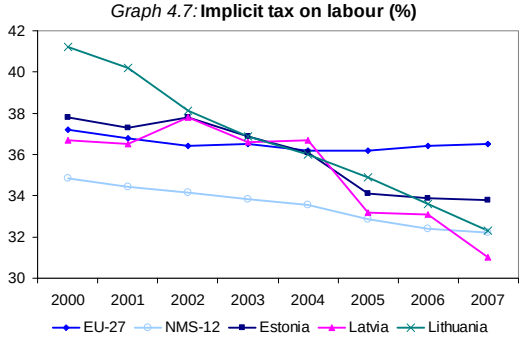


Source: European Commission (2009b).

The Baltic countries have been forerunners in terms of shifting taxation from mobile tax bases like *capital* towards less mobile tax bases. The special tax treatment of capital likely contributed to the attractiveness of the Baltics for foreign direct investment. ([62]) The share of FDI accumulated by Estonia, where the taxation of capital is the lowest, is the highest among the three Baltic countries (8450 euros per inhabitant as of end 2008), while it is lower in Latvia (3570 euros) and Lithuania (2720 euros). ([63]) In addition to a favourable treatment of reinvested earnings, Estonia attracted more FDI than its neighbours due to a more stable business environment and faster progress with structural reforms, notably in the area of banking. Tallinn became a financial hub of the Baltic region with Swedbank expanding its activities to Latvia and Lithuania through its Estonian headquarters.

Initially high shares of *taxes on labour* decreased in the 2000s in all three Baltic countries and are now close to the average rate for the New Member States. The decrease in labour taxation as measured by the implicit tax rate on labour (Graph 4.7) took place especially in terms of falling personal income tax rates in all three countries, as well as a gradual increase in basic allowances and expanding possibilities for tax deductions. ([64])

Graph 4.7: **Implicit tax on labour (%)**



Source: European Commission (2009b).

In Estonia and Latvia, the decrease in labour taxes was mainly compensated by an increase in *consumption-related taxation*, while in Lithuania it was compensated by an increase in capital-related taxes. The decline in the labour taxation is likely to have had a positive impact on labour market developments (see Box 4.2 for a discussion on personal income tax in the Baltics).

Labour taxes are characterised in the Baltic countries by a rather high share of *social contributions* in the overall tax burden. While personal income tax rates have been falling over time, social contribution rates remained broadly stable.

([60]) In Estonia corporate income tax is paid only on distributed profits.

([61]) Classification of taxes according to economic function is based on detailed revenue data and is published in European Commission (2009b). For example, taxes on capital include taxes on business income in broad sense: not only taxes on profits but also taxes and levies that could be regarded as prerequisite for earning profits, such as motor vehicle tax paid by enterprises, compulsory social contributions paid by self-employed persons, etc. Taxes on labour comprise all taxes, directly linked to wages and mostly withheld at source, paid by employers and employees, including social contributions and taxes on non-employed labour income such as taxes paid on social transfers and income.

([62]) A synthesis of existing studies on relations between company taxation and FDI by Mooij and Ederveen (2006) suggests a semi-elasticity between the corporate income tax and FDI inflows of 2.9%.

([63]) However, inward FDI in Estonia and Latvia has been largely dominated by investments into financial intermediation and real estate sectors, while FDI per inhabitant in the manufacturing sector was 1200 euros in Estonia and 630 euros in Lithuania, but only 320 euros in Latvia at end-2008.

([64]) Implicit tax rates are computed as the ratio of total tax revenue of the category (consumption, labour or capital) to a proxy of the potential tax base.

Box 4.2: **Pension system reforms in the Baltics**

The Baltic countries inherited from the Soviet Union a publicly managed PAYG pension system with standard retirement age set at 60 for men and 55 for women, while certain categories of employees could retire earlier. Pensions depended only on the years of service and not on the level of contributions, providing thus an incentive for undeclared wages. A first set of reforms implemented already in the second half of 1990s gradually increased the retirement age, dismantled special early retirement rights and linked the contribution of a particular earner to future payments within the PAYG system, while maintaining some redistribution elements.

These reforms were, however, insufficient to guarantee the financial solvency of the PAYG system, given the expected demographic trends and the legal provisions in place that linked pensions to wage growth and/or inflation. The introduction of legislation to regulate private pension savings and creating a voluntary funded pillar was the first step towards finding the solution. However, the major reform involved setting up a compulsory fully funded pillar, introduced in Latvia in 2001, in Estonia in 2002 and in Lithuania in 2004. The main features of the compulsory fully-funded pension pillar in the three countries are summarised below.

Table 1. Main features of the compulsory fully funded pension scheme (2nd pillar) in the Baltics

Year of introduction	Latvia 2001	Estonia 2002	Lithuania 2004
Contribution to 2nd pillar	The share of social security contributions switched to the second pillar gradually increases: 2% until 2006, 4% in 2007, 8% in 2008, 9% in 2009 and 10% from 2010 (entitlement to future PAYG pensions is correspondingly decreased).	2% paid by employees on gross wage and bonuses + 4% switched from social security contributions paid by employer (entitlement to future PAYG pensions is correspondingly decreased).	The share of social security contributions switched to the second pillar gradually increases: 2.5% in 2004, 3.5% in 2005, 4.5% in 2006 and 5.5% from 2007 (entitlement to future PAYG pensions is correspondingly decreased).
Changes adopted in 2008-2009 as consolidation measures	In April 2009, the contribution rate was cut back to 2% for 2009-2010; it will increase again to 4% in 2011 and 6% in 2012.	The contributions by state are suspended from June 2009 until end-2010, while employees can continue payments. Contributions resume at 1+2% in 2011 and 2+4% in 2012 with a possibility of compensatory payments in 2014-2017.	From January 2009, the rate was lowered to 3% and from July 2009 to 2% until end-2010; contributions will resume at 5.5% in 2011. As a compensatory measure, contributions will increase to 6% in 2012-2014.
Obligations to join and restrictions	Mandatory for those born in 1971 or later, voluntary for those born between 1952 and 1970.	Mandatory for those born in 1983 and later, voluntary for others, while right to join is gradually phased out.	Voluntary for all employees regardless of age (excluding self-employed).
Population at working age covered	68% (2008)	64% (June 2009)	69% (2008)
Accumulated assets, % of GDP	2.9% (2008)	6.2 % (June 2009)	0.8% (2007)
Memo: voluntary private funded pension scheme, % of GDP	*0.5% (2008)*	*1.3 % (June 2009)*	*:*

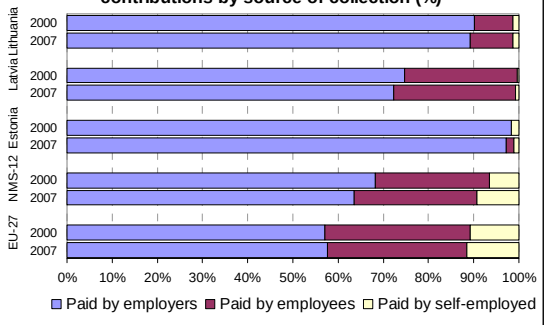
Sources: European Commission 2009a, IMF 2000, World Bank database, national authorities' websites.

Moreover, several measures like the introduction of an unemployment insurance tax and an increase in minimal social contribution duty in Estonia, as well as an increase in the upper ceiling for the social security contributions in Latvia, contributed to keep high the relative incidence of social security contributions.

A further distinguishing feature of labour taxation in the Baltics is a relatively high reliance on *labour*

taxes paid by employers. The proportion of social security contributions (excluding contributions to mandatory and voluntary funded pensions schemes) paid by employers in Estonia is the highest and in Lithuania third highest in the EU (Graph 4.8), while in Latvia it is closer to the EU average.

Graph 4.8: **Distribution of social security contributions by source of collection (%)**



Source: European Commission (2009b).

However, the composition of labour taxes could only be relevant for corporate profitability in the short term in the presence of wage rigidity; in the longer run higher labour costs paid by the employer will be passed on to employees in the form of lower wages (e.g., Arpaia and Carone, 2004).

4.2.3. Debt and sustainability

The Baltic countries started their catching up experiences with low levels of *government debt*, which remained until recently broadly stable (Graph 2.1.).

Although debt has stayed at relatively low levels in the past, in the long-term, trends relating to *ageing populations* may imply relevant pressures on public finances and lead to the accumulation of debt if unchecked. The total population is projected to decline between 2007 and 2060 by 15.6% in Estonia, 24.7% in Lithuania and 26.3% in Latvia, while the projected decline in working-age population is respectively 31.4%, 41.9% and 42.9% (European Commission 2009a).

To mitigate the impact on public finances, extensive *pension system reforms* were implemented in the first half of this decade (see Box 4.2 and Table 4.2). The introduction of mandatory funded schemes classified outside the government sector are expected to limit budgetary costs in the longer run, with pension expenditure projected to decrease by 0.7% of GDP in Estonia and 0.4% in Latvia and to increase by 4.6% in Lithuania between 2007 and 2060.

The introduction of the private pension schemes would permit maintaining the gross average replacement rate in the Baltics broadly unchanged between 2007 and 2050 and achieve a declining share of public pension expenditure

However, it needs to be mentioned that replacement and benefit rates are low when compared to other EU countries and that the adequacy of public pensions for the current

Table 4.2:
Main characteristics of pension systems and long-term projections

	EU-27		Estonia		Latvia		Lithuania	
	2007	2050	2007	2050	2007	2050	2007	2050
Statutory retirement age (males / females if different)			63/60.5		62		62.5/60	
Average exit age	61.2		62.5		63.3		59.9	
Old-age dependancy ratio (population 65+ as % of total polulation 15-64)	25	50	25	47	25	51	23	51
Social security (public) pensions (% of GDP)	10.1	12.3	5.6	5.3	5.4	5.8	6.8	10.4
Private mandatory pensions (% of GDP)	:	:	0.0	1.4	0.0	3.1	0.0	2.4
Average gross pension (public pensions in 2007 prices, thousands EUR)	10.6	19.5	3.3(i)	5.1	2.2(i)	4.0	2.4(i)	5.8
Gross replacement rate at retirement (public pensions, %)	:	:	28.0	16.0	32.5	22.5	32.3	30.0
Gross replacement rate at retirement (public and private pensions, %)	:	:	28.0	31.0(ii)	32.5	33.0(ii)	32.3	37.0(ii)
Benefit ratio (only public pensions, %)	49.7	41.4	26.5	18.5	24.0	16.1	33.1	29.0
Benefit ratio (public and private pensions, %)	:	:	26.5	22.0(ii)	24.0	25.0(ii)	33.1	32.0(ii)

Note: Without temporary suspension or reduction of contributions due to current downturn, (i) Projections for 2010, (ii) 2060.
Source: European Commission 2009a.

generation of retired workers still remains a relevant political and social issue. ([65])

Debt levels have grown considerably starting from 2008 in Latvia and from 2009 in Lithuania as a consequence of widening budget balance deficits and sharply falling nominal growth. Taking into account the maturity structure of government debt and roll-over difficulties encountered notably by Latvia in recent times, such a tendency needs to be reversed by effective consolidation measures.

4.3. PUBLIC FINANCES AND GROWTH

A series of empirical analyses suggest that a lower *size of the government* tends to be associated with higher long-term GDP growth rates, although the causality link is not obvious and results generally lack robustness (see, e.g., European Commission, 2008b for a survey). Moreover, *government expenditure* raising the scope for permanent productivity gains (e.g, public infrastructure, education, R&D) is deemed to raise long-term growth rates, an hypothesis also supported by empirical tests (see, e.g., European Commission 2004a and World Bank 2006 for literature surveys).

In the Baltics, the relatively small government size and the relatively high share of government investment and education-related expenditure compared to the EU average appear consistent with the objective of supporting growth and could have played a role in creating the conditions for the high growth rates recorded in the past decade. Even if the share of social security system spending has already expanded considerably in last few years and in the longer term population ageing could further add to this trend, the share of "productive" expenditure is likely to remain above the EU average in the coming years.

The same goal of supporting growth appears to be reflected in the *structure of taxation*. Recent empirical analysis indicates that real estate taxes have the smallest negative impact on growth, followed by consumption taxes and other property taxes, while personal income taxes and in particular corporate income taxes have the strongest negative impact on long-term growth (OECD, 2008). ([66]) As discussed above, the share of direct taxes is lower in the Baltics than the EU average, while the share of indirect taxes is broadly comparable, with the taxation structure thus supporting long-term growth.

The absence of noteworthy *taxation of land and real estate* may have played a role in supporting demand for real estate in peak years. The share of real estate taxes remains below the EU average in Estonia and Lithuania and close to the average in Latvia. Moreover, Estonia and Lithuania applied favourable tax treatment of interest payments ([67]) and, until 2007, revenues from real estate sales were excluded from the taxable income in Latvia (see section 2.4 for details). More recently, plans to increase real estate taxation are taking shape in Latvia and are under consideration in Lithuania, while Estonia is strengthening rules for excluding income from real estate sales from taxable income. The share of taxes related to land and real estate will thus increase in the medium term, while there may still be some potential to increase the reliance on these taxes in the longer run.

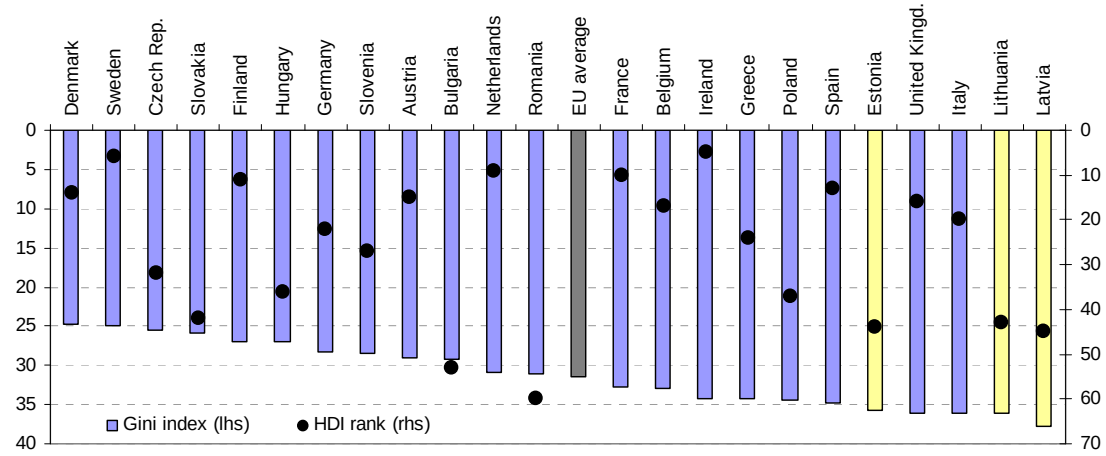
It is customary to distinguish the basic functions of governments in the allocation function (correcting for the market failures), income *redistribution*, and the stabilisation function (Musgrave, 1989). Empirical analysis suggests that there could be a trade-off between the objective of structuring public finances in such a way to support growth and distributional objectives (OECD, 2008). Prima-facie evidence seems to indicate that this trade-off could have been present in the Baltics. Their inequality, as measured by Gini indexes appears to be relatively high (Graph 4.9). In terms

([65]) The average public pension benefit is currently around or below 3000 euro per year in all Baltic countries. The issue of pension adequacy if further aggravated by low accumulated private savings, linked inter-alia to the governmental contraints on savings aimed at deriving capital income before the political independence of the Baltic countries.

([66]) A shift of 1% of tax revenues from income taxes to consumption and property taxes would increase GDP per capita by between ¼ and 1 percentage points in the long run. European Commission (2008a) research provides similar result: shifting taxation from labour to consumption by 1 percentage point of GDP by a small open economy can increase both real GDP and employment by ca 0.2% in the long run.

([67]) The favourable treatment of interest payments was abolished in Lithuania from 2009 and gradual phasing out of this provision is being considered in Estonia.

Graph 4.9: **Gini index and Human Development Index ranks 2007/2008**



Source: UNDP Human Development Report 2007/2008.

of the United Nations Human Development Index, which provides a gauge for the overall standard of living of the population, the Baltic countries have improved their positions since 2000, but the contraction that the Baltic countries are currently experiencing is likely to stop or even reverse part of this progress.

The performance of the Baltics with regard to existing composite *indicators of "quality of public finances"* is somewhat below the average, with stronger performance in studies that attribute more weight to the size of the public sector and composition of expenditure and with weaker performance in studies that attribute more weight to performance indicators. ([68]) Recent work by the European Commission (see Barrios and Schaechter, 2009) confirms these findings and indicates that there is room to improve the efficiency of public spending in the Baltic countries. The recent crisis resulted in growing shadow economies, requesting a stronger effort of tax collection. The performance of the heath sector, public infrastructure (in particular roads and railroads), and public order and safety score below the EU average. ([69]) Indicators measuring the efficiency of education are more mixed across the Baltic countries, while indicators related to governance and business climate tend to be somewhat higher in Estonia than in the other Baltic countries.

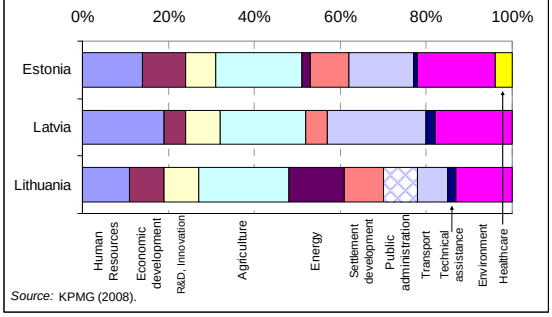
The use of EU *structural funds* in coming years will contribute to improving the performance of some of the sectors currently lagging behind the EU average. The Baltic countries will receive substantial funding from EU structural funds under the 2007-2013 financing period, with a total amount committed of around EUR 2600 per capita in Estonia, EUR 2100 in Latvia and EUR 1900 in Lithuania. Although the effective implementation of structural funds will largely depend on the absorption capacity (including due to the co-financing requirement, which is on average 15%), they could create considerable room for raising the quality and quantity of infrastructure and public services and carrying out policies supportive of the growth potential (about half of the funding is linked to the implementation of National Reform Plans).

([68]) For example, Afonso et al. (2006) constructed a composite public sector performance indicator which included measures of administrative processes (corruption, red tape etc), indicators measuring efficiency of health and education spending (life expectancy, infant survival rate, outcome of PISA tests), as well as some indicators related to distribution (Gini index) and macroeconomic performance, including those related to stability. The study found that the Baltic countries had performed slightly below the average of sample countries in 2001/2003. A more recent example is Standard and Poor's fiscal flexibility index (Standard and Poor's, 2008). While the level of taxation and composition of expenditure likewise played an important role in this index, the purpose of the analysis was different – to capture the scope of leeway for cutting expenditure and/or increasing revenue in adverse circumstances and thus continue servicing government's liabilities. On the basis of this index, the Baltic countries were placed in the top quartile of 30 European countries.

([69]) In particular, with regards to public order and safety, the higher-than-average spending combined with a poorer performance in all the Baltics suggest that there is room for improving efficiency in that field.

The distribution of funds across priorities varies among the three countries (see Graph 4.10), but generally corresponds to the identified shortcomings. Following an initially sluggish start in all three countries and in the case of Latvia also difficulties in finding sufficient co-financing resources prior to the multilateral financing agreement, implementation of projects dependent on funding from EU structural funds in the 2007-2013 programming period is currently gaining momentum, providing needed counter-cyclical stimulus to the economy.

Graph 4.10: **Distribution of EU structural Funds for 2007-2013**



Source: KPMG (2008).

Another relevant aspect to the quality of public finances is *fiscal governance*, namely, the set of fiscal rules, fiscal institutions, and budgetary procedures that help align public finance results with objectives. A major work in collecting and analysing information on existing fiscal rules and institutions in the EU Member States has been done in past years by the European Commission. Empirical analysis shows that stronger fiscal rules are associated with better budgetary performance (European Commission, 2006; Debrun et al., 2008). All Baltic countries have some debt and/or budget balance rules defined at the level of local governments, while Estonia is the only Baltic country applying a balanced-budget rule, defined at the level of general government. ([70]) This rule helped Estonia to accumulate sizeable fiscal buffers during peak years of the cycle, which was not the case in the other two countries. In the upswing phase of the cycle in 2004-2006, Estonia targeted a balanced medium term budgetary position, switching to targeting a surplus from its 2006 convergence programme update. These targets were subsequently outperformed despite a routine recourse to mid-year supplementary budgets to raise expenditure targets. At the same time, Latvia and Lithuania set considerably less ambitious targets, aiming at deficits between 1 and 2½ pp of GDP for 2004-2007. Although these targets were likewise outperformed due to higher than expected growth, windfall revenue was largely spent, resulting in deficits below 1 percent of GDP even in peak years of the cycle. ([71])Until 2008, none of the Baltic countries had in place rules limiting expenditure growth, while the presence of this type of rules could have contributed to limit spending buoyant windfall revenue in years of high growth. Some recent progress in terms of fiscal governance includes the adoption in 2007 of a fiscal discipline law by the Lithuanian government (applied first to the 2009 draft budget) which introduces some provisions to restrict expenditure growth in good times.

4.4. AUTOMATIC STABILISATION

The exchange rate arrangements adopted by the Baltics imply a limited room for manoeuvre for using monetary policy for output stabilisation objectives. Fiscal policy is therefore left as the major tool for cyclical stabilisation.

Fiscal stabilisation may not require additional law-making as undesired cyclical developments unfold, and operate via so-called automatic stabilisers, i.e., provision embedded in existing fiscal legislation helping to smooth shocks. Automatic stabilisers operate both on the expenditure and the revenues side. On the expenditure side, a relatively large *government size* reduces the exposure of overall economic activity to market fluctuations. Moreover, *automatic budget transfers* compensate

([70]) The rule is based on a coalition agreement and has no pre-defined action in case of non-compliance. Nevertheless, the rule has been until recently followed by all governments. When a shortfall in revenue became apparent in the beginning of 2008, a supplementary restrictive budget was adopted by the government and Parliament within months and a series of consolidation measures followed in 2009. However, given the extent of the current downturn a nominally balanced budget is becoming too ambitious a target.

([71]) Convergence programmes of Estonia, Latvia and Lithuania, assessments by the European Commission and Council Opinions, as well as the provisions of the Stability and Growth Pact, can be found on the following website: http://ec.europa.eu/economy_finance/sgp/convergence/programmes/index_en.htm.

income losses and support private spending in bad times. On the revenue side, *progressive taxation* reduces the sensitivity of households' disposable income to shocks, thus smoothing their impact. Hence, the potential for automatic stabilisation is expected to be higher the higher government size, the richer automatic transfer mechanisms, the more progressive the tax structure. ([72])

In light of the relatively low size of the government sectors in the Baltics, a limited role for social benefits and other form of transfers, a relatively low share of direct taxes and a low degree of progressivity of taxation, the potential for automatic fiscal stabilisation is expected to be small. The budgetary elasticities used in the European fiscal surveillance framework (European Commission, 2006) confirm that for the Baltics output fluctuations entail a small automatic response of the budget.

The overall budgetary sensitivity parameter EU in Lithuania (0.27) is the lowest in the EU, followed by Latvia (0.28), while it is only slightly higher for Estonia (0.30), as compared with an EU average of 0.44. ([73])

The *quantification of the potential for automatic fiscal stabilisation* requires taking into account general equilibrium effects associated with exogenous shocks and disentangling how those effects would differ with a different size and structure of government expenditures and revenues. Box 4.3 contains an analysis of the potential for automatic stabilisation in a representative Baltic country as compared with a stylised average EU country by means of stochastic simulations performed with the European Commission DSGE QUEST III model.

The results confirm expectations: the same constellation of shocks implies a higher variance of economic output in a representative Baltic country. Moreover, the result appears to be related both to differences in government size and in the structure of taxation and to hold both for supply and demand shocks.

Overall, the share of the government sector is expected to increase in the Baltics, both in the short term due to a sharp contraction of private sector activity in the current downturn that is not fully matched by a reduction of the public sector, as well as in the longer term due to structural trends (discussed in section 4.2) and population ageing. However, the scope for automatic fiscal stabilisation is likely to remain below that of other EU countries in the foreseeable future.

4.5. STABILISATION VIA DISCRETIONARY FISCAL POLICY

The alternative to fiscal stabilisation via automatic stabilisers is the recourse to discretionary fiscal policy. A first issue with discretionary stabilisation is its effectiveness, namely, the magnitude of *fiscal multipliers* which summarise the impact that changes in fiscal aggregates can produce on the level of economic activity.

Empirical analysis based on economic and fiscal time series show that substantial uncertainty exist on the value of fiscal multipliers. Some empirical analysis even points to the possibility that fiscal multipliers in New Member States may have been negative in some occasions, i.e., that fiscal policy may have exhibited non-Keynesian effects, with consolidations being followed by higher short-run growth (Rzońca and Cizkovicz, 2005). ([74])

([72]) There are, however, limits in the extent to which increasing the size of the government improves the stabilising capacity of the public finances. Moreover, it has been shown that the smoothing role of automatic stabilisers might be non-monotonic, because with very high taxation levels effects on the supply side of the economy may offset the smoothing of shocks on the demand side (Buti et al., 2003).

([73]) Results are comparable with the ones obtained by Kattai et al. (2003) for Estonia, at 0.35 for the period of 1996-2001.

([74]) The seminal work by Giavazzi and Pagano (1990) analysed the experience of Denmark in 1983-1986 and Ireland in 1987-1989 and was followed by further studies that confirmed the possible existence of this phenomenon (see, e.g., Giudice, Turrini, and in't Veld, 2007 for a cross country analysis on the EU).

Box 4.3: **Automatic stabilisers in the Baltic States**

This box tries to assess the automatic stabilization potential of Baltic governments compared to an average EU government using the Commission services' dynamic stochastic general equilibrium model. The model is a small-open-economy DSGE model with two types of households (Ricardian and liquidity-constrained) and incorporating various real and nominal rigidities. The model is parameterized to the trade structure of the Baltic economies. Monetary policy is specified as a fixed exchange rate regime.

In general, big governments are associated with less volatile economies. There are, however, large uncertainties as regards the size of automatic stabilization potential. Moreover, the theoretical link between government size and structure on one hand and economic fluctuations on the other hand is not clearly established. Brunila et al. (2003) analyse how the presence of automatic stabilizers depends on the source of the shocks that hit the economy. Andres et al. (2008) use a DSGE model with various frictions to show that automatic stabilization can be found when a fraction of consumers are liquidity-constrained.

Baltic governments differ from the average EU government along two dimensions. First, the size of governments in the Baltic countries is about 10 percentage points of GDP smaller than the EU27 average. Second, the structure of expenditure and revenue items is also different in the Baltics. In particular, tax rates are lower than the EU average and personal income taxes are flat as opposed to the more general progressive tax system in most other EU economies. As regards expenditure items, the big difference lies in the GDP share of social transfers (close to 10 percentage points below the EU average), largely due to relatively limited unemployment benefit and assistance systems.

The automatic stabilization potential is assessed by comparing changes in the transmission of economic disturbances on economic volatility under two different government types in an otherwise identical economy. Hence, a government is said to stabilize the economy if a given shock leads to smaller GDP volatility than it would with a different government type.

The simulation results indicate that a Baltic-type government has a weaker automatic stabilization potential than the average EU government. Under the Baltic-type government economic volatility is found to be around 5-10% higher than under the average EU government with the precise impact depending on the source of economic disturbances.

Table 1

Automatic Stabilisers – Simulation Restults

Full impact: Baltics vs. EU average	
Source of disturbance	% Change in GDP Volatility
TFP traded sector	9.7
TFP non-traded sector	4.3
Consumption	4.4
Impact of flat vs. progressive taxation	
Source of disturbance	% Change in GDP Volatility
TFP traded sector	6.5
TFP non-traded sector	2.4
Consumption	0.6

Notes: Simulation results. Stabilisation potential is measured by comparing the impact of identical economic disturbances in two economies which only differ in their government size and structure. The stabilisation potential of the Baltic-type government is lower when the GDP volatility of its economy is found to be higher than that in the base of comparison. The **upper panel** compares the automatic stabilisation potential of a Baltic-type government with that of an EU average government. The **bottom panel** compares the Baltic-type government with a government which only differs from the Baltic government in the presence of progressive labour income taxation.

The major difference in the stabilization potential of the Baltic-type government and the average EU government appears to be linked to differences in the labour income taxation system. In particular both the lower tax rate and the lack of progressivity in the Baltic States tend to reduce the Baltic governments' automatic stabilization potential. Specifically, with the lower labour income tax rate, fluctuations in real wages and employment have a proportionately larger impact on consumption and thereby on GDP. In

(Continued on the next page)

Box (continued)

addition, the flat tax system, as opposed to a more progressive one, is less effective in dampening the transmission of gross wage income fluctuations on net wage income volatility.

The differences across sources of disturbances are related to the transmission of shocks on real wages and employment. First, the difference between the productivity shocks and the consumption shock lies in the different impact of these shocks on real wages and employment. In particular, the consumption shock only has a small impact on wages and therefore barely triggers automatic stabilization due to the lack of progressivity of labour income taxation. At the same time, the size of the tax rate still matters after the demand shock through the shock's impact on the wage income via employment fluctuations. Second, the difference between TFP shocks originating in the traded and non-traded sectors is due to the different monetary accommodation of relative real wage adjustment across sectors and to the different size of the sectors.

In particular in the Baltics, the acceleration of output after consolidation episodes could be explained by the improved competitiveness of the economy associated with expenditure consolidations. ([75])

In spite of well-known uncertainties on the exact magnitude of fiscal multipliers, a consensus is emerging in the economics profession around recent-generation New-Keynesian models that fiscal multipliers are positive, even though not as large as predicted by traditional Keynesian theory, due to the presence of a forward-looking behaviour on the part of households and firms. A quantification of the fiscal multipliers in a representative Baltic economy by means of the DSGE European Commission QUEST III model (built on New-Keynesian assumptions) is provided in Box 4.4. As expected, fiscal multipliers are positive but relatively low in the Baltics due to their high degree of openness: fiscal policy for these countries leaks through the trade channel. ([76])

A different issue with use of discretionary fiscal policy as a stabilisation tool relates to the *capacity of governments to use effectively fiscal tools to lean against the wind* in light of well-known difficulties of tracking the cycle in real time and long and variable implementation lags of discretionary fiscal measures. These difficulties appear particularly relevant for the Baltics in light of high uncertainty on the measurement of potential output (due to highly volatile growth rates and rapid changes in economic structures) which complicates the assessment of the cycle and fluctuating budgetary elasticities (associated with major transformations in the structure of public finances and changing composition of tax bases) which blurs the measurement of the ex-post fiscal impulse. ([77])

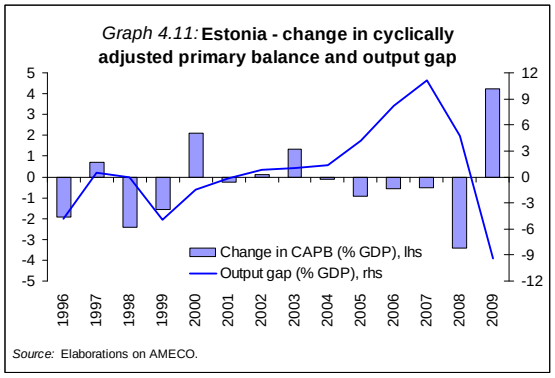
The comparison of output gap series with changes in the cyclically-adjusted primary balance (the CAPB, a common gauge of the fiscal stance) suggests that fiscal policy has been pro-cyclical in the Baltics over some periods both in upturns and downswings (Graphs 4.11-4.13). ([78])

([75]) Rzońca and Cizkovicz (2005). The main channels leading to an increase in output in the short run following a sizeable fiscal contraction are an adjustment in agents' expectations regarding future taxation, leading to a boost in domestic demand or improved external competitiveness associated with a reduction in public expenditure, notably the government wage bill, spilling over to private wage dynamics.

([76]) See also Brunila et al. (2003) for previous work on fiscal multipliers on the basis of the QUEST model.

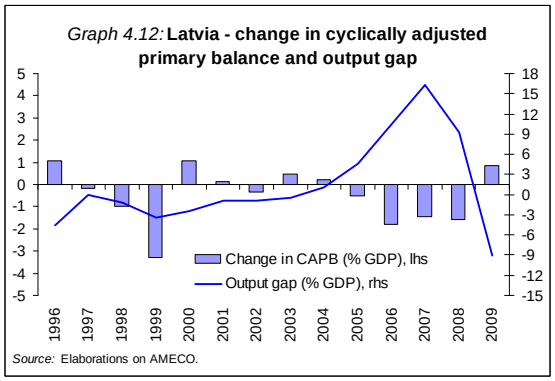
([77]) For a discussion of uncertainties related to calculation of the cyclical position and, respectively, the cyclically-adjusted fiscal position in the Baltics, see Chapter 5.

([78]) An exceptional increase in government expenditure in Lithuania in 1997 was related to a one-off operation which aimed at restoring the real value of residents' household deposits held at state-owned banks in February 1991 up to a per capita limit of 6000 litas.



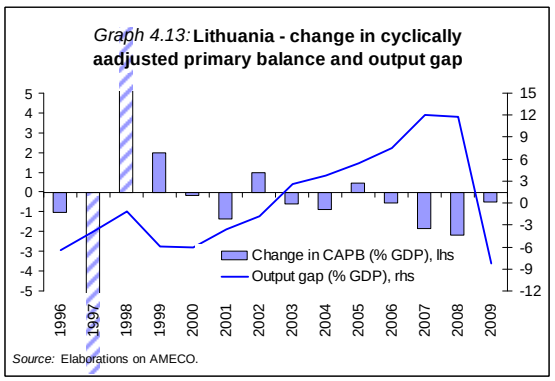
Graph 4.11: **Estonia - change in cyclically adjusted primary balance and output gap**

Source: Elaborations on AMECO.



Graph 4.12: **Latvia - change in cyclically adjusted primary balance and output gap**

Source: Elaborations on AMECO.



Graph 4.13: **Lithuania - change in cyclically aadjusted primary balance and output gap**

Source: Elaborations on AMECO.

In particular, fiscal policy has been rather expansionary during recent boom years in the three countries, which has added to the overheating tendencies of the economies, while pro-cyclicality in bad times is evident in Estonia in the current juncture. This prima-facie evidence of pro-cyclicality could be explained by the difficulties mentioned in determining the cyclical position in real time. Estonia's nominal budgetary position was better on average by more than 2 percentage points of GDP than the budgetary position in Latvia and Lithuania (with a surplus of 2.0% of GDP on average in 2004-2007), which contributed to the accumulation of sizeable fiscal buffers. However, the *change* in the cyclically-adjusted balance followed a similar pattern to that of the other two countries, being expansionary ex post.

Simply comparing the evolution of output gaps and the CAPB does not permit controlling for other determinants that affect fiscal policy developments on top of cyclical stabilisation concerns. A common approach to tackle this difficulty is the estimation of "fiscal reaction functions". Box 4.5 presents results from the estimations of fiscal reaction functions over the period between 1990 and 2008 for a panel of EU countries. Results indicate that the fiscal stance has been more pro-cyclical in the Baltics, in particular in Latvia, than on average in the rest of the EU without, however, being more pro-cyclical when compared to other new Member States. ([79])

4.6. FISCAL POLICY IN THE CURRENT DOWNTURN

Following years of high real and nominal economic growth, the Baltic countries had to face a sharp shortfall in revenue and a rapidly deteriorating fiscal position from 2008. The economic contraction started first in Estonia, shortly followed by Latvia, while only with a lag in Lithuania. Budgetary forecasts used for the 2008 budget laws did not incorporate the massive contraction in output and revenue that followed and were based on the expectation of nominal GDP growth of 20% in Latvia, 14% in Estonia and 12.3% in Lithuania according to the 2007 updates of the Convergence Programmes. ([80]) As a result, 2008 budgets still planned considerable expenditure increases compared to 2007, at 21.6% in Estonia (including due to the introduction of a more generous pension indexation formula), 19.4% in Latvia, and 16.9% in Lithuania. This led to the worsening of the nominal budgetary position in 2008, compared to 2007, by 5.7 percentage points of GDP in Estonia, 3.6 percentage points in Latvia, and 2.2 percentage points in Lithuania.

([79]) Staehr (2007b) analyses differences in fiscal reaction functions in EU-15 countries and Central and Eastern European countries finding that the fiscal balance exhibits much less inertia in the latter group of countries. Kattai and Lewis (2005) analyse behavioural aspects of fiscal policy in CEE-8 countries and finds that cyclical considerations can explain more of the fiscal activity in Estonia and Latvia than in Lithuania and Visegrad countries.

([80]) See footnote 16.

Box 4.4: **Fiscal multipliers in the Baltic States**

This box uses the Commission services' QUEST III model to assess the short-term impact of discretionary changes in fiscal policy in Baltic economies. There are two main reasons for which one may expect the impact of fiscal policy to be different in the Baltic States from the average EU economies. First, Baltic economies are smaller and therefore more open than average EU economies. Second, the size of the Baltic governments is smaller than the EU average and it is also different in structure: specifically, corporate taxes, labour income taxes and social transfers are significantly lower in the Baltic States. The model is parameterized to capture the afore-mentioned Baltic specificities. Each shock is of 1% of (baseline) GDP in the first year, fading away progressively thereafter. Fiscal multipliers are calculated as the deviation of GDP from its baseline in response to the shock in the year of the expansion.

The simulation results confirm expectations that fiscal policy interventions have a smaller multiplier in the Baltic States than in the EU on average. In particular, the deviation of GDP caused by changes in expenditure items is around 70-75% of the average. As regards interventions on the revenue side, this ratio is found to be between 60-70%. The difference in the multipliers is to a large extent explained by the small size and the high degree of openness of the Baltic economies. In contrast, government structure is found to have a very limited impact on the fiscal multipliers.

The simulation results confirm previous findings (e.g. in Brunila et al. 2003) according to which expenditure multipliers are stronger than revenue multipliers. In particular, government investment and government consumption have a bigger multiplier than other items since they enter GDP directly whereas other interventions only have an indirect impact on GDP. Simulation results suggest that corporate income taxes have the smallest multiplier. This is because investment decisions are taken on the basis of future returns and therefore a temporary cut in corporate taxes will only have a moderate impact on them.

Table *1*

Fiscal Multipliers – Simulation Restults

Expenditure-side Measures			
	Measures		
Country type	Government consumption	Government investment	Transfers
Baltic State	0.42	0.52	0.14
EU average State	0.59	0.68	0.2
Revenue-side Measures			
	Measures		
Country type	VAT	Labour tax	Corporate tax
Baltic State	0.25	0.17	0.01
EU average State	0.37	0.24	0.02

Note: Simulation results. The table displays multipliers in the year of the fiscal expansion, measured as the percentage deviation of GDP from its baseline in response to a 1% of GDP expansionary change in the given budget item. 'Baltic State': Size, trade structure and government structure calibrated to the Baltic economies. 'EU average State': Size, trade structure and government structure calibrated to an average EU economy. *Source:* Commission services.

With the global financial crisis deepening and the international environment became increasingly more risk-averse, recourse to external sources to finance growing deficits became more difficult. In Latvia the situation was aggravated by the financial sector stabilization measures undertaken by the government in late-2008 to provide liquidity to Parex Bank. While in Estonia the accumulated surpluses of previous years provided some buffer against the deteriorating budgetary position, no substantial buffers were available in other two countries. This left the authorities with little choice but to undertake substantial budgetary consolidation measures.

In *Estonia*, a restrictive supplementary budget was passed already in 2008. Since the beginning of 2009, further consolidation packages have been adopted with an overall impact of over 8% of GDP. The consolidation was achieved through a mixture of measures on revenue and expenditure side both of permanent and temporary nature. The main measures include broad-based expenditure cuts, in particular a reduction of the wage bill in the government sector, increases in VAT, excise tax

rates, and unemployment insurance contributions, suspension of state contributions to the mandatory funded pension scheme, higher dividends from state-owned companies and sales of non-financial assets.

In *Latvia*, there were two major rounds of fiscal consolidation to date. The first package was adopted in December 2008 and was centred on public sector wage reductions and an increase in the VAT rate and excise taxes. The size of the whole package was initially estimated at around 7% of GDP (compared to the budget passed in November), but a large part of it remained unimplemented due to the harsher than expected recession. In April 2009, state contributions to the mandatory funded pension scheme were cut to 2%. The second fiscal package, adopted in June 2009, amounted to around 4% of GDP and – on top of further public sector wage bill cuts – included lowering the basic exemption for personal income tax, healthcare expenditure cuts (partly mitigated by structural reforms in the health sector) and a 10% reduction in nominal pensions.

In *Lithuania*, the first consolidation package adopted in December 2008 amounted to around 4% of GDP, and was based on a comprehensive tax reform, and expenditure cuts coupled with a reduction in the contribution to the mandatory pension fund. The second package was adopted in May 2009, amounting to around 3% of GDP and mostly entailing expenditure cuts of central and local governments, introducing a less generous health insurance regime, and a further lowering of payments to the mandatory pension fund. In July 2009, further consolidation measures of around 0.5% of GDP were approved. The latest fiscal package includes an increase in VAT rate and public sector wage cuts.

The composition of adjustment in 2009 was centred in all three countries around considerable cuts in government consumption (ca 5% of GDP in Latvia, close to 4% in Lithuania and around 2½% in Estonia), including the wage bill. ([81]) Given the risk aversion prevailing in the markets in 2009, reversing past unsustainable trends in public finances, while contributing to price and wage adjustment, may positively affect confidence, thereby reducing the contractionary impact of such a consolidation and ultimately contributing to laying the basis for future economic recovery. At the same time, an increased absorption of EU structural funds provided a needed countercyclical impulse to the economy. The consolidation pattern in Estonia relied to a greater extent than in the other Baltic countries on measures with a limited domestic demand impact, in particular higher dividends from state-owned companies.

Despite the expenditure cuts in all three countries, the overall level of general government expenditure is set to rise relative to the whole economy faster than in the rest of the EU and new Member States (Graph 4.1), being overtaken by even sharper decline in private sector activity. Similarly to many other Member States, crises resulted in lower tax elasticities in the Baltics, although in Estonia this was observed mainly in 2008. Thus, despite several revenue-enhancing measures adopted in all three countries, the level of general government revenue relative to the whole economy is set to increase noticeably only in Estonia, where tax increases and efforts to improve tax administration were complemented by sizeable non-tax revenue (Graph 4.2). On the revenue side, at the current juncture the Baltic economies are the only Member States in the EU where revenues are expected to rise in relation to GDP in 2009 (Estonia and Lithuania) or to remain broadly at the level of the previous year (Latvia).

([81]) For Latvia and Lithuania, this includes cuts in the 2009 budget agreed in December 2008 compared to the previous budget proposal; in Estonia lowering operational expenditure targets was already implemented in the process of preparing the draft 2009 budget proposal.

Box 4.5: **Evidence from estimation of fiscal reaction functions**

Descriptive evidence on the behaviour over the cycle of cyclically-adjusted deficit figures does not reveal any clear-cut pattern, except in the most recent years. Prima-facie evidence on whether the fiscal stance in a given country was pro or counter-cyclical is obtained by comparing the change in the cyclically-adjusted primary balance (CAPB) in relation to the output gap. Whenever the CAPB rises (falls) in the presence of a positive (negative) output gap this is taken as an indication that the fiscal stance is counter-cyclical. Graphs 4.11-4.13 show that no clear-cut overall cyclical pattern is visible for the CAPB in Baltic countries in the past decade. While the downturn at the end of the '90s registered in all Baltic economies was matched by a fiscal loosening in Latvia and Estonia, this was not the case in Lithuania (the drop in the CAPB in 1997, and subsequent rebound, was related to a large one-off operation). Starting from mid-2000s, the overheating in the Baltic economies did not lead to a clear counter-cyclical tightening in any of the Baltic economies, with some stronger evidence of pro-cyclical loosening in Latvia.

The estimation of fiscal reaction functions allows disentangling the effect of the various determinants of fiscal policy on the behaviour of the CAPB. It has become customary to assess the behaviour of fiscal policy over the cycle by means of the empirical estimation of equations where measures of the fiscal stance are regressed against a series of possible factors explaining the behaviour of fiscal authorities, (e.g., Bohn, 1998; Gali and Perotti, 2003). The explanatory variables normally used are the lagged dependent variable, to capture an element of inertia in fiscal policy, lagged debt, which captures the fiscal stabilisation motive of fiscal authorities, and the lagged output gap, which summarises instead the cyclical stabilisation objective. The available data do not allow enough degrees of freedom to estimate fiscal reaction functions separately for the three Baltic economies. The alternative is to estimate fiscal reaction functions for a panel of EU 27 countries and EU 10 countries (new Member States) and check whether the reaction of the fiscal stance in Baltic countries was significantly different from that of the rest of the countries in the sample.

Table 1: **Fiscal reaction function estimates** (1990-2008)

Sample Dependent variable: Cyclically-adjusted primary balance (CAPB)	EU 27 (1)	EU 10 (2)	EU 27 (3)	EU 10 (4)
Lagged CAPB	0.598	0.441	0.598	0.439
	[13.69]***	[5.40]***	[13.60]***	[5.29]***
Lagged government debt	0.033	0.036	0.033	0.035
	[4.23]***	[1.28]	[4.21]***	[1.24]
Lagged output gap	-0.01	-0.238	-0.01	-0.24
	[0.21]	[2.46]**	[0.22]	[2.44]**
Lagged output gap*Baltics dummy	-0.142	0.076		
	[1.73]*	[0.68]		
Lagged output gap*Latvia dummy			-0.228	-0.022
			[3.33]***	[0.19]
Lagged output gap*Lithuania dummy			-0.088	0.139
			[0.64]	[0.98]
Lagged output gap*Estonia dummy			-0.15	0.066
			[1.40]	[0.51]
Constant	-1.516	-1.596	-1.515	-1.553
	[3.89]***	[0.84]	[3.88]***	[0.81]
Observations	415	133	415	133
R-squared	0.77	0.63	0.77	0.64

Absolute value of *t* statistics in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%. Estimation method: Least Square Dummy Variables, robust standard errors. Fiscal variables are expressed as ratios on GDP. The specification contains a dummy variable equal to 1 for Lithuania in 1997 to capture the large negative one-off recorded in that year (see footnote 63).

Results show that while the fiscal stance in the Baltic countries was significantly more pro-cyclical compared with the average of the EU, it was not more pro-cyclical than in the rest of the new Member States. The interaction of the output gap variable with a dummy taking value 1 for the Baltic economies

(Continued on the next page)

Box (continued)

measures the difference between the cyclical response of the fiscal stance in the Baltics and in the rest of the sample countries. Column (1) in the table 1 shows that, while the fiscal stance was significantly more pro-cyclical in the Baltics compared with the rest of the EU, no significant difference emerges with respect to the rest of the new Member States (column (2)).

The cyclical behaviour of fiscal policy was quite different for the three Baltic economies. Columns (3) and (4) in Table 1 repeat the exercise allowing for separate interactions of the output gap with dummies for each Baltic country. It appears that while fiscal policy in Latvia was significantly more pro-cyclical than in the rest of the EU, it was less so for the other Baltic countries.

4.7. CONCLUSIONS

Public finances in the Baltics have undergone significant transformations over the last decade. The share of the public sector in the economy, which initially contracted in the aftermath of the Russian crisis, started increasing again around the mid-2000s. This coincided with the period of elevated expectations, strong capital inflows and accession to the EU and NATO that increased outlays and further improved the perception of foreign investors. Overall, the evolution of government size, and the structure of expenditures and revenues was consistent in the three countries with the objective of supporting the catching-up process.

Given the limited room for manoeuvre for using monetary policy to stabilise the cycle, fiscal policy is a key tool for output smoothing in the cycle. However, due to relatively low government size, a limited role of automatic budget transfers and a low degree of progressivity of the tax system, the potential for automatic fiscal stabilisation is smaller in comparison with other countries.

Moreover, discretionary fiscal policy is likely to be comparatively less effective than in other countries, since fiscal multipliers are likely to be small in light of the high degree of openness of the Baltic economies. Finally, the well-known problem of correctly tracking the cycle and measuring the fiscal stance is further complicated for the Baltic countries because of major uncertainty regarding the value of potential output and fluctuating budgetary elasticities. Hence, fiscal stabilisation appears to pose a delicate trade-off to policy makers. On the one hand, the limited room for stabilisation via monetary policy and the small value of fiscal multipliers demand a bold use of discretionary fiscal policy to smooth the cycle. On the other hand, substantial uncertainties regarding the measurement of the cycle and the fiscal stance call for a cautious approach to discretionary fiscal policy-making.

Partly in light of the above difficulties, the fiscal stance taken in the Baltic countries does not appear to have effectively offset cyclical fluctuations. While fully neutralising the upswing solely through the fiscal policy would most probably not have been feasible, more prudent fiscal policy could have contributed to limit the extent of the overheating starting from the mid-2000s. Instead, windfall revenues were generally channelled into the economies, fuelling further the boom. There were, however, relevant differences. Due to a better nominal budgetary position, partly attributable to a balanced-budget rule, Estonia built up some fiscal buffers by accumulating part of windfall revenue, while no substantial cushions were accumulated in the other two countries.

In perspective, progress in fiscal governance could contribute to increase control of public finance developments including with the view to limit the risk of pro-cyclicality. Targeting a cyclically-adjusted budgetary position may prove challenging in the medium term due to ongoing structural changes in Baltic economies and a high volatility of output. However, the establishment of rules-based frameworks and strengthening of existing medium-term budgetary frameworks would allow limiting budgetary revisions during the year and containing the spending of windfall revenue in good times. Expenditure rules, in particular establishing enforceable ceilings, could also help adapt expenditure dynamics to a more moderate growth trend, thus preventing a recurrence of the unsustainable expenditure increases that prevailed in past years.

A contribution of output stabilisation could also come from a more careful structuring of revenues and expenditures. With hindsight, the structure of taxation should have played against the development of housing bubbles, and not in favour as it probably did. In perspective, the microeconomic dimension of fiscal policy could play a greater role in addressing macro-prudential concerns.

At the current juncture, the Baltic countries need to be consistent in their consolidation efforts with the view to structurally adjust budgets after windfall revenues have vanished in line with falling potential output and to stabilise government debt. A tight fiscal stance will be required also for the working out of external imbalances and to steer market expectations. Although a restrictive fiscal policy will have a negative impact on growth in the short run, it weighs against the major risk of unstable debt developments feeding into market expectations.

5. SUPPORTING POTENTIAL GROWTH AND ADJUSTMENT

5.1. INTRODUCTION

The recent economic history of the Baltic economies was characterised by large shocks and relevant structural transformations. After transition and the Russian crisis, the Baltic countries entered into a boom-bust cycle of major proportions. After overheating in the mid-2000s and the accumulation of large external imbalances, economic activity fell abruptly, and current account gaps are rapidly closing.

In light of the wide volatility of economic activity in the Baltic States, assessing the growth potential for these economies is not an easy task. However, looking forward, an adequate understanding of the growth potential of the Baltic economies will be key to adopting appropriate policies. In some respects, the development of asset price bubbles and the overheating of wage and prices was the result of an incorrect assessment of the speed limit to growth across the Baltic area. In perspective, estimates of the growth potential will feed into policy choices regarding, inter-alia, fiscal adjustment and wage setting, and the quality of the assessment of potential growth will have a bearing on the extent to which these policies will be appropriate. Additionally, a proper understanding of the determinants of the growth potential would help putting in place a policy framework conducive to high potential growth in the aftermath of the crisis.

Re-launching potential growth after the current recession will not be the only challenge that the Baltic economies will face in the coming years. External adjustment will also rank high in the policy agenda of these countries. After the sequence of large current account imbalances recorded during the past decade and the ensuing accumulation of large stocks of net foreign liabilities, the Baltic States will have to achieve sound external positions on a sustained basis. The adjustment is already taking place but the issue arises whether it will be durable once the current recession is over and the economies begin to grow at standard rates.

To ensure sustained progress towards external adjustment, price competitiveness will have to improve in such a way as to compensate for the major appreciation in real effective exchange rates that took place from the mid-2000s in all the Baltic economies. Additionally, durable improvements in trade and current account balances will ask for progress in terms of non-price competition, notably capacity to adapt the export mix towards dynamic segments.

The present chapter of the study analyses the above issues. First, it reviews growth developments in the Baltics both from the perspective of which were the major sources of growth in terms of the contribution of different production factors and in terms of the contribution of different sectors and industries of the economy. Second, it discusses ways to measure potential growth in emerging economies characterised by major structural transformations like the Baltics and presents results arising from alternative approaches. Third, it investigates competitiveness developments, both in terms of price and non-price factors. Finally, it discusses the medium-term outlook for potential growth and explores the role of policies in supporting potential growth and the main trade-offs and synergies between the main challenges for the Baltic economies in the coming years, namely that of restoring the growth potential after the current recession and that of ensuring sustainable adjustment of external positions.

5.2. EVIDENCE FROM GROWTH ACCOUNTING

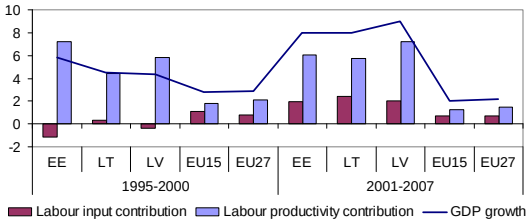
5.2.1. Aggregate evidence

During the early transition period, as in other countries reconverting their economies from central planning, the Baltic States suffered severe output losses. Starting from the mid-1990s, the Baltic countries started growing at relatively high rates as compared with other EU countries, including New Member States. As shown in Graph 5.1, the average growth differential between the Baltics and the rest of the EU became particularly strong from the beginning of the past decade.

Throughout the whole post-1995 period, the relatively strong growth performance of the Baltic economies was related to a comparatively high contribution of labour productivity. In fact, the contribution of labour inputs to growth was relatively weak or even negative (notably in

Estonia) during the 1990s. Conversely, starting from the beginning of the past decade, the *contribution of labour inputs* turned firmly positive and was on average stronger than that in other EU countries. Overall, it appears that while labour productivity was the main driver of the relatively high growth in the Baltics throughout all the post-transition period, growing labour inputs was the driver of the growth acceleration at the start of the present decade.

Graph 5.1: **GDP growth and contribution of labour inputs and labour productivity (%)**

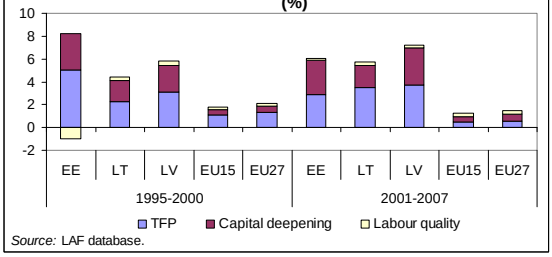


Source: LAF database.

In order to dig further into the contributions to growth of labour productivity and labour input components, a more detailed growth accounting exercise was undertaken (for details on the methodology, see Mourre, 2009). The contribution of labour productivity is further distinguished into a component relating to capital deepening (labour productivity rises as the capital stock rises in proportion to labour inputs), total factor productivity, and labour quality, as measured by the changing composition of labour inputs across educational groups. The contribution of labour inputs to growth is further decomposed into components driven by demographic developments and components related to the labour market performance, i.e. those that are partially driven by the set-up of labour market institutions. The demographic components account for the growth impact of natural population changes, net migration flows and changes in the share of the working-age population. The labour market components look at the contributions from labour market participation, unemployment and average hours worked.

Graph 5.2 shows that the largest share of the contribution of labour productivity to growth in all three Baltic economies was associated with *total factor productivity (TFP) growth*. It also appears that, on average, the share of labour productivity contribution attributable to TFP was higher in the Baltics compared with the rest of the EU. However, the contribution of *capital deepening* to growth in the Baltics was in absolute value considerably higher than in the rest of the EU throughout the whole period in light of comparatively stronger investment rates.

Graph 5.2: **Contribution to labour productivity growth: TFP vs. capital deepening vs. labour quality (%)**



Source: LAF database.

The contribution of *labour quality* to growth is captured by the change in an indicator measuring the average productivity per person employed relative to the productivity of those with lower secondary education or less. The indicator moves with the change in the employment composition by educational attainment and if this change is neglected, it is implicitly incorporated in TFP movements. ([82]) Graph 5.2 shows that the contribution of labour quality to growth in the Baltics was a relatively minor driver of labour productivity growth and on average of the same magnitude as in the rest of the EU, the exception being Estonia during the 1995-2000 period where labour quality appears to have fallen.

The decomposition of the contribution of labour inputs to growth into demography-related and labour market-related factors is illustrated in Graph 5.3. While the contribution of *demography*

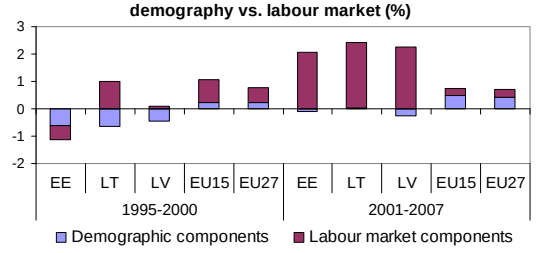
([82]) The indicator, akin to that in Scarpetta, Bassanini, Pilat and Schreyer (2000), is computed as:

$$Q_t = \frac{1}{E_{L\,t} + E_{M\,t} + E_{H\,t}} \cdot \sum_{S \in \{Low,\, Medium,\, High\}} \left(E_{S\,t} \cdot \frac{W_{S\,2002}}{W_{L\,2002}} \right).$$

where *Es* and *Ws* are respectively employment and hourly wage (without overtime) for each skill group (high, medium, low). Hence, *Q* is the average relative hourly wage compared with the low skilled (i.e. those with lower secondary education or less), with hourly wage differentials reflecting productivity differentials. Relative wages are those of the EU15 average (in order to average out wage differentials relating to labour market institutions rather than productivity). Source: European Commission 2002.

was normally negative in all Baltic economies (except in the case of Lithuania after 2000), that of *labour market-related factors* was positive, with the notable exception of Estonia during the 1995-2000 period.

Graph 5.3: **Labour input growth contributions: demography vs. labour market (%)**

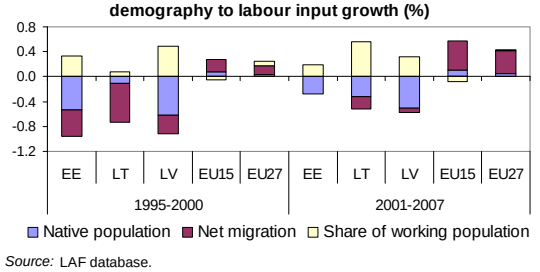


Source: LAF database.

As discussed above, most of the improving contribution of labour inputs to growth was related to falling unemployment rates and rising participation rates.

As for demography, Graph 5.4 shows that the negative overall contribution of demographic components was entirely driven by shrinking *native population* and the negative *net migration* flows. Demographic changes characterised by the gradual ageing of the population have started to become evident and the rapid shrinking of native populations have acted as a drag on output growth in all the Baltic countries over the whole 1995-2007 period.

Graph 5.4: **Decomposition of contribution of demography to labour input growth (%)**



Source: LAF database.

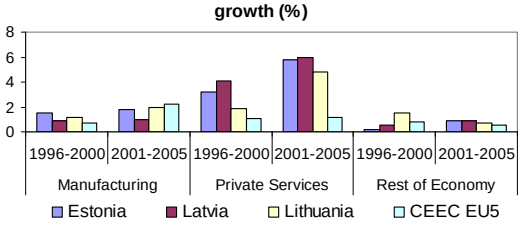
Added to this, the contribution from net migration flows was also significantly negative although the effect has diminished somewhat in recent years. Conversely, the share of the *working age population* exhibits relatively strong dynamics in the Baltics because of a still relatively high share in the total population compared with the rest of the EU and the entering into the labour force of the large cohorts born in the early nineties (the so-called baby-boomers of the "singing revolution").

5.2.2. Industry-level evidence

The evidence from growth accounting reveals that the Baltics share similar distinguishing features regarding both developments in growth rates and in the underlying determinants of growth. Notable distinguishing patterns are also observed for the contribution to growth of the different industries. In order to shed light in this direction, this section analyses growth contributions at industry level using the EU-KLEMS database.

The first decomposition performed is *value added growth* among the main sectors of the economy. Data are reported separately for the 1996-2000 and 2001-2005 periods, for the three Baltic economies and for a comparator group formed by the remaining former-transition countries that acceded to the EU in 2004 (EU-5). ([83]) The choice of the comparator group is dictated by the need to carry out a comparison between groups of countries that were characterized by analogous post-transition structural transformations.

Graph 5.5: **Sectoral contribution to value added growth (%)**

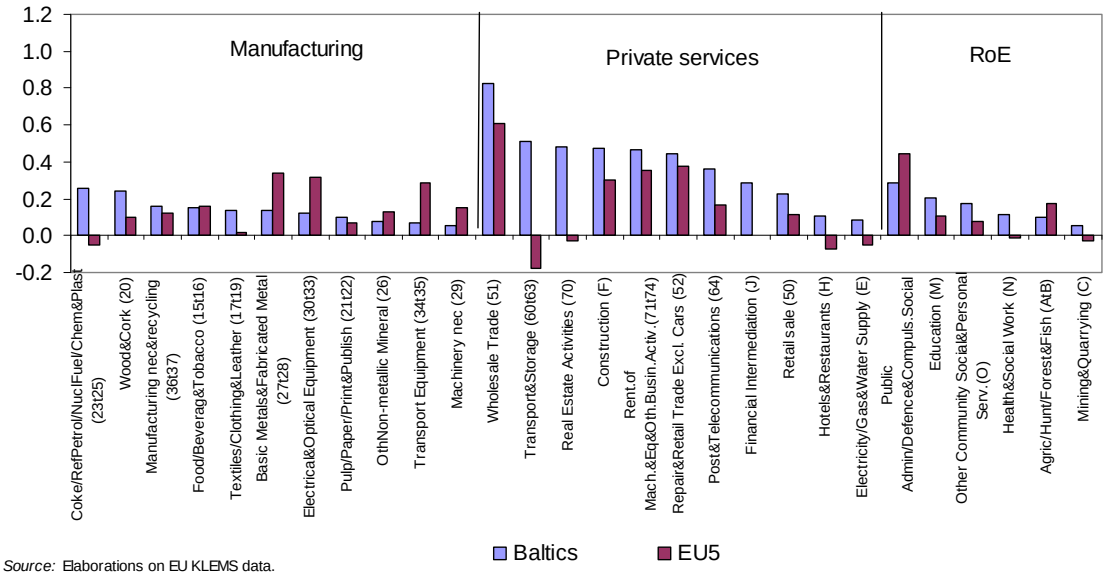


Source: LAF database.

A series of findings stand out from the analysis, reported in Graph 5.5. First, value added growth appears to have been *biased towards private services* in all the Baltic economies, notably in Latvia. Second, such bias has been growing over time, being more marked in the 2001-2005 period than during the latter part of the 1990s. Third, the contribution to growth of manufacturing and of the rest of the economy (mostly agriculture and public

([83]) Geographical aggregations have been performed using current exchange rates. Whilst this approach is in principle second-best compared with the use of PPP's, it is judged preferable in light of a series of measurement issues with sectoral PPPs in EU-KLEMS for the countries concerned.

Graph 5.6: **Industry contribution to value added growth, 1995-2005 (%)**



Source: Elaborations on EU KLEMS data.

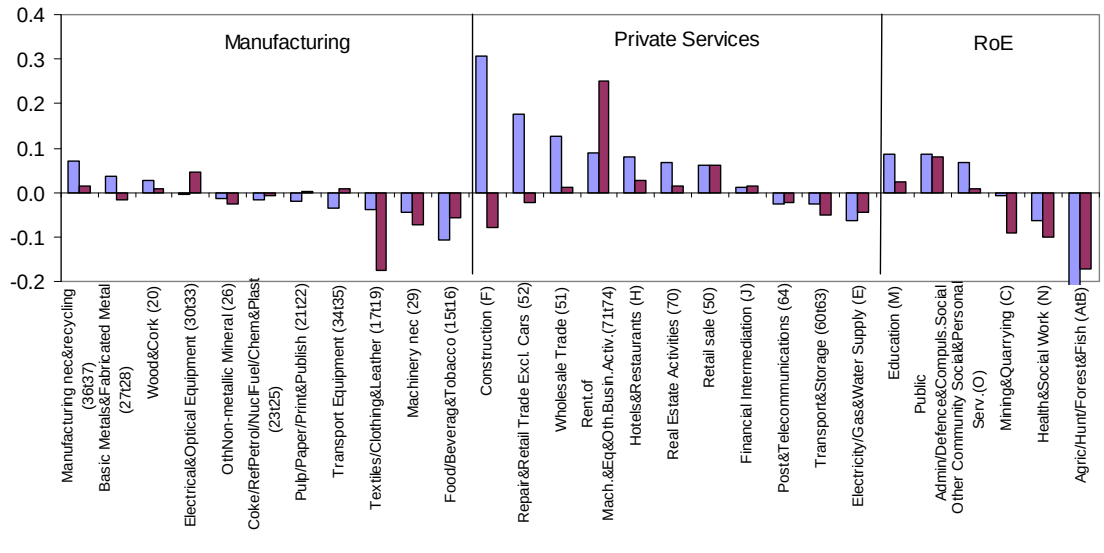
services) was broadly of the same order of magnitude in the Baltics and in the rest of the EU former-transition economies, but with relevant country-specificities: Latvia had a relatively low contribution from manufacturing, especially starting from 2000; Lithuania had a relatively strong contribution from the rest of the economy, notably in the latter part of the 1990s.

The relatively strong contribution of private services to growth is a distinguishing feature of the Baltics. It is of interest digging deeper into what types of private services were mostly responsible for such a strong growth performance. Additionally, it is relevant to understand whether the growth in manufacturing was concentrated in the same industries as those of other EU former-transition economies or whether there were peculiarities in this respect as well. To address these issues, Graphs 5.6 and 5.7 provide a 28-industry breakdown of, respectively, value added growth and the contribution to growth of labour inputs for the period 1995-2005. For the sake of synthesis, results are presented for the Baltic countries in aggregate (GDP-weighted averages).

A series of findings emerge from the industry distribution of contributions to value added growth (Graph 5.6). First, it appears that the Baltics received a stronger contribution to growth compared with the EU5 countries from all private services industries, with the difference being particularly large in transport and storage, real estate activities, and financial intermediation. Second, the Baltics appear to have received a relatively strong contribution to growth from only few manufacturing industries: chemicals and oil refinement, wood products, textiles and clothing. Conversely, the *contribution to growth from high-tech industries*, notably "electrical and optical equipment", which contains most ICT-related productions, transport equipments, and machineries, was relatively weak. Finally, regarding the contribution of "rest-of-the-economy" industries, it appears that while the Baltics had a comparatively weak contribution from agriculture, there was a relatively strong performance in selected public services (education, health, other community and social and personal services).

Regarding the sectoral distribution of the *contribution to growth of labour inputs* (Graph 5.7), the advantage of the Baltics appears concentrated in a few industries. Among private services, transport and storage, real estate activities, financial intermediation exhibit a relatively strong contribution as compared with the EU5. Among manufacturing industries, the productivity advantage for the Baltics is concentrated into chemicals and oil refinement and in wood products, while metal products, electrical equipments, transport equipments, machineries,

Graph 5.7: **Industry contribution to growth in labour inputs, 1995-2005 (%)**



Source: Elaborations on EU KLEMS data.

are all industries exhibiting a relatively weak contribution to the labour productivity component of growth. In textiles and clothing industries, the much smaller negative growth in the Baltics compared with the rest of the former-transition New Member States signals a lower degree of labour shedding in these industries.

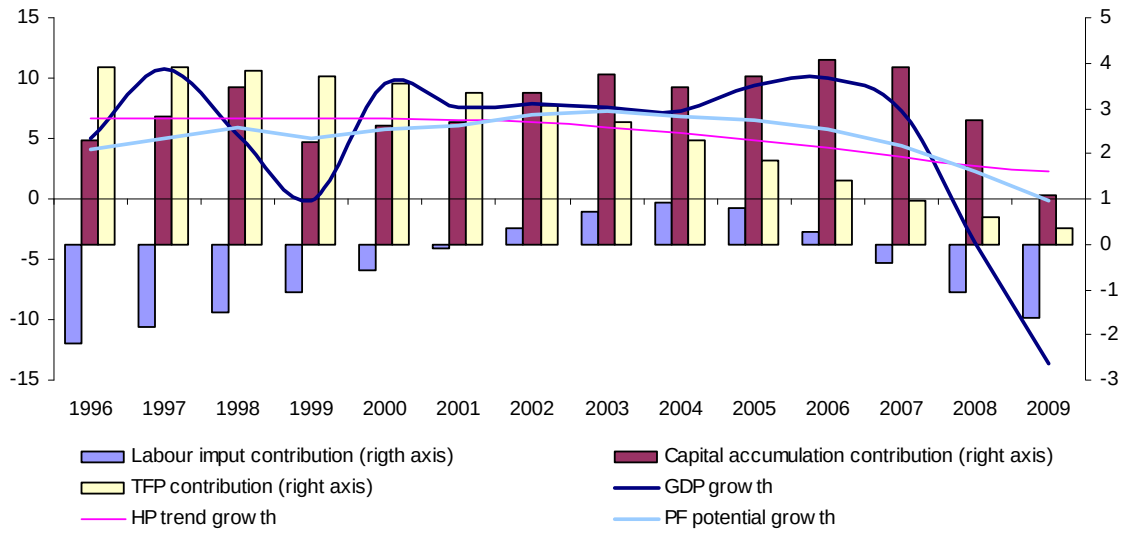
It also stands out from Graphs 5.6 and 5.7 that the largest share of inter-industry value-added growth differentials is driven by differences in labour productivity growth, the contribution of labour inputs to sectoral growth being in general of second order. It is noteworthy in this respect that the bulk of labour productivity growth was concentrated in services, notably less tradable than manufacturing. The *stronger productivity growth in the non-tradable compared with the tradable sector* does not support the evidence of major Balassa-Samuelson effects as the explanation of real exchange appreciation in the Baltics (see section 5.4.1).

5.2.3. Overall assessment

The Baltics outperformed other EU countries in terms of growth rates starting from the mid-1990s. The growth process of the Baltic economies was characterised by comparatively rapid productivity growth, mostly falling under the TFP component. As for the contribution of labour inputs, only starting from the beginning of the past decade, the progressive tightening of the labour market following transition-related years of high unemployment in the 1990s offsets the negative contribution stemming from demographic developments. Growth in the Baltics was biased towards private services. In fact, the advantage of the Baltics in labour productivity gains were concentrated in a handful of private service industries, notably transport activities, real estate activities, and financial intermediation, while the contribution of labour productivity to growth in manufacturing lagged behind that recorded in other former-transition EU economies, except in chemicals and oil refining and wood products.

This evidence from growth accounting raises a series of questions. First, to what extent was the growth recorded in the Baltics the outcome of structural supply side developments and to what extent was it instead related to a temporary demand boom? Second, what is the growth rate that appears to be consistent with the fundamentals of the Baltic economies, i.e., what is the growth potential for the Baltics? Third, what are the prospects for potential growth in the Baltic region looking ahead? The following sections aim to address these questions.

Graph 5.8: **Potential growth and contributions - Estonia (%)**



Source: Elaborations on AMECO data.

5.3. ESTIMATING POTENTIAL GROWTH

Estimating potential growth allows disentangling structural from cyclical development in economic activity. Several approaches have been developed for this purpose. This section of the study presents potential growth estimates results obtained with alternative analytical methods and discusses advantages and drawbacks of those estimates in relation to the specific features of the Baltic economies.

5.3.1. Evidence from time-series filtering and production function estimates

Methodology

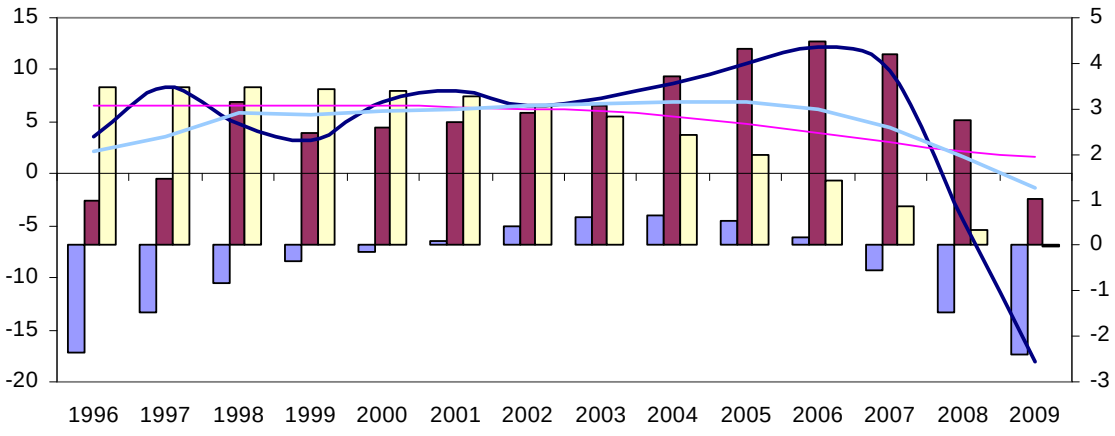
A first approach to assess the growth potential of an economy relies on estimates of potential output. Two broad approaches for the computation of potential output are followed in practice. First, potential output can be gauged by simply resorting to an estimate of "trend output" obtained via moving averages and *filtering techniques* on GDP series. Among the filters most commonly used to that purpose the Hodrick-Prescott (HP) filter features prominently. The advantage of this method is its simplicity and transparency. The filter allows retaining from GDP series only information at relatively long frequencies, with the degree of smoothing summarized in a single parameter representing the penalty assigned by the algorithm to a less smooth pattern for potential output. ([84]) There are however a series of relevant drawbacks. The HP filter method is not rooted in economic theory and its properties depend on the specific value assigned to the smoothing parameter. ([85]) Second, as for all centred filters, the HP filter suffers from the so-called end-point bias problem, i.e., the real-time estimates of trend output needs to be based on GDP extrapolations, with possible substantial ex-post revisions. Third, as for other techniques based on GDP series

([84]) The filtered series, τ_t is obtained from the original GDP series y_t from the following algorithm:

$$\min_{\tau_t} \sum_{t=1}^{T} (y_t - \tau_t)^2 + \lambda \sum_{t=2}^{T-1} [(\tau_{t+1} - \tau_t) - (\tau_t - \tau_{t-1})]^2 .$$

([85]) A large value for the smoothing parameter implies interpreting a large fraction of GDP fluctuations as cycle, while a relatively low value for the smoothing parameter tends to incorporate into trend output also a substantial share of high-frequency variations. From a conceptual view-point the choice of the value for the smoothing parameter of the HP filter is not obvious, since a rigorous assessment should depend on hardly measurable factors such as the relative frequency and duration of supply versus demand shocks and the magnitude and persistency of their impact on GDP. With annual GDP data it is customary to use a value for the smoothing parameter λ equal to 100. This is the standard value used for the estimation of trend output by the European Commission.

Graph 5.9: **Potential growth and determinants - Latvia (%)**



Source: Elaborations on AMECO data.

filtering, it does not make use of information that could be helpful in disentangling cyclical from structural developments in economic activity.

The alternative to simple data filtering is to rely on a model of the supply side of the economy. The assessment of potential output is in this case obtained via the computation estimation of a *production function* that summarizes how physical output is the outcome of combinations of production factor services and the state of technology. As compared with simple growth accounting, the objective of the production function approach to potential output is to compute a level of output consistent with a balanced use of available resources, i.e., excluding the case of excess supply or excess demand of production factors. To that purpose, labour inputs are normally computed assuming that the unemployment rate is equal to the non-accelerating inflation rate of unemployment (NAIRU) and filtering labour force data. Additionally, the Solow residual obtained from standard growth accounting algebra is further filtered in such a way to purge TFP from short-term fluctuations arising from variations in the degree of utilization of production factors. ([86]) In spite of advantages with respect to the HP filter approach, the production function method still suffers to some extent from the drawbacks common to filtering-based estimates of potential output (notably due to the filtering of TFP) and its reliability depends on the availability and quality of the data on production factor services. As discussed below, this is an issue which is of high relevance in the specific case of the Baltic economies.

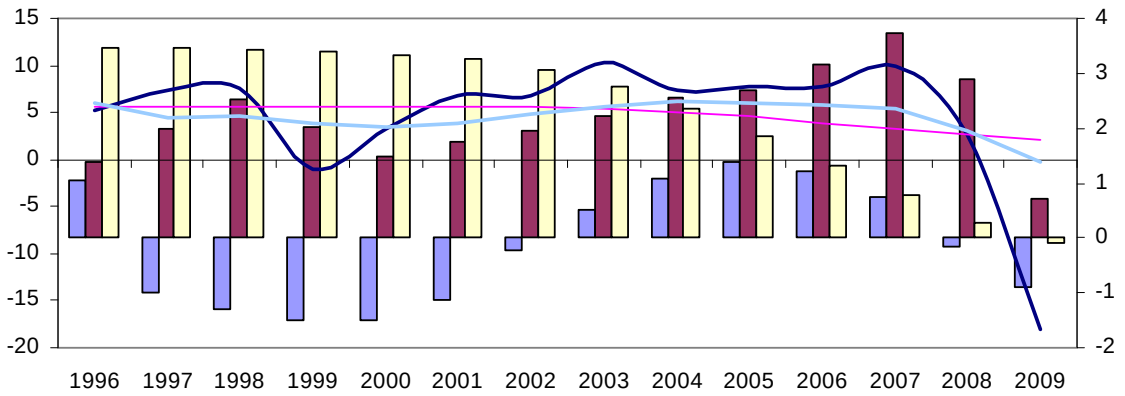
Results

Graphs 5.8 to 5.10 report, separately for each Baltic country, the evolution of real GDP growth, trend growth (obtained via HP filter-based trend GDP) and potential growth estimated via the production function method (updated to the Spring 2009 European Commission Forecasts). ([87]) The

([86]) In the European Commission estimation method for potential output, potential output, Y^*, is represented as $Y_t^* = (\bar{L}(1-\hat{U}))^{\alpha} K^{(1-\alpha)} \overline{TFP}$, where $\bar{L}$ is trend labour force (obtained by HP-filtering participation rates), $\hat{U}$ is the NAIRU (obtained via a Kalman filter approach), and $\overline{TFP}$ is the HP-filtered Solow residual. For New Member States, due to the problem of short time series, the NAIRU is estimated via a simpler "elasticity approach" and a statistical filtering is applied to TFP as opposed to the HP filter. See Denis et al. (2006) for an exposition of the production function method for estimating potential output carried out by the European Commission agreed by the Economic Policy Committee of the ECOFIN Council.

([87]) The potential growth assessment for the Baltic economies is likely to be undergoing non-minor revisions in light of recent downward revisions in actual real GDP growth as

Graph 5.10: **Potential growth and contributions - Lithuania (%)**



Source: Elaborations on AMECO data.

right-hand axes of the graphs report the contributions of labour inputs, capital deepening and TFP to potential growth. A series of similarities regarding the behaviour of trend and potential growth across all the Baltics stands out.

First, trend and potential growth peaked in roughly the mid-2000s, at values above 6% for Estonia and Latvia and just below 6% for Lithuania. Second, both trend and potential growth were below real GDP growth in the early 1990s and the boom period starting at the beginning of the 2000s, while they were above GDP growth during the slowdown following the Russian crisis in 1999 and following the inception of the current financial crisis. Third, trend growth appears above potential growth until the early 2000s and below potential growth afterwards.

Regarding the contribution of different factors to potential growth, it appears that labour inputs had a negative contribution in the early years of the series for all the Baltics; a stronger effect in Estonia, a more protracted one in Lithuania. The negative effects of demography discussed previously underline this, which also explains the lower level of potential growth compared with trend growth in the late 1990s and early 2000s (trend growth does not directly take into account the effect of falling labour inputs). TFP was thus the single most important contributor to potential growth until the middle of the past decade in the three Baltic economies. Since then, capital deepening has played the biggest role. The contribution of TFP to potential growth appears to be falling steadily throughout the series; the contribution of capital deepening rises during the boom in the mid-2000s and is currently falling steeply.

Measurement issues

The well-known limitations of standard approaches to assess potential growth via the computation of trend and potential output are particularly problematic in the case of the Baltic economies. The recent economic history in these countries is characterised by relevant output losses from transition, structural transformations and by an unprecedented degree of volatility in output figures ensuing from a complex constellation of temporary and more permanent shocks. Under these conditions, the difficulties of disentangling structural from temporary output fluctuations via moving averages and data filtering become particularly acute. In addition, the available meaningful time series for the major macroeconomic variables are short, thus reducing the available sample for running statistical filters and compromising the reliability of the capital

compared to the Spring 2009 European Commission Forecast.

stock variable, which is constructed cumulating past investment flows. ([88]) Finally, as discussed above, investment in the Baltic economies consisted largely of residential construction and dwellings, which hardly affect the structural production capacity of the economy, and then potential output, compared with business investment.

In light of the above limitations, caution is needed in interpreting output growth data and the contribution of different potential growth components. In particular, the evolution of TFP and then of potential output could be affected by cyclical movements that are not fully taken into account by filtering techniques. Additionally, the level of TFP suffers both from uncertainty on the initial capital stock and the estimation of the productive capital stock in light of the large share of residential construction investment.

5.3.2. Evidence from growth regressions

An alternative approach to assess the growth potential of an economy is to make use of large data cross-sections or panel data and estimate so-called growth regressions. Growth regressions have become a standard tool to analyse data on economic growth and test growth theories, notably convergence in per-capita income and growth determinants in "endogenous growth" conceptual frameworks (see, e.g,., Barro and Sala-i-Martin, 2004). Income per capita is regressed across countries or in panel data on variables capturing factor inputs employed in production and a set of determinants of production factor productivity. Among the latter set of determinants, initial income per capita captures the hypothesis that the productivity of capital falls with the degree of economic development in line with the idea that as the stock of capital increases, additional capital units imply a lower increase in output due to diminishing returns to scale. ([89]) A series of institutional and policy variables are aimed at capturing factors that affect total factor productivity.

Methodology

The estimation of growth regressions allows identifying relationships between "normal growth rates" and a series of country-characteristics, so that an assessment of the growth potential can be obtained from the (in-sample or out-of-sample) predictions obtained from regression results.

In the case of the Baltic economies, the alternative of estimating the growth potential relying on cross section and panel data have some attractive features, notably in light of the problems arising from structural changes in the available short time series available which have been stressed above.

A large cross-country control group and various economic and institutional control variables are used to assess whether the Baltics performed differently during and after EU accession. ([90]) The unbalanced panel dataset comprises annual observations of 62 advanced, emerging, and transition economies from 1960 to 2009. Besides the 27 EU member states and the remaining 11 OECD countries, 24 additional middle-income countries are considered. Annual observations are converted into averages over five-year, non-overlapping sub-periods, in order to avoid short-term disturbances affecting results. ([91]) Dummy variables capture the idiosyncratic effects of time periods and of geographic regions. The interaction between time and geographical effects permits assessing whether a group of countries performed above-average with respect to a particular reference country group and time period.

([88]) In the Commission methodology for computing potential output the capital stock is constructed cumulating available investment flows with the perpetual inventory method and assuming a depreciation rate of 5%. For New Member States with short investment series, the initial capital stock is assumed to be equal to 2 times GDP (see Denis et al., 2006).

([89]) The negative expected sign for the coefficient of per-capita income could also be interpreted as the result of reduced room for TFP gains from adopting existing up-to-date technologies and imitation, in line with technological catch-up models (Aghion and Howitt, 2005).

([90]) See, e.g., Acemoglu et al. (2005) on the role of institutions for the growth procees. See, e.g., Crespo-Cuaresma et al. (2002), Falcetti et al. (2006), Schadler et al. (2006), and Iradian (2007a) for previous work based on growth regressions aimed at assessing growth determinants in transition economies and Central and Eastern European countries. Böwer and Turrini (2009) analyse the growth impact of EU accession and investigate the channels driving this effect.

([91]) The last sub-period includes the available years between 2005 and 2009. Observations for 2009 are based on forecasts.

Results

The standard explanatory variables are significant and show the expected signs (Table 5.1). Lower initial per capita GDP and population growth are associated with higher average growth rates while gross capital formation, openness and terms-of-trade growth have a significantly positive impact on growth. Regarding the institutional indicators, legal system quality comes out as significant while freedom of trade is borderline.

Table 5.1:

Growth regression results	(1)	(2)
Log initial per capita GDP	-1.53***	-1.49***
	(-5.56)	(-5.44)
Population growth	-0.59***	-0.57***
	(-3.10)	(-3.02)
Gross capital formation	0.16***	0.17***
	(6.78)	(7.03)
Openness	0.01**	0.01**
	(2.17)	(2.13)
Terms of trade growth	0.12***	0.11***
	(3.10)	(3.03)
Quality of legal system	0.20*	0.22*
	(1.77)	(1.95)
Freedom of trade	0.24	0.20
	(1.61)	(1.36)
Quality of regulation	0.10	0.12
	(0.60)	(0.68)
New member states 2000-2004 (dummy)	2.87***	
	(2.88)	
New member states 2005-2009 (dummy)	1.82*	
	(1.81)	
Baltics 2000-2004 (dummy)		3.75**
		(2.49)
Baltics 2005-2009 (dummy)		-0.83
		(-0.54)
Non-Baltic NMS 2000-2004 (dummy)		2.50**
		(2.27)
Non-Baltic NMS 2005-2009 (dummy)		2.94***
		(2.66)
Sample size	289	289
Adjusted R^2	0.48	0.49

Notes: Estimation method: OLS. t statistics are reported in parentheses. The panel structure employs non-overlapping five-year periods, with the last sub-period including the available years between 2005 and 2009, partly based on forecasts. *, **, *** denote statistical significance at 10, 5, and 1% level. All specifications include world region dummies, time period dummies (1995-1999 period omitted), and the interaction between the two set of dummies. World regions in the specifications (1) and (2) are defined as follows: EU-15 (omitted), NMS, non-EU OECD, non-EU non-OECD, EU. Dependent variable: Growth in real GDP per capita (PPP, %). Source: World Development Indicators. Initial real GDP per capita (PPP): value recorded in the first year of each five-year periods Source: World Development Indicators. Population growth (%). Source: World Development Indicators. Openness: sum of imports and exports on GDP (%). Source: Penn World Tables. Terms of trade growth (%). Source: World Development Indicators. Quality of legal system: index computed by Fraser Institute summarising elements of legal system and property rights protection.
Freedom of trade: index computed by Fraser Institute summarising information on tariff and non tariff barriers and capital movement controls. Quality of regulation: index computed by Fraser Institute summarising elements (including the extent of public versus private ownership) of regulations affecting labour, product and financial markets.

In specification (1), the dummy variables for the NMS, interacted with the 2000-2004 and the 2005-2009 time periods capture possible post-enlargement effects and remaining cyclical factors on top of the standard control variables and the indices for an improved institutional context. ([92])

These dummies turn out positive and significant, indicating that the average growth performance of the NMS after 2000 was significantly stronger relative to the reference group (EU-15), as compared to the reference sub-period (1995-1999), controlling for other factors. This applies particularly to the 2000-2004 period, the coefficient of which is larger and of stronger significance than the one pertaining to the 2005-2009 coefficient. Specification (2) allows for separate enlargement effects on the Baltics and the remaining NMS. The results show that, for the 2000-2004 period, both the Baltics and non-Baltic NMS coefficients are positive and significant with regard to the EU-15 reference group although the Baltics dummy is of slightly larger magnitude. The Baltics dummy for 2005-2009 is negative and not significant, reflecting recent adverse economic developments, while the non-Baltics dummy continues to be positive and significant, relative to the EU-15.

Until the mid-2000s, predicted growth rates are below actual growth while the situation reverses after 2005 (Graph 5.11). Prediction (a) refers to the general NMS specification (1) while prediction (b) employs estimates from specification (2) but applies the non-Baltic NMS dummy coefficients in order to abstract from possible transitory effects affecting the Baltic economies.

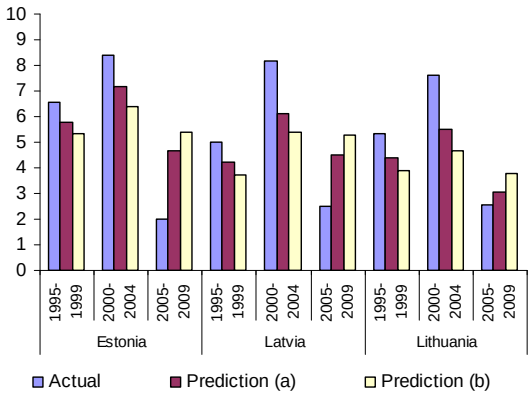
Actual growth rates exceed the predictions from NMS growth regressions between 1995 and 2004, indicating that, for a protracted period, the growth experience in Baltic economies has been above what could be justified on the basis of fundamentals, a result obtained also in previous analogous work. ([93]) During the late 2000s, actual average growth rates slumped below predictions,

([92]) Although enlargement for the EU-10 was formally completed as of 1 May 2004 (that of Bulgaria and Romania 1 January 2007), there is agreement that much of the enlargement-related growth effects took place already before the official dates, in light of the economic and institutional restructuring associated with the achievement of the 'acquis communautaire', EU transfers related to accession, and boosted investment, FDI, and technology transfer in anticipation of EU accession (e.g., Schadler et al., 2006).

([93]) E.g., Schadler et al. (2006).

most notably in Estonia and largely due to a marked growth slowdown expected in 2008-2009.

Graph 5.11: **Actual and predicted average annual growth rates (%)**



Note: Preditions (a) are based on regression specification (1) in Table 5.1, predictions (b) draw on regression (2) while applying the *non*-Baltics NMS coefficient in order to abstract from transitory, Baltic-specific factors. Actual data for 2009 refer to AMECO forecasts.

Overall assessment

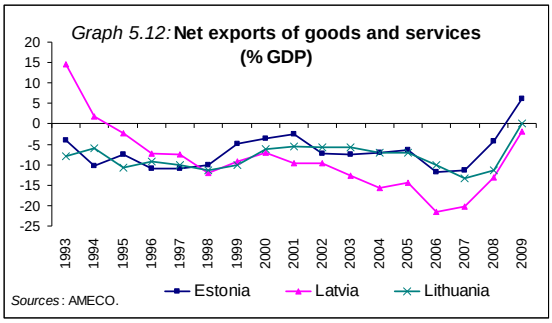
Alternative approaches to estimating potential output are to be seen as complementary tools to dig into a complex matter. Approaches based on series filtering and production function estimates are subject to a series of issues: (i) high volatility of GDP series for the Baltics, which aggravate the standard issue of disentangling cyclical from structural developments in economic activity; (ii) short-time series for the Baltic economies, which blur the contribution from capital deepening and TFP to potential growth; (iii) high shares of residential construction in gross fixed capital formation, which hardly add to the growth potential of the economy. Growth-regression-based methods permit avoiding the issue arising from GDP series volatility but are subject to other potentially serious limitations. Just to mention some of the most relevant: (i) uncertain specification of the regression equation (omitted variables,…); (ii) stability of estimated coefficients across time and country groups; (iii) possible endogeneity of explanatory variables (e.g., investment rates); (iii) measurement issues, notably relating to institutional variables (e.g., indexes of regulation quality…).

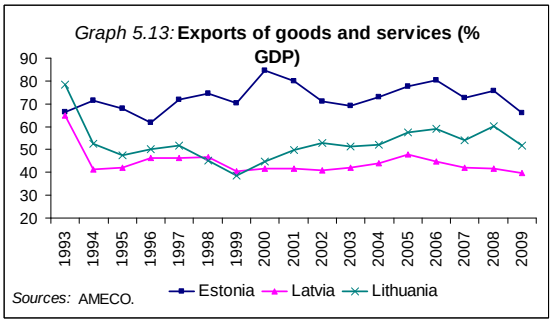
In spite of the above limitations, alternative approaches to the estimation of the growth potential for the Baltic economies deliver broadly consistent messages. It appears that starting from the beginning of the present decade until very recently (until 2007-2008 according to both the HP filter and the production function approach) GDP growth in all Baltic economies was substantially above potential. Income per capita growth was also above normal rates consistent with the results of growth regressions over the same period. Since the beginning of the decade until the years preceding the recession, potential growth rates are estimated to be in the neighbourhood of 7% for Estonia and Latvia and 6% for Lithuania, and discrepancies across the approaches employed are rather limited. Methods relying fully (HP filter) or partially (production function approach) on time-series filtering point to a strong reduction in potential growth at the current juncture. Although the current slowdown has undoubtedly a structural component, notably related to falling investment rates, disentangling cyclical from structural developments in economic activity in real time poses a big challenge. This holds in particular for TFP, which in the production function approach appears to be falling very steeply since the mid-2000s.

5.4. COMPETITIVENESS DEVELOPMENTS AND CHALLENGES

As discussed in previous Chapters of this study, the Baltic economies have seen their current account balances growing above prudential levels starting from the mid-2000s until very recently, and net foreign liabilities have reached levels that underscore the importance of re-balancing via adequate macroeconomic policies that permit restoring net national savings, fostering competitiveness and preserving market confidence. The trade balances of all the Baltic economies have deteriorated markedly throughout the 2000s and only since 2007 are there signs of rebalancing (Graph 5.12). As for most other New Member States, export dynamics have been strong over recent years in the Baltics, leading to significant gains in world market shares. However, rising export shares in GDP were outweighed by even faster import penetration, relating, inter-alia, to structural transformations, changing consumer habits and preferences, and large import content of exports, in light of the relevant role of transit trade, notably in mineral products and transport

equipment. More recently, export shares in GDP in the Baltics have slipped back (Graph 5.13).





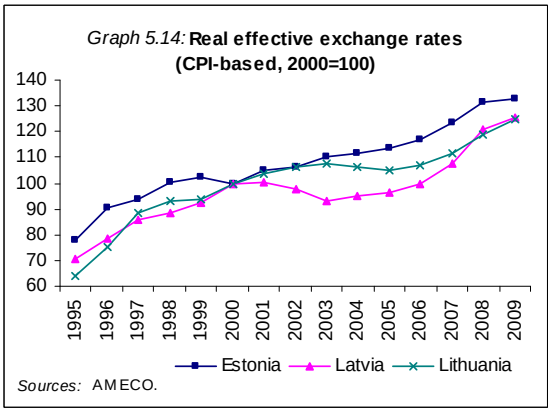
While this partly reflects one-off factors as well as a weakening of the external environment and very high nominal GDP growth, it also points to the need for stronger efforts to maintain both price and non-price competitiveness in the future. This section provides an overview of price competitiveness and export developments in the Baltics and discusses challenges ahead.

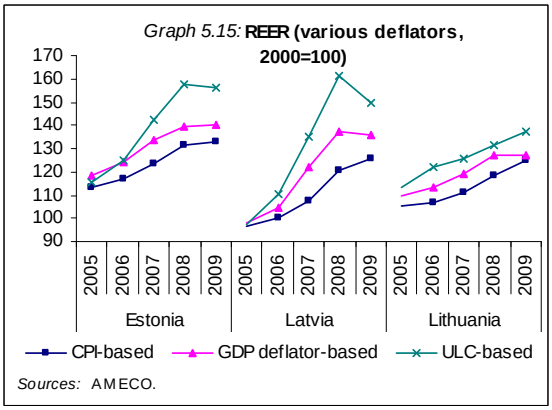
5.4.1. Price competitiveness

The evolution of *real effective exchange rate indexes* reveals that all Baltic economies have been losing price competitiveness since the mid-1990s (Graph 5.14, base year 2000). Exceptions to this trend are Latvia in the years following the nominal depreciation that occured in 2000 and the deflation-induced fall of Lithuania's REER in the mid-2000s. The graph shows CPI-based REERs but this trend is valid irrespective of the deflator used to measure price levels.

Price competitiveness appears to have been deteriorating especially as a result of rising labour costs. Growth rates in ULC-based REERs since 2005 appear to indeed be higher compared with measures of the REER based on the GDP deflator or the CPI in all Baltic economies (Graph 5.15).

The indexes show that in 2008 competitiveness measures in terms of unit labour costs were higher by above 60% in Estonia and Latvia and by almost 40% in Lithuania. This evidence indicates that, compared with trade partners, wages have been growing much faster than labour productivity for a protracted period.





The above evidence underscores the competitiveness implications of the tightening of labour markets in the Baltic economies since the mid-decade. As discussed previously, growing labour inputs, notably associated with rapidly falling unemployment rates, were among the factors that explain the comparatively strong growth performance of the Baltic economies during the past decade. The counterpart of these positive labour market developments was a rate of nominal wage growth well above that of productivity improvements which translated into progressively falling price competitiveness. Rising wages were partly due to tightening labour markets against the background of natural population decline and sizeable emigration. Labour market shortages became particularly evident in 2004-

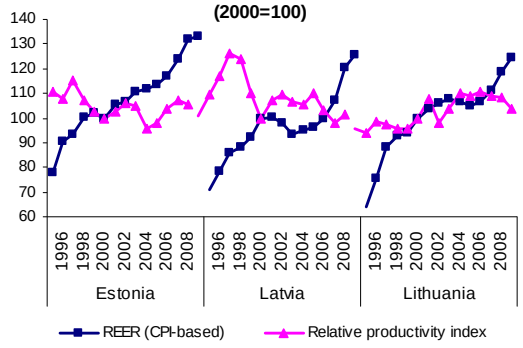
2007 (see Chapter 2). Despite these developments in the REER, however, the Baltics were able to improve their export competitiveness, as documented by the shift-share analysis below due to a favourable geographical re-orientation and improvements in non-price competitiveness (e.g., quality upgrading).

According to the European Commission services' Autumn 2009 Economic Forecasts, between 2009 and 2008 the growth in CPI-based real exchange rates slows down in all the Baltic economies, the ULC-based REER falls in Estonia and Latvia, and the GDP-based REER falls in Latvia and Lithuania. These developments are the result of recently adopted policies aimed at ensuring wage moderation and of the major drop in inflation resulting from the dramatic recession affecting the whole Baltic region. However, overall it appears that since the start of the crisis the Baltic economies have not yet significantly re-gained price competitiveness, largely due to a delayed adjustment of wages and prices, falling inflation across all major trade partners, and substantial depreciation of the currencies of several relevant trade partners, including Russia, Sweden, the Czech Republic, Hungary and Poland.

The appreciation of the REER may not necessarily signal a tendency towards worsening trade balances if the underlying cause is faster productivity developments in the tradable sector compared with competitors. In line with the *Balassa-Samuelson* argument, such productivity growth would lead to wage growth in the non-tradable sector unmatched by equally large productivity gains. The ensuing price increase in the non-tradable sector would justify an appreciating REER without this being an indication of an incipient deterioration in the trade balance.

The available evidence does not seem to support the argument that Balassa-Samuelson effects were a major determinant of REER developments in the Baltics, although there are considerable differences across countries (see also section 5.2.2). Graph 5.16 compares developments in the REER with those in a measure of relative productivity in the tradable versus the non-tradable sector compared with a group of competitor countries. ([94]) Only in Lithuania was the upward trend in the REER matched by an increase in the relative productivity of the tradable sector. It has been argued that, when the Baltic countries fixed their exchange rates, their currencies were markedly undervalued. ([95]) This may be a further explanation for the strong real appreciation since the early 1990s.

Graph 5.16: **REER and relative productivity (2000=100)**



Sources: Elaborations on AMECO data.

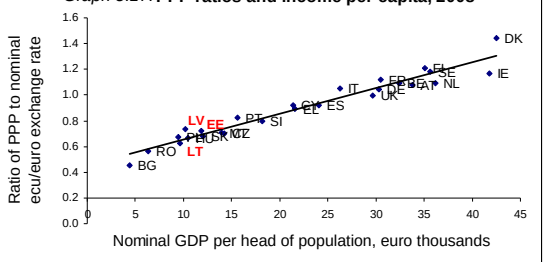
It needs to be stressed that, the REER being an index number, cross-country comparisons cannot be made on the basis of this indicator. The question therefore arises whether, in light of the past deterioration in price competitiveness, the current level of prices in the Baltic economies is excessively high by international standards to maintain a competitive position. The issue is pertinent, in light of the very low cost of living in these countries at the start of their catching-up process and the still relatively low current cost of living as compared with trade partners in spite of rapidly rising incomes and prices in past years. To answer that question it should be borne in mind that a meaningful comparison needs to take into account that, due to Balassa-Samuelson effects and other equilibrium appreciation effects, price levels tend to be higher in richer countries. Hence, the question boils down to whether the current level of the cost of living in the Baltics is justified by the

([94]) The measure is obtained as the ratio of value-added per person employed in agriculture and manufacturing over that for the total economy compared with a group of 35 competitors (double export weights). An increase in the ratio signals faster productivity growth in the tradable sector compared with the rest of the economy, in line with the Balassa-Samuelson argument.

([95]) See De Grauwe and Schnabl (2004).

relatively low income per capita compared with that of relevant competitors.

Graph 5.17: **PPP ratios and income per capita, 2008**



Sources: Elaborations on AMECO data.

A simple scatter plot analysis reported in Graph 5.17 suggests that in 2008 the cost of living in the Baltic economies was broadly in line with that implied by the relation between the *ratio of the PPP to nominal exchange rates* and income per capita across EU countries.

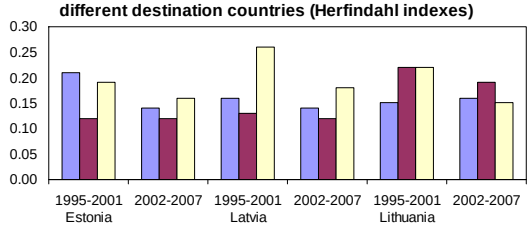
5.4.2. Export developments and non-price competitiveness

Price competition will be key to restore sound external positions in the Baltic economies. "Non-price" factors will be crucial as well. In particular, a relevant question is whether the export mix of the Baltic states is oriented towards dynamic products with growing demand or whether it is concentrated towards industries increasingly facing competition from low-wage economies. With a view to shed light on non-price aspects of export competitiveness, this section discusses the evolution of the export mix of Baltic states across technological product groups of different technological intensity and analyses the role that the changing product mix played in driving export dynamics. The analysis is based on disaggregated export data at the 2-digit SITC level from the UN COMTRADE database.

The Baltic economies are comparatively *strong service exporters* (the share of service exports in GDP in 2008 was 22.3, 13.9 and 10% of GDP for Estonia, Latvia and Lithuania, respectively), with transport, travel, financial services and other business services being those most exported. However, highly disaggregated data are not available for service exports, so that the following analysis of export composition will be restricted to merchandise data.

In terms of broad *composition of merchandise export*, the Baltics exhibit a tendency towards increasing diversification in their export mix, as revealed by the computation of Herfindahl indexes of concentration across export categories. Graph 5.18 shows that the sectoral composition of exports became less concentrated over the past decades, notably regarding those exports directed to the EU-15 countries. This tendency largely reflects the rapidly falling share of textiles exports towards EU-15 countries.

Graph 5.18: **Diversification of exports towards different destination countries (Herfindahl indexes)**



Note: Higher indexes indicate lower diversification.
Source: Elaborations on Comtrade data

To assess the degree of technological intensity of exports, industries are classified into low, medium, and high-tech sectors, following Anderton (1999). ([96]) Table 5.2 presents exports by technology content and by geographical destination. The bulk of the Baltics' exports are directed to the EU-15 countries, to other NMS and to Russia and NICs. Low-tech export shares decreased from 2002 towards all destinations but still constitute the largest share in the Baltics' exports, mainly comprising the food, textile and wood sectors and, in the case of Latvia, the basic metals industry. The high share of low-tech content is particularly striking for Latvia's and Lithuania's exports to the EU-15 while Estonia's largest share of low-tech exports is directed at Russia and NICs.

The share of medium-tech exports was stable or rose in most Baltic countries, with the strongest increase in Estonia to the EU-15 and in both Latvia and Lithuania to Russia and NICs. The latter two countries benefited notably from increased exports in chemicals (Latvia) and transport equipment (Lithuania) to Russia and NICs in recent years. Only in Estonia vis-à-vis the EU-15 does the high-

([96]) Oil products are presented separately and are excluded from the disaggregated shift-share analysis below to avoid distortions caused by excessive price volatility.

tech sector rank before medium-tech exports, driven by manufacturing of electrical machinery.

Table 5.2:

Export structure by technological intensity and destination

	Estonia		Latvia		Lithuania	
	1995-2001	2002-2007	1995-2001	2002-2007	1995-2001	2002-2007
	EU15 countries					
Low tech	52.6	45.3	84.0	79.9	60.6	53.0
Food	6.0	5.5	4.8	8.4	10.4	13.1
Textile	22.9	13.0	38.2	24.2	38.6	23.1
Wood	14.0	15.8	30.7	26.0	7.6	12.8
Medium tech	10.6	16.5	8.2	10.4	22.0	21.4
Agr&ind machin.	4.7	7.7	3.3	4.1	16.5	10.8
Transp.equip.	2.7	5.5	1.4	3.7	3.9	8.4
High tech	33.6	33.7	5.5	6.0	10.9	10.5
Electr.machinery	28.7	31.3	4.8	4.8	10.1	9.0
Mineral prod.	3.3	4.5	2.3	3.8	6.4	15.0
	EU New Member States					
Low tech	47.6	43.3	61.9	56.7	32.1	31.7
Food	17.6	14.8	18.1	18.9	13.5	15.5
Textile	8.6	8.2	16.3	8.3	7.5	4.6
Basic metal ind.	4.7	6.6	8.8	11.2	2.9	3.3
Medium tech	30.7	32.2	27.7	26.8	19.4	22.9
Chemical prod.	19.2	10.9	20.6	16.4	12.4	12.1
Transp.equip.	7.1	16.6	2.9	6.2	3.9	7.4
High tech	10.4	17.4	7.7	8.5	7.9	9.6
Electr.machinery	7.3	15.9	4.3	5.0	5.8	5.8
Mineral prod.	11.3	7.2	2.7	8.0	40.6	35.7
	Russia and NICs					
Low tech	53.3	51.1	55.1	50.9	38.1	31.1
Food	39.2	25.0	28.4	23.7	21.6	17.8
Textile	3.3	5.6	16.6	13.0	7.2	4.1
Medium tech	31.0	32.5	27.2	35.0	32.6	47.4
Chemical prod.	10.0	12.4	13.2	18.7	10.1	8.7
Transp.equip.	16.8	11.3	7.6	10.0	16.1	29.9
High tech	5.3	10.4	12.1	13.0	8.3	12.3
Electr.machinery	3.2	8.5	9.7	10.7	6.4	9.6
Mineral prod.	10.4	6.0	5.6	1.1	21.0	9.2

Source: Comtrade.

Regarding exports of mineral products, Lithuanian refinery activities are reflected in large export shares to other NMS but also and increasingly to the EU-15. Taken together, the sectoral export pattern suggests that the Baltics are mostly, albeit decreasingly, specialised in low-tech products. ([97]) This is in line with existing analyses which indicate that both the level and the growth rate of the technological intensity of exports in the Baltics appear below that of other New Member States, with the possible exception of Estonia (see, e.g., Fabrizio et al., 2007).

With a view to assessing the role played by the product mix in driving export dynamics, a *shift-share analysis* (SSA) is carried out, which permits disentangling export dynamics along sectoral and geographical dimensions and comparing a country's export performance with benchmark countries and over time. ([98]) The overall difference between a country's export growth and the world's export growth (the "total effect" in Table 5.2) is decomposed into a "structure effect" and a "market share effect". ([99])

- The structure effect aims at assessing the role of a country's sectoral and geographical export composition in driving export dynamics. It permits responding to the following question: what is the impact of the fact that export market shares by product category and destination market differ from that of the world average? The structure effect is further decomposed into a *product mix effect* showing whether a country's existing sectoral export structure benefits from global demand growth across product categories, and a *market destination effect* measuring the extent to which a country's given exports are geared towards dynamic markets. A residual "mixed effect" captures interaction effects between the product mix and market destination effects.

- The market share effect is obtained as a residual after deducting the structure effect from the total effect, and measures the role played by changing market penetration within product categories and export markets in driving the overall dynamics of the export market share. Thus, the market share effect captures the impact on market shares mainly attributable to developments in price and non-price competitiveness and asymmetric reductions in trade barriers and transport costs.

Table 5.3 reports the SSA results. Although export growth of the Baltics has been rather volatile since 1997, annual growth rates in general exceeded those of world exports, yielding largely positive total effects, except for Latvia over the 1997-2001 period, largely as a result of the contraction in

([97]) More recent evidence points to a faster increase in medium-tech manufacturing in Latvian exports since 2004.

([98]) The SSA is also known as "constant market share analysis". Seminal studies include Richardson (1971) and Milana (1988). This study draws on the specification presented by the European Central Bank (2005).

([99]) Formally, the total effect is decomposed as follows,

$$g - g^* = \left[\sum_i \sum_j (\theta_{ij} - \theta_{ij}^*) g_{ij}^*\right] + \left[\sum_i \sum_j \theta_{ij} (g_{ij} - g_{ij}^*)\right],$$

where g and θ represents, respectively growth rates and market shares, i stands for products and j for countries, and the asterisk refers to world figures.. The first term in square brackets is the structure effect, while the second is the market share effect.

export demand from Russia. Overall, the Baltic economies in the past decade managed to increase their export penetration of world markets.

Table 5.3:
Shift-share analysis

	1997-2006	1997-2001	2002-2006
		Estonia	
Total effect	6.2	9.7	2.7
Structure effect	0.1	-2.9	3.0
Product mix effect	-0.4	-0.6	-0.3
Market destination effect	0.3	-2.9	3.6
Mixed effect	0.1	0.6	-0.5
Market share effect	6.2	12.6	-0.2
		Latvia	
Total effect	5.8	-0.2	11.8
Structure effect	0.5	-3.4	4.4
Product mix effect	-0.2	-1.0	0.5
Market destination effect	0.6	-2.4	3.6
Mixed effect	-0.1	-0.3	0.0
Market share effect	5.5	3.4	7.7
		Lithuania	
Total effect	5.8	0.1	11.4
Structure effect	0.9	-2.8	4.5
Product mix effect	-0.7	-0.4	-1.0
Market destination effect	0.7	-2.7	4.1
Mixed effect	0.8	0.3	1.3
Market share effect	5.0	2.9	7.1

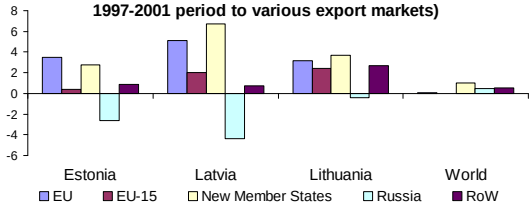
Notes: difference between export growth and world export growth attributable to different effects (%). *Source:* Elaborations on Comtrade data.

Over the full sample, the total effect appears to be largely driven by the *market share effect*, implying that the Baltics were able to increase their export market share on average within product categories and destination markets. ([100])

Although there are several limitations with the SSA, so that the results need to be interpreted with caution, the evidence appears to suggest that improvements in price and non-price competitiveness factors could have acted positively in driving export dynamics. ([101]) However, a relevant role for rising price competitiveness in driving export market shares seems to clash with the trends described above towards appreciating real exchange rates prevailing in the Baltic economies. Hence, improved non-export competitiveness, including due to rising goods' quality within broad product categories appears to be a more plausible alternative explanation.

An further explanation for the substantial market effect arising from the SSA exercise could be related to the rising trade integration with the rest of the EU resulting from falling administrative barriers, reduced information costs and strengthened business links. This interpretation is consistent with the major geographical trade re-orientation towards EU countries that has taken place since the mid-nineties (Graph 5.19).

Graph 5.19: **Geographical trade re-orientation (change of market shares between the 2002-2006 and 1997-2001 period to various export markets)**



Source: Elaborations on Comtrade data.

Regarding the role of the *structure effect*, it appears that this effect was broadly neutral over the full time span considered in the analysis in Table 5.3, but the sub-periods indicate that the structure effect actually turned around from an initially negative contribution to a positive one during the more recent years. In particular, the Baltics benefited from more dynamic export destination markets while they did not gain notably from their sectoral export specialisation.

The market destination effect was largely negative in the 1997-2001 period, notably due to falling export demand from Russia, an important export destination for Baltic economies. Following the Russian crisis, the *geographical orientation* of the Baltics' trade had a positive impact in driving overall export market shares, with the relatively high market shares to dynamic markets like those of the EU New Member States and that of Russia playing a strong role (Graph 5.20).

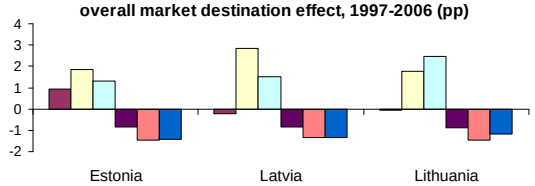
By contrast, the *product mix effect* had a negative impact in both sub-periods, with the exception of Latvia in the 2002-2006 period. Positive contributions came mainly from product categories

([100]) The negative market share effect for Estonia during 2002-2006 according to COMTRADE data is due to a slump in exports to Russia and the other CIS countries in 2004. Abstracting from this apparent outlier, exports to Russia/CIS did not contribute significantly to the market share effect.

([101]) Since the sectorally and geographically disaggregated data are available only in USD value terms, the results can be influenced by exchange rate movements. Moreover, the choice on the level of product and market disaggregation can affect the results. Finally, adverse effects of measurement errors and incomplete coverage on the data quality cannot be excluded.

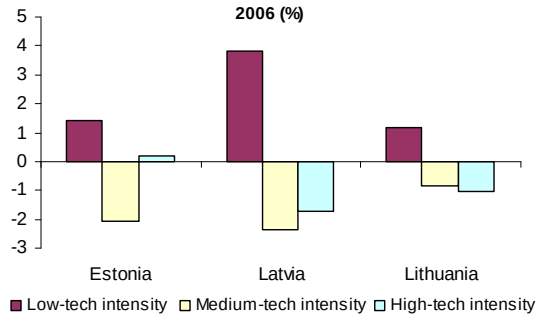
with relatively low technological content, as shown in Graph 5.21, implying that, in these sectors, the Baltic economies benefited from export demand growing above the world average.

Graph 5.20: **Contribution of destination markets to overall market destination effect, 1997-2006 (pp)**



Source: Elaborations on Comtrade data.

Graph 5.21: **Contribution to product mix effect, (1997-2006 (%)**



Source: Elaborations on Comtrade data.

Conversely, medium and high-technology industries have a negative contribution on overall export shares within the product mix effect, indicating that the Baltics were not able to capitalise from strong demand growth in these sectors. A notable exception is a small positive contribution of high-tech products for Estonia. Because medium and high-technology goods are characterised by more dynamic world export demand, the negative effect played by these sectors offsets the positive effect of low-technology industries. Interestingly, it appears that the product mix effect was more driven by the disadvantage of the Baltics in medium rather than in high-technology segments since in these product categories market shares are smaller compared with those of the average of other trade partners.

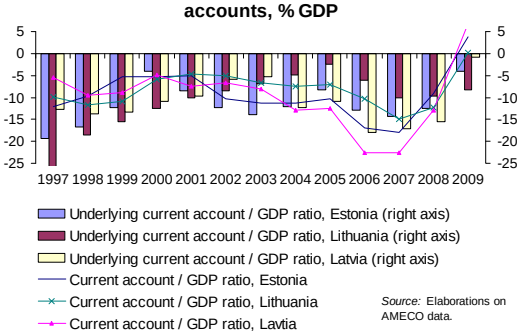
Overall assessment

Although the Baltics recorded a large and protracted appreciation of REER indexes in past years, there is no indication of a substantial misalignment of the currencies of the Baltic economies at the current juncture. The cost of living appears in line with those of competitors with comparable income per capita, headline current account imbalances are by now corrected, and current wage and price dynamics are expected to improve price competitiveness.

Looking forward, however, maintaining a trajectory towards further price competitiveness is necessary. The most recent REER indexes show that price and cost competitiveness has started to improve and further improvements are expected as price and wage corrections are currently under way in all the Baltics. Nevertheless, sustained progress on the front of price competitiveness will be a key condition to work out current account imbalances on a sustainable basis, with a view to reducing progressively the high stock of net foreign liabilities.

Moreover, it should also be stressed that the recent remarkable improvement in trade balance and current account positions may partly be temporary and not fully sustainable in the absence of progress towards improved price competitiveness. Indeed, current accounts will worsen once the largely negative output gaps in the Baltic economies close and after the lagged response of REER appreciation in recent years takes full effect on import and export quantities.

Graph 5.22: **Actual and underlying current accounts, % GDP**



Source: Elaborations on AMECO data.

Graph 5.22 provides an order of magnitude of the difference between actual and "underlying" current account figures taking into account the effects of the cycle and that of lagged changes in REER. Although underlying current accounts estimates are subject to a series of assumptions, Graph 5.22 clearly shows that while non-adjusted current accounts exhibit surpluses in all the Baltics in 2009

according to the Autumn 2009 European Commission Forecasts, the current account balance is still negative if expressed in underlying terms. ([102])

Price competitiveness will be key, but non-price factors are likely to play a role as well in restoring external positions. In the past, the Baltics have expanded their export market shares, a trend which was, among other factors, associated with improved non-price competitiveness (e.g., increased product quality within broad product categories) and rising economic integration with the rest of the EU. The Baltics' above-world-average share in dynamic economies like the Russian and other CIS markets and other New EU Member States also played a positive impact on overall export penetration. Conversely, the product mix effect played negatively on the export dynamics of the Baltic economies. The existing sectoral export pattern of the Baltics is indeed largely focused on low-tech intensity goods, which face a relatively weak world demand.

Looking ahead, it will be hard for the Baltics to sustain past rates of export penetration. Not only is the export stimulus arising from the deepening of trade integration with the EU largely over, but unlike in the past, the current geographical destination of Baltics exports is not likely to play a favourable role in the foreseeable future as it did in the past. Upgrading the export mix towards medium and high-technology segments will be key to ensure that export dynamics benefit from world export demand where it is more dynamic.

Furthermore, the issue arises whether the inevitable process of adjustment in light of cumulated external imbalances could conflict with the need to support the growth potential of the Baltic economies and which policies are needed to make such adjustment process growth-friendly, issues that are discussed in the next section of this chapter.

5.5. THE OUTLOOK FOR POTENTIAL GROWTH AND IMPLICATIONS FOR POLICY

Recovering from the current recession and fostering external adjustment are among the major challenges currently facing the Baltic economies. The following section of the study discusses the outlook for potential growth in the medium-to-long term and addresses the issue of the role of policies in ensuring that the potential for sustained growth is adequately exploited in the years to come. It also discusses the interplay between the objectives of re-launching potential growth and favouring the adjustment of the trade and the current account balance and which policy frameworks help in limiting possible trade-offs and exploiting synergies.

5.5.1. Sources of potential growth looking ahead

Labour inputs

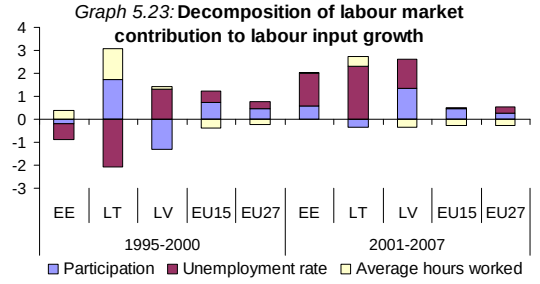
Labour inputs growth was among the factors that played a major role in the growth pick-up in the Baltics starting from the early 2000s in comparison with other country groups. The comparatively strong contribution of labour inputs to growth potential was partly cyclical, partly structural, related to falling NAIRU following transition and rising participation rates (Graph 5.23), notably for the young (partly as a result of rapidly rising wages and salaries) and the elderly (which was to some extent an outcome of pension and tax-benefit reforms).

In the years ahead, the scope for further growth impulses from labour inputs appears relatively limited. Sharp increases in unemployment can be expected to be accompanied by withdrawal of the least attached workers from the labour market. Baltic countries' labour markets have proven to be rather flexible and reacted quite fast to the changes in economic fortunes. However, the latent problem of long-term unemployment which was greatly alleviated due to the economic boom concentrated in low-skilled industries (e.g. construction) is

([102]) Underlying current account figures in Graph 5.26 adjust for effects of the cycle and for the lagged impact of changes in REER. The impact of the cycle is taken into account by adding the product of the import share times the output gap to the current account / GDP ratio. This adjustment permits adding (deducting) any reduction in the current account balance associated with higher (lower) imports due to a positive (negative) output gap (the hypothesis is that the elasticity of imports to income is relatively constant and does not fluctuate significantly over the cycle). Following Bayoumi and Faruqee (1998), the impact of lagged REER changes is accounted for by adding a fraction of the impact of current and one-period changes in the REER on import and export quantities.

likely to reappear as it is precisely these industries that are most hit by the current crisis.

Graph 5.23: **Decomposition of labour market contribution to labour input growth**



Source: LAF database.

Additionally, the negative impact on the growth of working population due to aging will continue and be further aggravated by two tendencies. First, the coming to an end of the positive impact on the working age population exercised in the recent past by the entry into the labour force of the large cohorts of the 1990s. Second, risks of increased outward migration triggered by the deep recession.

Capital deepening

As discussed previously, capital accumulation was a major source of potential growth in the past in all the Baltic economies, notably the mid-2000s, although gross fixed capital formation partly concerned dwellings and residential housing which is unlikely to add to the output potential.

During the current recession, the contribution of capital deepening to potential growth is estimated to be rapidly falling, but comparatively less strongly compared with TFP, so that it is assessed to be the major source of potential growth at the current juncture.

Looking ahead, investment rates are expected to fall as compared to the past decade. Several factors play in this direction. First, high investment rates were the result of high marginal returns to capital, which are likely to have progressively fallen with the increase in the overall capital stock in the economy.

Second, high investment rates in the past were partly related to post-transition structural transformations. In this respect, some capital investments were related to sectoral change, others were justified by the need to replace obsolete capital goods in the manufacturing sector and substitute poor business and residential real estate. These post-transition investment dynamics are expected to slow down considerably in the years to come.

Third, investment financing was to a large extent financed from abroad. Looking ahead, the room for foreign financing appears limited in light of the ongoing adjustment of current account balances. In particular, cross-border bank lending, which constituted the larger fraction of foreign capital inflows, is already contracting and expected to stabilise at a lower level compared with past years (see above). In light of historically low saving rates in the Baltic economies, the ongoing current account adjustment is expected to weigh negatively on capital deepening in the medium term.

Total factor productivity

Growth in total factor productivity is estimated to have been the major source of potential growth in the Baltics until the mid-2000s and has exhibited a comparatively very strong performance compared with other New Member States during the whole post-transition period.

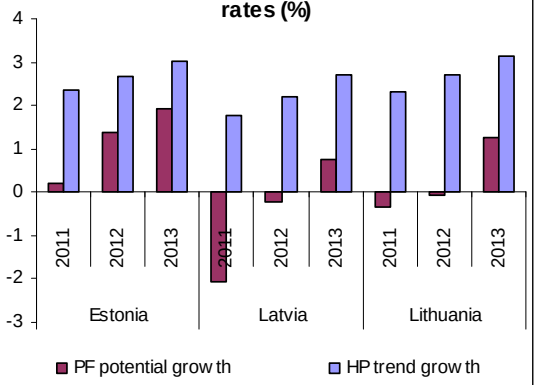
Part of the very strong performance in terms of TFP growth of the Baltic economies was associated with transition-related structural transformations that led to reduced "x-inefficiency" and increased allocative gains. Although in the Baltics the transfer of resources out of agriculture and mining did not take place to the same extent as other ex-transition New EU Member States, aggregate productivity gains arising from inter-sectoral re-allocation of production factors are unlikely to materialize in the future on the same scale as in previous years. While gains from shifts to dynamic, high value-added production within broadly-defined industrial aggregates are likely to be still relevant, prospective gains from broad sectoral shifts into manufacturing and services do not appear comparable with those achieved in the past. Moreover, although the share of employment in agriculture in the Baltics is still high, and there is room for further employment shifts out of the primary sector, the productivity gain from moving out of agriculture has been estimated lower than that benefiting Southern EU countries after accession (Caselli and Tenreyro, 2005).

Conversely, in the future there appears to be room for TFP gains associated with the adoption of superior technologies and innovation. The evidence available for countries that joined the EU and converged towards income per-capita levels of previous incumbent countries shows that a considerable share of labour productivity growth in these countries took place within industries rather than as a result of between-industry reallocation (Caselli and Tenreyro, 2005). However, the extent to which the Baltic economies will be able to reap such potential benefits will depend to a large extent on adequate policy frameworks (see below).

5.5.2. Medium-term quantitative assessment

With the purpose of adding a quantitative dimension to the previous arguments, potential growth projections are carried out based on three alternative approaches, namely projections of the production-function approach, HP filtering and out-of-sample predictions building on growth regressions. Graph 5.24 shows the results of the medium-term projections of the production function approach and of HP-filtered trend growth.

Graph 5.24: **Potential and trend growth rates (%)**



Note: PF potential growth is based on a production function approach. HP trend growth rates are calculated using the Hodrick-Prescott filter. *Source:* Elaborations on AMECO data.

Projections appear to largely depend on the chosen methodology, with simple filtering providing a more optimistic picture (projected growth rates close to 3% in 2013) than estimates based on a production function approach (values below 2% in 2013 in all countries). Potential growth-based projections are based on extrapolations of the components of the production function by means of autoregressive models, which tend to put a relatively high weight on the crisis years, while HP-filter-based projections extrapolate data filtered on a longer horizon.

An alternative approach to assess medium-term growth prospects is based on out-of-sample predictions from growth regressions. To that purpose, the growth regressions displayed in Table 5.1 are used to calculate out-of-sample predictions of potential growth rates based on long-term determinants. ([103]) The explanatory variables population growth, openness ratio, terms-of-trade growth as well as the institutional variables were assumed constant. The initial levels of per capita GDP per 5-year sub-period were iteratively calculated, using the estimated growth rates from the respective previous periods. The ratio of gross capital formation to GDP was projected on the basis of per capita GDP using an elasticity of investment to real per-capita GDP estimated across a large cross-section of countries. ([104])

Results are shown in Graph 5.25. For the period 2015-2019, predictions based on the baseline regressions in Table 5.1 point to growth rates close to 2.5% for all Baltic economies. This projected fall in growth rates is consistent with ongoing convergence and falling investment rates as per capita income increases. When the projections are obtained abstracting from effects likely to be Baltic-specific the projected growth rates rise to about 5% (prediction b) in Graph 5.25). ([105]) While growth rates in the Baltic countries exceeded those in the remaining NMS during the accession boom, Baltic growth slumped more strongly than in non-Baltic NMS in the wake of the financial crisis. This recent growth experience explains the relatively stronger predicted growth rates when abstracting from Baltic-specific factors. Taken together, medium-term growth projections, irrespective of the methodology employed,

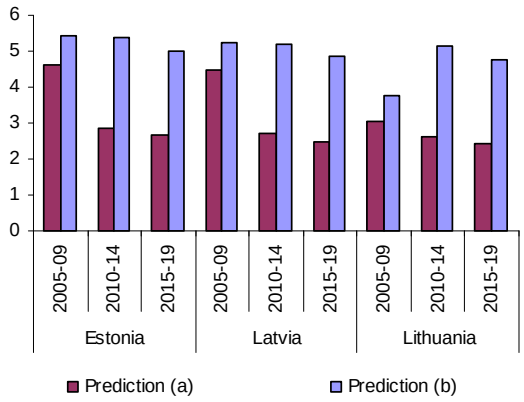
([103]) It needs to be taken into account, however, that the growth regression predictions are based on long-term determinants and judgemental assumptions and can therefore have only an indicative character.

([104]) The cross-country sample shows that gross capital formation is significantly and negatively associated with per capita income. The obtained values were cross-checked with the averages of countries with similar per-capita GDP. In addition, they were compared to the experience of earlier enlargements (Greece 1981, Spain and Portugal 1986).

([105]) The prediction in this case uses fixed effects for the NMS other than Baltics States only, without including Baltic-specific effects (regression (2) Table 5.1).

indicate that future growth rates in the Baltic countries are unlikely to return to overheated pre-crisis levels. Indeed, in the presence of unchanged policies and structural conditions, potential growth is expected to fall in the medium term.

Graph 5.25: **Out-of-sample predictions from growth regressions (%)**



Note: Preditions (a) are based on regression specification (1), predictions (b) draw on regression (2), applying the non-Baltics NMS coefficient to abstract from transitory, Baltic-specific factors. Actual data for 2009 refer to AMECO forecasts. *Source:* Elaborations from regressions in Table 5.1.

5.5.3. The role of policy frameworks

Adequate policy frameworks could to some extent help to mitigate the expected fall in potential growth for the Baltic economies. A first set of policies would be aimed at containing the falling contribution of *labour inputs* to growth. In particular, reforms in the education system aimed at tackling skill mismatches could help in reducing structural unemployment. In particular, there appears to be room for progress by raising the supply of medium skills and vocational training. Moreover, tax-benefit systems could be geared to further improve participation rates and prevent outward migration.

How much *capital deepening* will contribute to the growth potential will first of all depend on the speed and success of policies aimed at restoring the normal functioning of financial markets. By how much and for how long deleveraging by domestic and foreign banks will prevail will be depend on the capacity of policy authorities to ensure adequate regulation and supervision.

Policy frameworks will matter especially for ensuring that *TFP growth* rates are in line with those observed with successful catching-up countries.

As stressed previously, part of the potential TFP gains could come from *reallocation of resources* towards higher-value-added, higher-growth activities. In this respect, a role will be played by *product and factor markets* that prove responsive to price signals and by regulations that do not hinder the reallocation of production factors. The Baltics score high in terms of labour market flexibility indicators (Table 5.4) and labour mobility, notably cross-border mobility, has been historically relatively high in these countries.

Table 5.4:
Assessment of selected policy frameworks in the Baltics

Policy areas	Estonia	Latvia	Lithuania
Labour market			
Active labour market policies	-7	-5	-3
Making work-pay: interplay of tax and benefit system	6	-5	3
Labour taxation to stimulate labour demand	4	2	-1
Job protection and labour market segmentation/dualisation	9	8	9
Policies increasing working time	18	10	11
Specific labour supply measures for women	-3	0	-2
Specific labour supply measures for older-workers	7	4	1
Wage bargaining and wage-setting policies	-17	-11	-10
Immigration and integration policies	10	8	10
Labour market mismatch and labour mobility	-12	6	2
Product and capital market regulations			
Competition policy framework	6	-8	-1
Sector specific regulation (telecom, energy)	10	-7	-6
Business environment - Regulatory barriers to entrepreneurship	5	1	2
Business Dynamics - Start-up conditions	-1	-2	3
Financial markets and access to finance	-6	-5	-10
Market integration - Openness to trade and investment	13	6	5
Innovation and knowledge			
R&D and Innovation	-11	-17	-11
ICT	7	-7	-2
Education and life long learning	4	-2	4

Notes: the scores are obtained as differences of the satndardised value of a composite synthetic indicator of policy and performance in each area compared with the EU27 weighted. *Source:* Lisbon Assessment Framework, 2008 update (http://ec.europa.eu/economy_finance/db_indicators/db_indicators14998_en.htm). See European Commission (2008b) for detailes on the policy and performance indicators considered and detailes on the methodology.

Although the banking sector grew dramatically in the past two decades, the degree of financial development is still low as compared with the rest of the EU and there appears to be room for an

improved role for financial intermediaries in channelling resources towards productive activities (Table 5.4). ([106])

Regarding product market regulations, whether the current state of policies is more or less growth-friendly varies substantially among the Baltic countries. In all the Baltic economies, regulatory barriers to entrepreneurship and start-up conditions do not appear to be substantially more burdensome to new entrants as compared with the rest of the EU. Regarding competition policy and the regulation of network utilities, Estonia ranks relatively high while Latvia and Lithuania (regarding mainly the regulation of network utilities) lag behind (Table 5.5).

Table 5.5:
FDI positions by sector (% of total FDI)

	Estonia		Latvia		Lithuania	
Sector	2007	2000	2007	2000	2007	2000
Financial intermediation	31.3	22.0	25.8	21.1	17.0	15.7
Real estate	28.1	5.9	22.7	10.2	7.9	4.8
Manufacturing	15.3	22.0	9.4	16.8	38.1	30.0
Low-tech	*10.9*	*14.5*	*8.0*	*12.6*	*8.0*	*19.1*
Medium-tech	*2.0*	*4.0*	*0.8*	*2.4*	*7.8*	*6.0*
High-tech	*1.8*	*1.5*	*0.5*	*1.4*	*0.5*	*1.4*
Petroleum	*0.0*	*0.0*	*0.0*	*0.0*	*18.7*	*0.4*
Manuf. n.i.e.	0.7	1.2	0.1	0.4	3.0	3.2
Wholesale, retail trade	12.9	16.3	12.4	21.6	10.6	23.1
Transport and communication	4.5	25.6	7.9	19.5	12.7	19.7
Electricity, gas, water	3.1	2.1	7.3	4.6	9.3	1.1
Construction	2.0	1.5	1.7	0.6	1.7	0.7
Others	2.8	4.7	12.8	5.5	2.7	4.9
Total	100	100	100	100	100	100

Source: National central banks.

Part of the potential TFP gains will be linked to the *adoption of advanced technologies*, and to the ability of firms to improve upon existing production techniques and working methods and to carry out product and process innovation.

Progress in terms of technological adoption will depend, inter-alia, upon *supportive tax treatment* for the purchase of technologically advanced equipment and the availability of the necessary *physical and human capital infrastructure* to ensure absorption capacity. Although the average level of educational attainment of the population is relatively high in the Baltic countries, further efforts are needed to make education and training systems more responsive to labour market needs. ([107]) Measures will also have to be devised to contain skill mismatches associated with the emigration of skilled workers to the EU-15 countries. ([108]) Developing adequate workforce skills will be crucial to ensure an upgrading of the innovation potential of the Baltic economies. In this respect, it needs to be stressed that apart from the availability of resources allocate to education, a key role will be played by improved governance of universities and research institutions. Moreover, in light of their relatively high educational attainment, a priority for the Baltic economies appears to be that of improving the matching between the supply and demand of skills rather than raising average years of schooling.

Innovation output relates to a large extent to the willingness of firms to carry out *research and development investments*. R&D investments by firms would also be supported by adequate tax and benefit systems and by a full exploitation of synergies with universities and research institutions. It needs to be stressed, however, that substantial progress with respect to the current sub-par performance of the Baltics in terms of R&D policies and output would be achieved only if improved incentives at the firm level are complemented by conditions that permit the transition to technologically-intensive sectors.

Scope for fostering TFP growth will to an important extent be linked to the capacity of small open economies like the Baltics to attract *FDI in dynamic sectors*, thus benefiting from technological spillovers and the dissemination of superior managerial practices. In this respect, the past experience with FDI inflows shows that FDI was directed mostly towards the service sector and notably in the real estate sector where the room for technological spillovers is limited (see Table 5.5). Additionally, the share of FDI directed towards high-tech manufacturing sectors was relatively low

([106]) In Table 5.4 the very low ranking given to wage-bargaining and wage setting policies in the Baltic countries is mostly due to the lack of wage moderation in the recent past. Note that the presence of relatively highly decentralised bargaining systems and relatively low unionisation would however, imply relatively supportive institutions during adjustment where wages and salaries need to adjust downward. On labour mobility and migration patterns in the Baltics see, e.g., Kielyte and Kancs (2002).

([107]) According to Eurostat data, the share of population having completed at least upper secondary education is around 85-90% compared to 75% in the new Member States and 70% for the EU-15 average.

([108]) Heinz and Ward-Warmedinger (2006).

and did not show a tendency to rise over the past decade. Looking forward, adequate physical infrastructure and competitive skilled workforces will be key factors for redirecting FDI inflows towards technologically intensive activities.

Overall, although potential growth prospects do not appear encouraging for the Baltics over the short-to-medium term, the prospects will depend to an important extent on the policy framework that will be put in place over the coming years. A positive note comes from the initiatives carried out by each of the Baltic countries that appear to go in the direction of creating better conditions for growth in the years ahead (Box 5.1). One important instrument to foster export growth and investment into infrastructure lies in the frontloading of EU cohesion funds, given that there is limited room for additional stimulus in the presence of severely strained public finances and the need to implement fiscal austerity measures (see also Chapter 2).

5.5.4. Can the Baltics adjust and grow?

After having accumulated large stocks of net foreign liabilities, the Baltic economies are currently undergoing a process of adjustment of their current account positions. Key questions arise regarding how this process will impinge on their future growth prospects.

The role of structural adjustment

The compression in domestic absorption accompanying the rebalancing of the current account will inevitably imply subdued growth conditions in the short to medium term. Weak growth conditions will be largely cyclical but, as discussed, repercussions are expected also in terms of potential growth, notably in light of reduced financing for productive investment. Investment could be depressed also as a result of negative balance-sheet effects arising from falling euro-denominated incomes coupled with large net foreign liabilities expressed in euro.

In the medium-to-long term, further negative implications of the adjustment process for growth could be expected. Falling capital deepening related to reduced financing from abroad could have indirect effects on growth potential via increased unemployment rates, since these could in turn lead to a reduced labour force (including due to outward labour migration) and higher NAIRU (via increased labour market mismatch and hysteresis effects). Additionally, the tight fiscal policies accompanying the rebalancing of the current account could also have implications, notably in terms of reduced margins for financing growth-enhancing policies out of the government budget and rising tax burdens, with consequent reduced incentives to supply labour and carry out investment.

Over the longer term, however, other elements of external rebalancing could have positive implications for the growth potential. First, wage moderation, which is functional to raise price competitiveness, would over time also raise firms' profitability and restore investment incentives. Furthermore, as the Baltics, like other emerging economies, are also characterised by a phenomenon of "capital account dominance", increased competitiveness would contribute to increasing the attractiveness of the Baltic economies to foreign investors. Additionally, there are synergies from the policy frameworks necessary to restore price competitiveness and upgrade the export mix to those in support of potential growth.

Finally, and more fundamentally, external adjustment will imply a shift of resources out of the non-tradable sector and into the tradable sector. For emerging small open economies like the Baltics, net exports are a primary source of demand. However, the past boom phase has coincided with a rising real effective appreciation of the currencies of these countries and with a resource allocation tilted towards non-tradable activities, notably housing. In this respect, external adjustment would help in restructuring the economies towards the sectors where prospects for demand growth are larger. Additionally, tradable activities are expected to be on average those where durable TFP gains are the largest. This channel for the effects of real appreciation on growth has been subject of recent research (e.g., Rodrik, 2008).

Box 5.1: **Selected recent policy initiatives with potential positive impact on investment and productivity in the Baltics**

Estonia

- Public infrastructure investment carried out in the transport and energy sector recent years with the support of EU structural funds – *Approved in the framework of the Development Plan.*
- Changes in income tax legislation introduced in 2008 which contribute to contain the tax burden – *Approved by Parliament in the budget for 2008.*
- Measures to strengthen R&D performance: (i) creation of technology centres at university level; (ii) development of competence centres focused on applied research; (iii) increase in public sector R&D expenditure – *2008 Lisbon Programme*.
- Educational reforms, in particular those related to vocational education, are also being carried out – *Not yet implemented.*
- Estonian Development Fund, established in 2007 with the purpose of providing risk capital for start-ups – *Established by the Estonian Parliament in April 2007.*

Latvia

- Reduction on tax on invested earnings – *Approved by Parliament in the budget for 2009*.
- Prolongation of the period during which accrued losses can be transferred across years – *Originally adopted in the context of the May 2008 Stabilisation Plan, extended in the 2009 budget approved by Parliament.*
- Accelerated amortization regime for equipment investment embodying new technology – *Originally adopted in the context of the in the May 2008 Stabilisation Plan, extended until 2013 in the 2009 budget approved by Parliament.*
- Increased amortization for non-material investments resulting patent registrations – *Approved by Parliament in the 2009 budget and valid until 2011.*
- Elimination of tax on profits from the sale of used technological equipment conditional on replacement with technologically more advanced equipment – *Approved by Parliament in the 2009 budget and valid until 2011.*
- EU-funds supported programmes aimed at, inter-alia, establishing "competence centres", attracting high skilled emigrants, and exploring new export markets with the help of state-supported export guarantees – *Funding agreement with the European Investment Fund within the 2007-2013 Structural Funds' planning period.*

Lithuania

- Profit tax exemptions for scientific research and experimental expansion – *Established by Parliament in April 2008. Further revisions of profit taxation so as to increase R&D are being discussed.*
- Productivity and competitiveness enhancing measures in the framework of the Investment Promotion Programme co-financed by EU structural funds (physical infrastructure, human resources developments) – *Adopted by the Parliament in December 2007, the Investment Promotion Programme is co-financed by EU Structural Funds.*
- Education system reform aiming at intensifying competition in the higher education sector and at reforming governance of higher education institutions – *Politically agreed in 2007 and the object, in 2009, of a presidential resolution for a reform as of the school year 2009/2010 – in the updated National Reform Programme, part of the Lisbon process.*
- Concession allowing companies investing in substantial technological renewal to reduce their payment of profit tax by 50% – *Adopted by the Parliament in December 2008.*

Table 5.6 shows that measures of currency misalignment when added as explanatory factor to growth regressions indicate that current misalignment negatively affects growth,

controlling for other factors. The interpretation is that growth possibilities are reduced by the fact that the high value of the relative price of non-tradable goods which accompanies currency real over-valuation also implies that resources are employed in activities with lower growth potential (non-tradables). ([109])

Table 5.6:
Misalignment and growth regressions

	(1)	(2)	(3)	(4)
Misalignment	-0.02	-0.06***	-0.02	-0.06***
	(-1.14)	(-3.12)	(-1.26)	(-2.62)
Misalignment*openness		-0.09***		-0.07***
		(-3.72)		(-2.63)
Misalignment*per capita GDP			0.03**	
			(2.18)	
Misalignment (lagged)				0.02
				(1.61)
Log initial per capita GDP	-1.83***	-1.84***	-1.56***	-1.68***
	(-5.90)	(-5.98)	(-6.26)	(-4.31)
Population growth	-1.00***	-0.97***	-1.02***	-0.76***
	(-3.87)	(-4.11)	(-4.10)	(-2.58)
Gross capital formation	0.13***	0.16***	0.13***	0.16***
	(4.92)	(5.84)	(4.59)	(5.04)
Openness (standardised)	0.49***	0.37***	0.55***	0.30
	(3.33)	(2.67)	(3.72)	(1.53)
Terms of trade growth	0.09**	0.09**	0.08**	0.06
	(2.08)	(2.40)	(2.09)	(1.61)
Quality of legal system	0.30**	0.27**	0.30**	0.29
	(2.21)	(2.05)	(2.38)	(1.50)
Freedom of trade	0.13	0.15	0.10	0.19
	(0.94)	(1.08)	(0.67)	(1.01)
Quality of regulation	0.01	0.04	-0.01	0.01
	(0.02)	(0.22)	(-0.01)	(0.02)
Sample size	228	228	228	180
Adjusted R^2	0.56	0.65	0.64	0.57

Notes: Misalignment is expressed as the percentage deviation of the real effective exchange rates from ist equilibrium value, estimated with the current account norms approach. Overvaluation is thus denoted by positive numbers. For definition of remaining variables and estimation method see *Notes* to Table 5.1.

The Table also shows that this effect is stronger the more open are the economies and the lower is their GDP per capita. Interestingly, it also appears that the negative impact of currencies' over-valuation tends to fade away over time. Past periods of over-valuation actually tend to be associated with faster growth, other things being equal, indicating that, on average, the correction of previous external imbalances and the recovery of price competitiveness exert *per-se* a positive impact on growth. ([110])

The role of exchange rate arrangements

How the undergoing external adjustment will interact with growth prospects will crucially depend on exchange rate policies, on market developments, and on the extent of possible pressures on exchange rate markets that could destabilise the current pegs.

In the recent debate, it has been emphasised by academic observers that, over the long-run, recovering price competitiveness via disinflationary processes while keeping the current pegs or via nominal depreciation would lead to the same outcome. In both cases, improved net exports would come at the price of reduced income expressed in foreign currency which, in light of high debt denominated in euros, would imply negative wealth effects impinging on investment and consumption growth. While the statement is in principle correct in terms of "comparative statics analysis", the final outcome will be largely driven by the way the adjustment process unfolds.

A number of arguments play in favour of maintaining the current exchange rate regime. Although nominal currency depreciation would in principle stimulate net exports, typical features of the Baltic economies (including a structurally high import content of exports and a potentially strong feed-back of currency depreciation to inflation in light of the large share of imports in aggregate expenditure) and the peculiar current context characterised by unusually weak export demand could play against significant and lasting output stimulus via exchange rate depreciation.

([109]) For the sample, the specification and the estimation method see Table 5.1. Misalignment estimates are computed using deviations (current account gaps) of underlying current accounts from current account norms. Underlying current accounts are adjusted for HP-filtered output gap estimates. Current account norms are predictions from regressions of non-overlapping 4-year averages of current account / GDP ratios on: general government budget balance/GDP ratio (source AMECO, complemented by IMF); old-age dependency ratio (AMECO, complemented by United Nations); real GDP per-capita PPP, ratio with respect to US (Penn World Tables extrapolated with AMECO data); real GDP per capita growth (AMECO, complemented by World Bank); net foreign asset/GDP ratio (AMECO, complemented by national Central Banks and Statistical Institutes and Lane and Milesi-Ferretti, 2007); oil balance (percentage difference between oil barrels per year produced and consumed, source BP and US Energy Information Administration). The current account gaps are turned into misalignment estimates using 1.5 and 1.25 as values for, respectively, export and import elasticities.

([110]) The misalignment variable is measured at the beginning of the 5-year periods over which growth and most of the explanatory variables are measured. The lagged misalignment variable therefore represents the value of the misalignment prevailing at the beginning of the previous 5-year period.

Crucially, depreciating the exchange rate would also entail more sudden and more strongly negative balance sheet effects on the household and corporate sector. This would impact private consumption and productive investment directly and indirectly via widespread deleveraging and reduced credit availability ensuing from increased default rates and larger expected losses for the banking sector.

A further issue with abandoning the current exchange rate regime is the general loss of confidence in the macroeconomic stability of the economy. Account must also be taken that the growth implications of possible nominal devaluation / depreciation scenarios would crucially depend on subsequent policy responses and that abandoning the current peg for any of the Baltics could possibly trigger contagion dynamics to neighbouring countries and possibly lead to competitive devaluations.

Furthermore, one has to factor in that keeping the exchange rate fixed may offer stronger incentives towards more structural measures to improve competitiveness.

Finally, re-pegging the exchange rate may not be necessary to re-establish exchange rate levels in line with fundamentals because, in light of the recent substantial reduction of current account imbalances and ongoing correction of price dynamics, currency misalignment is by now expected to be already corrected or under correction in the three Baltic economies.

Under these circumstances, national ownership of the chosen strategy is key: the risks and rewards associated with alternative exchange rate arrangements need to be consistent with national priorities. In this respect, the Baltic economies have repeatedly reiterated their commitment towards the currency peg that has been a cornerstone of their macroeconomic model since shortly after transition and have already taken measures consistent with their maintenance.

5.6. CONCLUSIONS

The Baltic States were among the miracle EU economies in terms of growth performance in the past decade. The exceptional growth performance of the Baltics was, however, doomed to be temporary, being to a large extent driven by overheating dynamics fuelled by foreign capital inflows. This development was favoured by a low cost of capital and high profitability of FDI (see Chapter 2). The improvement in growth performance was associated with very large TFP gains and high rates of increased capital deepening, with increased contribution to growth from labour inputs (largely due to falling unemployment rates and increased participation) playing a role only starting at the crossroad of the past decades. Much of the growth took place in the service sector, while technologically-intensive manufacturing industries had a relatively moderate contribution to growth. The growth rates recorded in the past decade appear to be considerably above the estimated potential growth rates, irrespective of the specific methodology employed.

In perspective, the potential growth performance of the Baltics is expected to fall compared with the recent past. The room for further productivity gains related to resource reallocation after the transition shock are narrowing and investment financing from abroad is likely to become not as easily available as before the financial crisis.

Potential growth prospects in the Baltics will largely depend on the quality of the policy frameworks put in place to support the supply of capital and productivity gains arising from resources shifting towards technologically-intensive activities, the adoption of up-to-date production technologies, and strengthened innovation performance.

Maintaining tax-benefit systems compatible with incentives towards labour supply would help fostering the growth potential via increased labour inputs, including by limiting the risks of outward migration. Strengthened vocational training and policies to re-train workers could help in containing structural unemployment.

The extent to which investment will contribute to the growth potential will depend substantially on the success of policies aimed at restoring the normal functioning of financial markets. The degree of deleveraging by domestic and foreign banks will be considerably affected by the capacity of policy authorities to ensure adequate regulation and supervision and deal with hidden risks on banks' balance sheets.

Policies to support total factor productivity growth should focus, inter alia, on:

- ensuring taxation system that are supportive of investments in technologically advanced equipments;
- maintaining labour and product market regulations that do not hinder the process of resource reallocation towards higher-value-added activities;
- building and improving the physical and human capital infrastructure necessary to create the conditions for faster adoption of new technologies, enhance the innovation potential and attract FDI in dynamic sectors;
- strengthening incentives towards R&D activities;
- ensuring balanced potential growth by directing investment also into the tradable sectors.

Unavoidably, the sustainable correction of external imbalances would dent on growth in the nearer term. The compression in domestic absorption which is prompting the rebalancing of the current account will inevitably imply subdued growth conditions for some time ahead. Additionally, the tight fiscal policies needed to close the significant fiscal gap that emerged during the economic crisis will imply reduced margins for financing growth-enhancing policies out of the government budget and rising tax burdens.. In this respect, a more significant and front-loaded absorption of EU structural cohesion funds in the Baltic countries would support infrastructure, technological and human investment at a moment when these countries face very difficult times.

In the longer term, however, structural adjustment could exert a positive role via improved price competitiveness, stronger investment incentives, and increasing the attractiveness of the Baltic economies to foreign investors. The adjustment would likely imply shifting resources towards tradable activities, namely those where prospects for demand growth are larger and where durable TFP gains are more likely.

Including in light of the commitment of the Baltic economies to their currency pegs, completing the external adjustment process in the Baltic economies require measures that ensure sustainable progress in terms of price competitiveness, and that favour the upgrading of the export mix towards dynamic industries. Re-assuring signals have been sent in this direction, with measures being recently implemented or in the pipeline.

REFERENCES

Acemoglu, D., S. Johnson and J. Robinson (2005), 'Institutions as the fundamental cause of long-run growth', in P. Aghion and S. Durlauf (eds.), *Handbook of Economic Growth*, Elsevier, Amsterdam.

Afonso, A., L. Schuknecht, V. Tanzi (2006), 'Public sector efficiency: evidence for new EU Member States and emerging markets', ECB Working Paper, No 581.

Aghion, P. and P. Howitt (2005), 'Growth with quality-improving innovations: an integrated framework', in P. Aghion and S. Durlauf (eds.), *Handbook of Economic Growth*, Elsevier, Amsterdam.

Alesina A., Wacziarg R. (1998), Openness, country size and government, *Journal of Public Economics* 69 (1998)

Anderton, R. (1999), 'Innovation, product quality, variety and trade performance: an empirical analysis of Germany and the UK', *Oxford Economic Papers*, 51, 152-167.

Andres, J., R. Domenech, A. Fatas (2008), 'The stabilizing role of government size', *Journal of Economic Dynamics & Control* 32 (2008) pp. 571-593.

Arpaia, A., A. Turrini (2008), 'Government expenditure and economic growth in the EU: long-run tendencies and short-term adjustment', European Economy Economic Papers, No 300.

Arpaia, A., G. Carone (2004), 'Do labour taxes (and their composition) affect wages in the short and the long run?', European Economy Economic Papers, No 216.

Arratibel, O., F. Heinz, R. Martin, M. Przybyla, L. Rawdanowicz, R. Serafini and T. Zumer (2007), 'Determinants of growth in the Central and Eastern European EU member states – a production function approach', ECB Occasional Paper, Series, 61.

Baltzer, M., L. Cappiello, R. A. De Santis and S. Manganelli (2008), 'Measuring financial integration in new EU member states', ECB Occasional Paper, 81, March.

Bank of Lithuania (2006), *Financial Stability Review*, p. 58.

Barrios, S., A. Schaechter, (2009), 'Gauging by numbers: a first attempt to measure the quality of public finances in the EU', European Economy Economic Papers, No 382, July 2009.

Barro, R., X. Sala-i-Martin (2004), *Economic Growth*, MIT Press, London.

Bayoumi, T. and H. Faruqee (1998), 'A calibrated model of the underlying current account', in P. Isard and H. Faruqee (eds.), Exchange rate assessment. Extensions of the macroeconomic balance approach, IMF Occasional Paper, 167.

Beck, T., R. Levine and N. Loayza (2000), 'Finance and the sources of growth', *Journal of Financial Economics*, No 58, pp. 261-300.

Bems, R. and K. Hartelius (2006), 'Trade deficits in the Baltic States: how long will the party last?', *Review of Economic Dynamics*, 9 (1), 179-209.

Berengaut, J., A. López-Claros, F. Le Gall, J. A. Schiff, D. Jones, R. E. Stern, K. Westin, L. E. Psalida and P. Garibaldi (1998), 'The Baltic Countries: from economic stabilization to EU accession', IMF Occasional Paper, 173.

Bohn, H. (1998), 'The behavior of U.S. public debt and deficits', *The Quarterly Journal of Economics*, MIT Press, vol. 113(3), pp. 949-963.

Boissay, F., O. Calvo-Gonzalez and T. Kozluk (2006), 'Is lending in Central and Eastern Europe developing too fast?', paper presented at the conference 'Finance and consumption workshop: Consumption and Credit in Countries with Developing Credit Markets', Florence, 16-17 June 2006.

Borio E., I. Shim (2007), 'What can macro-prudential policy do to support monetary policy?', BIS Working paper, No 242, p. 22-26.

Böwer, U., and A. Turrini (2009) 'EU accession: a road to fast-track convergence?', European Economy Economic Papers No 393.

Brunila, A., M. Buti, J. in't Veld (2003), 'Fiscal policy in Europe: how effective are automatic stabilisers? *Empirica*, 30: 1-24, 2003.

Buti, M., C. Martinez-Mongay, K. Sekkat, P. van den Noord (2003), *'Macroeconomic policy and structural reform: a conflict between stabilisation and flexibility?'*, Cambridge University Press, 2003.

Calvo, G. (1998), 'Capital flows and capital-market crises: The simple economics of sudden stops', *Journal of Applied Economics*, 1, 35-54.

Camilleri G., Marie-Therese (2002) 'Policy pre-commitment and institutional design: a synthetic indicator applied to currency boards', OECD Economics Department Working Paper 330, ECO/ WKP (2002)16.

Caselli, F. and S. Tenreyro (2005), 'Is Poland the next Spain?', NBER Working Paper, 11045.

Cottarelli, C., G. Dell A. and I. Vladkova-Hollar (2005), 'Early birds, late risers, and sleeping beauties: bank credit growth to the private sector in Central and Eastern Europe and in the Balkans', *Journal of Banking and Finance*, 29, 83-104

Crespo-Cuaresma, J., M. A. Dimitz, D. Ritzberger-Grunwald (2002), 'Growth, convergence, and EU membership', OENB Working Paper, No 62.

De Grauwe, P. and G. Schnabl (2004), 'Exchange rate regime and macroeconomic stability in Central and Eastern Europe', CESifo Working Paper, 1182.

De Mooij, R., S. Ederveen (2006), 'What a difference does it make? Understanding the empirical literature on taxation and international capital flows', European Economy, No 261.

Debrun X., L. Moulin, A. Turrini, J. Ayuso-i-Casals, M. S. Kumar (2008), 'Tied to the mast? National fiscal rules in the European Union', *Economic Policy*, CEPR, CES, MSH, vol. 23, pp. 297-362, 4.

Denis, C., D. Grenouilleau, K. Mc Morrow and W. Röger (2006), 'Calculating potential growth rates and output gaps – A revised production function approach', European Economy Economic Paper, No 247.

Egert, B., P. Backe and T. Zumer (2006), 'Credit growth in Central and Eastern Europe – new (over)shooting stars?', ECB Working Paper, Series, 687.

Enoch, Ch. and Otker-Robe, I. (2007), *Rapid credit growth in Central and Eastern Europe. endless boom or early warning?*, IMF, Washington.

European Bank for Reconstruction and Development (2008), *'Transition report 2007: Growth in transition'*, EBRD.

European Central Bank (2005), 'Competitiveness and the export performance of the euro area', *Occasional Paper*, 30.

European Central Bank (2008a), 'Bond markets and long-term interest rates in non-euro area member states of the European Union', *Statistical Tables*, January.

European Central Bank (2008b), *'Financial integration in Europe'*, April.

European Commission (2002), The European Union Structure of Earnings Survey (SES 2002).

European Commission (2004a), 'Catching up, growth and convergence of the New Member States', *The EU Economy: 2004 review*, *European Economy*, 6.

European Commission (2004b), *Public Finances in EMU 2004*, *European Economy*, No 3.

European Commission (2006), *Public Finances in EMU 2006*, *European Economy*, No 3.

European Commission (2008a), *Public Finances in EMU 2008*, *European Economy*, No 3.

European Commission (2008b), 'The LIME assessment framework (LAF): A methodological tool to compare, in the context of the Lisbon Strategy, the performance of EU Member States in terms of GDP and in terms of twenty policy areas affecting growth', European Economy, Occasional Papers, No 41.

European Commission (2009a), The 2009 Ageing Report: Economic and budgetary projections for

the EU-27 Member States (2008-2060), European Economy, No 2.

European Commission (2009b), 'Taxation trends in the European Union, 2009 edition', Taxation trends.

Fabrizio, S., D. Igan and A. Mody (2007), 'The dynamics of product quality and International Competitiveness', IMF Working Paper, No 7/97.

Falcetti, E., T. Kysenko and P. Sanfey (2006), 'Reforms and growth in transition', *Journal of Comparative Economics*, 34, 421-55.

Fitch Ratings (2008), Bank systemic risk report, October.

Gali, J., R. Perotti (2003), 'Fiscal policy and monetary integration in Europe', CEPR Discussion Papers, 3933.

Giavazzi, F., M. Pagano (1990), 'Can severe fiscal contractions be expansionary? Tales of two small European countries', NBER Working Paper, No 3372.

Giudice, G., A. Turrini, and J. in't Veld, 2007. 'Non-Keynesian fiscal adjustments? A close look at expansionary fiscal consolidations in the EU', *Open Economies Review*, 18, 613-630.

Gorodnichenko, Y., J. Martinez-Vazquez, K. Sabirianova (2008), 'Myth and reality of flat tax reform: micro estimates of tax evasion response and welfare effects in Russia', NBER Working Paper, No 13719.

Heinz, F. F. and M. E. Ward-Warmedinger (2006), 'Cross-Border Labour Mobility within an Enlarged EU', ECB Occasional Paper, 52.

Hilbers, P. et al. (2005), Assessing and managing rapid credit growth and the role of supervisory and prudential policies, IMF Working Paper, No 151.

International Monetary Fund (2000), 'Pension reform in the Baltics', Occasional Paper, No 200.

International Monetary Fund (2007), 'Government Finance Statistics', Vol. XXXI, 2007, IMF.

International Monetary Fund (2009), World Economic Outlook, October 2009, IMF.

Iradian, G. (2007a), 'Rapid growth in the transition economies: Panel regression approach', IMF Working Paper, No 7/170.

Iradian, G. (2007b), 'Rapid growth in transition economies: Growth-accounting approach', IMF Working Paper, No 164.

Kattai, R., A. Kangur, T. Liiv and M. Randveer, (2003), 'Automatic fiscal stabilisers in Estonia: The impact of economic fluctuations on general government budget balance', Working Papers of Eesti Pank, No 11/2003.

Kattai, R., J. Lewis (2005), 'Hooverism, hyperstabilisation of Halfway-House? Describing fiscal policy in Central and Eastern European EU members', Working Papers of Eesti Pank, No 5/2005.

Keen M., Y. Kim and R. Varsano (2006), 'The "flat tax(es)": principles and evidence', IMF Working Paper, 6/218.

Kielyte, J. and Kancs, D. (2002), 'Impacts of international labour migration: empirical evidence for migration from the Baltic States to the European Union', *Journal of Baltic Studies*, Vol. 33, No 3, 2002, pp. 259-279.

King, R. and R. Levine (1993), 'Finance, entrepreneurship, and growth — theory and evidence', *Journal of Monetary Economics*, No 32, pp. 513–542.

Kiss, G., M. Nagy and B. Vonnak (2006), 'Credit growth in Central and Eastern Europe: trend, cycle or boom?', paper presented at the conference 'Finance and consumption workshop: Consumption and Credit in Countries with Developing Credit Markets', Florence, 16-17 June 2006.

Klein, M. (2005), 'Capital account liberalization, institutional quality and economic growth: theory and evidence', NBER Working Paper, 11112.

Knöbl, A., A. Sutt, and B. Zavoico, (2002) 'The Estonian currency board: its introduction and role

in the early success of Estonia's transition to a markets economy', IMF Working Paper WP/2/96.

KPMG: *'EU funds in Central and Eastern Europe'* (2008).

Lamine, B. (2009), 'Estonia: analysis of a housing boom', *ECFIN Country Focus*, Vol. VI, Issue 07.

Lane, P., and G. Milesi-Ferretti (2007), The external wealth of nations mark II: revised and extend estimates of foreign assets and liabilities, *Journal of International Economics*, 73, 223-50.

Lendvai, J., W. Roeger (2009), 'External deficits in the Baltic States 1995-2007: catching-up or imbalances?', mimeo, European Commission.

Luengnaruemitchai, P., S. Schadler (2007), 'Do economists' and financial markets' perspectives on the new members of the EU differ?', IMF Working Paper, 7/65.

Maeso-Fernandez, F., C. Osbat and B. Schnatz (2005), 'Pitfalls in estimating equilibrium exchange rates for transition economies', *Economic Systems*, 29 (2) 130-143.

Milana, C. (1988) 'Constant market share analysis and index number theory', *European Journal of Political Economy*, 4, 453-478.

Mourre, G. (2009), 'What explains the differences in income and labour utilisation and drives labour and economic growth in Europe? A GDP accounting perspective', European Economy Economic Papers, 354, European Commission.

Musgrave, R., P. Musgrave (1989), *'Public finance in theory and practice'*, Fifth edition, McGraw-Hill.

Nenovsky, N., K. Hristov, and M. Mihaylov, (2001) 'Comparing currency board automatic mechanism in Bulgaria, Estonia and Lithuania', *The Bilingual Journal of Interdisciplinary Studies*, Vol. XI, No 4, December 2001, 575-615.

Nicodème G. (2007), 'Flat tax: does one rate fit all?', *Intereconomics*, Vol. 42, No 3.

Organisation for Economic Cooperation and Development (2008), 'Tax and economic growth', Working Paper, No 620.

Rajan, R. G. and L. Zingales (1998), 'Financial dependence and growth', *American Economic Review*, 88 (3), American Economic Association, pp. 559-86.

Ratto M., W. Roeger, J. in 't Veld (2008), 'QUEST III: an estimated open-economy DSGE model of the Euro Area with fiscal and monetary policy', *Economic Modelling*, 26 (2009), pp. 222-233.

Richardson, J. (1971), 'Constant market share analysis of export growth', *Journal of International Economics*, 1, 227-239.

Rodrik, D (2008), 'The real exchange rate and economic growth', mimeo, JFK School of Government, Harvard University.

Rodrik, D. (1998), 'Why do more open economies have bigger governments?', *The Journal of Political Economy*, Vol. 106, No 5.

Rosenberg, B. C. and M. Tirpak (2008), 'Determinants of foreign currency borrowing in the New Member States of the EU', IMF Working Paper, 173.

Rzońca, A., P. Cizkowicz (2005), 'Non-Keynesian effects of fiscal contraction in New Member States', ECB Working Paper, 519/2005.

Scarpetta, S., A. Bassanini, D. Pilat and P. Schreyer (2000), 'Economic growth in the OECD area: recent trends at the aggregate and sectoral level', Economics Department Working Papers, No 248, OECD.

Schadler, S., A. Mody, A. Abiad and D. Leigh (2006), 'Growth in the Central and Eastern European countries of the European Union – a regional perspective', IMF Occasional Paper, 252.

Staehr, K. (2007a), 'Economic developments in the Baltic States: success and new challenges', Danmarks Nationalbank, Monetary Review.

Staehr, K. (2007b), 'Fiscal policies and business cycles in an enlarged euro area', Working Papers of Eesti Pank, No 3/2007.

Staehr, K. (2008), 'Estimates of employment and welfare effects of personal labour income taxation in a flat-tax country: The case of Estonia', Working Papers of Eesti Pank, No 3/2008.

Standard & Poor's (2008), The 2008 Fiscal Flexibility Index, Ratings Direct, July 2008.

Tirpak, M. (2007), 'Migration in the EU8 countries', IMF Regional Office in Warsaw.

Tornell, A. and F. Westermann, (2002), 'Boom-bust cycles in middle income countries: facts and explanations', CESIFO Working paper, No 755.

UNDP (2000 and 2007/2008), Human Development Report, New York.

World Bank (2006), EU-8 Quarterly Economic Report, May 2006.

World Bank (2009), Doing Business in 2009: Understanding Regulation, Washington, DC: World Bank Group.