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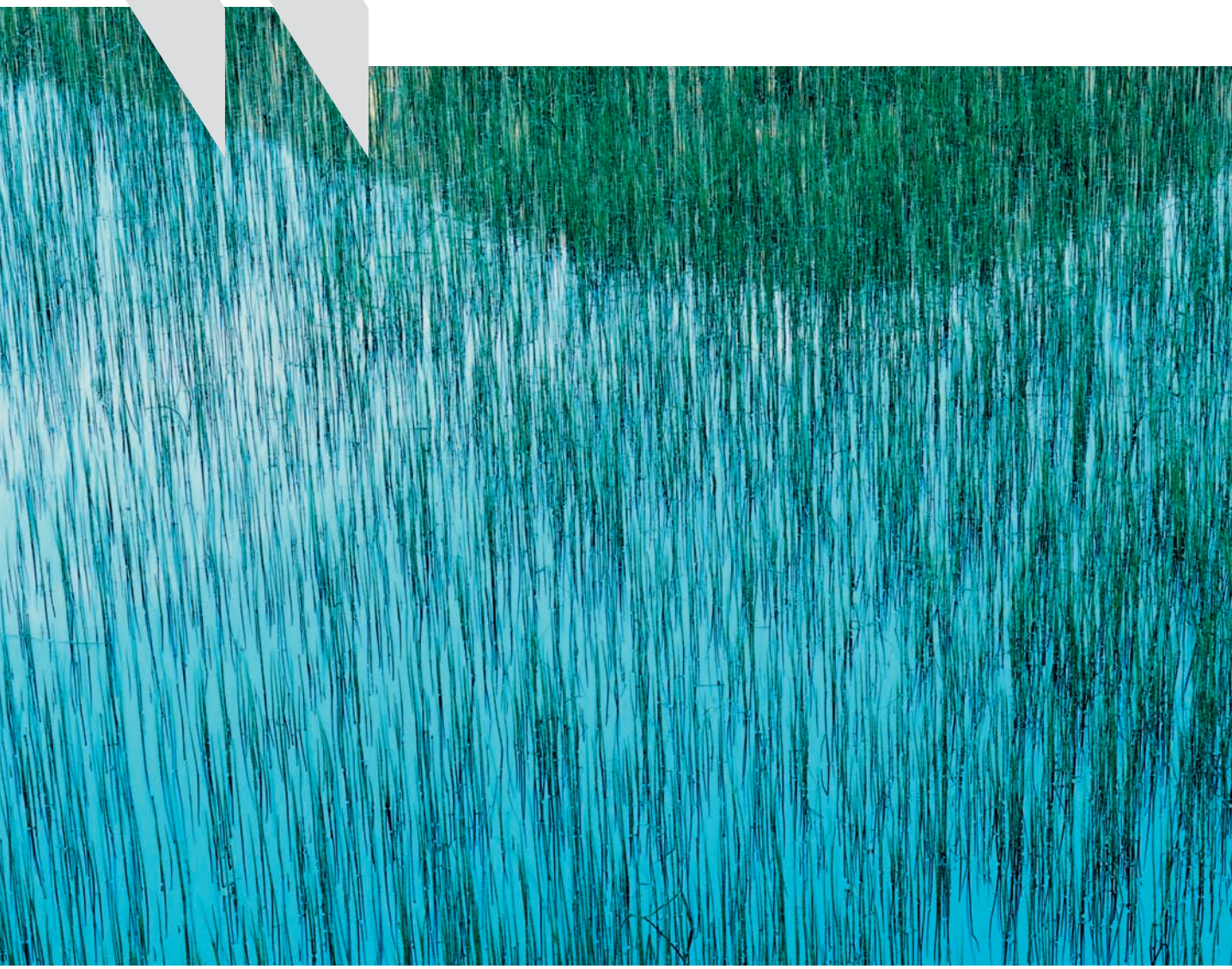

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On 16 May 2007, the OECD Council decided to open discussions with Estonia on accession to the Organisation and, on 30 November 2007, an Accession Roadmap, setting out the terms, conditions and process for accession was adopted [C(2007)101/FINAL].

In the Roadmap, the OECD Council requested a number of OECD Committees to provide it with a formal opinion. The Economic and Development Review Committee was requested to review Estonia's overall economic policies in order to provide a formal opinion on the degree of coherence of Estonia's policies with those of OECD member countries. In light of the formal opinions received from OECD Committees and other relevant information, the OECD Council will decide whether to invite Estonia to become a member of the Organisation.

The present Economic Survey of Estonia was prepared for the purposes of the accession review of Estonia. The draft report was discussed by the Economic and Development Review Committee on 26 January 2009, revised in the light of the discussions and finalised on 18 February 2009.

The draft report was prepared for the Committee by Zuzana Brixiova and Laura Vartia under the supervision of Andreas Wörgötter. Research assistance was provided by Margaret Morgan.

This is the first OECD Economic Survey of Estonia. This Survey is published on the responsibility of the Secretary-General of the OECD.

This book has...

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BASIC STATISTICS OF ESTONIA, 2007

LAND

Area (km^2)	45 227	Major cities (1 000 inhabitants)	
Agriculture, 2006 (%)	17	Tallinn, January 2008	398
Forest, 2006 (%)	49	Tartu, January 2008	102

PEOPLE

Population (1 000)	1 342	Employment, 2008 (1 000)	657
Inhabitants per m^2	30	Agriculture (%)	4
Natural increase in population (1 000)	–2	Industry (%)	35
Net immigration (1 000)	1	Services (%)	61

GOVERNMENT

Public consumption (% of GDP)	17	Coalition government, as at January 2009	Seats
General government total revenue (% of GDP)	38	Estonian Reform Party	31
General government deficit (% of GDP)	3	Union of Pro Patria and Res Publica	19
Public debt, Maastricht definition (% of GDP)	3	Estonian Social Democratic Party	10
		Total	60

PRODUCTION

GDP, current prices (billion EEK)	239	Origin of value added (%)	
GDP per capita (USD, current prices)	15 567	Industry	30
Gross fixed investment (% GDP)	32	Services	67

FOREIGN TRADE

Exports of goods and services (% GDP)	74	Imports of goods and services (% GDP)	85
Main exports (% of total merchandise)		Main imports (% of total merchandise)	
Manufactures	34	Machinery and transport equipment	35
Machinery and transport equipment	29	Manufactures	28
Mineral fuels, lubricants and related materials	12	Mineral fuels, lubricants and related materials	14

CURRENCY

Monetary unit: Estonian kroon (EEK)		Currency units per USD	
Currency units per euro (pegged)	15.65	Year 2008	10.69
		January 2009	11.77

Executive summary

Estonia grew faster than most emerging market economies during 2000-07, but it is now in a severe recession. While the initial reversal of GDP growth was caused by a collapse of domestic demand, at the current juncture Estonia is vulnerable to external shocks as well. The current-account deficit has been reduced, but there are risks of further cut-back in credit that could intensify or prolong the reduction of output. The main challenge facing the policymakers is therefore to bring the economy quickly back to trend growth, which is complicated because of past policy commitments. Towards this goal, this Survey makes the following recommendations:

The policy of annually-balanced budgets has a pro-cyclical bias and should evolve into a more flexible, rule-based counter-cyclical fiscal framework

- *During the past boom, the fiscal policy amplified an already highly pro-cyclical growth of credit and wages. The current downturn presents the opportunity to adopt a fiscal rule of balancing the budget over the cycle to allow automatic stabilizers to work. The deficit target could be anchored in a medium-term budgetary framework incorporating expenditure ceilings and a mechanism that claws back expenditure or debt overruns.*

Financial stability should be strengthened, while distortions that contributed to the housing boom should be removed

- *Given the role of foreign-financed credit in the boom, and then the current recession, the Estonian Financial Supervision Authority should carefully monitor risks and intensify co-operation with the foreign supervisory bodies. The favourable tax treatment and credit guarantees of housing loans amplified the housing boom and should be phased out over the medium term to facilitate allocation of capital to its most productive use.*

Labour needs to become more mobile across occupations, sectors, and regions for GDP to recover along a sustainable path of high growth

- *The importance of labour market flexibility is further underscored by the goal of adopting the euro in an environment of low, though rising, synchronisation with euro area business cycles. The recently-adopted Employment Act eases employment protection and enhances labour market flexibility. The parallel reform of the unemployment benefit system increases benefits and strengthens the financing responsibility of social partners. To improve incentives the unemployment benefit increase should be accompanied by additional measures supporting active job search. At the same time, job creation by firms could be enhanced through reductions in the social security tax. To prevent erosion of competitiveness, both minimum and public-sector wages should grow in line with productivity in the private sector. Over the medium term, regional labour mobility could be enhanced through increasing housing allowances and further improvement of public transportation infrastructure.*

The business environment needs to become even more competitive to support innovation-driven productivity gains

- *OECD's product market regulation (PMR) indicator confirms the overall very open and business friendly regulatory environment, although several specific weaknesses still need to be tackled. In particular, the impact of limiting the corporate tax liability to distributed profits should be carefully monitored and this tax regulation reconsidered if it is established that serious distortions arise. In addition, competition in the electricity sector could be increased, and cost effectiveness of programmes supporting business and innovation activities enhanced. Private sector activities in less developed areas of the country should be encouraged, in particular through facilitating access to credit for small and medium-sized enterprises.*

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Assessment and recommendations

A long boom is ending in a bust

During 2000-07, the Estonian economy experienced one of the highest growth rates among emerging market economies and, until 2005, low inflation. However, in recent years, domestic demand was mainly driven by a housing investment boom, fuelled by high expected income growth and accommodated by large capital inflows and cheap credit, as well as tax incentives. Tightening loan standards in the wake of the severe international financial crisis, falling house prices and an abrupt turnaround of consumer confidence have put an end to expanding domestic demand, which has been shrinking since mid-2008. Pro-cyclical fiscal policy is adding negative stimulus. Moreover, strong wage growth real appreciation weakened Estonia's external competitiveness.

The recovery relies on shifting resources from non-tradables to exports

Estonia was one of the first countries to enter recession in 2008 and is now going through most challenging times. Real GDP growth is expected to be significantly negative in 2009 and turn positive only towards the end of the year and pick up in 2010, due to a more favourable outlook for exports. This recovery will depend on the ability to shift resources from serving domestic demand to producing for export demand. While the initial causes of the slowing and reversal of GDP growth largely affected domestic demand, Estonia is now highly exposed to external risks, especially to a deeper or more prolonged recession in the euro area and further fallout from international financial markets crisis. Even though the current-account deficit has been reduced, risks of an accelerated reversal of capital flows could lead to a further reduction of output. While a diversified small economy like Estonia may hardly hit an effective demand constraint on external markets, it might nevertheless need to accept lower prices and wages to secure the increase in export market shares necessary to compensate the collapse of domestic demand.

The key challenge is the return to a sustainable path of high growth

The key current policy challenge for the government is to bring the economy back to trend growth. To this end, distortions introduced during the past boom and the misallocation of resources toward the non-tradable sector will need to be corrected. However, the real exchange-rate appreciation that has already taken place will make the reallocation of

resources from non-tradable to tradable sectors and an export-driven recovery more challenging. From this perspective, the following policy issues stand out:

- *Removing the pro-cyclical bias of fiscal policy*. Up to now, fiscal policy has exhibited a pro-cyclical bias. Some of the windfall revenues were saved, but a considerable part was used to initiate structural tax cuts as well as, but to a lesser extent, expenditure increases.
- *Strengthening financial stability and unwinding distortions in the housing market*. Pro-cyclical lending conditions and wages, as well as a fiscal bias in favour of home ownership, have re-enforced each other and led to an over-expansion of real estate and construction.
- *Reforming labour markets to enhance wage flexibility as well as regional, sectoral and occupational mobility*. Reallocating labour smoothly to more productive activities, typically in the export sectors, will hinge on more flexible labour markets.
- *Making the business environment even more competitive*. While recent GDP growth was driven largely by capital deepening, productivity gains from innovation will need to play a greater role in the future. In that context, it will be important to remove remaining obstacles to investment, entrepreneurship and innovation.

Estonia's alignment with the euro area is low, but has increased over time and needs to be supported by appropriate policies

The currency board introduced in 1992 has served Estonia well. The main motivation at the time was to rapidly enhance the credibility of policies and reduce inflation, effectively by taking over the monetary stance of a well reputed central bank. While the business cycle is only loosely synchronised with those of the euro area, its alignment seems comparable to some smaller EMU countries. Moreover, synchronisation of shocks and cycles with the euro area seems to have increased somewhat, mainly due to policies and institutions that facilitated EU accession. However, in the absence of exchange-rate flexibility, the response to asymmetric shocks and the consequences of the remaining cyclical divergence from the euro area will have to be mitigated by fiscal policy as well as by policies enhancing structural flexibility.

With inflation falling and risks originating from the international financial crisis, an early adoption of the euro has re-emerged as a key government priority. Regardless of whether this goal is achieved, given that the Kroon is pegged to the euro, the relatively low level of synchronisation implies that effective counter-cyclical fiscal policy and labour mobility are required to avoid excessive volatility.

Fiscal policy has been amplifying the business cycle

The period 2000-07 was characterised by rapid foreign-financed credit growth, which in turn fuelled an investment boom, especially in real estate. While credit growth contributed strongly to the overheating of the economy during 2005-07, the liberalised capital account and the currency board – although serving the country well – severely limited the options of policy-makers to manage the highly pro-cyclical capital inflows. Wages also grew rapidly in recent years, reflecting labour and skill shortages and mismatch. Even though these developments called for countercyclical fiscal policies, in practice budgets were pro-

cyclical, with the government increasing expenditures and cutting tax rates during this upswing. Moreover, with some of the higher revenues during the past years being of a one-off nature, the expansionary policies worsened the underlying budgetary balance and will make achieving fiscal sustainability more challenging.

The government should apply rule-based countercyclical fiscal policies

The balanced budget rule that Estonia has adhered to since independence has been important in keeping its public debt at very low levels. However, it has also meant that the country has not used enough the counter-cyclical role that fiscal policy can play. While respecting the Stability and Growth Pact, in the current downturn the government should abstain from the usual practice of *ad hoc* expenditure cuts and allow the automatic stabilizers to operate. This is particularly important since the approved budget for 2009, which was based on a forecast of 2.8% GDP growth, will result in considerable restrictive measures to prevent an excessive deviation from the targeted balance.

Instead, the government should aim at balancing the budget over the business cycle. To maintain hard-won fiscal credibility, discretionary fiscal measures should be reserved mainly for longer-term issues, and otherwise be used only in exceptional circumstances such as natural disasters or severe recessions. To facilitate sustainability and efficiency of public spending, the deficit target could be accompanied by an expenditure rule, incorporated in a medium-term budgetary framework. Debt overruns stemming from lower-than-forecasted medium-term revenues or overestimating the structural part of the budget balance should be clawed back with a mechanism, which effectively targets the debt to GDP ratio, similar to the Swiss debt rule. A welcome side effect of a transition to a more flexible fiscal rule would be the development of a well-functioning government bond market, which could also play an important benchmark role for financial markets and thereby increase competition in the financial sector.

Financial integration has brought not only benefits but also risks

While the economy has benefited from strong financial integration, it has also exposed the economy to risks. In particular, the private investment boom, mainly in residential housing, was financed by massive capital inflows. Private-sector credit largely mirrored the capital inflows and surged during 2000-07, albeit from a low base. A growing share of credit went to the housing sector, fuelling house price increases and an overexpansion of the construction sector. As credit was mostly financed by intra-group loans from foreign parent banks, the net foreign asset position of Estonian affiliates deteriorated, and risks to financial stability increased. This has exposed Estonia to risks of a change in foreign lenders' sentiment in the wake of the global financial crisis. Some of these risks have already materialised in the form of tightening lending standards.

The global financial crisis necessitates intensified co-ordinated cross-border actions and strengthened co-operation with foreign supervisors

The strong presence of foreign banks in the financial sector underscores the importance of close co-operation with the Nordic countries in the area of crisis management. In this context, the Estonian government is currently preparing welcome legal amendments, which would expedite expenditure decisions. Moreover, the Memorandum of Understanding with the Swedish central bank specifies practical modalities of possible actions by central banks. Co-ordination in the supervision of cross-border financial groups also needs to be strengthened, as some supervisory responsibilities fall on the home country's supervision authority, while others rest with the Estonian authorities. Building on the already existing bilateral Memoranda of Understanding with Nordic supervision authorities, the Estonian Financial Supervision Authority should intensify reciprocal visits and information-sharing. In addition, the Estonian financial supervision authorities should carefully monitor financial stability risks and communicate findings to the public in order to sustain confidence in the financial system. Given the risks stemming from the large share of variable rate-loans, households should be informed more effectively about the pros and cons of loan conditions, and an apparent bias in favour of risky loans (95% variable rates 80% in foreign currency) should be addressed.

Tax incentives and loan guarantee programmes favouring home ownership should be phased out

In addition to cheap credit, the favourable tax treatment of housing has amplified the housing boom. Eliminating the tax deductibility of mortgage interest payments has been on the policy agenda for several years, and some ceilings have already been introduced. While difficult to implement in the current downturn, these distortions should be phased out over the medium term to facilitate the allocation of capital to its most productive use.

Access to affordable housing would facilitate labour mobility

Persistent regional differences in employment and unemployment outcomes point to labour market rigidities and barriers to mobility, both of which need to be addressed. In spite of the recent housing boom, access to affordable housing for some segments of the population remains limited, thus impeding inter-regional movement of labour, in particular of low-wage earners. Policy challenges therefore include increasing the availability of affordable housing. In particular, the level of allowances could be increased over the medium term to take into account regional differences in the housing cost, which would allow for mobility from low housing cost areas to growth centres characterised by high costs. Mobility across counties and regions could be further enhanced by improving public transport system through investment in infrastructure.

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Enhanced flexibility of labour markets is the key to timely recovery and long-term growth

In the past several years, overall labour market outcomes were favourable – unemployment declined and employment rates increased, including among women and older workers. At the same time, large regional differences have persisted and outcomes for low-skilled and young workers have improved only marginally. Moreover, skill and labour shortages have led to wage increases above productivity growth. More flexible labour markets, including wage growth reflecting labour market conditions and productivity gains, will be needed for re-employing laid-off workers in more knowledge-based export sectors. The importance of labour market flexibility is further underscored by the goal of adopting the euro in an environment of low, albeit increasing, synchronisation of Estonia's business cycles with those of the euro area. Barriers to internal mobility such as relatively underdeveloped job search programs or high tax wedge on labour that would prevent labour reallocation into more productive activities across occupations, sectors, and regions thus need to be removed.

The recently adopted Employment Act combines lower employment protection with higher income replacement in case of unemployment

The new Employment Act combines deregulation of the employment protection legislation (EPL) against higher unemployment benefits. The very comprehensive Act reduces both the notice period and the amount of severance payments for regular contracts, thereby making Estonia's EPL restrictiveness comparable to Central European OECD members. Furthermore, the severance payment obligation will be shifted from employers to the Unemployment Insurance Fund thereby lifting liquidity constraints on SMEs. However, the changes to the unemployment benefit scheme increase the initial benefit/wage replacement rate and *de facto* prolong the period during which the benefit can be collected, therefore discouraging job search. To shorten the search period, it would be preferable if benefit recipients start receiving the unemployment benefit immediately after being laid off. Furthermore, active labour market measures should give more priority to supporting job search. Conditions for active job search should be adjusted such that swift re-employment is facilitated in order to avoid putting the sustainability of the unemployment insurance system system in danger. To encourage labour mobility further, Estonia could also consider replacing the severance payment system with a compulsory, transferable saving scheme, such as the one recently introduced in Austria.

In addition reductions of labour costs are needed

To prevent the emergence of a high unemployment trap, active job search requirements should be stepped up, with effective sanctions imposed for non-compliance. In other countries, well-designed and targeted measures geared towards engaging workers in job search and reducing search cost have mitigated the disincentives stemming from changes in the unemployment benefit system and have improved unemployment outcomes. Strategies combining job search with selective training programmes seemed to have the greatest impact. Over the medium term, the incentives for firms to create jobs could be

further enhanced by reducing the relatively high social security tax and replacing it by less distortionary sources of revenue, including on consumption and real estate.

Finally, to enhance flexibility of labour markets and maintain the competitiveness of the economy, increases of both minimum and public sector wages should reflect productivity gains. More specifically, outside economic expertise could be used in the negotiations between the trade unions and the employers' confederation as a means to de-politicise the process.

Ethnic non-Estonians and migrant workers should be better integrated

Labour market performance of non-Estonian ethnic minorities, who represent a significant portion of the total population, depends to a large extent on language capacity and has been lagging behind for a large part of this group. Progress in this area is uneven. Important differences remain between the two main ethnic groups. Ethnic non-Estonians have also exhibited markedly worse social indicators than ethnic Estonians, a difference that has widened since independence. Better integration of ethnic non-Estonians into the economy is thus an important challenge.

The income and employment opportunities of ethnic non-Estonians seem to be strongly determined by their command of the Estonian language and language competence is also crucial for obtaining Estonian citizenship. The policies aiming at better integration of this group should therefore expand Estonian language and professional training (including the use of the Internet) for the considerable non-Estonian segment of the population. The work permit process for non-EU foreign workers could be simplified further.

Estonia already has a very open and business-friendly environment, but needs to do more

Since regaining independence in 1991, Estonia has progressed swiftly to establish a modern market economy. Today, the country is considered to have one of the most open and competitive economies in the world. The dynamism of the business environment is reflected in high rates of firm and job creation, also relative to other European emerging market economies, as well as by large inflows of FDI. Estonia is particularly highly regarded in the area of network readiness, and also scores relatively highly (for its level of development) on measures of corporate governance and transparency. Estonia's good business environment is further supported by e-government, which is considered as the most outstanding example in central Europe, and in several aspects (such as e-governance or delivering e-services for businesses) even exceeds the standards of the OECD countries on average.

However, the share of production in high tech sectors and knowledge-intensive services is still relatively low, and the share of high technology products in exports has slowed. To become a knowledge-based economy, production will need to shift towards knowledge-intensive sectors and productivity gains from innovation will need to drive growth in the future. Moreover, application of the OECD product market regulation (PMR) methodology indicated that the overall product market policies in Estonia were only slightly less

restrictive than on average in the OECD countries, signalling room for further reforms to catch-up with best performers.

Several key challenges remain to improve the business environment

While acknowledging the significant achievements of past regulatory reform for a business and investment friendly environment, a few specific challenges still need to be tackled:

- Barriers to competition in the electricity sector should be removed. Unbundling of Eesti Energia remains a challenge. Increasing the share of the retail markets open to consumers and creating a liberalised wholesale market should be a priority.
- The impact of limiting the corporate tax liability to distributed profits should be carefully monitored and this tax regulation reconsidered if it is established that serious distortions arise.
- The cost effectiveness of the different programmes supporting business and innovation activities needs to be enhanced. Results of evaluation studies should be more rigorously implemented, including at Enterprise Estonia.
- Private-sector activities in less-developed areas of the country as a driver of growth and poverty reduction should be encouraged, in particular through facilitating a better access to credit for small and medium-sized enterprises.

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Chapter 1

Getting back to sustainable growth path is the key policy challenge

Estonia is facing its most challenging economic situation since the early 1990s. Past overexpansion, in particular of real estate and construction, was financed by rapid credit growth, mainly via variable interest rate and foreign currency loans. Growth was in general biased towards domestic demand, fuelled also by high wage growth. Unsustainably high current-account deficits exposed Estonia to a sudden reversal of investor sentiment in the wake of the global financial crisis. The downturn has not yet bottomed out and the challenge will be to stimulate recovery and bring the economy back to potential. Macroeconomic policies have a pro-cyclical bias and the labour market has been regulated by a law which contains many elements from the Soviet era.

Given the limited scope for macroeconomic policies under the currency board arrangement and low synchronisation of shocks and business cycles with those of the euro area, effective counter-cyclical fiscal policy and flexibility of the economy are crucial. The first OECD Economic Survey of Estonia *addresses these issues, and focuses in particular on:*

i) modifying the fiscal framework to enhance the role of fiscal policy as a counter-cyclical tool;

ii) reducing distortions in the housing market while strengthening financial stability;

iii) increasing flexibility and reducing segmentation of the labour market; and

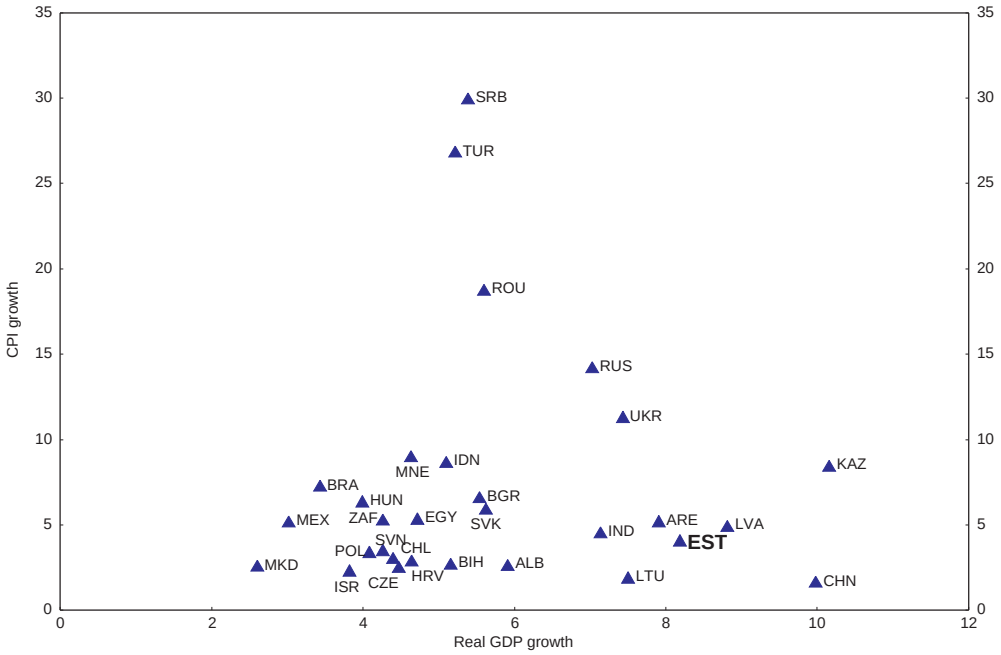
iv) enhancing the business environment to foster productivity.

The current economic situation is the most challenging since the early 1990s

During 2000-07, Estonia had one of the highest rates of real GDP growth among the emerging market economies and, until 2005, low inflation (Figure 1.1). As a result of high growth, Estonia converged rapidly to the income levels of the euro area and the EU27 average (Figure 1.2). Employment expanded and the unemployment rate declined from its peak of 13.6% in 2000 to 4.7% in 2007, accompanied by increasing labour force participation. Consumer confidence was buoyant, supported by EU accession and rising incomes. During 2005-07 clear signs of an overheated economy emerged: GDP grew above its trend, labour and skill shortages emerged, inflation accelerated, and current account deficits surged to unsustainable levels.

Figure 1.1. **Estonia and emerging market economies: GDP growth and inflation**

Average annual % change, 2000-2007



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Note: Refer to Glossary for country codes.

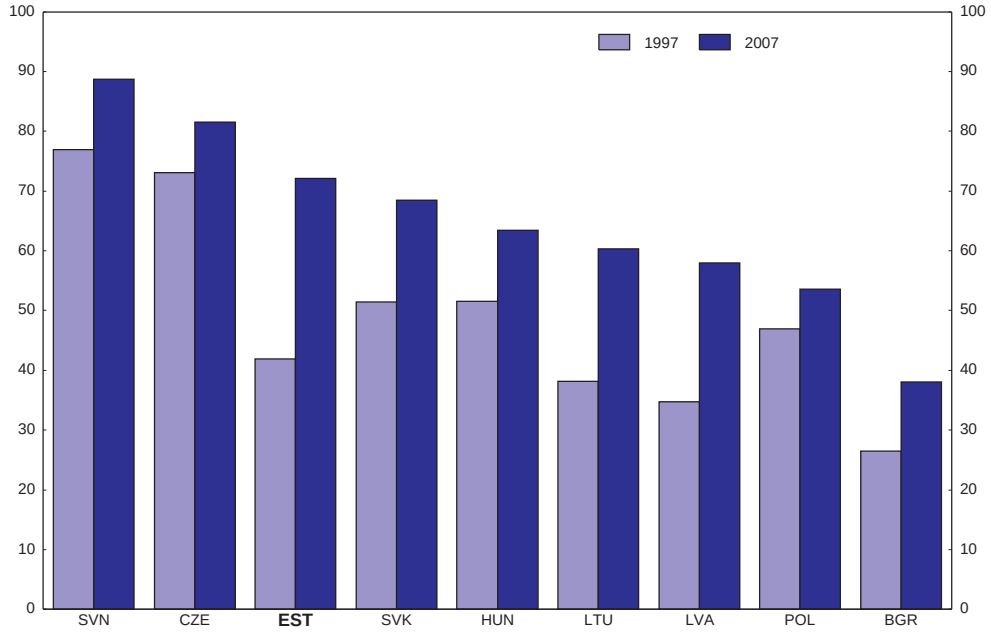
Source: IMF, *World Economic Outlook*.

Growth collapsed in 2008 and is projected to regain strength only after 2010

The Estonian economy is currently experiencing a hard landing, largely unwinding a loan-financed over-expansion of domestic demand. Real GDP contracted by 3.3% in the

Figure 1.2. **GDP per capita in the new EU members**

Index, EU27 = 100, based on purchasing power parities



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Note: Refer to Glossary for country codes.

Source: Eurostat.

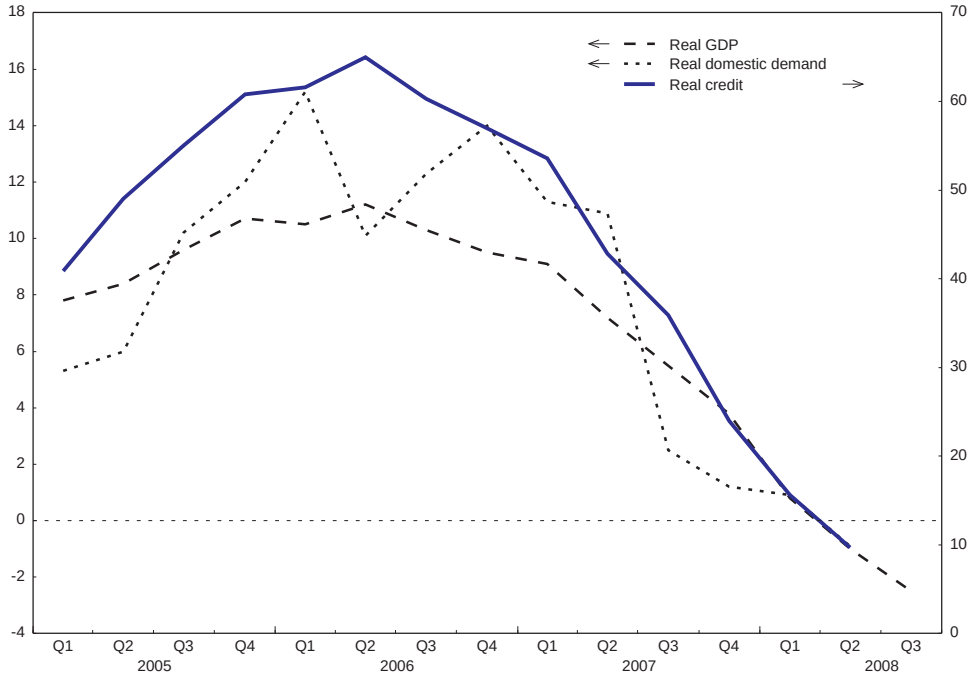
third quarter of 2008 compared to the same quarter in 2007, due to a collapse of domestic demand and slowdown of foreign-financed credit (Figure 1.3). In the fourth quarter, real GDP decreased by 9.7% compared to the same quarter of the previous year.

The ongoing recession was triggered by declining real estate prices and construction activity (Chapter 3) and amplified by credit tightening, plummeting consumer confidence, and a slowdown of export growth. House prices have decreased by about 20% since mid-2007. Even though the large external imbalances of preceding years implied that a correction and slowdown were necessary, the speed and size of the output adjustment were faster and larger than expected. The slowing of the economy has also brought about a deterioration of the fiscal balance (Chapter 2), which is projected to show the first significant deficit since the Russian crisis. Unemployment increased rapidly in the second half of 2008, putting an end to years of steady decline. On the positive side, the current account deficit has narrowed since 2007. The annual (year-on-year) CPI inflation decelerated to 4.1% in January 2009 after peaking at 11.4% in June, mainly reflecting dampened demand and falls in food and energy prices.

Growth is projected to gradually pick up in 2010, driven by recovering exports (Box 1.1). Since recovery will depend on a relatively smooth reallocation of resources from non-tradable to tradable sectors; enhancing flexibility of labour and product markets will be crucial (Boxes 4 and 5). However, the inherited real exchange rate appreciation from the 2000-07 boom will make the necessary export-driven recovery more challenging.

Figure 1.3. **Real GDP, domestic demand and private sector credit**

Annual change, %



StatLink http://dx.doi.org/10.1787/560655852847

Source: Bank of Estonia, OECD *Economic Outlook Database*.

Box 1.1. **Economic projections for 2009-10**

Recent developments

- **Real GDP growth** collapsed in 2008, making Estonia the first country in Central and Eastern Europe to enter recession. GDP decreased by 9.4% year-on-year in the fourth quarter; domestic demand had been declining since the beginning of the year and then exports were hit by the collapse of import demand from main trading partners. High inflation, tighter loan standards and consumer confidence at a historic low led to the fall of domestic demand.
- **Consumer price inflation** decelerated from its peak of 11.4% (year-on-year) in June 2008 to 4.1% in January 2009, as international prices of food and energy declined and the one-off impact of increases in excises and regulated prices wore off.
- **The current account deficit** narrowed from 16% of GDP in 2007 to 7.5% in the third quarter of 2008. The flash estimate for the fourth quarter indicates a further decline. This correction of macroeconomic imbalances has been driven by a sharp drop in imports.
- Even though the **financial sector** is well capitalised, overdue loans to banks have risen in recent months. The Bank of Estonia has intensified cooperation with its Nordic counterparts on crisis management and banking supervision. In February 2009 the Bank signed a precautionary agreement with the *Riksbank* that allows it to borrow up to 10 billion Swedish *kronor* against Estonian *kroons*. The objective is to safeguard liquidity under the currency board arrangement.

Box 1.1. **Economic projections for 2009-10** *(cont.)*

Factors shaping the projection

External

- **The global recession** is now projected to be deep and persistent. Advanced economies may begin to recover only in 2010, as the benefits of the economic stimulus measures and restructured banking sectors start to set in. The 2010 GDP growth rates of Estonia's main export destinations (Finland, Sweden, Latvia, Lithuania and Russia) are projected to remain well below their trend paths.
- The **global tightening of credit conditions** has negatively affected Estonia as well. The ratios of new credit to the existing stock fell below the levels seen after the Russian crisis, including in sectors that should lead the recovery such as manufacturing.
- **FDI inflows** also slowed in the second half of 2008. They are expected to decelerate sharply in 2009, making an export driven recovery more challenging.

Domestic

- **The government cut expenditures** for 2009 to keep the deficit below 3% of GDP with euro adoption as a key priority. It also postponed the reduction of the income tax rate and widened the VAT base. These pro-cyclical fiscal policies are likely to deepen the recession.
- **The new labour law**, deregulating employment protection legislation, should facilitate the reallocation of workers to more productive jobs, provided adequate activation measures for the unemployed are implemented.

Projections

- Real GDP is projected to decline by 8% in 2009 and does not recover to trend growth until after 2010. The 2009 GDP fall is broad based. The gradual pickup in exports should become the main driver behind the recovery from 2010.
- Annual headline inflation is projected to decline sharply to 2.1% in 2009, reflecting the weak demand and the fall in international energy and commodity prices. Low employment will contribute to shrinking real disposable income.

Risks to the outlook

- The growth outlook is subject to downside risks due to:
- Uncertainties surrounding the speed of the global recovery.
- Households' inability to service their mortgages and tighter lending conditions to the private sector.

Table 1.1. **Economic projections for Estonia**

	2006	2007	2008	2009f	2010f
	Percentage changes, volume (2000 prices)				
Economic activity					
Gross domestic product	10.4	6.3	–3.6	–8.0	0.9
Private consumption	12.7	7.9	–4.0	–3.9	1.2
Government consumption	1.8	3.9	4.4	0.4	0.1
Gross fixed capital formation	19.5	4.9	–8.6	–8.5	1.7
Exports of goods and services	11.6	0	–1.1	–8.9	2.0
Imports of goods and services	20.4	4.2	–7.9	–6.0	2.2
Memorandum items	Annual percentage changes, unless otherwise indicated				
Harmonised index of consumer prices	4.4	6.7	10.6	2.1	1.4
Employment	5.4	0.7	–0.5	–6.7	–2.0
Budget balance (per cent of GDP)	2.9	2.7	–1.7	–3.8	–3.3

Source: OECD Analytical Database.

External vulnerabilities are high, but the narrowing current-account deficit helps mitigate them

While lower domestic demand was the main factor for the initial reversal of output growth, at this juncture the growth has been affected by external factors, namely a slowdown of growth in the euro area and a tightening of global credit conditions. Estonia remains vulnerable to adverse spillovers from international financial markets, as the maintenance of credit growth depends almost entirely on lending from the foreign parent banks, some of which have experienced financing constraints. The liquidity risk of the banking sector materialised in the fall with a run on one of the major regional banks, but the situation was stabilized due to a swift action of the home country central bank that allowed the parent to provide sufficient liquidity (IMF, 2009). In February 2009, the Bank of Estonia signed a precautionary agreement with the Riksbank that strengthens its capability to provide liquidity.

The substantial stock of short-term external debt creates vulnerability, especially since its reserve coverage is low (Table 1.2).[1] This vulnerability is mitigated by the rapidly narrowing current account deficit, now financed fully by the EU structural funds.

Table 1.2. **Macroeconomic and financial indicators in selected European emerging market economies**

	Foreign bank credit (% of host GDP)	Current account balance (% of GDP)		Reserves to short-term external debt	Net external position *vis-à-vis* BIS-reporting banks (% of GDP)	Private-sector credit	Inflation
	End-2007	2007	2008[1]	End-2007		Year-on-year, 2008[2]	
Estonia	**161.7**	**–18.1**	**–10.8**	**0.2**	**–78.7**	**21.5**	**11.1**
Bulgaria	90.4	–21.4	–24.4	1.1	–29.0	54.5	14.5
Hungary	87.0	–5.0	–5.5	0.9	–54.1	18.0	6.7
Latvia	125.5	–22.9	–15.1	0.3	–72.5	22.2	16.7
Lithuania	92.4	–14.6	–14.9	0.9	–45.6	36.4	12.2
Poland	51.1	–3.8	–4.7	0.8	–17.1	29.5	4.8
Romania	50.6	–14.0	–13.8	0.9	–36.4	62.0	9.0

1. Estimates, *IMF WEO Database*, October 2008.
2. Latest available observation in 2008.
Source: Based on IMF 2008a, Table 1.5, and Maechler and Ong (2008).

The high share of foreign currency in total debt, together with the credit risk due to declining output and real estate prices, is another vulnerability. Financial markets reflected these risks – the Tallinn stock exchange experienced a considerable fall (Figure 1.4) and credit-default swap spreads have widened. In the fall of 2008, one rating agency downgraded Estonia's credit rating and another one worsened its outlook.

Capital inflows fuelled growth in 2001-07, but led to macroeconomic and sectoral imbalances

The growth acceleration during 2001-07 was driven mostly by domestic demand, and in particular by private investment (Table 1.3). Since 2003, the bulk of higher investment took place in the non-tradable sector, particularly residential housing, while the share of capital goods (machinery) in investment declined. The growing investment in residential

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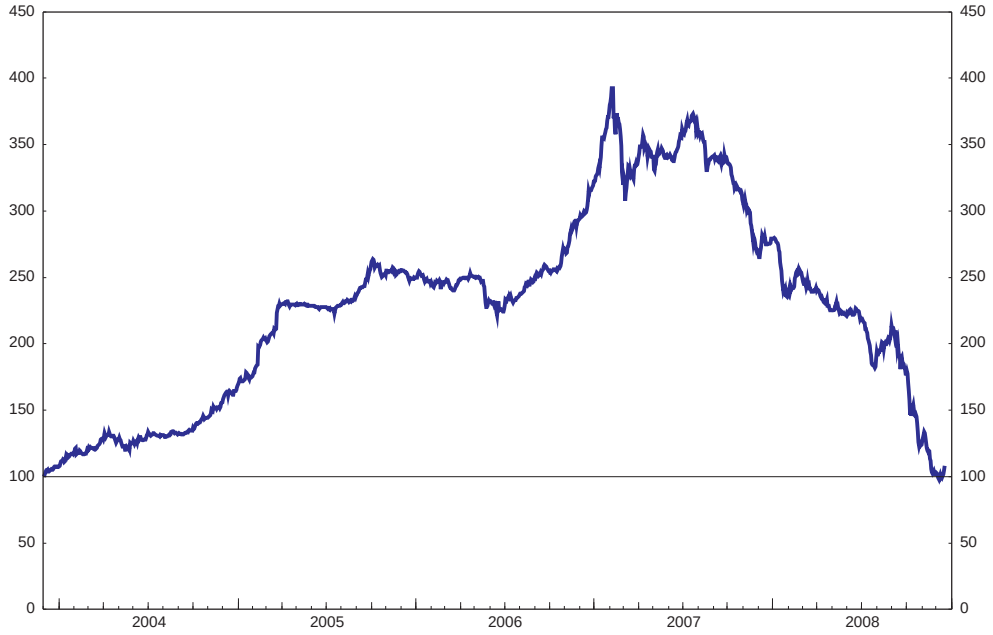
Figure 1.4. **OMX Tallinn index, December 2003-December 2008**

1 December 2003 = 100



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Note: OMX Tallinn (OMXT) is an all-share index which includes all the shares listed on the Main and Secondary lists on the Tallinn Stock Exchange with exception of the shares of the companies where a single shareholder controls at least 90% of the outstanding shares. The aim of the index is to reflect the current status and changes on the Tallinn market.

Table 1.3. **Sources of domestic demand boom, changes during 2001-07**

Percentage points

	Domestic demand/GDP	Investment/GDP			Consumption/GDP		
		Total	Private	Public	Total	Private	Public
Estonia	**4.8**	**9.1**	**8.8**	**0.3**	**–4.2**	**–2.3**	**–1.9**
Czech Republic	–7.2	–2.4	–3.6	1.3	–4.8	–3.7	–1.1
Slovak Republic	–7.4	–2.4	–1.2	–1.2	–4.9	–2.0	–2.9
Slovenia	0.9	6.3	5.9	0.4	–5.4	–3.9	–1.5
Finland	4.7	2.5	2.7	–0.1	2.2	1.3	0.9
Sweden	–0.9	2.0	2.7	–0.7	–2.9	–2.4	–0.5

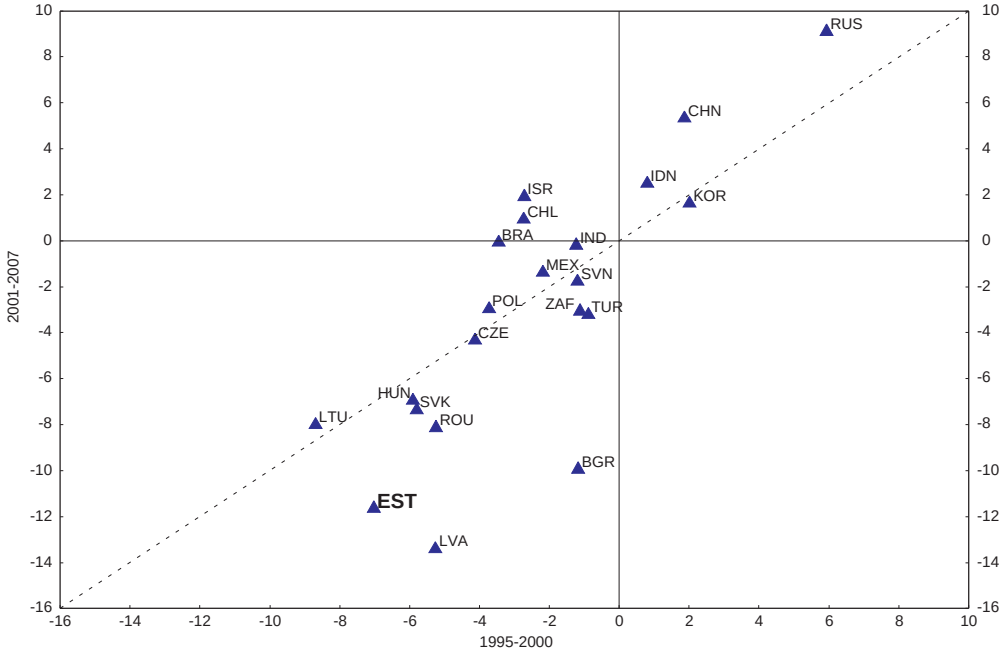
Source: IMF, *International Financial Statistics Database* (2008).

housing contributed to a surge in real estate prices, with house price inflation during 2005 and 2006 being one of the highest in the EU (Chapter 3).

The private investment boom was financed by massive capital inflows, in an environment of a liberalised capital account and under-pricing of lending risks by foreign banks, stemming mainly from their overly-optimistic assessment of Estonia's growth prospects.The counterpart to the investment boom was thus a soaring current-account deficit. Estonia exhibited one of the strongest deteriorations of the current-account balance among emerging market countries, starting from already high deficit levels in the late 1990s (Figure 1.5). Since the current-account deficits were financed by foreign credit

Figure 1.5. **Current account deficits in emerging market economies**

% of GDP



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Note: Refer to Glossary for country codes.

Source: IMF, *World Economic Outlook*.

and investment going mostly to non-tradables (Table 1.4), the country's export capacity and competitiveness did not improve directly. Moreover, as a significant share of the current-account deficit was continuously financed by borrowing, the stock of gross private external debt rose to more than 100% of GDP at end-2007 (Figure 1.6). The accumulation of short-term debt reached almost 40% of GDP at the end of 2007.

Table 1.4. **Composition of FDI stock in Estonia, by sectors, 2000-07**

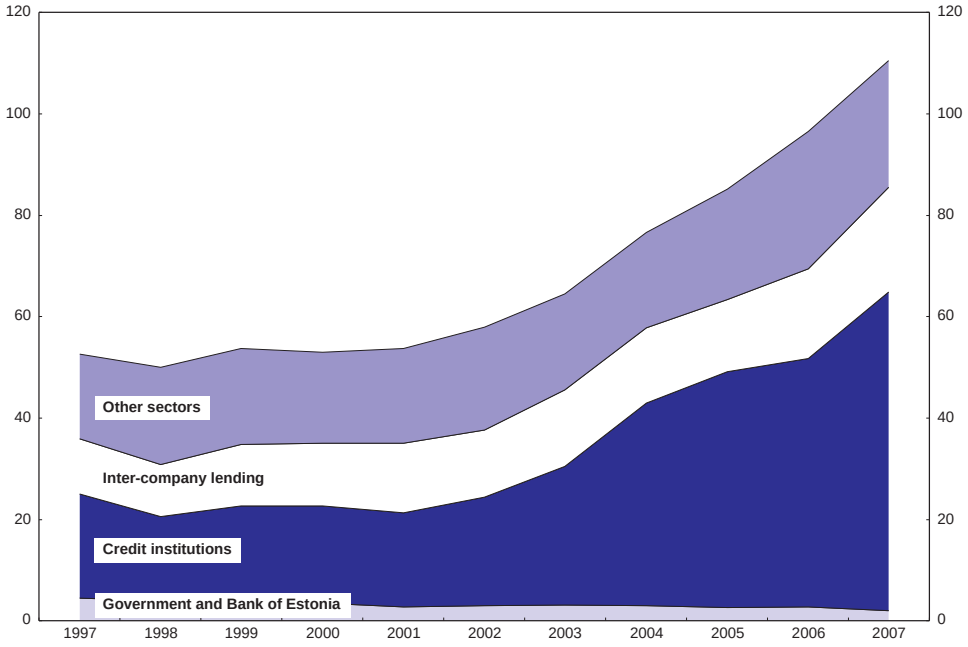
% of total FDI

	2000	2001	2002	2003	2004	2005	2006	2007
Manufacturing	21.6	20.7	18.8	16.9	16.8	14.9	17.4	14.6
Trade	15.6	13.2	13.5	14.8	10.0	8.8	10.3	13.4
Transport	21.5	22.5	21.4	16.4	5.2	3.5	7.0	4.2
Financial intermediation	**24.3**	**25.2**	**28.0**	**26.2**	**31.5**	**38.8**	**28.3**	**33.2**
Real estate	**7.8**	**7.6**	**9.5**	**18.0**	**30.8**	**27.8**	**29.7**	**26.8**
Other	9.1	10.8	8.7	7.7	5.7	6.2	7.3	7.8

Source: Bank of Estonia.

Largely mirroring capital inflows, private-sector credit surged during 2000-07, albeit from a low base (Figure 1.7). The currency board locked in low real interest rates, but other factors (high GDP growth, EU accession) also contributed to the credit boom. The credit growth was partly due to the financial deepening/"catch-up" process, reflecting an initially

Figure 1.6. **Composition of external debt, 1997-2007**
% of GDP



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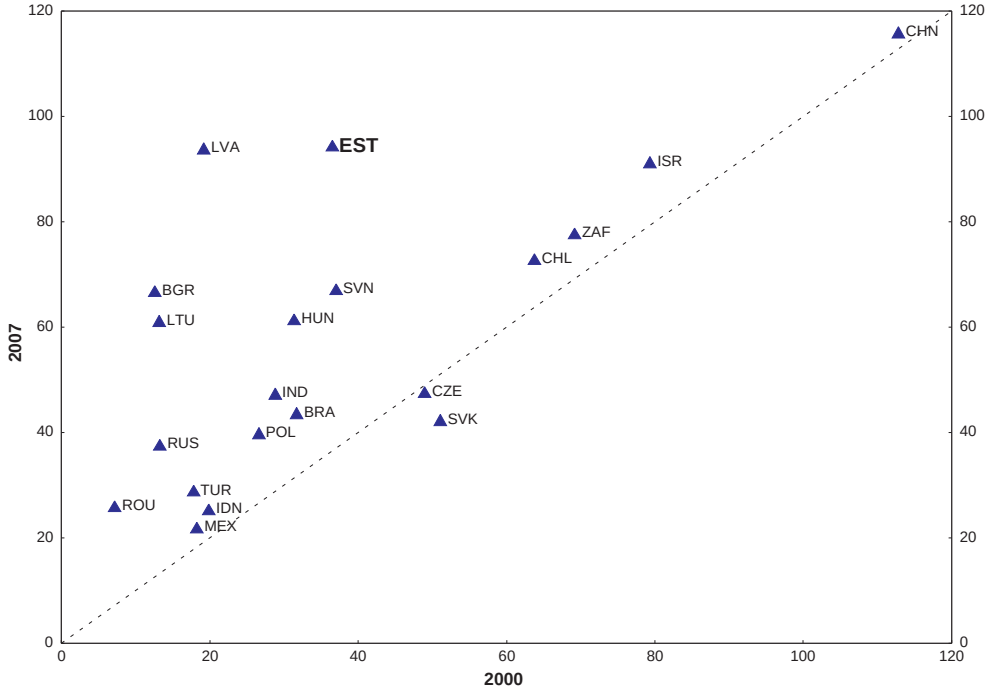
Source: Bank of Estonia.

Figure 1.7. **Private sector credit in emerging market countries as % of GDP, 2000 *vs.* 2007**



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Source: IMF, IFS.

low level of bank intermediation. At the same time, private-sector credit expanded rapidly even relative to the country's regional peers, raising questions about the quality of the loan portfolio and associated credit risks. As liabilities of Estonian banks and foreign branches operating in Estonia increasingly relied on credit from parent banks rather than domestic deposits, their net foreign asset positions deteriorated and risks to financial stability increased (Table 1.5).

Table 1.5. **Financing the credit growth, 2000-07**

Changes in the ratios, in percentage points of GDP

	2000-04	2005-07
Bank credit to the private sector	**5.9**	**11.0**
Bank credit to the public sector	0.1	–0.2
Net foreign liabilities	**–0.3**	**8.4**
Bank deposits	1.9	3.9
Other net liabilities	4.4	–1.5

Source: IMF.

The aggregate figures on private-sector credit conceal important differences by types of borrower, sector, and currency. Credit to households expanded rapidly, with the sectoral composition shifting markedly towards real estate. Estonia's share of housing loans in total loans to non-banks, at about 40% in 2006, is among the highest in emerging European economies. This made the country vulnerable to a sharp correction in the real estate market, which now materialised (Chapter 3). About 80% of all domestic loans were extended in foreign currency – again one of the highest shares among European emerging market economies (IMF, 2007a). The currency mismatch in the households and corporate balance sheets has made local borrowers vulnerable to a potential currency risk.

Fiscal policies exacerbated pro-cyclical financial flows and wage growth

With intense competition, foreign banks were willing to take increasing risks, especially as their exposure in Estonia was small relative to their total portfolios. Accordingly, they set nominal interest rates at levels similar to those in Nordic markets, and real interest rates, with a rise in local inflation, turned negative for local borrowers.[2] In turn, these low real interest rates increased demand for credit. However, the high tolerance for risk of the Nordic banks has also at least partly reflected an underestimation of economic risks pertaining to the Estonian economy and overly optimistic growth expectations. These views were also supported by continuously improving scores from credit rating agencies during the boom period of 2001-07 (Table 1.6). Moreover, when extending credit, the banks most likely overestimated the liquidity or collateral value involved in higher risk loans, especially in real estate (Chapter 3).

Table 1.6. **Evolution of Estonia's credit ratings (for long-term borrowing)**

	2001	2002	2003	2004	2005	2006	2007	2008
S&P	BBB+	A-	A-	A-	A	A	A	A
Fitch	BBB+	A-	A-	A-	A	A	A/A+	A-/A
Moody's	Baa1	Baa1	A1	A1	A1	A1	A1	A1

Source: Ministry of Finance of the Republic of Estonia.

Over the years, the currency board has served Estonia well, especially as a guarantee of commitment to prudent macroeconomic policies during transition. However, with global low-cost liquidity the arrangement constrained the Bank of Estonia's ability to curb rapid credit growth (Box 1.2). Measures which the Bank adopted, such as an increase in the minimum reserve requirement ratio or actions aimed at curbing the demand for housing loans, were mostly of a signalling nature and had minimal actual impact. As a result, bank lending in Estonia in recent years was highly pro-cyclical (IMF, 2008b). Both credit and wage growth stimulated private consumption and domestic demand and contributed to output volatility.

Box 1.2. **Currency board: past achievements and implications for current policy**

In June 1992, Estonia established its own currency. Shortly after, the Kroon became a symbol that helped gather support for reforms needed for the transition to a market economy. The chosen monetary regime was a currency board, initially with the German mark as the anchor currency, and since 1999 the euro (at a rate of 15.6466 EEK = 1 EUR). Under this regime: *i)* the monetary base became 100% backed by the gold and foreign exchange reserves of the Bank of Estonia; *ii)* the Kroon was completely convertible; and *iii)* all restrictions on capital account transactions were eliminated. Foreign exchange operations by the Bank were the main instrument of the monetary policy, supplemented by the reserve requirement ratio.

With the adoption of the currency board Estonia gained credibility and transparency of monetary policy, especially given its limited central banking expertise and the lack of data. The board eliminated any scope for discretionary monetary policy by prohibiting any lending by the Bank of Estonia except to banks in case of systemic risks and within the limit of excess foreign exchange reserves over the monetary base. It also greatly impacted fiscal policy, as the limited funding from the financial markets in the early 1990s implied that the budget had to be almost balanced – a practice that the government has followed since then.

The currency board was a key in the success of Estonia's stabilization in the early 1990s. Currently, it makes the goal of euro adoption and low inflation challenging to achieve because nominal convergence has to take place either through higher inflation or productivity growth in the domestic sector. Strong productivity growth in the traded goods sector leads to real appreciation of the Kroon and higher price increases than in the euro area (Balassa-Samuelson effect). Reforms increasing flexibility and facilitating catch-up for non-tradables and real convergence are crucial, but may not be sufficient to meet the Maastricht inflation criterion, given the important role of external conditions.

The currency board limits the possibility for the Bank of Estonia to extend liquidity to its banking sector in the event of a financial crisis (by the amount of excess reserves over the monetary base). While the currency board was already "tested" by the Russian crisis, its nature was different from the current global financial crisis with the overall tightened credit conditions. The key question is whether the Nordic banks, which dominate the Estonian banking sector, would be able to provide financing if Bank of Estonia's foreign exchange reserves would fall short of the demand. Underdeveloped capital markets are one of the main mitigating factors, constraining the room for speculative attacks. Almost non-existing public debt and limited government contingent liabilities further mitigate these risks. Moreover, the euro adoption as an exit strategy enhances the credibility of the currency board arrangement.

Source: Knöbl, Sutt and Zavoico (2002), Sepp and Randveer (2002), and Stockman (1999).

In addition to lending conditions, Estonia's policymakers were faced with highly pro-cyclical wage growth (Table 1.7 and Maivali and Lubenets, 2007). Strong credit and wage growth of recent years stimulated domestic demand, and was mirrored in the pro-cyclical private consumption Moreover, output and private consumption in Estonia are more volatile (measured by relative standard deviation) than, on average, output and private consumption in other European emerging market economies.

Table 1.7. **Business cycle properties of wages, credit and private consumption**

	(Relative) standard deviation		Correlations with output		
	Output	Private consumption	Wage growth	Private consumption	Private sector credit
Czech Republic	13.5	12.2	0.12	0.78	0.84
Estonia	**30.6**	**27.9**	**0.52**	**0.95**	**0.92**
Hungary	17.9	17.9	–0.20	0.73	0.59

Note: Correlation of real wage growth with the Eurostat's output gap.
Source: Secretariat estimates.

Even in the environment of expansionary financial conditions and highly pro-cyclical wages, the government kept the annual budgets balanced since the early 1990s when the currency board was introduced. However, this fiscal policy lacked medium-term perspective, exhibited a pro-cyclical bias, especially in recent years, and contributed to output volatility[3] (Chapter 2).

Labour and skill shortages resulted in real wage growth above productivity

During 2001-07, the country converged rapidly to the income per capita levels of the OECD and EU countries. Nevertheless, a substantial gap remains between the productivity level of Estonia's labour and more advanced EU15 countries. In addition, Estonia's productivity level is still below that of some of the new EU member countries (Box 1.3 and Figure 1.8). Continued catch-up to the income levels of more advanced EU countries hinges critically on closing this productivity gap.

In recent years, labour market shortages led to rapid real wage increases, which outpaced labour productivity growth. Public sector wages were no exception to this general trend, with wages in health and social services reflecting particular shortages of labour in these areas. In the private sector, the excess of growth of real wages above productivity was particularly high in construction in the last several years.

Against this background, Estonia's current external competitiveness indicators are mixed, and the restrictions on adjusting the nominal exchange rate made improvements in competitiveness more challenging. On the one hand, rising wages and unit labour costs eroded competitiveness, which to a large extent depended on the availability of inexpensive labour. On the other hand, Estonia's share in world exports increased during 2000-07. However, export growth became more subdued during the 2000s than in the late 1990s, with an increasing share of exports going to emerging markets and developing countries (25% of total exports in 2005 and 40% in 2007). In addition, a substantial portion of exports consists of products from traditional labour intensive sectors, while the shift towards products of higher quality and with greater technological intensity was limited (IMF, 2007b).

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Box 1.3. **Labour productivity levels: Estonia and other countries**

Decomposing the 2007 GDP per capita in PPP into share of working age population in the total, employment rate, hours per person employed, and labour productivity (either per person employed or per hour worked), yields:

$$\frac{Y_t}{N_t} = \left(\frac{N_t^w}{N_t}\right)\left(\frac{E_t}{N_t^w}\right)\left(\frac{L_t}{E_t}\right)\left(\frac{Y_t}{L_t}\right)$$

With Y (output), N (population), N^W (working age population), E (employment), L (hours worked per employee). Estonian workers worked longer hours than workers in Finland, Czech Republic, and Slovenia. With the exception of Finland, the employment rate was also higher in Estonia than in the countries examined. The gap in labour productivity between Estonia and the other countries therefore exceeded the gap in GDP per capita (Table 1.8).

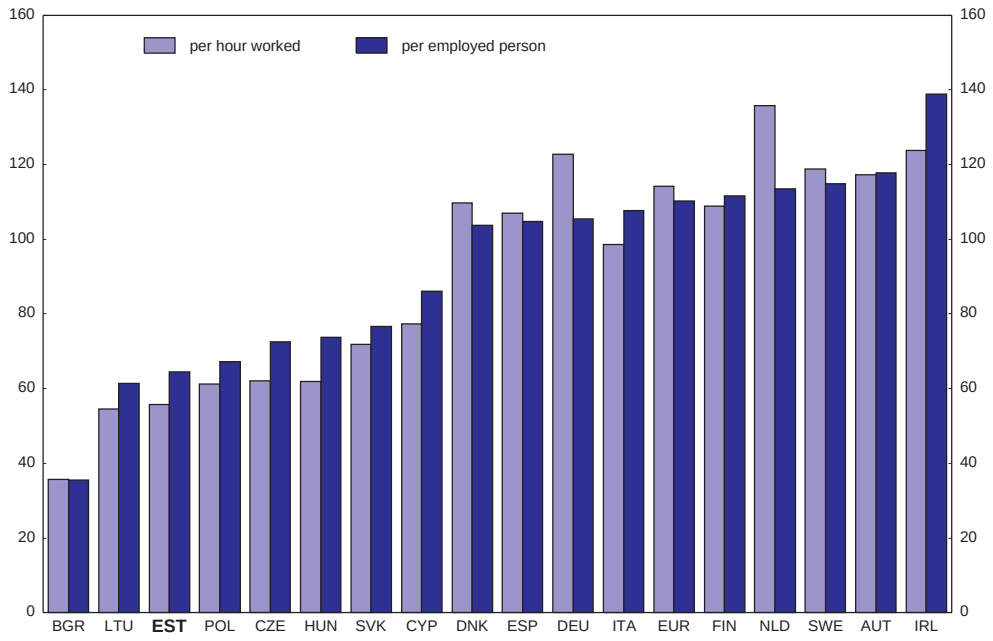
Table 1.8. **Comparison of factors behind differences in GDP per capita, 2007**

	GDP per capita (PPP of $)	Work age/pop.	Empl./work age	GDP per empl. (PPP, in ths of $)	Work hours per employed person	GDP per hour (PPP, $)
Estonia	21.2	0.68	0.69	44.9	1 872	0.024
Finland	35.2	0.66	0.70	75.5	1 688	0.045
Czech Rep.	24.1	0.71	0.66	51.3	1 718	0.030
Slovenia	27.1	0.70	0.68	57.1	1 832	0.031

Source: Eurostat and Secretariat estimates.

Figure 1.8. **Labour productivity, 2007**

Index, EU27 = 100, based on purchasing power parities



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Note: Refer to Glossary for country codes.

Source: Eurostat.

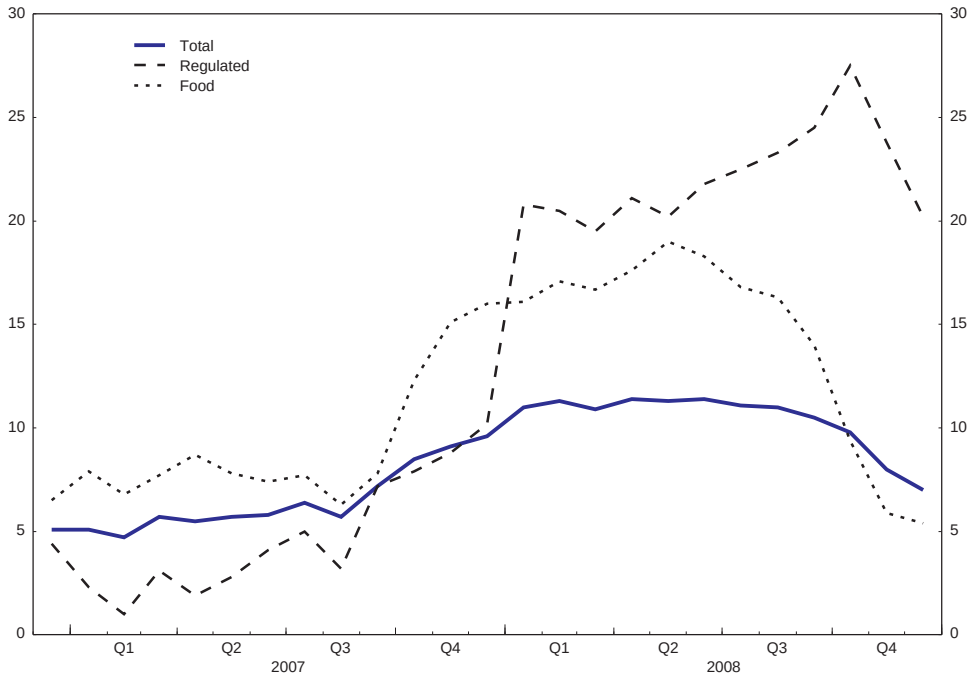
As a consequence, inflationary pressures built up

Following a period of high growth with low inflation, inflationary pressures started to emerge in 2005 and intensified in 2007, resulting in a 12-month rate of almost 10% by end-2007, significantly above the Maastricht inflation criterion.[4] Estonian inflation differs from EU-wide inflation due to several factors: *i)* price-level convergence due to different levels of development (essentially the Balassa-Samuelson effect); *ii)* lack of synchronisation of the cycle with the euro area and hence differences in output gaps; and *iii)* structural differences such as larger share of food in CPI than in the euro area, divergences in regulated prices and their changes, and differences in labour and product market regulations.

External factors played a role in inflationary pressures that Estonia experienced in recent years. Food and commodity prices rose rapidly, including surging world prices of timber, oil, metals, and Russian-origin natural gas.[5] Since Estonia's share of food products in the total CPI is about 30% higher and its share of energy prices almost 20% higher than in the euro area countries, price increases in these commodities played a greater role than in the euro area countries. Regarding Estonia-specific factors, inflation acceleration in the non-tradable sector has been fuelled in part by pro-cyclical fiscal policies as well as sizeable wage increases reflecting labour shortages already pointed to overheating during 2005-07. Domestic *ad-hoc* adjustments of regulated prices were also important in explaining the inflationary patterns, as illustrated by the price jump from December 2007-January 2008 (Figure 1.9). In summary, the contribution of domestic factors to overall

Figure 1.9. **CPI inflation**

12 month % change



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Source: Statistics Estonia.

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inflation became more significant during 2005-08 relative to earlier years (2002-04) when external factors were the driving force (Vanags and Hansen, 2008).

As inflation started to decelerate in the second half of 2008 due to declining domestic demand and falling commodity and fuel prices, the euro adoption became again a top priority for policymakers, to reduce currency and financial risks. However, meeting the Maastricht inflation criterion could turn out challenging, given that Estonia has relinquished independent monetary and exchange rate policies. While inflationary pressures could, in principle, also be reduced through fiscal tightening, given the low share of the budget in GDP the magnitude of the required adjustment is large.[6] Moreover, in the current recession such adjustment would amplify the cycle. In contrast, measures to further increase the flexibility of labour and product markets would help faster recovery (Chapters 4 and 5) and reduce future inflation by: *i)* reducing mark-ups or wage-cost pressures; and *ii)* changing the monetary transmission mechanism and anchoring inflationary expectations at a lower level (Bulir and Hurnik, 2008).

Overall employment outcomes were favourable, but regional and skill mismatches persist

Estonia experienced a notable decline in the unemployment rate during 2000-07, after an initial build-up related to the transition to a market economy and the Russian crises. The unemployment rate dropped to its lowest point in 16 years in mid-2008, and other labour market indicators also compare favourably to the EU15 as well as the European emerging market economies (Table 1.9).

Table 1.9. **Indicators of labour market performance, 2007**

	Unemployment rates (% of LF)	Employment rates (as % of relevant population)		
		Ages 15-64	Ages 55-64	Women
Estonia	**4.7**	**69.4**	**60.0**	**65.9**
Czech Republic	5.3	66.1	46.0	57.3
Hungary	7.4	57.3	33.1	50.9
Poland	9.6	57.0	29.7	50.6
Slovak Republic	11.1	60.7	35.6	53.0
EU27	7.1	65.4	44.7	58.3
EU15	7.0	66.9	46.6	59.7

Source: European Commission (2008).

The employment rate increased by almost 10 percentage points to 69% of working-age population in 2007, reflecting high job creation in a booming economy on the demand side and a modest social safety net on the supply side. Moreover, unlike most other EU countries, the labour market has been characterised by high employment rates among workers of ages 55-64 years and women. The increase in employment has been accompanied by higher labour force participation, as different groups of workers were able to seize the newly-created employment opportunities in the booming economy.

However, disparities among regions and counties have widened.[7] Several counties have been caught in a "low employment trap", with employment rates below 90% of the national average (Table 1.10). At the same time, employment rates in Tallinn have been above the national average since the mid-1990s, with differences widening further since then.[8] Inter-regional differences in employment performance have been persistent – the

Table 1.10. **Employment rates by counties**

In % of Estonia average

	1997	2000	2004	2005	2006	2007
Harju	108	110	109	111	110	110
Hiiu	110	109	107	111	109	113
Ida-Viru	95	89	85	88	92	91
Jõgeva	**88**	**81**	**80**	**77**	**82**	**86**
Järva	97	103	104	103	99	97
Lääne	97	97	102	99	87	96
Lääne-Viru	95	91	93	99	94	89
Põlva	**86**	**73**	**79**	**81**	**75**	**76**
Pärnu	107	97	97	92	92	98
Rapla	97	92	100	96	101	102
Saare	92	102	98	90	89	91
Tartu	93	99	106	99	101	102
Valga	93	94	92	89	92	87
Viljandi	93	103	97	95	98	96
Võru	**83**	**81**	**84**	**88**	**88**	**78**

Source: Statistics Estonia and OECD staff calculations.

three worst performing counties in 2000 were still the worst performing in 2007, indicating that employment policies have not adequately addressed local bottlenecks.

Similar to more advanced EU countries, differences in regional production structures and human capital explain much of the gap between good and bad performers (European Commission, 2002). Areas with high employment benefited from relatively large shares of output concentrated in high-tech sectors and knowledge-intensive services, and possessed a highly-skilled labour force. For example, in 2007 services accounted for almost 70% of employment in Harju and Tartu counties (where the two largest cities are located) and about 40% of their workers had tertiary education, in comparison with the national averages of 60 and 34%, respectively. In turn, the areas with poor outcomes had a large share of employment in agriculture and a low share of labour with tertiary education.[9]

The counterpart to substantial regional differences in employment rates is the low employment of low-skilled workers (with less than upper secondary education). The employment rates of the low-skilled remain well below those of workers with upper secondary or tertiary education, and the boom period during the 2000s raised them only marginally. Especially during 2005-07, the low employment of low-skilled workers coincided with skill shortages in high-tech sectors and knowledge-intensive services.[10] The widening differences in employment outcomes point to regional and skill mismatches, as well as labour market rigidities (such as insufficiently differentiated real wages) and other barriers to mobility.[11]

The Northeastern region has had persistently the highest unemployment in the country

During 2000-07, the unemployment rates declined across all regions. However, polarisation among regions emerged – the Northeastern region bordering with Russia, where many of the ethnic Russians reside, had persistently the highest unemployment rate as well as the largest incidence of long-term unemployment in the country (Table 1.11). When the unemployment started to rise in the third quarter of 2008, it increased the most again in this region – while the unemployment rates in other regions

Table 1.11. **Regional unemployment rates (% of labour force)**

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Northern Estonia	8.5	9.1	10.2	11.5	11.6	8.6	9.6	9.6	7.5	4.3	3.3
Central Estonia	8.9	8.4	12.0	14.9	11.0	9.7	7.9	7.8	5.1	5.2	5.1
Northeastern Estonia	**13.3**	**14.7**	**20.0**	**21.1**	**18.0**	**18.9**	**18.2**	**17.9**	**16.2**	**12.1**	**9.0**
Western Estonia	7.0	7.9	11.8	11.8	11.0	9.2	7.8	5.6	5.7	4.0	4.2
Southern Estonia	11.0	10.0	11.6	13.4	12.8	9.3	8.3	8.1	6.3	6.6	4.8
Total	9.6	9.8	12.2	13.6	12.6	10.3	10.0	9.7	7.9	5.9	4.7
Relative Standard Dev.	25.2	27.3	29.8	26.9	22.9	39.1	42.9	48.5	56.1	51.6	41.5

Source: Statistics Estonia.

reached about 5-6%, in the Northeastern region it climbed up to almost 12%. Another concern is the high concentration of long-term unemployed in this region.

The poor labour market outcomes in the Northeastern region can to some extent be attributed to its industrial heritage, and the region was therefore particularly hit by the necessity to restructure and downsize the large-scale industrial enterprises (Box 1.4). At the same time, private-sector development has been slow. Another contributing factor is the close geographical proximity to relatively less-developed regions in Russia – according to OECD (2005), the labour market performance of individual regions is closely linked to the outcomes of their surrounding regions, even if those are located in different countries. To improve the labour market outcomes, policies in this region need to take some of these special factors into account, and should aim especially at encouraging private-sector development (Chapter 5).

Box 1.4. **Downsizing of the Krenholm company**

Privatised in 1994 to the Swedish Company Boras Wafweri AB, Krenholm is the oldest and one of the largest textile companies in Estonia. With about 2 000 employees, it is a major employer in the Northeastern region. In 2006 and 2007 the company made losses, while turnover declined.

For several years now, Krenholm has been undergoing major restructuring and downsizing, with a view to restore profitability. While in the past the company was profitable partly because of availability of cheap labour, its competitiveness has been eroded by the rapid growth of labour costs in recent years. All employees are covered by collective agreements, and in 2007 they received wage increases in excess of 20%, as all the negotiated wages were proportionally linked to the centrally-agreed minimum wage. To cut costs, Krenholm's management started negotiations in early 2008 to lay-off of about 1 000 employees and shut down entire segments of operations, following earlier cuts of 376 jobs in 2005 and about 300 in 2006.

Krenholm's downsizing is made more complex by the composition of its workforce – most of the employees are women aged 50 years or more, with basic or specialised high school education. Many of them do not speak Estonian, cannot easily move, and are not readily suitable for other employment opportunities. Their chances are further hampered by the limited private sector development in Narva and the region, which is also reflected by a much lower vacancy-unemployment rate than the national average.

Source: Kallaste and Nurmela (2007) and materials provided by the Krenholm company.

Medium-term prospects remain favourable, but hinge on reforms

At this juncture, the government faces two key medium-term challenges: *i)* bringing the economy quickly back onto a sustainable growth path; and *ii)* setting up conditions for an eventual euro adoption.

Maintaining rapid productivity growth

To determine the factors which are likely to drive or constrain Estonia's growth over the medium term, it is important to identify the underlying sources of growth during the past boom, when Estonia's rates exceeded those of most European emerging market economies (Table 1.12). To clarify the approximate causes of the recent growth and establish some key stylised facts, a standard growth accounting methodology is applied to Estonia's aggregate data (Annex 1.A1).[12]

Table 1.12. **Real GDP per capita**

Average annual growth in %

	1995-2000	2001-07
Estonia	5.9	8.2
Central and Eastern Europe	4.0	5.0
European Union	2.9	2.3
Euro area	2.7	1.8
G7	2.9	2.0

Source: IMF.

The growth accounting exercise reveals that during 1998-2007, the accumulation of physical capital was the key factor, accounting for about 51.8% of the growth. TFP accounted for about 43.5% (Table 1.13).[13] The combined contributions of labour input and human capital amounted to only 4.7%. The share of labour input fluctuated – it was negative immediately after the Russian crises when employment declined, but rebounded from 2001 on and especially during 2005-07, reflecting increasing employment and labour shortages.[14] However, caution is needed when interpreting physical capital in recent years, since increasing shares of investment went to residential housing, which does not directly raise productivity.

Table 1.13. **Aggregate growth accounting results for Estonia, 1998-2007**

In %, annual averages

	1998-2007		1998-2000		2001-07	
	Annual % change	% of total	Annual % change	% of total	Annual % change	% of total
Real GDP growth (per cent)	7.1	100.0	4.7	100.0	8.2	100.0
Contributions to growth (percentage points)						
Labour	0.2	2.2	–2.1	–44.6	1.1	13.8
Human capital	0.2	2.5	0.2	4.2	0.2	2.1
Physical capital	3.7	51.8	3.3	70.3	3.9	47.2
TFP	3.1	43.5	3.3	70.1	3.0	36.9

Source: OECD, Statistics Estonia, Secretariat estimates.

A comparison of sources of growth in Estonia during 2001-07 with those in Finland and Ireland shows that physical capital accumulation has contributed more to growth in Estonia

than in Finland (Annex 1.A1). While TFP was the main source of growth in Finland, Ireland's growth was driven primarily by capital accumulation, largely in the tradable sector.

At least two conditions will need to be met to put Estonia back on a path of sustainable growth: *i)* Productivity gains rather than capital accumulation should play a greater role, given Estonia's already high investment share in GDP and high level of private external debt; and *ii)* the composition of investment would need to shift from non-tradables (and residential housing in particular) to tradables (Chapter 3).[15]

Making the economy more resilient – Estonia's economic alignment with the euro area

The global financial crisis re-established euro adoption as a key priority of policymakers, but reaching this goal will not be straightforward. Even though inflationary pressures have started to abate with contracting GDP and reduced commodity prices, meeting the Maastricht deficit criterion could be a challenge. Given that Estonia has adopted a fixed exchange rate regime, euro adoption would eliminate the costs of a perceived devaluation risk. The cost of joining would not be high, as the country has already given up independence in monetary and exchange rate policies. Less clear is the extent of the economic alignment with the euro area. Another question is whether the country's alignment with the euro area has increased as a result of pegging to the Deutschmark since 1992 and to the euro since 1999, as suggested by the endogeneity of the optimal currency area paradigm (Frankel and Rose, 1998).

Application of standard empirical methods (measures of structural similarity for output and trade, structural VAR) in examining Estonia's shock and business cycle synchronisation with the euro area suggests that country-specific shocks prevail in Estonia (Box 1.5 and Annex 1.A2). The predominance of asymmetric shocks does not seem to be too different from several current member of the euro area (Ireland). With the currency board in place, low synchronisation of cycles with the euro area implies that the ECB's monetary policy may be suboptimal (pro-cyclical) for Estonia's conditions and lead to excessive volatility of output. To avoid excessive volatility, Estonia needs to rely heavily on adjustment mechanism such as wage and price flexibility, labour and capital mobility, and effective counter-cyclical fiscal policy.

Box 1.5. **How synchronised is Estonia with the euro area?**

The optimal currency area (OCA) theory emphasizes synchronisation of economic shocks as one of the main conditions for countries to benefit from the monetary integration. Standard empirical methods were used (Annex 1.A1).

Structural similarity and correlation of economic activity between Estonia and the euro area

The likelihood of synchronisation of shocks and the business cycles increases with greater structural similarity of production and share of intra-industry trade. However, the share of intra-industry trade between Estonia and the euro area (about 50%) has been lower than that of the Czech Republic and Slovenia, new EU members with similar income per capital levels (CNB, 2008). Correlation of real GDP growth with the euro area has been low even relative to other new EU member countries, but increased during 2003-08. Similarly, correlation of inflation has been low but increasing and has been comparable to those of some of the smaller EMU members (Table 1.14).

Box 1.5. **How synchronised is Estonia with the euro area?** *(cont.)*

Table 1.14. **Estonia and the euro area: correlation of inflation and real GDP growth (1997-2007)**

	Real GDP growth	Inflation
Estonia	0.29	0.50
Germany	0.87	0.89
France	0.75	0.93
Finland	0.60	0.58
Ireland	0.45	0.56
Italy	0.79	0.74
Netherlands	0.74	0.22

Source: Secretariat estimates.

The nature and symmetry of shocks in Estonia and the euro area

A structural VAR model, consisting of output growth and changes in inflation, was applied to recover the underlying demand and supply shocks in Estonia and to determine their correlation with the euro area shocks. In Estonia, the supply shocks (including the real interest rate) accounted for majority of the real output variability, while the demand shocks accounted for most of the variability in prices (Annex 1.A2). Estonia's results are compared with those of Finland (Table 1.15).

Table 1.15. **Variance decomposition of changes in output and inflation in %**

	Real output		Inflation	
	Supply shock	Demand shock	Supply shock	Demand shock
Estonia	83	17	36	64
Finland	70	30	32	68

Even though correlations of the supply and demand shocks between Estonia and the euro area have been low (Figure 1.10), they have been positive and increased over time (Annex 1.A2).

Existing empirical research on shock synchronisation between the new EU members and the euro area

Extensive empirical literature exists on synchronisation of shocks and business cycles in the new EU countries (including Estonia) with the euro area. The following robust conclusions emerged:

- Shocks of the new EU countries (including Estonia) are less synchronised with the euro area than shocks of most of the EU15 countries (Fidrmuc and Korhonen, 2003).
- Estonia's shock synchronisation may be comparable with the smaller EMU countries (Eickmeier and Breitung, 2005; Fidrmuc and Korhonen, 2006).
- In some countries (including Estonia) synchronisation of shocks has increased over time (Babetskii, 2005; Fadejeva and Melihovs, 2008).

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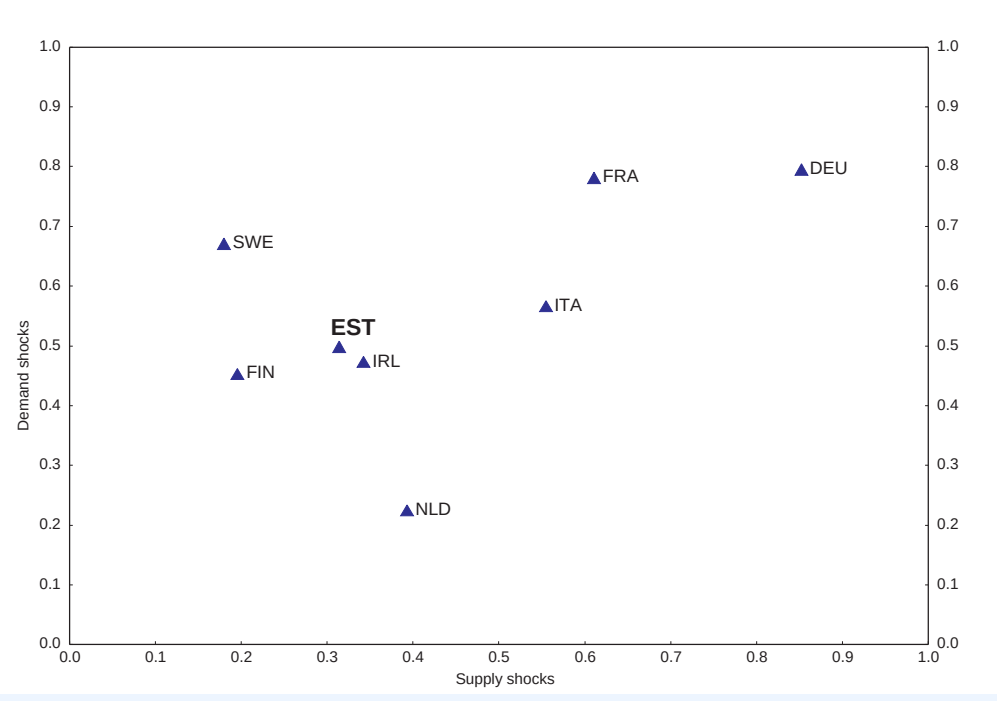
Box 1.5. **How synchronised is Estonia with the euro area?** *(cont.)*

Figure 1.10. **Correlation of underlying supply and demand shocks with those of the euro area**

0 to 1 indicating increasing correlation



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Note: Shocks were recovered from the residuals of structural vector autoregressions (real GDP and HICP inflation with 4 lags) for an effective sample 1998Q2 to 2007Q4. The euro area comprises the 15 members as at 2008.

Source: OECD Secretariat estimations.

Persistent disparities in income raise concerns about equity and sustainability

The current recession notwithstanding, Estonia's longer-term economic performance has been outstanding, with one of the highest growth rates in Europe and declining absolute income poverty.[16] However, the impressive absolute poverty reduction was purely due to rapid growth, and will be partly reversed during the current downturn. High income inequalities persist. Gini coefficient changed only marginally between 2000 and 2006 (from 0.36 to 0.34), and remains one of the highest in the EU, including many of the new EU members (Eomois, 2007). Regarding relative poverty, the Estonian Social Survey conducted by Statistics Estonia reveals that 19.5% of the total population was "at-risk-of-poverty" in 2006. The slight increase from 2005 (18.3%) indicates that continued high economic growth and the decrease in unemployment in 2006 affected various groups of society in different ways.

Looking at more disaggregated levels, people aged 65 years or more are the most vulnerable to poverty; their relative income position deteriorated in recent years. Examining the poverty rates among different regions reveals that the poverty rate is the highest in the Northeastern region and the lowest in the North region. Poverty rates also markedly differ among people with different levels of education – more than 40% of the population with less than upper secondary education was at risk of poverty in 2006. And by far the largest difference

in risk of poverty is between the employed part of the population (8%) and the unemployed (60)%, confirming that encouraging job creation and participation in the labour market is the most effective poverty-alleviating measure (Table 1.16, Figure 1.11, and Khan, 2007).

Table 1.16. **Risk-of poverty rates, 2003-06**

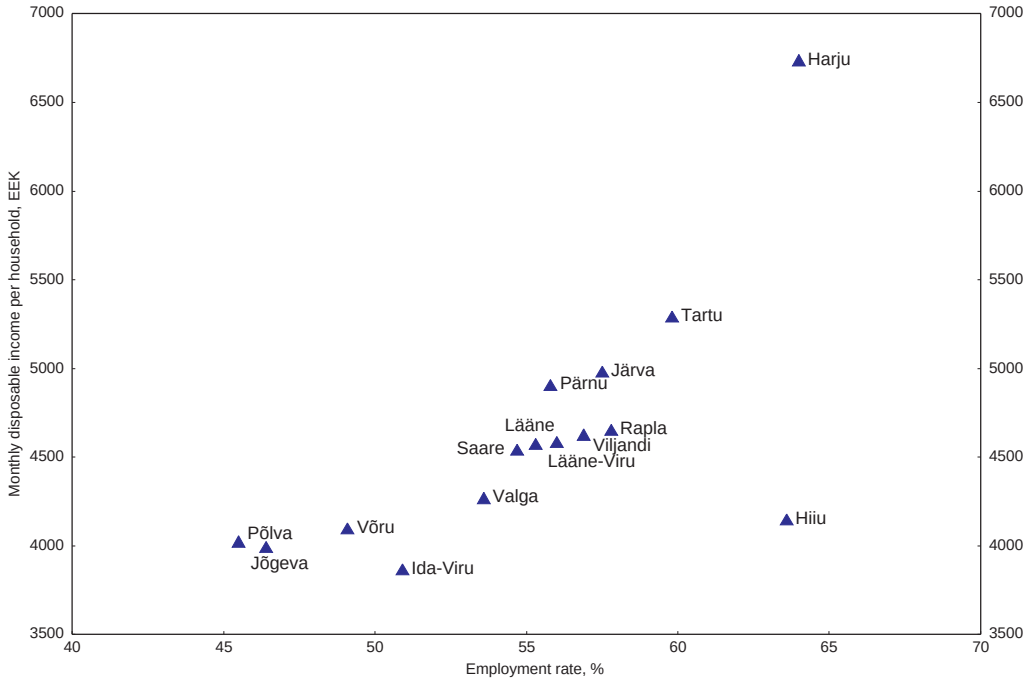
% of population

	2003	2004	2005	2006
Estonia	20.2	18.3	18.3	19.5
By regions				
Northern Estonia	12.5	10.9	11.9	11.2
Central Estonia	21.2	23.9	22.9	23
Northeastern Estonia	29.8	25.2	27.9	32.6
Western Estonia	21.8	20.1	19.6	21.6
Southern Estonia	25.8	23	20.8	23
By education				
Below upper secondary	35.8	34	37.1	43
Upper secondary	20.3	19.2	19.4	21.9
Tertiary	11.4	9.6	10.3	10.2
By age group				
0-15	19.8	21.5	19.8	17.4
16-64	18.4	17.1	16.2	16.5
65+	16.7	20.3	25.1	33.2
By employment				
Employed	9.6	7.5	7.5	7.8
Unemployed	49.0	60.0	59.5	61.7

Source: Statistics Estonia.

Figure 1.11. **Estonia: employment rates and disposable income**

By counties, average 2000-06



StatLink http://dx.doi.org/10.1787/560755014683

Source: Statistics Estonia.

These persistently high inequalities between the employed and unemployed could jeopardise the recent poverty achievements, especially since unemployment rose markedly in the third and fourth quarter of 2008. Consequently, both absolute and relative poverty are also likely to increase during the current cyclical downturn, creating potential for social tensions.[17]

Challenges ahead – bringing Estonia back onto a high sustainable growth path

Going forward, the main challenge for policymakers is to bring the economy quickly onto a path of high sustainable growth with low inflation. Towards this goal, *the OECD Survey* focuses on:

- *Removing the pro-cyclical bias of fiscal policy and enhancing its medium-term perspective.* Estonia's hard landing illustrates the importance of removing the pro-cyclical bias of fiscal policy and eliminating *ad hoc* adjustments. Experience of several OECD countries suggests that a well-designed expenditure rule, combined with balancing the budget over the cycle, is especially effective for conducting rule-based counter-cyclical fiscal policy with low debt (Chapter 2).
- *Addressing risks to financial stability and distortions in the housing market.* The medium-term challenges include improving risk management in the housing finance market through adopting mortgage-based lending with a securitisation scheme, phasing out distortions in incentives for housing investment, and increase financial literacy of all market participants. Risks to financial stability could be also mitigated by increasing co-operation with foreign supervisors. (Chapter 3).
- *Increasing flexibility of the labour market.* More flexible labour markets will be key in the current recession as well as over the medium term if Estonia is to move towards a knowledge-based economy. Remaining barriers that prevent labour reallocation into more productive activities should be thus reduced (Chapter 4).
- *Improving the business environment to foster productivity.* Overall, Estonia's business environment already facilitates productivity growth and investment in many ways. However, certain sectors remain regulated, as also suggested by OECD's PMR indicator (Chapter 5).

Notes

1. Sorsa, *et al.*, (2007) examined similar risks and vulnerabilities in countries of south-eastern Europe.
2. Ahrend, Cournède and Price (2008) discuss whether and how eased monetary and financial conditions may lead to excesses in financial and real asset markets and financial dislocation.
3. This is consistent with Kaminsky, Reinhart, and Vegh (2004) who found that in the emerging market economies periods of capital inflows are associated with expansionary macroeconomic policies while periods of outflows with contractionary ones.
4. White (2008) discusses how low inflation, high growth and low interest rates could coexist in emerging market economies for such an extended period of time. Rather than focusing on a single factor, he suggests that treating domestic and international factors as complements provides a more satisfactory explanation.
5. As the dollar is used for purchases of some commodity groups (primarily purchased from Russia), the appreciating EEK w.r.t. dollar was a mitigating factor, but played only a marginal role.
6. Staehr (2008) points out that one option for a country aiming to contain short-term inflationary pressures without giving up its fixed exchange rate system would be to use tax policies as a "hidden revaluation" for example by reducing the value-added tax and increasing the employers'

social security contributions. However, this would weaken competitiveness while reducing only short-term inflationary pressures. It would imply shift from direct to indirect taxation, with negative consequences for incentives and growth.

7. Estonia is divided into 5 regions and 15 counties.
8. As suggested in the OECD 2000 *Economic Survey of the Baltic States*, over time Tallinn with its diversified labour market has been playing an increasing role for job seekers from other areas of the country.
9. In the area with the highest unemployment, the Northeastern region, production is concentrated in the industrial sector, and a high share of labour force has specialised vocational education.
10. As a response to skill shortages in the IT and similar sectors, the government has recently relaxed somewhat its tight quota on number of immigrants that can enter Estonia every year.
11. In nominal terms, the disparity in regional wages has narrowed during 2000-07.
12. GDP data *prior* to the switching to chain-linked method in September 2008 was used.
13. Possible sources of TFP growth include changes in technology, improvements in efficiency of organisations, and externalities. Lamine (2008) carried out a sectoral breakdown of the real value added and TFP growth during 2005-07 and found that manufacturing and financial intermediation registered high total factor productivity growth, while productivity growth in construction and real estate declined.
14. The finding that capital accumulation was the main driving force of growth, followed by TFP, is consistent with Vanags and Bems (2005), who examined the period from 1996 to 2003.
15. Low contribution of human capital is also of concern, even though it may be somewhat underestimated since the calculation is based on years of schooling and work experience is not taken into account.
16. The share of households below the absolute poverty line decreased from 35% in 1997 to less than 10% in 2006 (Vork, 2008).
17. The 2007 study conducted by the Statistics Estonia highlighted that the poorest groups of population also tend to have low access to health services and participate less in cultural and social life.

Bibliography

Ahrend, R., B. Cournède, and R. Price (2008), "Monetary policy, market excesses and financial turmoil", *OECD Economics Department Working Papers*, No. 597.

Babetskii, I. (2005), "Trade integration and synchronization of shocks: implications for EU enlargement", *Economics of Transition*, Vol. 13(1), pp. 105-138.

Bayoumi, T. and B. Eichengreen (1993), "Shocking aspects of European monetary integration", in Torres, F. and F. Giavazzi (eds.), *Adjustment and Growth in the European Monetary Union*, Cambridge University Press, Cambridge, MA, pp. 193-229.

Bems, R. and J. Hartelius (2006), "Trade deficits in the Baltic states: how long will the party last?", *Review of Economic Dynamics*, Vol. 9 (1), pp. 179-209.

Blanchard, O. and D. Quah (1989), "Dynamic efficiency of aggregate demand and supply disturbances", *American Economic Review*, Vol. 79, No. 4, pp. 655-673.

Bulir, A. and J. Hurnik (2008), "Why has inflation in the European Union stopped converging?", *Journal of Policy Modelling*, Vol. 30, pp. 341-347.

Cover, J. and C. Hueng (2006), "Using the aggregate demand-aggregate supply model to identify structural demand-side and supply-side shocks: results using a bivariate VAR", *Journal of Money, Credit and Banking*, Vol. 38 (3), pp. 777-790.

Czech National Bank (2008), *Analyses of the Czech Republic's current alignment with the euro area*, CNB, Prague, December, *www.cnb.cz/m2export/sites/www.cnb.cz/en/monetary_policy/strategic_documents/download/analyses_of_alignment_2008.pdf*.

Eickmeier, S. and J. Breitung (2005), "How synchronized are central and east European economies with the euro area? Evidence from a structural factor model", *Deutsche Bundesbank Discussion Papers*, No. 20/2005.

Enders, W. and S. Hurn (2007), "Identifying aggregate demand and supply shocks in a small open economy", *Oxford Economic Papers*, Vol. 59 (3), pp. 411-429.

European Commission (2008), *Employment in Europe 2008*, European Commission, Brussels, *http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0758:FIN:EN:PD*.

European Commission (2002), "Performance gaps between European regions", Chapter 4, in *Employment in Europe 2002,* pp. 115-30, European Commission, Brussels.

Eomois, P. (2007), "Income inequality", *Social Inequality*, pp. 78-85, Statistics Estonia, Tallinn.

Fadejeva, L. and A. Melihovs (2008), "The Baltic States and Europe: common factors of economic activity", *Baltic Journal of Economics*, Vol. (8), pp. 75-96.

Fidrmuc, J. and I. Korhonen (2006), "Meta-analysis of the business cycle correlation between the euro area and the CEECs", *CESIFO Working Papers,* No. 1693.

Fidrmuc, J. and I. Korhonen (2003), "Similarity of supply and demand shocks between the euro area and the CEECs", *Economic Systems*, Vol. 46, No. 1, pp. 45-62.

Frankel, J. and A. Rose (1998), "The endogeneity of the optimal currency area criteria", *Economic Journal*, Vol. 108, pp. 1009-1025.

Gollin, D. (2002), "Getting the income shares right", *Journal of Political Economy*, Vol. 110, No. 2, pp. 458-474.

International Monetary Fund (2009), "Republic of Estonia: Financial system stability assessment", *IMF Country Report* 09/89.

International Monetary Fund (2008a), *Global financial stability report*, IMF, Washington, DC, October.

International Monetary Fund (2008b), "The European credit cycle: diverging patterns", in *IMF Regional Economic Outlook for Europe: Dealing with Shocks,* October.

International Monetary Fund (2007a), "Managing rapid financial deepening in emerging Europe", in *IMF Regional Economic Outlook for Europe: Strengthening Financial Systems,* November.

International Monetary Fund (2007b), "Republic of Estonia: 2007, Article IV Consultation", *IMF Country Reports, No.* 07/255, July.

Kaminsky, G, C. Reinhart and C. Vegh (2004), "When it rains it pours: procyclical capital flows and macroeconomic policies", *NBER Macroeconomics Annual 2004, The MIT Press, Cambridge, MA*.

Khan, AR. (2007), "Employment and pro-poor growth", in *Poverty in Focus – Analyzing and achieving pro-poor growth*, UNDP, 14-15, March 2007.

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 market economy", *IMF Working Papers,* WP/02/96.

Lamine, B. (2008), "Estonia: overheating and sectoral dynamics", *ECOFIN Country Focus*, Vol. 5, Issue 7 (8/1/2008).

Maechler, A. and I. Ong (2008), "Foreign banks in the CESE countries: in for a penny, in for a pound… or penny wise, pound foolish?", presentation at the IMF, 30 October.

Maiväli, M. and N. Lubenets (2007), "Managed *vs.* free wage-setting in Finland and Estonia: optimising Outcomes", *ECOFIN Country Focus*.

OECD (2009), *OECD Economic Outlook*, OECD, Paris, forthcoming.

OEC D (2000), *Baltic States: A Regional Economic Assessment*, OECD, Paris.

Romer, D. (2000), "Keynesian macroeconomics without the LM curve", *Journal of Economic Perspectives*, Vol. 14(2), pp. 149-169.

Sepp, U. and M. Randveer (2002), "Aspects of sustainability of the currency board arrangement", *Working Papers of Eesti Pank,* No. 5.

Sorsa, P., B. Bakker, C. Duenwald, A. Maechler and A. Tiffin (2007), "Vulnerabilities in emerging southeastern Europe – how much cause for concern?", *IMF Working Papers,* WP/07/236.

Staehr, K. (2008), The Maastricht inflation criterion and the new EU members from Central and Eastern Europe, *Working Papers of Eesti Pank, No.* 4/2008.

Stockman, AC. (1999), "Choosing an exchange rate system", *Journal of Banking and Finance*, Vol. 23, pp. 1483-1498.

Vanags, A. and M. Hansen (2008), "Stagflation in Latvia: how long, how far, how deep?", *Baltic Journal of Economics*, Vol. (8), pp. 5-28.

Vanags, A. and R. Bems (2005), "Growth acceleration in the Baltic States: what can growth accounting tell us?", *BICEPS report*.

Vork, A. (2008), "Estonian tax-benefit system: recent developments and challenges", presentation at the University of Tartu, Estonia, 10 September.

White, W. (2008), "Globalisation and the determinants of domestic inflation", *BIS Working Papers*, No. 250.

ANNEX 1.A1

A growth accounting exercise for Estonia

Methodology and data

Following the standard growth accounting framework, output performance in Estonia can be expressed using the Cobb-Douglas production function:

$$Y_t = A_t K_t^{\alpha} (q_t L_t)^{1-\alpha} \tag{1}$$

where Y is real GDP, K is the physical capital, L is labour input, q is a human capital index (measured by education), and A is total factor productivity (TFP), which can be interpreted as containing any growth-enhancing factor other than the inputs mentioned. From (1), the growth accounting equation becomes:

$$\frac{dY}{Y} = \frac{dA}{A} + \alpha \frac{dK}{K} + (1-\alpha)\frac{dL}{L} + (1-\alpha)\frac{dq}{q} \tag{2}$$

The data used for real GDP, real investment, the capital stock, employment and the human capital are from the OECD database. Specifically, the path of the physical capital is calculated from $K_{t+1} = I_t + (1 - \delta)K_t$, where I denotes the real investment and δ is the rate of depreciation of the existing capital. Capital stock for Estonia is then estimated from investment data by assuming a capital/GDP ratio of 1.3 in 1995 and a constant depreciation rate of 8%.[1] The human capital index is measured by the average years of schooling of the population of ages 25-64.[2] The labour input is measured by total hours worked by all persons in employment, and the labour income share $1 - \alpha$, set at 0.66, is obtained from the national accounts.[3]

Results

Results of the growth accounting estimates, based on equation (2), are presented in Table 1.12. The contributions of factor inputs (physical capital, human capital, and labour) to output growth are measured by their growth rates and weighted by income shares. During 1998-2007 the accumulation of physical capital was the most important source of growth, followed by the TFP growth.

Sensitivity analysis

Sensitivity analysis was carried out with respect to: *i)* the initial capital stock/GDP ratio; *ii)* share of labour income in GDP; and *iii)* the rate of depreciation of the physical capital (Table 1.A1.1).

Table 1.A1.1. **Factor contribution to growth under different parameters in 2001-07**

In % of total GDP growth

Value of parameter	Depreciation rate		Initial capital stock		Capital income share	
	6%	10%	1.1	1.5	0.31	0.39
Labour	13.8	13.8	13.8	13.8	14.4	12.8
Human capital	2.1	2.1	2.1	2.1	2.2	2.0
Physical capital	48.9	45.8	50.0	44.6	43.3	54.1
TFP	35.2	38.3	34.0	39.5	40.1	31.1

Source: Statistics Estonia and Secretariat estimates.

Comparison with Finland and Ireland

Physical capital accumulation has contributed more to real GDP growth in Estonia than in Finland but less than in Ireland during 2001-07 (Table 1.A1.2).

Table 1.A1.2. **Growth accounting results for Estonia, Finland and Ireland, 2001-07**

In %, annual averages

	Estonia		Finland		Ireland (2001-06)	
	%	% of total	%	% of total	%	% of total
Real GDP growth (%)	8.2	100.0	3.1	100.0	5.4	100.0
Contributions to growth (% points)						
Labour	1.1	13.8	0.4	13.3	1.1	21.1
Human capital	0.2	2.1	0.3	8.2	0.3	5.7
Physical capital	3.9	47.2	1.0	33.1	3.4	63.7
TFP	3.0	36.9	1.4	45.5	0.5	9.5

Source: OECD, Statistics Estonia, and Secretariat estimates.

Notes

1. At 0.08 the depreciation rate δ is well within the range of 0.04-0.1 used in similar studies (Vanags and Bems, and others). The initial (1995) capital stock value was set at 1.3, within the range of 1.3-1.7 derived in Vanags and Bems (2005).
2. This approach, widely used in the growth accounting, does not take into account on-the-job experience, and thus underestimates the contribution of human capital to growth. During the transition some of the previous work experience became obsolete (as evidenced by massive sectoral and occupational shifts).
3. Similarly to Bems and Hartelius (2006), Vanags and Bems (2005) and along the lines of Gollin (2002), the income share consists of employees' compensation and mixed income, to reflect the fact that in emerging market economies unincorporated enterprises tend to be labour intensive.

ANNEX 1.A2

Shock synchronisation between Estonia and the euro area

The underlying model

The empirical analysis is based on the standard aggregate demand-aggregate supply (AD-AS) model:

$$y_t^S = E_{t-1}y_t + \alpha(\pi_t - E_{t-1}\pi_t) + \varepsilon_t^S \quad (1)$$

$$y_t^D + \pi_t = E_{t-1}(y_t^D + \pi_t) + \varepsilon_t^D \quad (2)$$

$$y_t = y_t^S = y_t^D \quad (3)$$

In (1)-(3), y_t denotes the output level in period *t*, while $E_{t-1}y_t$ is the *t*-period output expected given information at *t-1*. Similarly, π_t is the inflation during period *t*, while $E_{t-1}\pi_t$ is the inflation expected at *t-1*. The superscripts *S* and *D* represent supply and demand, and ε_t^S and ε_t^D denote the, serially uncorrelated, structural aggregate supply and structural aggregate demand shock, respectively.[1]

Equation (1) is the AS curve, where output rises with unexpected inflation acceleration and positive supply shocks. Equation (2) states that the nominal AD increases with its expected value and positive demand shock. Equation (3) denotes the market clearing condition. In the matrix form, the model is described by:

$$\begin{bmatrix} y_t \\ \pi_t \end{bmatrix} = \begin{bmatrix} E_{t-1}y_t \\ E_{t-1}\pi_t \end{bmatrix} + \begin{bmatrix} \frac{1}{1+\alpha} & \frac{\alpha}{1+\alpha} \\ \frac{-1}{1+\alpha} & \frac{1}{1+\alpha} \end{bmatrix} \cdot \begin{bmatrix} \varepsilon_t^S \\ \varepsilon_t^D \end{bmatrix} \quad (4)$$

The responses of output and inflation to positive AD and AS shocks are detailed in Table 1.A2.1:

Table 1.A2.1. **Predicted responses from the above AD-AS framework**

		Short-run	Long-run
Output response to positive	AS shock	Positive	Positive
	AD shock	Positive	Neutral
Inflation response to positive	AS shock	Negative	Negative
	AD shock	Positive	Positive

Empirical analysis (structural VAR approach)

A bivariate structural VAR model is applied to recover the underlying AD and AS shocks in Estonia and to determine the degree of their correlation with the euro area

shocks.[2] Supply shocks, which influence cost of inputs, are driven by oil prices, interest rates, changes in technology, and permanent changes to the labour force; they represent the structural side of the economy. Demand shocks consist of: *i)* real shocks such as changes in consumer confidence or in government spending; and *ii)* nominal shocks such as changes in expected inflation or monetary policy (interest rates). These shocks are identified as follows:

- Both shocks – supply and demand – may have short-run effects on output and inflation.
- Supply shocks have permanent effect on both output and inflation.
- Demand shocks have permanent effect on inflation, but do not have permanent effect on output.

While this identification scheme does not impose the sign restrictions of Table 1.A2.1 (Annex 1.A2), they are used in *ex-post* verification of the results (below).

Results

Variance decomposition was carried out on real GDP and price data from Q2 1997 and Q2 2007, to identify contributions of supply and demand shocks to fluctuations in real output and prices. In Estonia, the supply shocks (including the real interest rate) accounted for majority of the real output variability, while the demand shocks accounted for majority of the variability in prices.[3]

Verification of results – impulse responses

In the long run, the impulse response of real GDP to supply shock is consistent with the prior of the AD-AS framework, namely the supply shock has a permanent impact on

Figure 1.A2.1. **Comparison of underlying supply shocks**

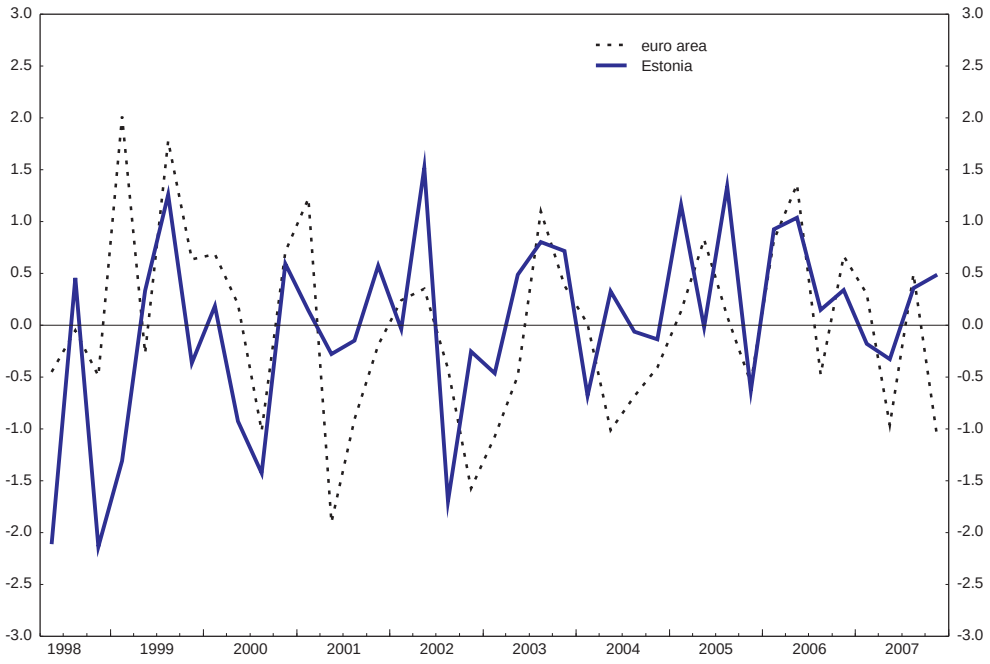


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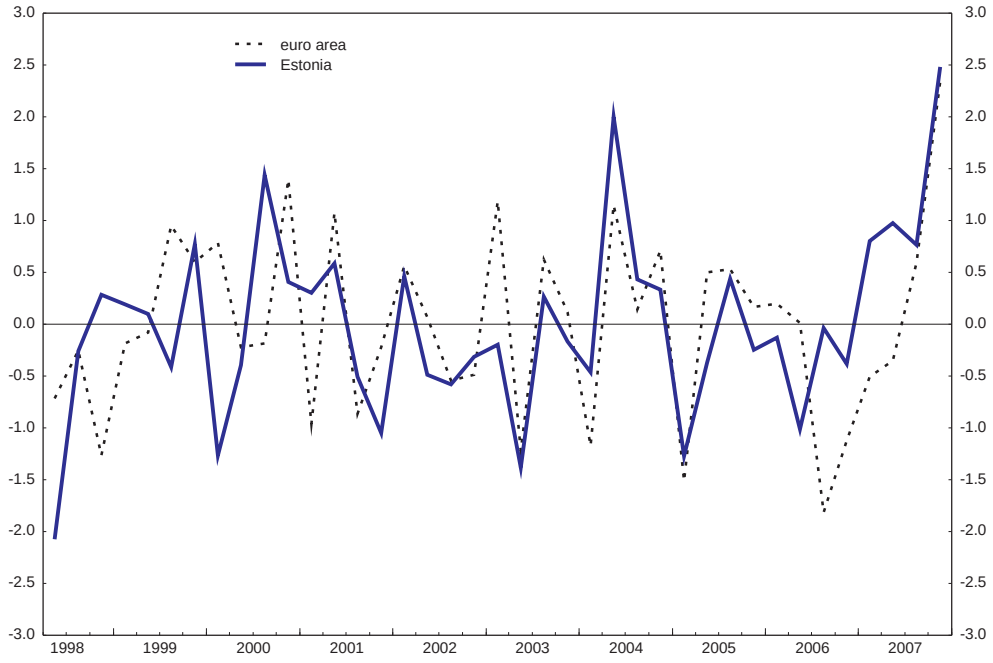
Figure 1.A2.2. **Comparison of underlying demand shocks**



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Note: Recovered from the residuals of structural vector autoregressions (real GDP and HICP inflation with 4 lags) for an effective sample 1998Q2 to 2007Q4. The euro area comprises the 15 members as at 2008.

Source: OECD Secretariat estimations.

the real GDP. The impulse response of inflation to demand shock is positive as predicted. The positive response of inflation to positive supply shock suggests that the supply shock has been accompanied by accommodating demand management (pro-cyclical fiscal policies).

Correlation of the supply and demand shocks of Estonia with those of the euro area

Figures 1.A2.1 and 1.A2.2 (Annex 1.A2) show low, but positive correlations between the Estonia's and the euro area's supply and demand shocks. Moreover, the shocks have become more synchronised over time.

Notes

1. The model described by (1)-(3) is a stochastic version of the AD-AS model based on IS-MP-IA framework, along the lines of Romer (2000). In the context of identifying the structural demand and supply shocks, a very similar framework was used in Cover and Hueng (2006) and Enders and Hern (2007). The only difference in (4) is replacing the price level with inflation.
2. The method was pioneered by Bayoumi and Eichengreen (1993), who applied the Blanchard and Quah (1989) identification scheme to the OCA theory. In the empirical OCA literature on the EU accession countries, the method was used by Fidrmuc and Korkohan (2003), and others.
3. Since early 2000s until 2007, the high GDP growth in Estonia was driven to a large extent by foreign credit obtained at very low and eventually negative real interest rates. This would imply that inputs to production were obtained at low cost, eventually raising the potential output.

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Chapter 2

Removing the pro-cyclical bias of fiscal policy

The severe economic downturn and high output volatility, in the context of the currency board, underscore the importance of well-designed fiscal policies to help mitigate shocks. Since Estonia's fiscal policy now exercises a pro-cyclical bias, the key challenge is to develop gradually its counter-cyclical role without jeopardising sustainability. The government could achieve this objective by modifying the rule of annually balanced budgets and balance the budget over the business cycle while letting the automatic stabilizers respond freely to short-term fluctuations. The deficit target accompanied by an expenditure rule incorporated in the medium term budgetary framework would facilitate sustainability and efficiency of public spending. To enhance credibility of the modified framework discretionary measures should be used for longer-term structural issues. The uncertainty of estimating the structural surplus could be addressed through a mechanism that claws back expenditure or debt overruns. An important consequence of such changes would be the development of a government bond market, which could also play a benchmark role for financial markets.

Trends in fiscal policies and outcomes

Estonia has a stronger fiscal position than most OECD countries…

Shortly after establishing the currency board, Estonia adopted a conservative fiscal policy. It was anchored in a *de facto* balanced budget rule and accompanied by a simple, efficient, and transparent tax system, which included a flat rate income tax.[1] Even though the fiscal rule is not enshrined in the Constitution, it has been followed by all political parties in power. In addition to the macroeconomic stabilization, the fiscal framework aimed at private sector development by minimising distortions from high tax rates and public sector capture of resources.[2]

The balanced budget rule provided a depoliticised framework for fiscal discipline and macroeconomic stabilization. CPI inflation decreased from over 1 000% in 1992 to less than 10% in 1998, and government expenditures were reduced by almost 7 percentage points of GDP between mid-1990s and 2001. This allowed the government to ease the tax burden while turning the budget deficits of the 1990s into surpluses from 2001 on. The fiscal rule resulted in Estonia's low and declining public sector debt. During 2003-07 Estonia had the highest fiscal surpluses and the lowest national public debt among the new EU members and also one of the lowest public debts among the OECD countries (Figures 2.1-2.6).

The recent boom was a missed opportunity to save more of the windfall revenues

During 2005-07 the revenues collected exceeded projections, leading to surpluses. However, a strong fiscal position, the co-financing obligations for EU-sponsored expenditures, and election-related pressures reduced the political scope for savings. A breakdown of revenues reveals that a large portion of the surge was due to a "one-off" rise in non-tax revenues while the extra VAT receipts were mostly related to the absorption (import) boom (Table 2.1).[3] Nevertheless, some of the windfall revenues were spent in *ad hoc* manner *via* supplementary budgets, including on large public sector wage increases that are difficult to reverse (IMF, 2007). The recent expansionary policies thus worsened the underlying budgetary balance and made achieving the Maastricht budget criterion and fiscal sustainability more challenging.[4] In the current recession, fiscal policy faces a dual challenge of correcting the past overspending without amplifying the cycle.

Fiscal policy exhibits a pro-cyclical bias

With the currency board and a liberalised capital account, Estonia relinquished the monetary and exchange rate tools of macroeconomic management and assigned a greater role to fiscal policy. The key question thus becomes: Has fiscal policy played a stabilizing role or has it exacerbated cycles? As indicated above, the fiscal rule of annually balanced budget reduced flexibility of fiscal policy. In addition to lacking solid economic foundations, such rules have been criticized for increasing output volatility and creating pro-cyclical bias (Fatas, 2005; and European Commission, 2006). Indeed, estimates of the Estonian cyclically adjusted budget balance suggest that fiscal stance has been pro-cyclical or neutral every year since 2000 (Figure 2.7). Moreover, since the estimates below are based

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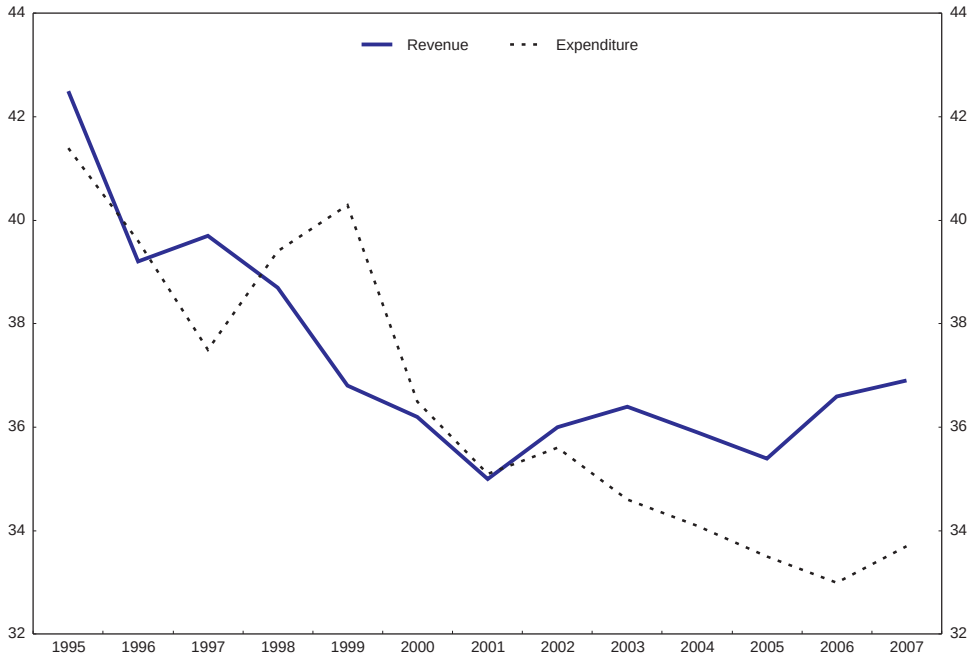
Figure 2.1. **General government revenue and expenditure, 1995-2007**
% of GDP



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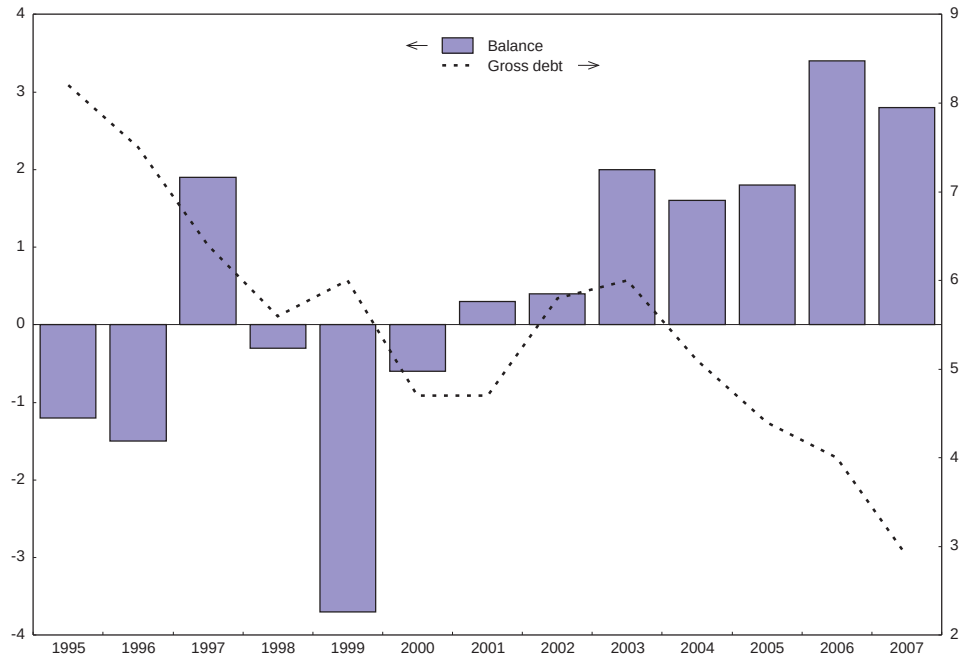
Source: Statistics Estonia.

Figure 2.2. **General government balance and gross debt, 1995-2007**
% of GDP



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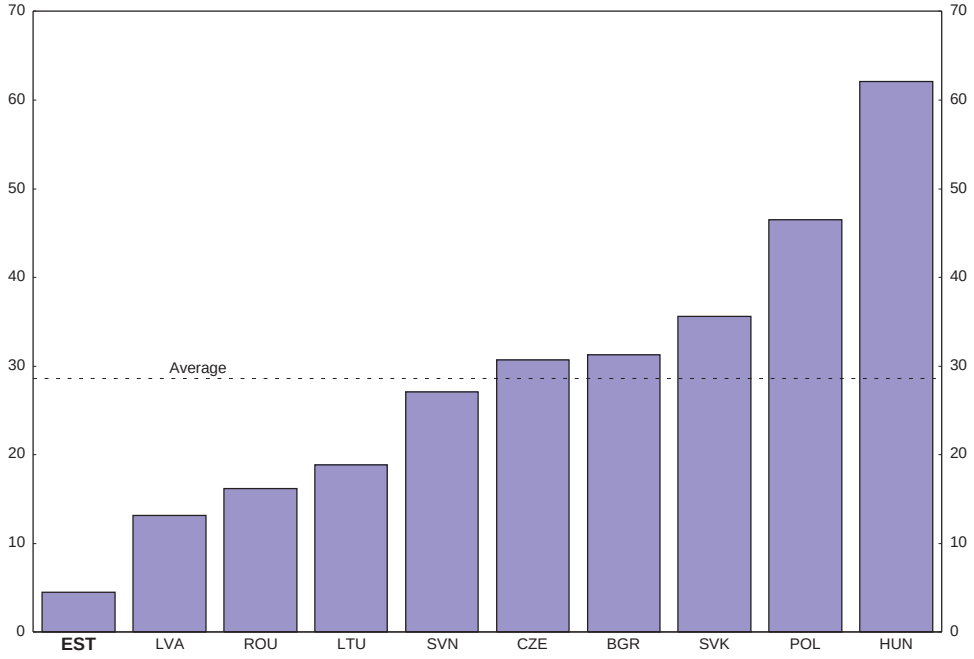
Source: IMF, IFS.

Figure 2.3. **Gross debt, 2003-07**
% of GDP



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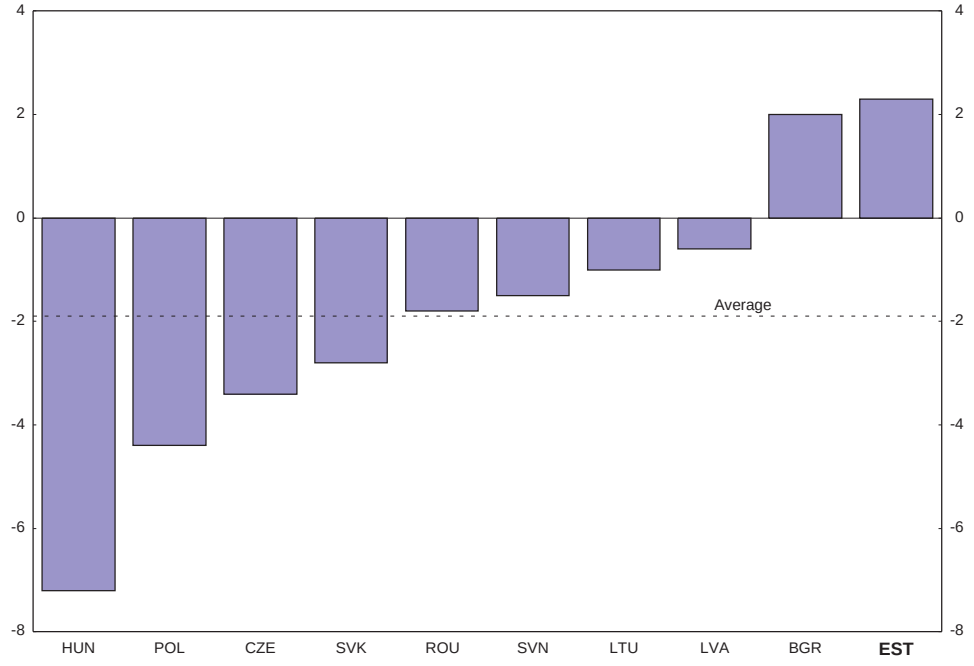
Source: IMF, IFS.

Figure 2.4. **Fiscal balance, 2003-07**
% of GDP



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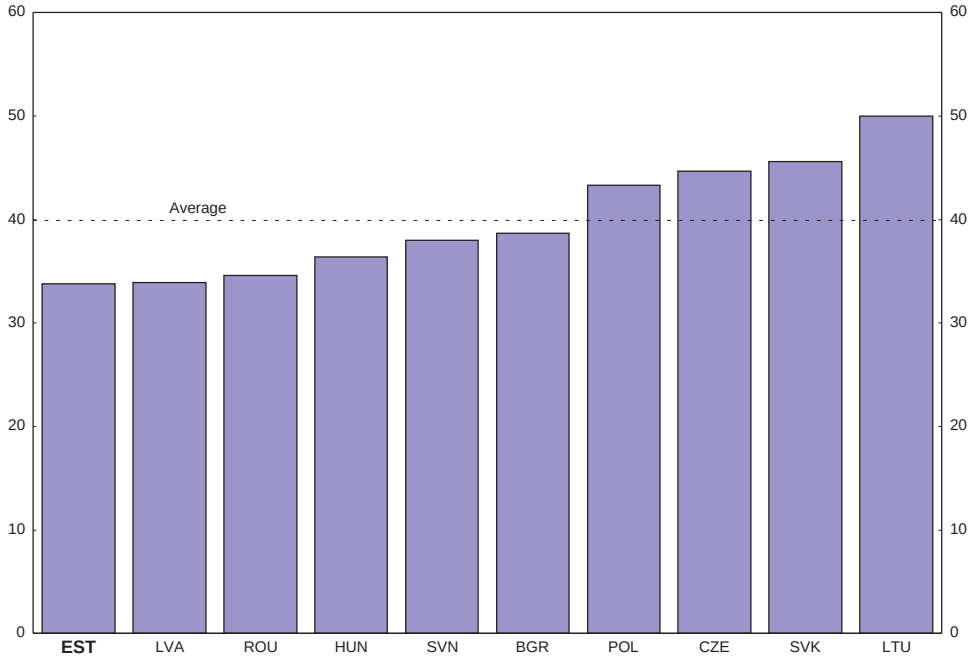
Source: IMF, IFS.

Figure 2.5. **Government expenditures, 2003-07**
% of GDP



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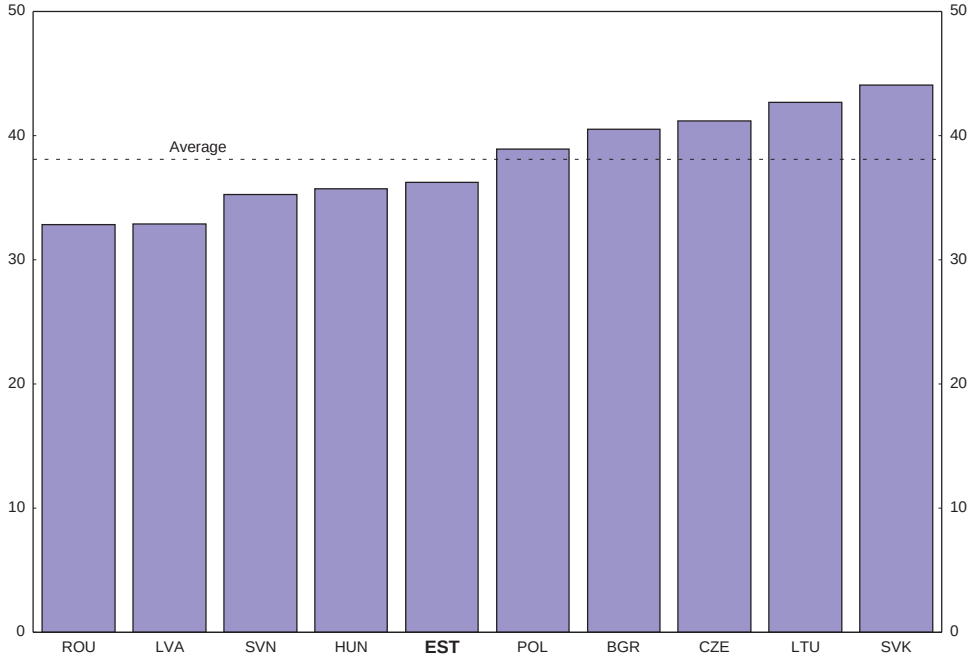
Source: IMF, IFS.

Figure 2.6. **Government revenues, 2003-07**
% of GDP



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Source: IMF, IFS.

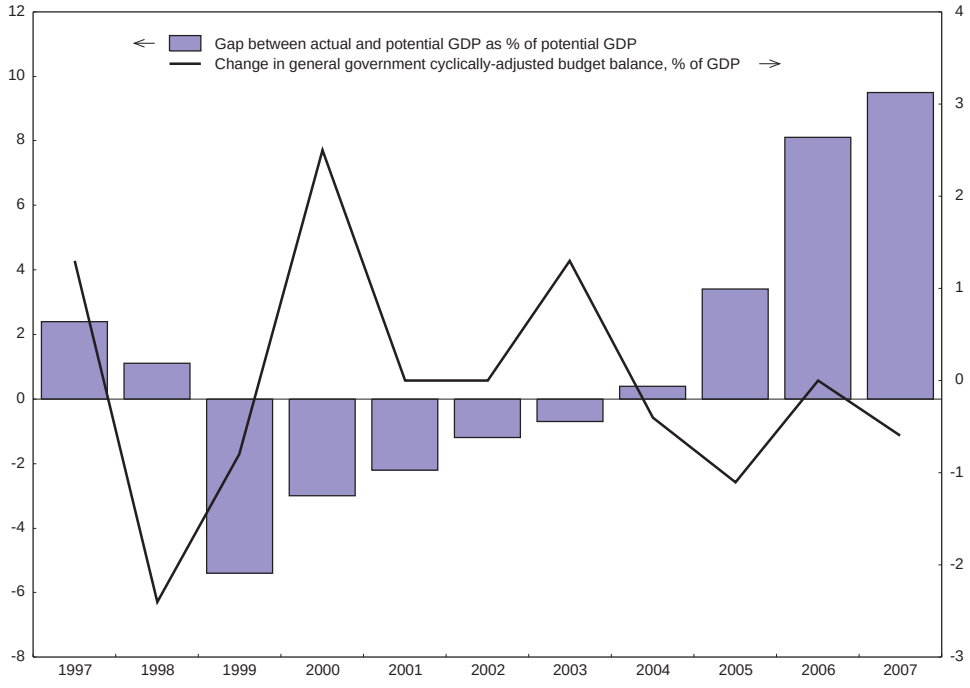
Table 2.1. **Summary of the fiscal adjustment, 2004-07**

% of GDP

	2004	2005	2006	2007
Revenues and grants	30.9	31.4	32.8	33.7
of which: Revenues	28.9	28.8	30.0	30.8
Tax revenues	26.2	26.2	26.7	27.8
Direct taxes	18.5	17.3	17.7	18.9
of which:				
PIT	6.3	5.5	5.6	6.0
CIT	1.7	1.4	1.5	1.7
Social Security contributions	10.5	10.3	10.5	11.2
Indirect taxes	11.4	12.5	12.8	13.0
of which:				
VAT	**7.5**	**8.4**	**9.0**	**9.2**
Non-tax revenues	**4.8**	**5.3**	**6.1**	**5.9**
Expenditures	29.8	30.4	31.5	31.8
Current expenditures	28.4	28.4	29.5	29.6
Capital expenditures	1.4	2.0	2.0	2.2
Balance	*1.1*	*1.0*	*1.3*	*1.9*

Source: Ministry of Finance of the Republic of Estonia and Statistics Estonia.

Figure 2.7. **Output gap and general government balance**



StatLink http://dx.doi.org/10.1787/561168503150

Source: European Commission – Economic and Financial Affairs, Cyclical adjustment of budget balances, October 2008.

on the output gap, they do not classify revenues associated with the absorption boom as windfall ones and thus underestimate the loosening of the fiscal stance in recent years (Jaeger and Klemm, 2007).

An alternative way to evaluate the fiscal cyclical stance is through policies such as changes in government consumption (net of transfers and debt service outlays) and tax rates rather than outcomes such as the budget deficit (Kaminsky *et al.*, 2004).[5] Tax policy of the recent years indicates pro-cyclical stance, since tax rates on both personal and corporate income were gradually lowered from 2004 onwards, while the other tax rates remained unchanged. Moreover, increases in non-taxable minimum during 2003-06 exceeded the inflation rate, further easing the tax burden (Table 2.2). The pro-cyclical tax policy continues in 2009 since the planned cut of personal income tax and corporate income tax on distributed profits has been postponed, while the minimum tax-deductible amount has been left unchanged and the reduced VAT rate on selected items increased. On the expenditure side, the cyclical component of real government consumption has been positively correlated with the cyclical component of real GDP during 1993-2007, confirming that expenditures also amplified already pro-cyclical lending conditions (Figures 2.8 and 2.9).

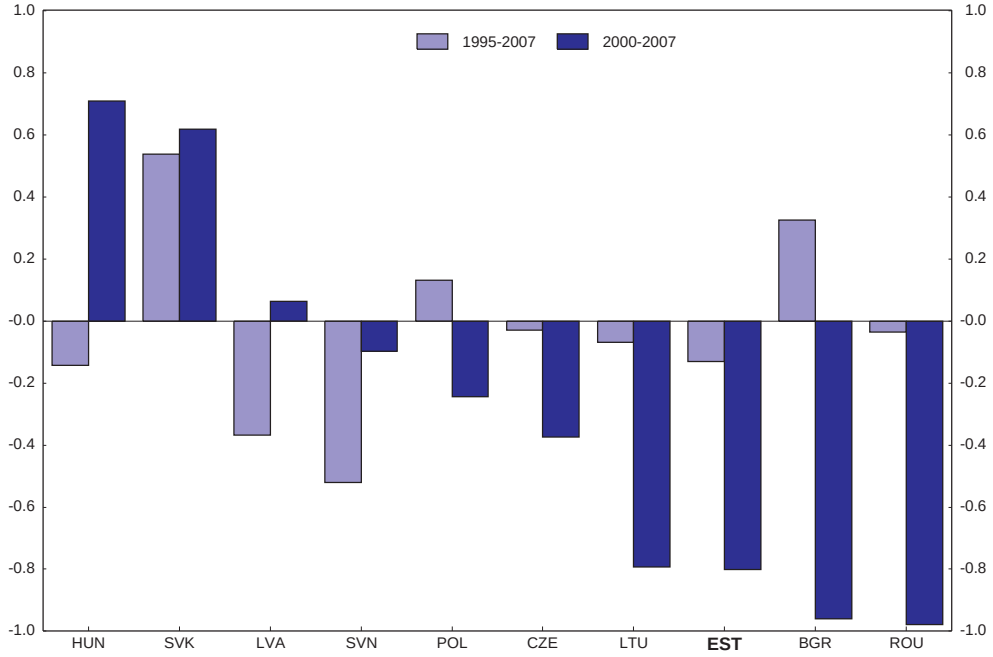
Table 2.2. **Income tax rates and non-taxable minimum**

	Income tax rate (%)	Monthly non-taxable minimum (EEK)
2003	26	1 000
2004	26	1 400
2005	24	1 700
2006	23	2 000
2007	22	2 000
2008	21	2 000

Source: Ministry of Finance of Estonia.

Figure 2.8. **Correlations of the cyclical components of real interest rates and real GDP**

0 to ±1 indicating increasing positive/negative correlation

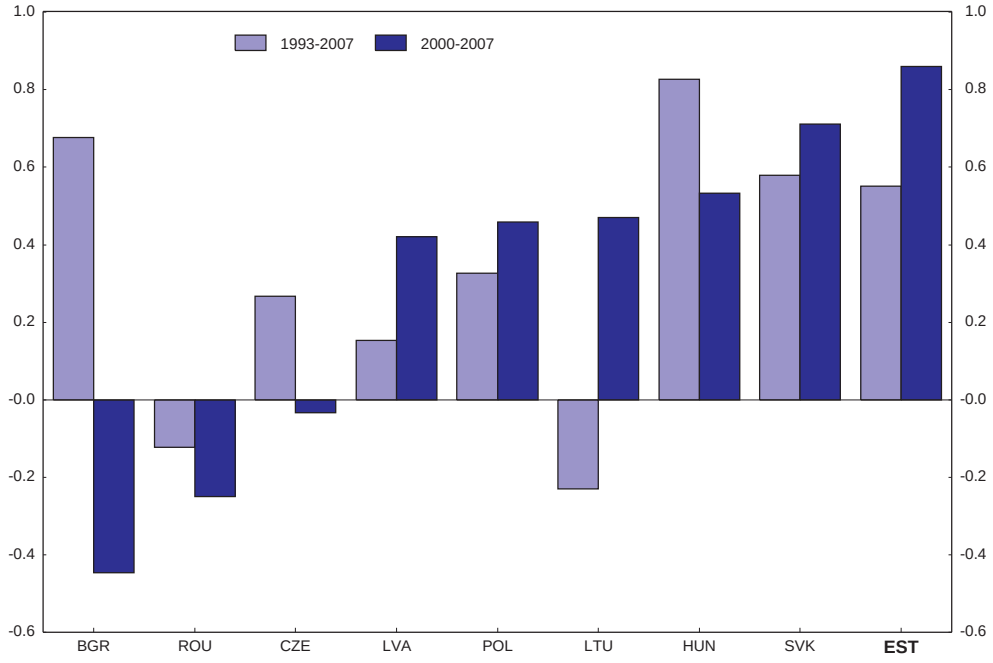


StatLink http://dx.doi.org/10.1787/561172171825

Source: IMF, *World Economic Outlook* and Secretariat estimates.

Figure 2.9. **Correlations of the cyclical components of real government consumption and real GDP**

0 to ±1 indicating increasing positive/negative correlation



StatLink http://dx.doi.org/10.1787/561174333246

Source: IMF, *World Economic Outlook* and Secretariat estimates.

In addition to the pro-cyclical bias, the fiscal rule of annually balanced budgets tends to worsen economic performance by increasing volatility of revenues and output (Fatas, 2005). In Estonia, private consumption has indeed been more volatile than in most other European emerging market countries. Given the large share of consumption taxes in revenues, the high volatility of private consumption implies high volatility of the tax base. Output in Estonia is also relatively volatile (Table 2.3).

Table 2.3. **Volatility of private consumption and output, 1995-2007**

Standard deviation/mean, in %

	Output	Private consumption
Czech Republic	13.5	12.2
Estonia	30.6	27.9
Hungary	17.9	17.9
Latvia	29.9	33.6
Lithuania	25.3	26.2
Poland	18.9	20.5
Slovak Republic	19.6	22.7

Source: Secretariat estimates.

Modifying the current fiscal rule – increasing flexibility without jeopardising sustainability

During the current downturn, Estonia faces the challenge of minimizing pro-cyclical discretionary measures, without jeopardising medium-term sustainability and undermining credibility.

The annually balanced-budget rule is inefficient and discourages a medium-term perspective

In spite of their merits, balanced budget rules are far from optimal policies, and Estonia should weigh their benefits against the cost. From the dynamic taxation perspective, optimal fiscal policies would minimise inter-temporal distortions. The government budget thus would not be balanced annually but only in a present value sense. Temporary fluctuations in revenues would be smoothed out, including by issuing debt. From the stabilization perspective, the balanced budget rule limits interventions that the government can use to dampen the effect of an economic shock on individuals' income (Alesina and Perotti, 1996).

Estonia's budgetary process exhibited these weaknesses, especially in recent years. Following the tax rate cuts and *ad hoc* expenditure increases during 2005-08, even the initial agreement on the 2009 budget was difficult to reach, mainly because of lack of consensus on what expenditures should be cut to balance the budget. When the projected 2009 real GDP growth was revised downwards dramatically, additional cuts in the amount of EEK 8 billion were agreed in February 2009. These cuts were taken as Estonia tries to meet the Maastricht criterion of the 3% of GDP budget deficit limit and adopt the euro in 2011. The government is ready to tighten the budget further if the 2009 decline of GDP is more pronounced than 6% as in the latest official forecast. Taking into account its own January 2009 forecast and the Estonia's objective of euro adoption, the European Commission considered the overall restrictive fiscal stance planned for 2009 and 2010 as an adequate response to current macroeconomic challenges (European Commission, 2009). Nevertheless, the lengthy discussions pertaining to the latest budget suggest that medium term expenditure priorities need to be better established or at least clarified and the underlying macroeconomic forecasts strengthened.

Estonia can draw on substantial international experience with reforms of fiscal institutions…

Modifying any fiscal rule inevitably involves trade-offs between credibility and flexibility. In the case of Estonia, however, gradually increasing flexibility of fiscal policy would raise its credibility as well. The excessively strict *ex ante* rule lacks credibility because it cannot accommodate shocks without discretionary expenditure increases or cuts. It is also destabilizing as it overrides the impact of automatic stabilizers. Estonia is well positioned to modify its fiscal framework since it can draw on its own experience with the balanced budget rule as well as on international best practices on effective fiscal rules gathered across many countries and over long periods of time. Although annually balanced budget rules were implemented by a number of countries wishing to install fiscal responsibility, they eventually proved too rigid and were replaced by more flexible arrangements. In fact, annually balanced budget rules in nominal terms at the national level currently do not exist in OECD countries (Box 2.1).

Box 2.1. **National fiscal rules in historical perspective**

Efforts to constrain discretion in fiscal policy date back to the early 19th century. Following broadly Schick (2003), fiscal policy and rules evolved in three stages: *i)* prevalence of the balanced budget rules, *ii)* adherence to Keynesian deficit rules, and *iii)* an increased emphasis on debt and deficit reduction.

1. Balanced budget rules prevailed to shortly after World War II. While some countries applied such a rule to the entire budgets, others adopted a "golden rule", that is allowing deficits for public investment, to gain credibility and access to financial markets (Kopits, 2001). Several countries (Germany and Japan, for example) introduced balanced budget rules in their post-war stabilization programs.
2. In the 1950s and 1960s, many countries shifted to demand management policies and accommodating fiscal stance. Some countries strived to maintain a balance over the business cycle by raising taxes during the periods of strong economic performance. Persistent deficits and accumulating debt in the 1970s and 1980s led policymakers to refocus on fiscal prudence.
3. National fiscal rules have become widely used since the 1990s, with countries supplementing their cyclically balanced budget rules with expenditure and debt rules to achieve sustainability. While the increase in the number of rules used reflects partly the EU expansion, it is also due to proliferation. The recent rules tended to be accompanied by transparency standards consisting of accounting rules, reporting requirements, and medium-term budgetary frameworks (Kopits, 2001).

The Netherlands provides an example of how views on the function of fiscal rules evolved. The following periods can be distinguished in the development of the Dutch fiscal framework: *i)* the balanced budget rule (1814-1956); *ii)* the Keynesian deficit norms (1957-79); *iii)* rules for deficit reduction (1980-93); and *iv)* trend based budgeting since 1994. The priority to lower debt drove fiscal policy during 1814-40, 1945-52 and again since 1983. The debt-to-GDP ratio improved markedly after the introduction of nominal medium-term expenditure ceilings and rules for disposition of revenue shortfalls and overruns in 1994. During 1993-2007, the public debt declined from 77 to 47% of GDP, while expenditures were reduced from 57 to 46% of GDP (Bos, 2008).

Several studies of the fiscal rules in the EU and OECD countries posit that rules can support fiscal consolidation (Debrun *et al.*, 2008; Guichard *et al.*, 2007; Von Hagen, 2006; Kennedy *et al.*, 2001). Debrun *et al.* (2008) found that countries that take into account the stabilization function of fiscal policy tend to exhibit less procyclical policies.

The fiscal rules introduced during the last two decades can be categorized into: *i)* deficit and debt rules; *ii)* expenditure rules; and *iii)* revenue rules. Their main characteristics are as follows (European Commission, 2008 and 2006):

- Deficit and debt rules facilitate fiscal sustainability. Nevertheless, if set on an annual basis and in nominal terms as in Estonia, these rules offset the impact of automatic stabilizers. Often, following these rules is achieved by cutting investment conducive to long rung growth, such as IT or R&D outlays. Deficit rules (multi-year or cyclically adjusted) are the most prevalent. Among the EU15 countries such rules are applied, for example, in Denmark, Germany, the Netherlands, Spain, Sweden, and the United Kingdom. Among the new EU member States the rule has been applied in Bulgaria, Poland, Slovakia, and Lithuania, among others.

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- The expenditure rule incorporated in a medium term expenditure framework improves budgetary control and accountability, since the government is directly responsible for implementation. As the experience of Sweden (and several other countries) shows (Box 2.2), if designed in nominal terms rather than as percentage share of GDP, this rule can be effective in countercyclical fiscal policy. The automatic stabilizers work fully on the revenue side, and, if cyclically sensitive outlays are excluded, also on the expenditure side. The rule can also assist in redirecting expenditures to higher priorities combining functions of fiscal policy as a stabilization tool and supporting long-run growth. However, a deficit bias can emerge as the outcomes depend also on revenues. In practice, the rule has been applied to various aggregates – total expenditures (Finland, Ireland), primary expenditures (Belgium), expenditures excluding investment (Switzerland), or public consumption (Denmark). Among NMS, the Czech Republic, Bulgaria and Lithuania are examples of countries that have had such rules in place since 2000.
- Revenue rules can be help limit the tax burden and contain the size of the government. They have been utilized as an anti-cyclical tool, by pre-determining how higher than expected revenues would be saved or spent and thus preventing overspending during the boom times. For example, the recently adopted revenue rule in France requires the government to define *ex ante* how revenue surpluses would be spent.

Box 2.2. **The Swedish budgetary framework: its stabilization role *vs.* sustainability**

The Swedish budgetary framework was reformed in the 1990s, as a response to a sharp increase in public expenditure, government deficit, and debt ratio. The framework is founded on three pillars: *i)* a surplus target for general government finances; *ii)* a nominal expenditure ceiling for the central government; and *iii)* a balance requirement for local governments. To ensure that an ageing population will not jeopardize fiscal sustainability, a surplus of 1% of GDP is targeted for the general government sector (reduced from 2% of GDP in 2007). The surplus is formulated in terms of an average of the business cycles, to allow automatic stabilizers to operate. Another element of the framework is a multiannual nominal expenditure ceiling for the central government, which covers all the expenditures, except interest rates. To achieve consistency, the expenditure ceiling has to be set at a level that would generate the required surplus. A legislative requirement prohibits negative net lending of local governments.

The fiscal framework has contributed to an improved fiscal position. Since the surplus target is set over the cycle, it allows for counter-cyclical fiscal policies through automatic stabilizers.

Source: Lindh and Ljungman (2007).

International experience shows that fiscal rules are most constructive when they meet several preconditions. Rules should combine flexibility, sustainability, and growth. They must be simple to manage and understand, transparent, and easily monitored. They also need to be supported by an appropriate and sufficiently advanced institutional infrastructure, consisting of a transparent and multi-year budgetary process and effective surveillance through an independent audit. Since fiscal rules operate in the area where economics and politics merge, they require strong political will and broad consensus (Kopits, 2001; Schick, 2003; and Guichard *et al.*, 2007).

… and gradually move toward credible and rule-based countercyclical fiscal policy

Going forward, Estonia would benefit from modifying its fiscal framework and phasing out the discretionary measures. As Alesina and Perroti (1996) write, "… no institutions will prevent a government or a legislature from running deficits, if this is what they are really determined to do. What one can ask of budget procedures, however, is that they do not create obstacles to governments that want to be fiscally responsible". With its track record of low or no budget deficits, Estonia has demonstrated its intentions and ability to exercise fiscal prudence. However, the excessively rigid rule has led to regular discretionary pro-cyclical measures. While these measures did not jeopardize sustainability, they undermined stabilization function of fiscal policy and weakened its credibility.

In the current recession, discretionary countercyclical policy became a politically feasible and widely considered policy option. However, empirical evidence suggests that while discretionary fiscal measures can have positive effects on economic activity, they are typically modest. They can even be negative if the interventions are not timely, well targeted and temporary. The reservations about the application of discretionary fiscal policy may apply more strongly in emerging market economies (IMF, 2008a). Estonia's long track record of fiscal prudence would be erased rather quickly if expansionary discretionary measures were applied. Hence, as argued in Taylor *et al.* (2000), Estonia should reserve discretionary measures only for long term policy issues (sustainability of the pension system) or *ex ante* defined exceptional circumstances. However, the automatic stabilizers should be allowed to operate freely.

The policy recommendations below aim at improving the fiscal framework so that it safeguards sustainability while increasing flexibility *and* credibility of fiscal policy.[6] The modified framework would establish rule based counter-cyclical fiscal policy, with the automatic stabilizers operating freely.

1. Given the current downturn and the generally high output volatility, Estonia would be well advised to move toward targeting the cyclically adjusted deficit that is balancing the budget over the cycle. Technical issues of determining the cyclical position aside, the rule needs to be applied symmetrically over the cycle, that is such arrangement could endure unfavourable shocks only if sufficient savings were made during the booms.
2. The sustainability objective as well as the growth-oriented and countercyclical roles of fiscal policy would be enhanced by adopting an expenditure rule on a multi-year basis. This allows the automatic stabilizers to operate on the revenue side. The countercyclical function could be further strengthened by setting the rule in nominal terms and excluding cyclically-sensitive expenditures, such as unemployment and disability benefits.[7] However, proper incentives for the labour supply need to be in place so that these spending programmes do not balloon during recessions. Adopting a multi-year expenditure rule would fundamentally change Estonia's budgeting. While so far the budget has been driven by revenues and more recently by the Maastricht conditions, under the new rule it would be determined by medium-term expenditure goals, with emphasis on efficiency and growth. Any increases in spending in priority areas should be budget neutral, *i.e.* compensated for by cuts elsewhere, to maintain sustainability (as, for example, in Sweden).
3. For the expenditure rule to work, the Medium Term Budgeting Framework (MTBF) should be strengthened and used as a basis for the annual budgeting process, while the revenue and growth projections made more realistic. The practice of supplementary budgets,

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which introduce discretionary procyclical measures and eliminate the impact of automatic stabilizers, should be phased out. Uncertainty associated with estimates of structural balance could be addressed with a mechanism that claws back expenditure and debt overruns in order to avoid debt build up (Box 2.3).

Box 2.3. **The Swiss debt brake rule: design, application, and relevance for Estonia**

Design

When Switzerland adopted its debt-brake rule in 2003, it introduced two innovations: *i)* targeting a structurally balanced budget by annually setting cyclically adjusted expenditure ceilings, and *ii)* containing the accumulation of public debt *via* corrections of future expenditures for past overruns (Danninger, 2002). The rule rests on three pillars:

- *The debt containment principle*. This balances government expenditures annually with cyclically-adjusted revenues. The accurate assessment of potential output and revenue projections is a key to avoid unexpected deficits.
- *An adjustment account*. Unforeseen discrepancies from the budget are addressed through this account, which needs to be balanced over the longer term. If the account has a deficit above 6% of last year's spending, it has to be corrected over the next three years.
- *Provisions for spending in extraordinary circumstances* such as natural catastrophes or severe recessions so as to ensure sufficient flexibility of fiscal policy.

Put more formally, the debt-brake rule mechanism works as follows: During the budget preparation in period t, the authorities set the upper limit for expenditures in the next period, G^L_{t+1}, based on: *i)* the revenue forecast, $E_t(R_{t+1})$; *ii)* the predicted cyclical position of the economy $E_t(C_{t+1})$; and *iii)* an adjustment factor correcting for the past differences between budget targets and outcomes, A_{t+1}:

$$G^L_{t+1} = E_t(R_{t+1}).E_t(C_{t+1}) + A_{t+1} \qquad (1)$$

where $E_t(C_{t+1}) = E_t(Y^T_{t+1}) / E_t(Y_{t+1})$, that is the predicted cyclical position of the economy at t+1 is the ratio of the predicted trend-GDP (calculated using the HP filter) and the predicted GDP. The key component of (1) is the link between the expenditure limit and structural revenues: $E_t(R^S_{t+1}) = E_t(C_{t+1})E_t(R_{t+1})$. *Ex post*, the amount transferred to or withdrawn from the adjustment account is the difference between actual expenditures and the limit that would be set at the end of the period given the actual cyclical position and revenues, $A_{t+1} = R_t C_t - G^A_t$. Discrepancies to be corrected through this adjustmnt arise from: *i)* revenue forecasts; *ii)* forecasts of GDP and potential GDP; and *iii)* actual spending exceeding the budgeted limit.

Application in Switzerland and Germany

Switzerland

Although the application of the debt-brake rule encountered challenges due to weak activity shortly after it came into effect, the rule facilitated the country's fiscal consolidation by containing expenditure growth. Federal government debt declined from 55% of GDP in 2003 to 47% in 2007 (OECD, 2007). However, in recent years extraordinary spending has been substantial. For example in 2008 this spending amounted to 1% of GDP. To mitigate this trend, a proposal (effective in 2011) requires that authorization of such expenditures be contingent on compensating medium term measures (IMF, 2008).

Box 2.3. **The Swiss debt brake rule: design, application, and relevance for Estonia** *(cont.)*

Germany

In some earlier years Germany regularly violated its golden-rule, the budget exceeded the limit set by the SGP in several years and its debt reached about 70% of GDP. The authorities thus plan to establish a rule that would keep the structural budget for the general government close to balance, starting in 2016. Similarly to the Swiss debt brake, *ex post* deviations from the targeted deficit would be registered in an adjustment account, which will have to be balanced over the medium term. Over the longer run, the public debt is targeted to drop to well below 60% of GDP.

Trade-offs between debt-brake and expenditure rules – Considerations for Estonia

The Swiss debt-brake rule meets many requirements of good practice. It is economically sound and transparent with its goal to contain debt, preserves fiscal sustainability, and allows for counter-cyclical fiscal policy. However, the reliance of the debt target on cyclically adjusted variables impedes its implementation in Estonia, as it is challenging to determine a country's cyclical position while undergoing structural changes and in the middle of a deep recession.

The expenditure rule incorporated in the medium term expenditure framework is simple and easy to understand by the public, an important consideration in Estonia. However, the rule suffers from several drawbacks. Slippages in revenues can undermine fiscal discipline as the expenditure ceiling alone does not lead to a specific debt path. Furthermore, if strictly imposed, the rule limits flexibility in extraordinary circumstances.

From the political economy perspective, fiscal rules reduce a debt bias and time inconsistency issues by constraining the behaviour of policy makers. They also facilitate financial market and public monitoring of fiscal policies. A trade-off exists between "complex" rules, where a well-argued economic reasoning may gain acceptance, and "simple" rules that are easy to monitor. The experience of the euro area countries shows that in the pre-EMU phase and under the EMU exclusion threat the simple Maastricht rule prevailed. However, following EMU entry, fiscal rules have become more complex, discretionary, and less enforceable (Schuknecht, 2004). While Estonia aims at the euro adoption, simple rules such as the expenditure rule could be preferable, with more complex ones such as the Swiss debt brake getting more attention in the medium term.

4. Given the bias in the revenue projections in the recent years, an independent institution could be established to monitor budgets and their outcomes, as, for example, in Sweden. The agency would estimate the cyclical position of the economy as well as government's revenues, and assess how the annual expenditure proposals fit into the medium term framework. Causes for deviations of projections from outcomes would be also analysed, and findings regularly communicated to the public. In addition, the independent macroeconomic projections of the Bank of Estonia, including the real GDP growth rates, could be used during the budget preparation.
5. Developing well functioning government securities markets would facilitate efficient financing of government deficits.[8] Experience of other countries shows that developing such markets requires a commitment of the government and the central bank to a coherent strategy, including: *i)* regular issuance of securities; *ii)* public debt management practices to create clear benchmarks for different maturities; and *iii)* supporting institutional infrastructure including a payment system (IMF, 2008b).

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Box 2.4. **Removing the procyclical bias of fiscal policy – Policy recommendations**

- Phase out the rule of annually balanced budgets that resulted in pro-cyclical fiscal policy. Balance the cyclically-adjusted budget.
- To facilitate efficiency of public spending and counter-cyclical fiscal policy, supplement the deficit target by an expenditure rule on a multi-year basis.
- Develop a medium term budgetary framework and use it as a basis for the annual budgeting process.
- Establish an independent institution to monitor budgets and their outcomes. In addition, the independent macroeconomic projections of the Bank of Estonia including the real GDP growth rates could be used during the budget preparation.
- If the output gap and hence the structural position is estimated with a high error margin or the expenditure ceiling exceeded, augment the rule with a mechanism that would claw back expenditure or debt overruns.
- Develop further a government bond market to facilitate efficient financing of the government deficit. Well-functioning government bond markets can be an important benchmark for financial markets. They can also increase competition in the financial sector.

Notes

1. A fiscal rule, defined as in Kopits and Symansky (1998), is a permanent constraint on fiscal policy, expressed in terms of a summary indicator of a fiscal performance, such as the government budget deficit, debt, or their major components. Specifically, budgetary rules in Estonia include *i)* balanced budget principle, *ii)* limit on debt of local municipalities), and *iii)* limit on annual debt service (Saalik, 2007).
2. In 1997 the Stabilization Reserve Fund was established to save budgetary surpluses. The proceeds were to be used in macroeconomic emergencies or for financing long term reforms (pension).
3. The Updated Convergence Programme 2007 of the Republic of Estonia identifies "one-off" non-tax measures to amount to 0.6% of GDP in both 2006 and 2007.
4. Examining the experiences of the OECD countries after the booms of the late 1980s and the late 1990s, Joumard and André (2008) found that economic upswings were often followed by significant deteriorations of structural fiscal positions, forcing the governments to tighten the fiscal stance in downturns.
5. The cyclical properties of fiscal policy can be assessed through *i)* changes in tax rates, and *ii)* the co-movement of the cyclical component of real government expenditures and real GDP. The cyclical component is obtained from HP-filtered data from the Eurostat and the IMF IFS covering period of 1993-2007. For emerging market economies, this method was used in Talvi and Vegh (2005) and Calderon, Duncan and Schmidt-Hebbel (2004), in addition to Kaminsky, Reinhart, and Vegh (2004).
6. Similar recommendations were provided in the *Economic Survey of the Slovak Republic* (OECD, 2009) and in the IMF's analysis of the fiscal framework in Slovenia (Tuladhar, 2007). Experiences of these recent euro area members could be of particular interest to Estonia.
7. The macroeconomic literature on automatic stabilization focuses on taxes and the unemployment compensation. Darby and Melitz (2008) analysed 21 OECD countries from 1982 to 2003 and found that age- and health-related social expenditure and incapacity benefits also stabilize the cycle.
8. Legal, informational, and institutional infrastructure would further develop the financial sector (IMF, 2008b). Liquid government securities would provide a market-determined interest rate structure and thus facilitate pricing of other financial instruments. They can also reduce credit risk by serving as collateral.

Bibliography

Alesina, A. and R. Perotti (1996), "Fiscal discipline and the budget process", *American Economic Review*, Vol. 86, No. 2, pp. 401-407, papers and proceedings of the Annual Meeting of the American Economic Association.

Bos, F. (2008), "The Dutch fiscal framework: its history, current practice and the role of the CPB", *Journal on Budgeting,* Vol. 7, OECD, Paris.

Calderon, C., R. Duncan and K. Schmidt-Hebbel (2004), "Institutions and cyclical properties of macroeconomic policies", *Central Bank of Chile Working Papers,* No. 285.

Darby, J. and J. Melitz (2008), "Automatic stabilizers", *Economic Policy*, pp. 715-756, October.

Debrun, X. *et al.* (2008), "Tied to the Mast? National fiscal rules in the European Union", *Economic Policy*, pp. 297-362, April.

European Commission (2009), "Estonia: Macroeconomic fiscal assessment – An analysis of the December 2008 update of the convergence programme", ECFIN/50721/09-EN.

European Commission (2006), "Numerical fiscal rules in 25 EU member States", in *Public Finance in EMU*, European Commission, Brussels.

Fatas, A. (2005), "Is there a case for sophisticated balanced-budget rules?", *Economics Department Working Papers*, No. 466, OECD, Paris.

Guichard, S. *et al.* (2007), "What promotes fiscal consolidation: OECD country experiences", *Economics Department Working Papers*, No. 553, OECD, Paris.

Von Hagen, J. (2006), "Fiscal rules and fiscal performance in the European Union and Japan", *Monetary and Economic Studies*, pp. 25-60, March.

International Monetary Fund (2008a), "Fiscal policy as a countercyclical tool", Chapter 5, in *The World Economic Outlook*, IMF, Washington, DC, October.

International Monetary Fund (2008b), "The European credit cycle: diverging patterns", in *IMF Regional Economic Outlook for Europe: Dealing with shocks*, IMF, Washington, DC.

International Monetary Fund (2007), "Republic of Estonia – 2007 Article IV Consultation", *Country Reports*, No. 7/255, IMF, Washington, DC.

Jaeger, A. and A. Klemm (2007), "Assessing the fiscal stance during the absorption boom", in *Bulgaria: Selected Issues*, *IMF Country Report* No. 07/390, pp. 44-53.

Joumard, I. and C. André (2008), "Revenue buoyancy and its fiscal policy implications", *Economics Department Working Papers,* No. 598, OECD, Paris.

Kaminsky, GL., C. Reinhart and CA. Vegh (2004), "When it rains it pours: procyclical capital flows and macroeconomic policies", *NBER Macroeconomics Annual 2004,* The MIT Press, Cambridge, MA.

Kennedy, S., J. Robbins and F. Delorme (2001), "The role of fiscal rules in determining fiscal performance", paper presented at the economic workshop on Fiscal Rules, organised by the Bank of Italy, 1-3 February.

Kopits, G. (2001), "Fiscal rules: useful policy framework or unnecessary ornament?", *Working Papers,* No. WP/01/45, IMF, Washington, DC.

Kopits, G. and S. Symansky (1998), "Fiscal policy rules", *IMF Occasional Papers*, No. 162.

Kraan, J., J. Wehner and K. Richter (2008), "Budgeting in Estonia", *Journal on Budgeting*, Vol. 2008/2, pp. 93-132, OECD, Paris.

Lindh, Y. and G. Ljungman (2007), "Fiscal rules and the scope for stabilisation policy: the case of Sweden", paper presented at the workshop on "Fiscal Policy: Current Issues and Challenges" at the Bank of Italy, March 2007.

OECD (2009), *OECD Economic Survey: Slovak Republic*, OECD, Paris.

Republic of Estonia (2007), *Updated Convergence Programme 2007*.

Saalik, A. (2007), "Sound public finance in Estonia: why and how?", presentation at the JVI policy research conference on "Economic Governance and Sustained Growth in the Balkans".

Schick, A. (2003), "The role of fiscal rules in budgeting", *Journal on Budgeting*, Vol. 3(3), pp. 7-34, OECD, Paris.

Talvi, E. and C. Vegh (2005), "Tax base variability and pro-cyclical fiscal policy", *Journal of Development Economics,* Vol. 78, pp. 156-190.

Taylor, JB. (2000), "Reassessing discretionary fiscal policy", *Journal of Economic Perspectives*, Vol. 14, No. 3, pp. 21-36.

Tuladhar, A. (2007), "A fiscal framework for Slovenia", in *Republic of Slovenia: Selected Issues, Country Report* 07/256, IMF, Washington, DC.

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Chapter 3

Strengthening financial stability while reducing distortions in the housing market

Following EU accession Estonia experienced a loan financed boom. The boom was characterised by overinvestment in the real estate and construction sectors fuelled by strong growth in housing loans, particularly those with variable interest and denominated in foreign currency. Now these sectors are facing a downturn, which has already affected overall economic activity. Since the two sectors are closely linked, problems in one may spill over to the other. So far, risks have mostly spread from the housing market to the financial sector, as most of rapidly rising lending consisted of mortgages, which are now suffering from increasing defaults. At the same time, tighter lending conditions have dampened the demand for housing. More recently, global financial distress has led to a credit crunch and further exacerbated the downturn.

At this juncture, co-operation is required between regional financial supervisory authorities to mitigate risks to financial stability as well as cyclical volatility in housing and construction. Looking ahead, financial stability could be strengthened by increasing households' financial literacy, especially regarding the risks of high indebtedness and variable rate loans. The development of fixed rate loans could be encouraged through surveillance activity by the Bank of Estonia and/or the Financial Supervision Authority, to ensure that commercial banks are appropriately pricing credit risks. Moreover, the mortgage-based lending system accompanied by a securitization scheme should be adopted over the medium term. A careful redesign of fiscal incentives and other housing policies could bring about a better allocation of resources and increased labour mobility.

After a boom, the housing market is experiencing a sharp downturn[1]

Until about mid-2007, the housing market was characterised by sizeable price increases

From 2002 until mid-2007, the real estate market was booming. As in most OECD countries and European emerging market economies, house prices increased markedly over the past decade. However, prices in Estonia grew faster than in most OECD countries, the Nordic neighbours, and regional peers such as Slovenia (Table 3.1), raising the question of whether a bubble had formed.

Table 3.1. **Real house price changes and some of the underlying factors, 2004-06**[1]

	Real house prices[2]	Real GDP growth, 2002-06[2]	Real mortgage rates[3]	Housing loans to GDP[4]
Estonia	23.0	8.4	0.1	16.8
Slovenia	10.3	4.2	3.6	3.6
Finland	6.1	3.0	2.6	5.8
Ireland	9.2	5.5	1.5	13.3
Spain	10.2	3.3	0.3	15.8
Sweden	9.0	3.2	1.9	5.9

1. Based on the European Central Bank (2003), Table 2.4.
2. Average annual growth rates, in per cent. For Estonia, only Tallinn prices were used.
3. Average over the period, in %.
4. Cumulative change in percentage points.

Source: ECB; Hypostat, 2008.

Box 3.1. **What drives house prices in Estonia?**

Econometric evidence confirms that house price developments in Estonia over the long run are explained mainly by changes in household incomes and in after-tax real interest rates (Annex 3.A1). During 2005-07, house prices have risen only about 10% above fundamentals, likely driven by expectations of further price increases.[1] The estimated gap between actual price and the price driven by fundamentals is somewhat smaller than is estimated for other countries. For example, IMF (2008a) suggests a gap over 30% for Ireland and 20% for the United Kingdom, although such estimates are quite uncertain.

The fact that house price increases seem mostly justified by changes in real income and after-tax interest rates does not imply that ongoing correction in prices will be moderate, because the fundamentals themselves are deteriorating rapidly. Moreover, additional declines in prices may occur due to factors not captured in the model, such as financial accelerator effects related to tightening of financial conditions and constraints on households' liquidity. In fact, between mid 2007 and September 2008 prices have already declined by about 20% in nominal terms.[2]

1. For discussion of how expectations of price increases lead to actual increase in house prices that are not related to fundamentals, see White (2006) and Jacobsen (2005).
2. The importance of balance sheet effects and collateral for lending conditions was underscored by Bernanke and Gertler (1989).

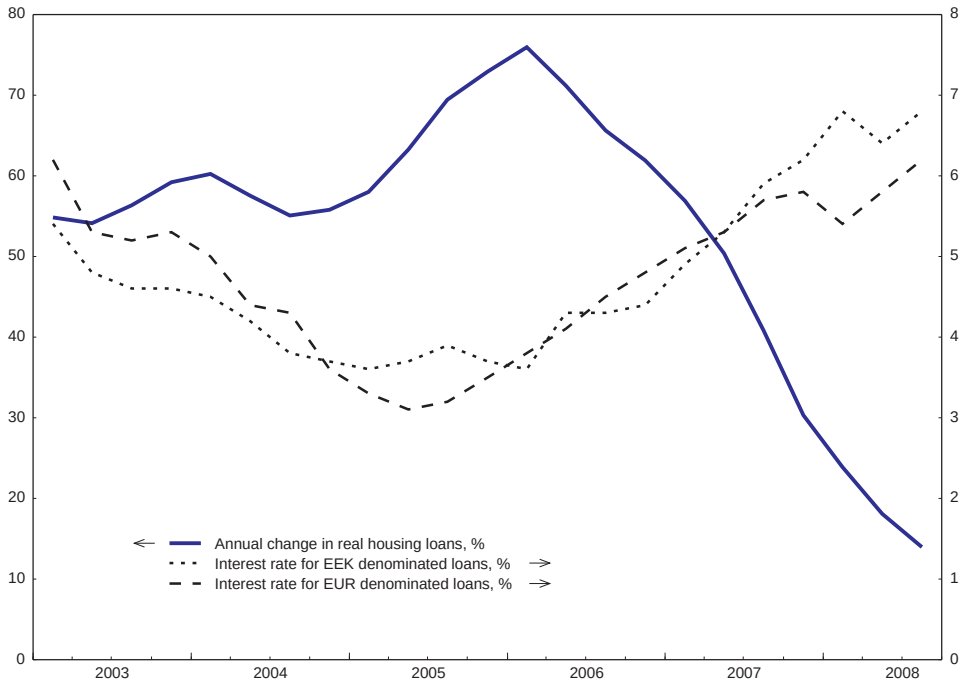
Source: OECD estimates.

Since end-2002 real house prices and the number of transactions more than doubled, while construction activities increased almost sixthfold. Housing demand was driven by: *i)* rapidly-rising disposable incomes related to steep GDP, wage growth, and declining tax rates; *ii)* optimism about future income and house price rises fuelled by recent strong growth and EU accession; and *iii)* a sharp fall in interest rates during the first half of the decade (Box 3.1).[2] Privatisation in the mid-1990s put 95% of the housing stock into private ownership, forming a collateral base for mortgage finance (OECD, 2005a). As the supply response became limited by capacity constraints in the construction sector, including labour shortages, soaring house prices raised household wealth and confidence even more. Increases in the value of the underlying collateral further fuelled borrowing and spending, including for speculative purposes.

Growth of housing loans has stalled and real estate prices are falling

With a global tightening of credit conditions, the housing market is now in a sharp downturn. Fears of a decline of real estate prices have contributed to the slowdown. Specifically, as interest rates have started to rise, real growth of housing loans has decelerated from its March 2006 peak of 71% (year-on-year) to less than 5% in the last quarter of 2008 (Figure 3.1).[3] By mid-2008 real estate prices were rapidly declining, and the number of transactions had returned to 2004-05 levels (Figure 3.2).[4] With waning confidence and wealth, lower real estate prices have reduced the scope to finance private consumption by loans and contributed to the collapse of domestic demand.

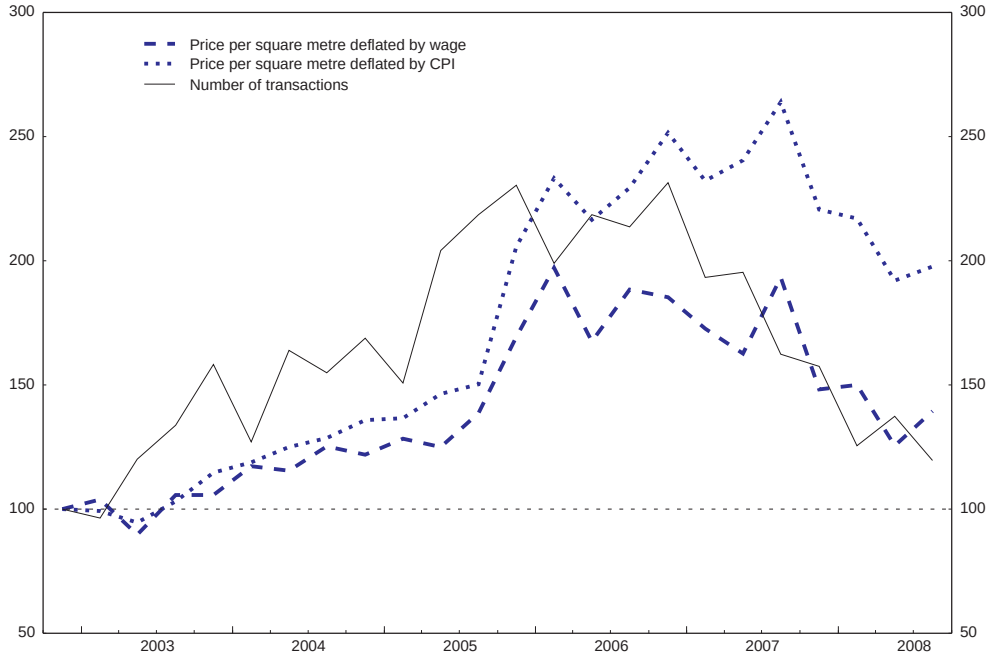
Figure 3.1. **Housing loans and interest rates**



StatLink http://dx.doi.org/10.1787/561181881826

Source: Statistics Estonia.

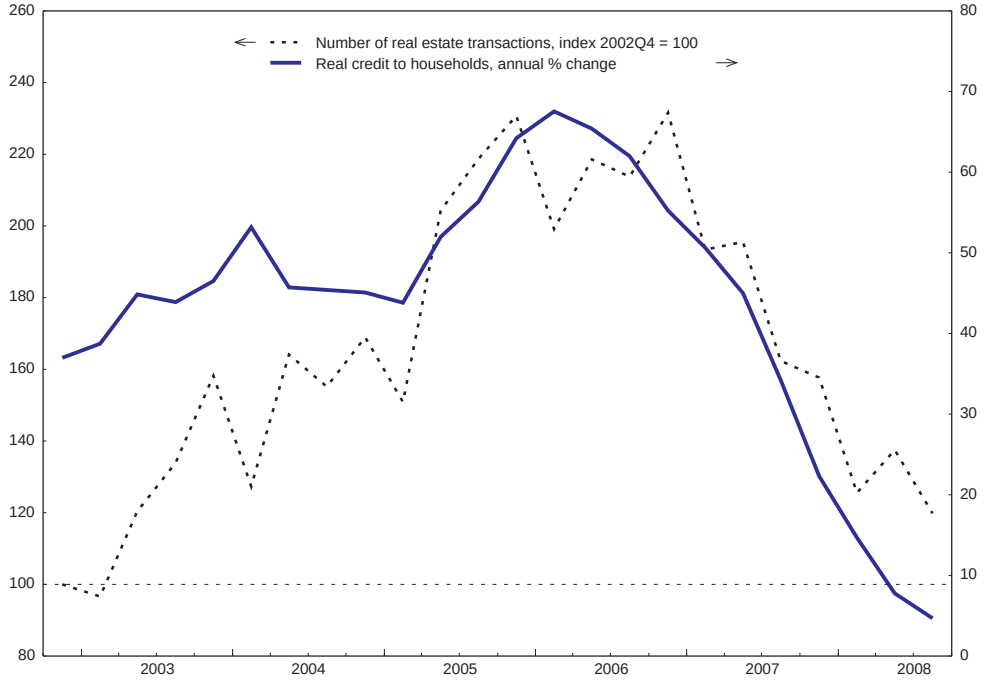
Figure 3.2. **Real estate transactions and prices of apartments in Tallinn**
Index, 2002Q4 = 100



StatLink http://dx.doi.org/10.1787/561235440504

Source: Statistics Estonia.

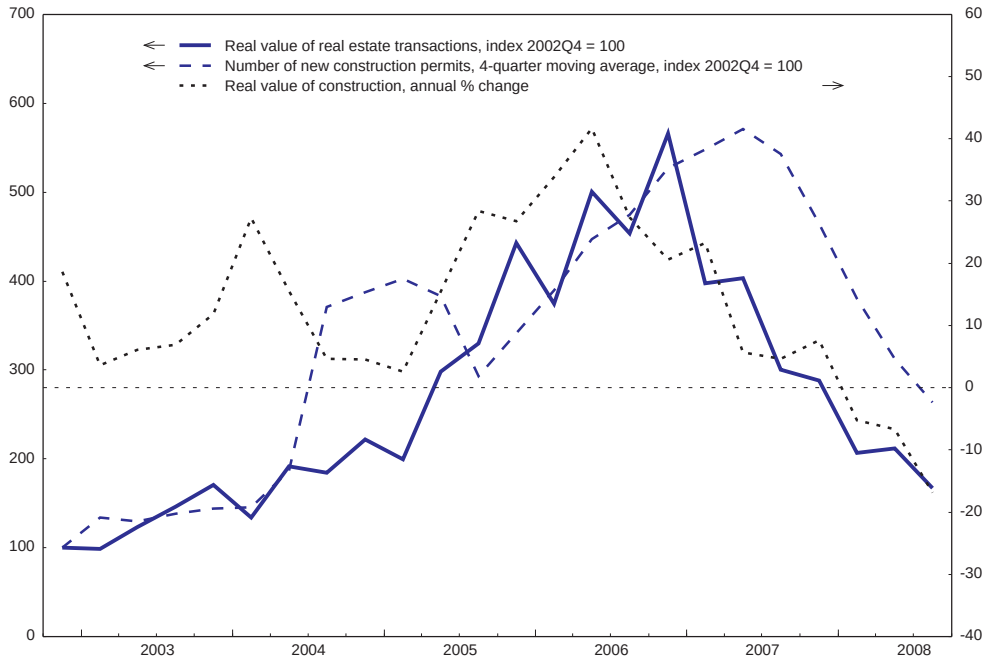
Figure 3.3. **Credit to households and number of real estate transactions**



StatLink http://dx.doi.org/10.1787/561323587127

Source: Statistics Estonia.

Figure 3.4. **Real estate transactions, construction volume and number of new construction permits**



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Note: Construction volume is the production value of construction deflated by the construction price index.
Source: Statistics Estonia.

The construction sector is contracting…

As tighter lending rules and falling housing prices have weakened consumer and investor confidence, real estate transactions have plunged and construction activities have been declining (Figures 3.3 and 3.4). During the boom, the construction sector responded to high demand and low interests rates. Recently, however, the combination of declining real estate prices and higher construction costs has rapidly eroded profitability of construction companies. Many of the construction companies need to downsize their labour force, and the number of bankruptcies has risen.[5] In turn, these developments heighten the risk of household loan defaults and ultimately weaken financial stability.

High indebtedness has made households vulnerable to adverse shocks

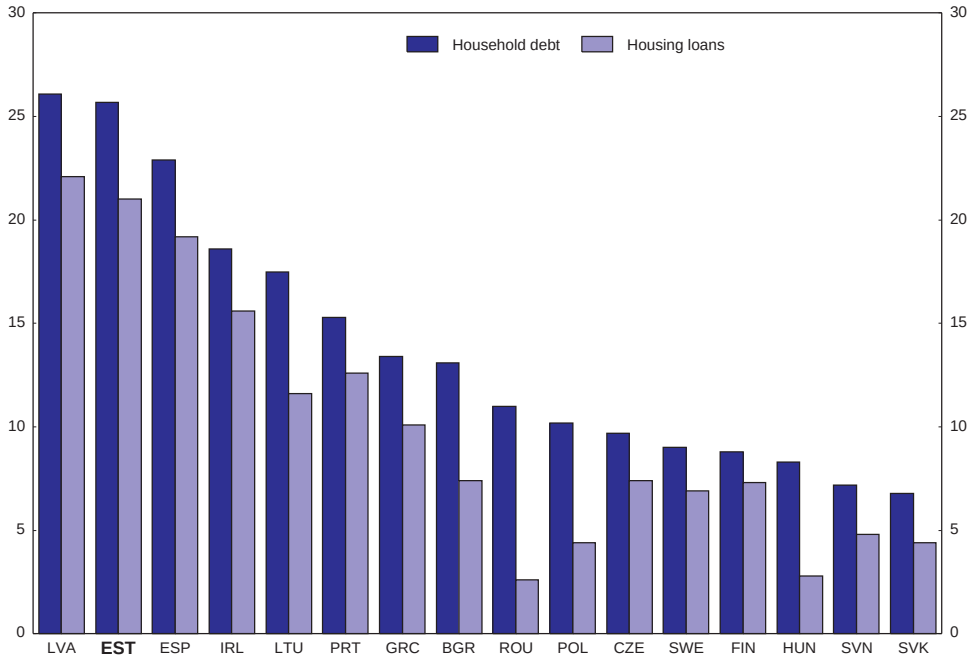
A significant increase in loans to households was mirrored by the, until recently, strong housing market. Interactions between these two markets can amplify the effects of shocks on house prices and even weaken the financial position of households and ultimately the stability of the financial system (Bernanke and Gertler, 1989; Kiyotaki and Moore, 1997; Ortalo-Magne and Rady, 2006). With high levels of debt, households are more vulnerable to tighter lending conditions, especially if these are combined with income and house price declines (European Central Bank, 2003). It is thus important to understand the causes and characteristics of high household debt, its macroeconomic implications, and mitigating factors, as well as linkages between enterprise and household indebtedness.

Household indebtedness has soared due to a variety of factors

Household debt grew rapidly during 2000s, as illustrated by both the ratio of household loans in GDP and by household debt per capita (Figure 3.5 and Table 3.2). Optimistic expectations about future incomes, low mortgage rates[6] combined with favourable tax treatment of interest payments (below), and low inflation led to this rapid debt accumulation (Figure 3.5 and Table 3.2).

Figure 3.5. **Increase in household debt and housing loans, 2004-07**

% points of GDP



StatLink http://dx.doi.org/10.1787/561338027258

Source: European Central Bank.

Table 3.2. **Household debt, December 2002-September 2008**

	Dec. 02	Dec. 03	Dec. 04	Dec. 05	Dec. 06	Dec. 07	Sept. 08
As per cent of disposable income	25.7	33.1	41.6	56.2	75.7	86.1	84.3
As per cent of GDP	13.7	17.7	21.4	30.6	40.9	46.8	48.9

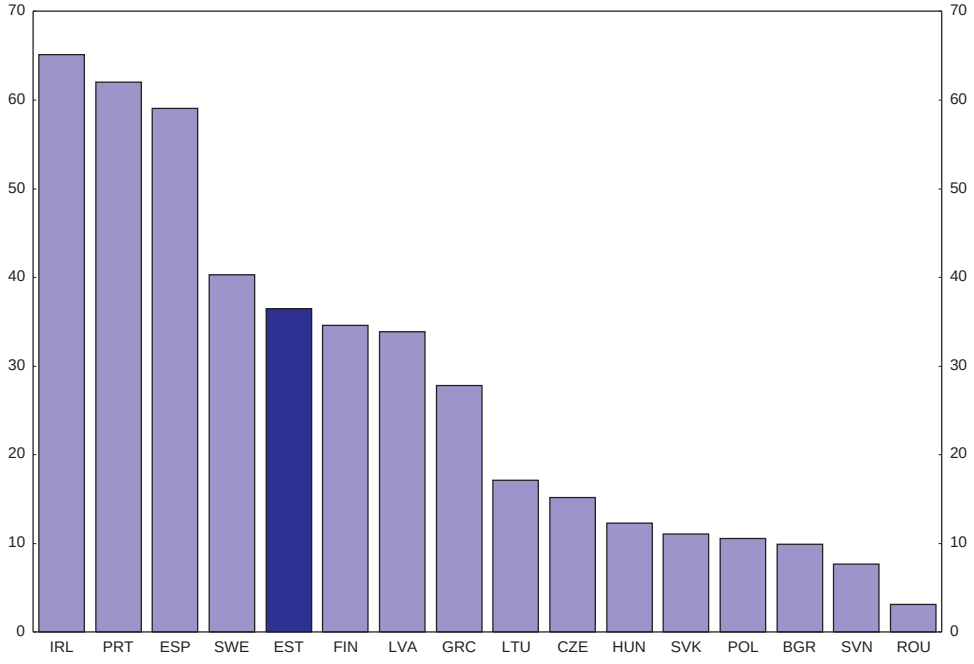
Source: Bank of Estonia.

In addition to low interest rates and low inflation, reforms of the financial sector, especially measures to open it up to foreign investors, drove the rapid household debt accumulation. Specifically, household borrowing took especially off in the aftermath of the Russian crisis in 1999-2000, when Scandinavian banking groups acquired some of the largest Estonian banks. As these banks competed for market shares, they drove down lending margins and often underestimated the credit risks involved. The gradual development of new products such as equity-withdrawal allowed borrowers to repay their mortgages at slower rates, adding to debt accumulation. In many ways, the causes of rising

household debt in Estonia were thus similar to those in many OECD countries during the past decade – a combination of favourable financial conditions, buoyant housing markets, and supply side innovations in credit markets (Girouard, Kennedy and Andre, 2006).

Housing loans accounted for 80% of household debt in September 2008.[7] Housing loans as a share of GDP reached levels comparable to more advanced EU countries (Finland or Sweden) and exceeded those of most European emerging market economies in 2007 (Figure 3.6). The high level of indebtedness also manifested itself in rising interest payments-to-disposable income ratio. For example, the interest rate burden of households rose from 2% of disposable income in 2004 to over 5% in 2008, approaching shares of Nordic countries, which have a higher stock of debt (Bank of Estonia, 2008).

Figure 3.6. **Housing loans, 2007**
% of GDP

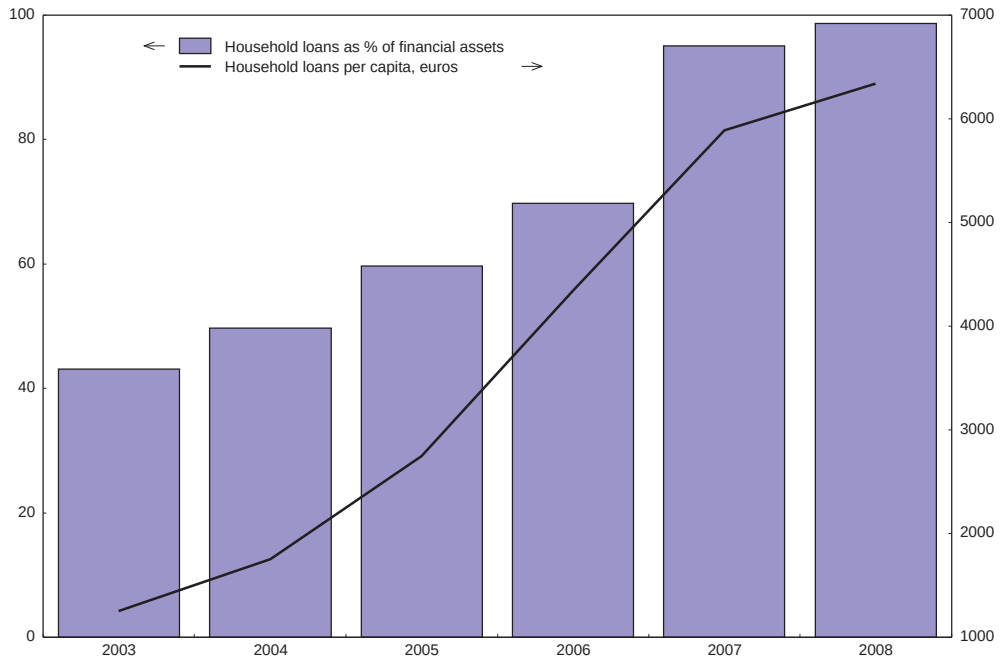


StatLink http://dx.doi.org/10.1787/561361878844

Source: ECB.

The soaring household debt, mostly foreign currency-denominated, has weakened households' financial position. By mid-2008, household loans amounted to almost 100% of household financial assets, significantly above regional peers such as the Czech Republic where the ratio has been around 30% (Figure 3.7). Even though households' financial assets more than doubled between 2003 and 2007 reflecting rising disposable incomes, debt has grown even faster. While the growth of borrowing has slowed in 2008, the value of assets also declined because of plummeting equity prices and slowdown in growth of deposits, with resulting negative net financial worth.[8]

Figure 3.7. **Household indebtedness**



StatLink http://dx.doi.org/10.1787/561385846572

Note: Data for 2008 refers to June and for other years, to December.

Source: Bank of Estonia.

Macroeconomic implications of high household indebtedness

The high level of household indebtedness in Estonia has several macroeconomic implications, including a greater sensitivity of private consumption and GDP growth to changes in interest rates. While to some extent high household borrowing constituted a rational response to favourable lending conditions and consumption smoothing, the level of households' indebtedness in Estonia at the end of 2007 far exceeded that of regional peers with similar per capita income, such as the Czech Republic (Table 3.3). Experiences of other countries suggest that high household indebtedness is unlikely to be a source of a major negative shock to the other sectors of the economy, but it may amplify other shocks, such as fluctuations in income, interest rates and house prices (Debelle, 2004a).

Table 3.3. **Estonia and the Czech Republic: selected indicators of household indebtedness, end-2007**

	Estonia	Czech Republic
Debt/GDP (%)	45.0	23.4
Debt/financial assets (%)	95.0	29.6
Interest expenses/disposable income (%)[1]	4.8	1.8
Deposits/debt (%)	44.5	216
Net financial assets/GDP (%)	0.7	41.1

1. Gross disposable income is used for the Czech Republic; net disposable income for Estonia.

Source: The Bank of Estonia and the Czech National Bank.

Several factors mitigate risks stemming from the high household indebtedness. The distribution of the debt is skewed towards households with high incomes, who are less exposed to rises in unemployment or interest rates.[9] As the maturity of housing loans lengthened, households can maintain same monthly debt service payments while taking out larger loans.

However, the average loan to value (LTV) ratio increased to 90% for some of the new housing loans extended in recent years. As the house prices continue to fall, some of the newer borrowers are likely to end up with negative equity. The Bank of Estonia and Financial Supervisory Authority should therefore carefully monitor the latest developments in various aggregate indicators of indebtedness, including LTV ratios and ratios of debt to disposable income, and communicate findings and implications to the banking sector and the public. This would increase transparency and also help to maintain trust in the financial stability of the banking system.

Given the interconnectedness between the household and corporate sectors, which is high in the SME-dominated economy, the deterioration of the financial position of households reduces funding and investment opportunities for the already heavily indebted private corporations. Conversely, through their shareholdings in private companies, households ultimately bear many risks associated with deterioration in the corporate sector (Box 3.2).

Box 3.2. **Inter-sectoral linkages – enterprise borrowing also increases credit risk**

In addition to housing loans, exposure of the banking sector to real estate increased through financing of real estate and construction companies, at the expense of loans to manufacturing and other market services (Table 3.4).

Table 3.4. **Sectoral composition of banks' lending to the corporate sector (in % of total lending)**

	2000	2001	2002	2003	2004	2005	2006	2007
Real estate and construction	16.8	16.6	17.3	16.4	20.2	31.8	46.5	43.6
Manufacturing	15.7	15.2	14.1	10.2	9.1	9.6	10.1	9.9
Market services	57.8	57.5	57.5	63.1	60.9	48.1	33.0	36.1
Other	9.7	10.7	11.1	10.3	9.8	10.4	10.3	10.3

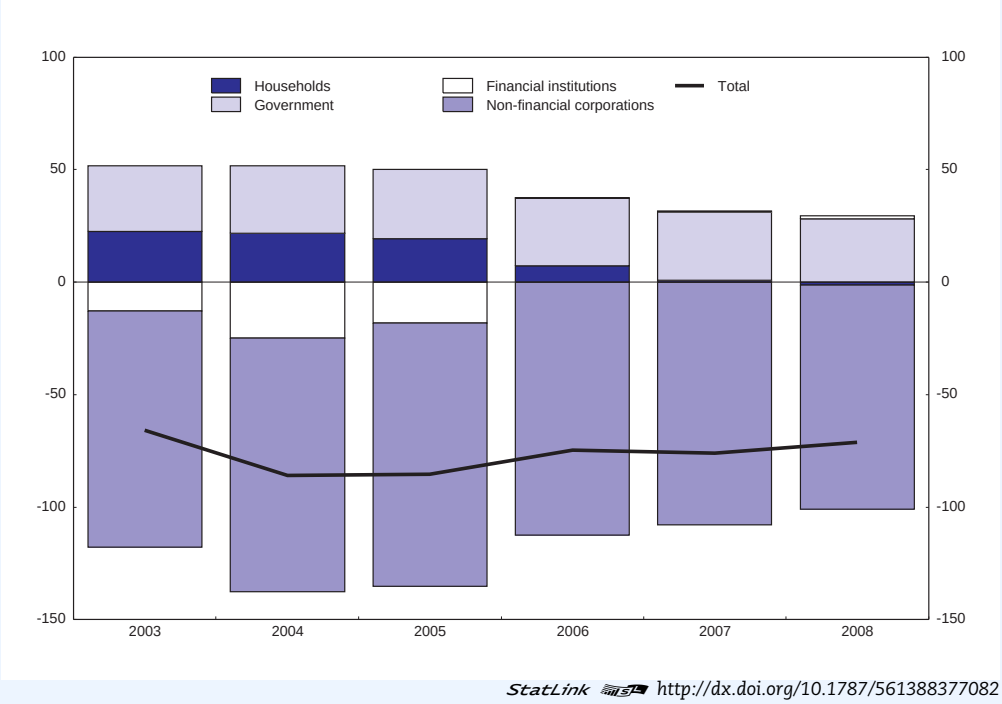
Source: Bank of Estonia.

The weak financial position of the private sector, which together with household debt is a counterpart to high current account deficits since 2000, raises concerns about inter-sectoral spillovers (Figure 3.8). Given the prevalence of the mortgage borrowing in the corporate sector, the asset side of the balance sheet of the enterprises is likely to deteriorate further with declining real estate prices, reducing their ability to borrow and invest. According to Statistics Estonia, in the third quarter of 2008 enterprise investment was 20% lower than in 2007, magnifying the boom-bust patterns. This trend continued in the fourth quarter, with entrepreneurs' profits being 25% lower than in 2008.

Box 3.2. **Inter-sectoral linkages – enterprise borrowing also increases credit risk** *(cont.)*

Figure 3.8. **Financial balances by sector**

% of GDP



StatLink http://dx.doi.org/10.1787/561388377082

Note: Data for 2008 refers to June and for other years, to December.

Source: Bank of Estonia.

The weak financial position of the private sector, which together with household debt is a counterpart to high current account deficits since 2000, raises concerns about inter-sectoral spillovers (Figure 3.8). Given the prevalence of the mortgage borrowing in the corporate sector, the asset side of the balance sheet of the enterprises is likely to deteriorate further with declining real estate prices, reducing their ability to borrow and invest. According to Statistics Estonia, in the third quarter of 2008 enterprise investment was 20% lower than in 2007, magnifying the boom-bust patterns. This trend continued in the fourth quarter, with entrepreneurs' profits being 25% lower than in 2008.

The rapid debt accumulation by both corporate and household sectors (about 70% of GDP and 50% of GDP at end-2008, respectively) distinguishes Estonia and other Baltic countries from most euro area economies, where household savings actually increased during the credit expansion, offsetting the surge in financial deficit of the corporate sector. In non-euro area advanced economies, small corporate financial surpluses compensated for household financial deficits of similar magnitude (IMF, 2008b).

Household loans consist mostly of variable-rate mortgages extended by a few banks[10]

The Estonian financial sector is dominated by commercial banks, which also provide the bulk of household lending (Box 3.3). The banking sector is mostly foreign owned and the four largest foreign banks accounted for 97% of the housing loan market in 2007 (Tamm, 2007). This high degree of concentration exceeds that of most other European

Box 3.3. **Structure and characteristics of the financial sector**

Estonia's domestic financial system is dominated by commercial banks, and the banking sector is fully privately owned. The majority of the banking sector is foreign-owned. The market concentration is high, with the four largest banks (Swedbank, SEB, Sampo, and Nordea, all foreign-owned) accounting for 95% of the market, judged by total assets at the end of 2007 (Estonian Banking Association: *www.pangaliit.ee/eng/Info*).

During 2002-07 financial deepening has progressed rapidly, with domestic banks relying on foreign funds to finance lending. Banks' credit (excluding loans to other financial institutions) has been the main source of domestic financing, and amounted to 100% of GDP at the end of 2007. About 85% of loans were denominated in foreign currency, mostly euros, at the end of 2008 (Table 3.5).

Table 3.5. **Banks' deposits and loans, by currency.**

	Dec. 00	Dec. 01	Dec. 02	Dec. 03	Dec. 04	Dec. 05	Dec. 06	Dec. 07	Dec. 08
	(in bln of EEK, unless otherwise indicated)								
Total deposits	35	43	49	53	65	95	123	143	149
Foreign currency	12	13	14	14	17	32	39	58	57
Percent of total	**34**	**30**	**29**	**26**	**27**	**33**	**32**	**41**	**38**
Total stock of loans	34	41	50	69	93	125	178	240	260
Foreign currency	27	32	41	56	74	100	139	190	222
Percent of total	**78**	**79**	**83**	**82**	**80**	**80**	**78**	**79**	**85**

Source: Bank of Estonia.

The role of non-bank financial institutions remains limited. While financial assets of the banking sector accounted for 120% of GDP, stock market capitalisation stood at only 26% of GDP at the end of 2007. Leasing activities (for real estate, cars and other items), provided by institutions almost entirely owned by Estonian banks, have also grown. The bond market remains subdued (total bond market capitalization was only 6% of GDP in 2007) and the government bond market is particularly underdeveloped. The absence of a well-functioning government securities market implies that an important price benchmark for other securities is missing, and availability of savings instruments limited. Moreover, the non-existence of mortgage bonds reduces banks' sources of long-term funding of housing loans.

Source: Bank of Estonia and the Estonian Banking Association (2008).

emerging market countries, where about 70-80% of the housing market share is captured by the five largest banks. It is, however, comparable to some of the more advanced OECD countries with the highest concentration rates, for example Denmark and Sweden, where the five largest banks account for more than 90% of the housing market (IMF, 2007a).

Mortgages accounted for 84% of total housing loans in 2003, almost double of the regional average of 47% (OECD, 2005a). Since borrowers have experienced mostly declining interest rates, they tended to opt for variable interest rate loans, possibly without fully realising the risks involved.[11] More recently, the extension of maturities to more than 20 years and reductions in minimum down payment requirements made housing loans accessible to lower income households. Correspondingly, households that took out a loan in recent years seem to be the most vulnerable to adverse shocks.

As in other countries, the supply side of mortgage markets – in particular the types of contracts offered – is a key factor behind the prevalence of adjustable-rate or fixed-rate-type mortgages. The high loan to deposit ratio also played a role, as banks became more dependent on wholesale refinancing with an incentive to pass on the interest rate risk to customers. Countries with adjustable-rate mortgages experienced higher house price growth and volatility than countries with fixed-rate mortgages (IMF, 2004). Institutional characteristics of mortgage markets and regulatory environments vary widely across countries. They reflect the local characteristics of the financial sector and prevailing financial products (Table 3.6).

Table 3.6. **Institutional characteristics of national mortgage markets**

	Financial sector indicators		Mortgage products			
	Maximum LTV (%)	Typical maturity (years)	Typical rate (fixed/variable)	Equity withdrawal (Y/N)	Restrictions on early payments (Y/N)	Mortgage bond markets (Y/N)
Estonia	95	20-30	Variable	Yes	Yes	No
Bulgaria	75-90	5-25	Both	…	No	Yes
Czech Republic	70-100	20-25	Fixed	No	Yes	Yes (limited)
Hungary	100	15	Variable	Yes	No	Yes (limited)
Poland	> 100	20	Variable	Yes, but rarely used	Fees allowed, but rarely used	Yes (limited)
Slovak Republic	70	15	Variable	Yes, but rarely used	No	Yes (limited)
Latvia	100	20-40	Variable	Yes	No explicit regulations	Yes (limited)
Lithuania	100	20-25	Variable	Yes	No	No
Turkey	75	5-10	Fixed	No	2% maximum annually	Yes (being developed)
Finland	75-80	15-20	Variable	Yes	Creditor compensated	Yes (limited)
Sweden	60-80	<30	Variable	Yes	No	Yes (limited)

Source: IMF (2008b) and OECD (2005a).

The housing market is characterised by variable-rate loans, high maximum LTV ratio and long maturity.[12] In contrast to other European emerging market economies, Estonia has not developed mortgage bond markets, and in the past years banks relied mostly on short-term deposits to finance long-term housing loans, supplemented by funding from parent bank groups. Under such funding, lenders typically offer variable-rates mortgages to reduce their own interest risks, which was the case in Estonia as well.

Increases in interest rates and unemployment also raise banks' credit risk

The high mortgage debt and high share of variable loans make households sensitive to interest rate changes. The households bear directly the risk of higher interest rates through larger mortgage payments and smaller net income. Through volatility of debt service payments, the variable-rate loans make the household sector directly, and the banking sector indirectly, vulnerable to interest rate changes. Specifically, a 1 percentage point rise in short-term interest rates would lead to a 0.8 percentage point increase in the aggregate interest payment-to-disposable income ratio. The ability of households to maintain debt service payments in the event of interest increases will largely depend on whether these changes were anticipated by them at the time when they signed up for the mortgages (Debelle, 2004b).

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Banks' credit risk rises with the increased use of variable rate loans as banks replace their interest rate risk by higher client default. In contrast to variable rates, fixed rates give households certainty over the profile of their debt service payments.[13] However, since the fixed-rate loans entail an interest rate risk for the lender, a premium is required and these loans often *ex post* turn out to be more expensive.

Attractiveness of the different products for households depends also on the costs of repaying the loan early or of re-financing. In Estonia, these costs are very high – according to the law, the additional cost caused to the lender by early prepayment of the loan must be borne by the borrower (Tamm, 2007). In an environment with declining interest rates that prevailed until mid-2005, myopic expectations, the high refinancing costs and limitations on early loan repayment encouraged households to opt for variable-rate instead of fixed-rate loans. More recently, there is evidence of an increased interest in the fixed-rate housing loans, reflecting the global financial turmoil and rise in short-term interest rates.

The current recession has increased risks to financial stability, mainly through rising unemployment and deterioration of disposable income.[14] To the extent that the house purchases were speculative and households were counting on house price increases for repaying their primary mortgages, the decline in real estate prices will undermine their debt service capacity. However, the share of such speculative loans seems low (measured by second and third mortgages). The deterioration of the construction and the real estate increased the risk of loan defaults by these sectors and the capacity of the banks to provide loans. As most loans are backed by mortgages, banks' capacity to extend loans is reduced further by declining asset prices.

Since the currency board constrains the Bank of Estonia's ability to provide liquidity support to banks (Chapter 1), in February 2009 the Bank signed a precautionary agreement with the Swedish central bank to increase confidence on the financial markets. The agreement allows the Bank of Estonia to borrow up to 10 billion Swedish kronor against Estonian krooni, strengthening its capacity to extend liquidity.

The high household indebtedness, recession, and rising unemployment have already led to a rise in the stock of overdue household loans. Specifically, Bank of Estonia data suggest that the share of stock of overdue loans in the household loan portfolio more than doubled from mid-2007 and reached 7% in September 2008.[15] The steady increase in overdue loans serves as a leading indicator of future further increases in non-performing loans (NPLs). On the positive side, the banking sector is well-capitalised. Capital adequacy ratio has continued to rise steadily from 13% in January 2007 and 14.8% in December 2008 to 18.6% in November (minimum required is 10%). Although banks have increased provisions as NPLs have risen, increases in lending rates and spreads have offset the impact on earnings (IMF, 2009).

Avenues to reduce households' vulnerability to interest rate increases

In the current environment of high mortgage debt and the high share of variable-rate loans, the sensitivity of households to interest rate changes implies a greater default risks and an increased vulnerability of the financial sector. Even if households would not default on loans, an interest rate increase would reduce their disposable income, thus affecting overall economic activity.[16]

On the supply side of the housing finance market, the share of variable rate loans could be reduced by shifting to capital market funding and reducing the term gap between

funding and lending. Such move would entail developing mortgage securities markets, namely markets with covered bonds and/or residential mortgage-backed securities.[17] With the funding of housing loans through short-term deposits, the banks' interest rate risk is mitigated through variable rates applied to long term mortgages. Costs related to higher interest rates that need to be paid to depositors are thus passed onto borrowers.

While there is no best practice on the housing market structure, OECD (2005a) points to improved interest risk management by shifting from deposit-based to mortgage-based lending supported with long-term secondary market funding, such as mortgage–based securities or mortgage covered bonds. Looking ahead, the government should adopt mortgage-based lending accompanied by a securitisation scheme, in addition to the traditional deposit-based scheme. Because of lack of experience with secondary market instruments, accompanying financial education of lenders and borrowers would be important. In addition, the Bank of Estonia and the Financial Supervisory Authority could encourage development of fixed rate loans through surveillance. Specifically, they should ensure that banks take appropriately into account all credit risks resulting from variable rates in their lending parameters and pricing.

On the demand side, the choice of variable rates may reflect a lack of financial literacy among households. The financial deepening was fast and not all households were necessarily aware of the risks associated with variable rates. The lending boom was characterised by unusually low interest rates, in particular for variable loans denominated in foreign currency. As in other countries, households may have been myopic in looking at only initial monthly payments or assuming the interest rates will remain low, and thus less willing to take out fixed-rate loans. Given the risks to financial stability, the government and the Central Bank should take measures to increase households' financial literacy, especially on risks related to high indebtedness and variable-rate loans.

High financial integration and predominance of foreign ownership in the banking sector creates special challenges for banking supervision

The financial integration has brought significant benefits to the Estonian economy, but also raised concerns about cross-border risks from international financial markets. The strong presence of foreign banks has increased Estonia's dependence on foreign credit flows and its vulnerability to reversals in credit due to changes in foreign banks' risk assessment. The global financial crisis has affected the Estonian banking sector through higher cost of borrowing, tighter lending standards, and reduced foreign credit.

The high foreign bank presence in the financial sector requires co-ordinating the supervision of cross-border financial groups. Towards this goal, the Estonian Financial Supervision Authority has signed agreements with foreign supervisory bodies, especially in the Nordic countries. These agreements are generally substantiated in the Memorandum of Understanding (MoU). To be effective, the MoUs should be complemented by reciprocal visits and information sharing between the supervisory bodies involved.

Fiscal policies contributing to increased housing demand and house prices

Favourable tax treatment of housing

Taxation in Estonia is more geared toward promoting homeownership than in other countries (Table 3.7). The favourable tax treatment is often justified by positive externalities for the society associated with home ownership. However, such treatment may artificially increase house prices and distort capital allocation (OECD, 2007). The

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Table 3.7. **Property-related tax rates**

In per cent

	Property tax	Capital gains tax
Estonia[1]	**0.1-2.5**	**0**
France	0.7	39.3
Spain	0.4	30.9
Ireland	0.7	27.5
Finland	0.2	26.8
Belgium	1.6	21.7
Sweden	1.4	18.4
Portugal	0.8	13.6
Netherlands	0.5	6.3
Greece	0.8	5.5

1. In Estonia, property tax is levied only on land. There is no capital gains tax on sale of primary residence; profit from the sale of a second home is taxed at the same rate as income.

Source: IMF and the Estonian Ministry of Finance.

Estonian tax system favours homeownership through tax deductibility of mortgage interest payments, exemption of imputed rental income, and non-taxation of capital gains from selling residential property.

Tax deductibility can fuel house prices

In Estonia, interest payments on housing and student loans can be deducted from all taxable income, with a ceiling of 50 000 Kroons (corresponding to EUR 3 195). Although tax deductibility has been scaled back over the past decade, deductions were still worth the equivalent of close to 1% of GDP in 2008. In order to reduce distortions in housing investment and adverse effects on house market cycles, the government shouldconsider phasing out mortgage tax deductibility in the medium term.

Exemption of capital gain tax distorts investment decisions

In Estonia capital gains are taxed at the flat rate of 21%, the same as for labour and corporate income. However, capital gains from the sale of the primary place of residence or a summer house are exempted. While many OECD countries have a similar system (Catte *et al.*, 2004), some have introduced restrictions, for example, by requiring a minimum period of residence or excluding holiday homes.

The capital gains tax creates "lock-in" effects by discouraging to sell their houses. This shortcoming is due to the design which in many OECD countries is based on taxing capital gains at the time of realisation. There are several ways to reduce these negative effects. For example, some countries have introduced reduced or effective tax rates on capital gains from selling the personal residence. Other countries allow the tax liability to be rolled over if the gains are used to buy a new residence. Alternatively, the whole capital gain tax system can be based on accrual accounting (New Zealand, Canada and the United Kingdom).

On the other hand, the tax exemption of capital gains from selling homes and summer houses distorts capital allocation by encouraging investing in housing at the expense of other potentially more productive assets. It may also increase portfolio risk as investment is not diversified. On balance, the government should reconsider the design of the tax exemption of capital gains on housing, for example by introducing a minimum period of residence and excluding summer houses from the exemption.

Tax on the value of buildings may mitigate house price cycles

In Estonia land value is taxed, but not the value of buildings. The land tax is levied and collected at a local level and tax revenues accrue fully to the local budgets of municipalities. Its share of municipal revenues is 4%. In international comparison, property tax revenue 0.25% of GDP in Estonia, clearly below the OECD average level. The tax rate varies between 0.1-2.5% depending on the municipality and the usage of land. In the most recent five years, the average rate has increased from around 1.1% to almost 1.6%. For example, in 2008 the city of Tallinn raised its tax rate on land from 0.6% to 1.5%.

The tax burden on land depends not only on the tax rate but also on the valuation of the tax base. The last assessment was carried out in 2001 and thus current assessment values and the value of the tax base have fallen far behind recent market prices. The low value of the tax base implies that the effective land tax rate and the tax burden are lower than suggested by the statutory rate. For example, in 2007 the tax assessment value was around 14% of the current value of land in Tallinn and thus the effective tax rate was less than 0.1%, rather than the statutory rate of 0.6%. This lack of timely assessment of property values also results in pro-cyclical effective property tax rates, exacerbating housing cycles (Muellbauer, 2005). Furthermore, a narrower tax base necessitates increases of other tax rates.

The advantage of the real estate tax is that it has least adverse effects on resource allocation and thus is less likely to inhibit growth than other taxes. Another major advantage is that the tax base is more stable than that of the personal and especially corporate taxes, resulting in predictable revenues (Joumard and Kongsrud, 2003). To reduce investment distortions and to dampen house and land price cycles the tax assessment values of land should be updated regularly and aligned more closely with actual market values. The tax base should be extended to cover buildings.

Housing policies to address social imbalances

Housing loan guarantees further subsidize home ownership

The state housing loan guarantee programme also subsidises home ownership (Box 3.4). Loans guaranteed by this programme are granted with considerably lower down

Box 3.4. **Loan guarantee programme**

The state loan guarantee programme was launched in 2000 and is implemented by *KredEx*, a state agency operating under the Ministry of Economic Affairs and Communication. The agency provides guarantees for housing loans to individual households and for apartment building loans. Housing loan guarantees are mainly targeted to young families and tenants of houses privatised through restitution, whereas only apartment and housing associations are eligible for the building loan guarantee programme.

Housing loan guarantees are designed for households buying a new home or renovating an existing one, and allow them to decrease their down payment, although the down payment still has to be at least 10% of the value of the loan. The amount of the loan guarantee can be up to 24% of the value of the loan. There are no limits to the loan amount, while the maximum loan maturity is 30 years. A fee of 3% of the guarantee amount is to be paid upon signing the agreement. Only one *KredEx* housing loan guarantee can be in used at the same time. Refinancing using a loan with a guarantee is allowed in most cases and there is no cap on refinancing.

Box 3.4. **Loan guarantee programme** *(cont.)*

The purpose of the loan guarantees for building apartments is the financing of renovation and enhancement of living standards. The apartment building has to have undergone a technical inspection and/or an energy audit or a building permit has been issued for performance of the work to be credit-financed. The guarantee covers up to 75% of the loan principal, and will be reduced proportionally by each loan repayment. The annual guarantee fee is 1.2%-1.7% of the balance of the guarantee.

Statistical facts about the loan guarantee programme:

- In 2000-07, the average housing loan with *KredEx* guarantee was around 435 000 Kroons (EUR 29 000), about 20% of the mortgage, and the average maturity of the loans was about 20 years. Tallinn and Tartu had the largest share of loans.
- In 2007 the total amount of guarantee liabilities around 551 million Kroons and the total housing loan amount issued by bank with *KredEx* guarantee was 1.18 billion Kroons.
- During 2000-07, the average loan for building apartments with *KredEx* guarantee was around 462 000 Kroons and the average maturity was less than 10 years. On average the value of loan guarantee was 70% of the loan.

payments and higher loan-to-value ratios than is customary in financial institutions (Palacin and Shelburne, 2005). In the early 2000s around one-fifth of housing loans were issued with the help of the guarantee programme. In recent years, the relative importance of the program as banks' lending conditions eased. However, its role may strengthen again with financial sector turmoil and tightening lending standards.

Like tax incentives, the loan guarantee programme is an explicit subsidy favouring home-ownership relative to rental housing. It may also discourage investing in housing at the expense of other potentially more productive investment. Furthermore, the government should thus consider phasing out this programme and achieve social goals by granting allowances.

Rental markets are small

Only 4% of households are tenants (Table 3.8), and most of the private rental dwellings are held by small owners. To address the lack of adequate information on the size and conditions of the private rental market, the new Estonian National Housing Development Plan aims at gathering information on the existing private housing stock and on new developments in this market by 2013 (Box 3.5).

The tenure structure in Estonia is partly due to the privatisation in the early 1990s, which allowed households to acquire their residence at low cost with vouchers issued by the government. In addition, some of the dwellings were privatised through the restitution programme. The privatisation led to a rapid transformation of state and municipally-owned dwellings to private ownership. In 1994, central government or municipalities owned 71% of the dwellings, up from 5% at the end of the 1990s. However, the privatisation inhibited the development of market-based real estate trade as transactions based on vouchers were made at a considerably lower cost than the market price. Due to large differences in prices of new and old dwellings, new dwelling construction picked up only in the early 2000s.

Table 3.8. **Households by tenure type – owner occupation rate**

Per cent

	Year	Share
Belgium	2007	78.0
Bulgaria	2002	96.5
Czech Republic	2007	58.7
Denmark	2007	54.0
Germany	2002	43.2
Estonia	**2007**	**96.0**
Greece	2007	80.1
Spain	2005	86.3
France	2004	56.5
Ireland	2007	74.5
Italy	2002	80.0
Latvia	2007	87.0
Lithuania	2007	97.0
Luxembourg	2005	74.6
Hungary	2003	92.0
Netherlands	2005	54.0
Austria	2003	57.0
Poland	2004	75.0
Portugal	2006	76.0
Romania	2007	97.6
Slovenia	2003	84.0
Slovakia	2007	81.0
Finland	2005	58.0
Sweden	2005	50.0
United Kingdom	2005	70.0
EU27	–	70.4

Source: Hypostat (2007).

Box 3.5. **Estonian National Housing Development Plan 2008-13**

The new National Housing Development Plan was approved by the government in January 2008. It lays out the strategy for developing the housing sector and sets out objectives and measures to be undertaken.

The main objectives and measures of the housing development plan are the following:

- Make housing accessible to every Estonian resident by: *i)* supporting adjustment of housing to meet special needs of different groups; *ii)* continuing with the state loan guarantee programme and provision of tax incentives; *iii)* supporting large families in acquiring a home and improving their housing conditions, increasing social housing at municipal level and mapping the private rental housing stock; and *iv)* specifying in the law that the housing costs are compensated as a part of the subsistence benefit.
- Increase the quality and sustainability of the housing stock by: *i)* granting support to renovation of dwellings and state guarantees to renovation loans; *ii)* raising public awareness on energy efficiency issues and training persons involved in maintenance and management of dwellings; and *iii)* supporting expert analyses and energy audits of dwellings and mapping the condition of the housing stock.
- Ensure diversity as well as balanced and sustainable development of residential areas by: *i)* increasing the role of architectural planning and providing guidelines for developing residential areas; *ii)* supporting the demolition of housing in non-repairable condition and tidying up slow traffic areas around dwellings; *iii)* developing public urban space and green areas, *iv)* preserving valuable sites and architectural heritage; and *v)* increasing security in living areas.

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Shortages of affordable housing and underdeveloped road infrastructure hinder labour mobility

As highlighted in Chapter 4, there are large disparities in regional labour market performance. A low level of geographic labour mobility also induced by the housing market is one of the explanations. Predominance of home-ownership hinders mobility as home owners are less likely to move to a new location, due to transaction costs and potential capital losses (OECD 2005b). In addition, the large regional differences in the housing prices prevent households from moving to high-price areas. The lack of rental housing exacerbates this problem. As regional labour mobility is important (Chapter 4), policies strongly favouring home ownership over other types of tenure should be reconsidered and policies enhancing private rental market should be introduced. Mapping the private rental housing stock as suggested in the Estonian National Housing Development Plan is essential for supporting such reforms.

In Estonia only 4% of the dwelling stock is owned by the central or municipal governments, a rate well below many OECD countries, but about the same as Estonia's regional peers. The low rate is desirable, as extensive social housing hinders mobility (OECD, 2005b). The problem would be particularly acute in high growth areas, such as Tallinn and other major cities, where house prices and rents are highest.

Enhancing mobility through gradually increasing housing allowances and improving public transport system

Housing allowances play a minor role in Estonia compared to many OECD countries, as only 3.4% of households received these benefits in 2006 (the OECD average is above 10%). Moreover, the average amount of the benefits was low, EEK 1 199 (around EUR 80), as the housing allowances are a part of subsistence benefits that are intended to guarantee only a minimum living standard. Given the negative effects of social housing on mobility, housing allowances are a less distortive way to increase access to affordable housing. In particular, the level of allowances could be increased over the medium term to take into account regional differences in the housing cost, which would allow for mobility from low housing cost areas to growth centres characterised by high costs. Mobility across counties and regions could be further enhanced by improving public transport system through investment in infrastructure.

Box 3.6. **Summary of policy recommendations**

Mitigate risks to financial stability

- Continue careful monitoring of financial stability risks and strengthen strong cross-border co-operation with foreign financial market supervisors as well as foreign banks on supervision, liquidity provision to banks, and the coverage of deposit insurance.
- Enhance communication of information to the public in order to sustain the confidence of the public in the financial system.
- Increase households' financial literacy, especially on risks related to high indebtedness, variable rate loans and loans in foreign currency.
- To reduce interest risk due to variable loans, consider adopting a mortgage-based lending system with a securitisation scheme, in addition to traditional deposit-based lending. Because of lack of experience with secondary market instruments, provide accompanying financial education for all market participants.

Box 3.6. **Summary of policy recommendations** *(cont.)*

- Encourage the development of fixed rate loans through surveillance by the Bank of Estonia and/or the Financial Supervision Authority. Encourage banks to take account of credit risks due to variable rates.

Reduce the favourable fiscal policy bias of home ownership

- Consider phasing out the tax deductibility of mortgages in the medium term to avoid further amplifying the cycles in the housing markets.
- Reconsider the design of tax exemption of capital gains on housing, for example by introducing a minimum period of residence and excluding summer houses.
- Align the tax assessment of land value more closely with the market value by regularly updating assessments and bringing buildings into the tax base.
- Consider phasing out the loan guarantee programme to reduce distortions in housing investment.

Enhance labour mobility while easing access to affordable housing and improving public transport

- Enhance labour mobility while easing access to affordable housing. Increase the level of housing allowances over the medium term to take into account regional differences in the housing cost.
- Enhance labour mobility across counties and regions by improving public transport system through investment in infrastructure.

Notes

1. European Central Bank (2003) defines booms and busts as periods of uninterrupted changes of at least 10% per year in real house prices.
2. Due to relatively high inflation in Estonia since 2005, real interest rates turned negative during 2005-07.
3. The interest rates on housing loans increased faster in Estonia than in the euro area. Moreover, there has been a divergence between kroon-denominated rates and the euro-denominated rates, with Kroon-denominated rates rising faster.
4. While caution needs to be applied when comparing house price developments across countries, a survey by the Global Property Guide indicates that in mid-2008 the drop in Estonia's real estate prices was one of the sharpest among OECD countries and emerging market economies (*www.globalpropertyguide.com/house-prices-indices/House-price-changes-year-to-end-Q1-2008*).
5. In the initial stages the housing boom was also supported by low construction cost, but the construction costs, and in particular labour costs, have accelerated rapidly since 2005, with real wages rising much faster than labour productivity. As the sector turned down, profitability in the construction sector decreased in real terms by 33% between June 2007 and June 2008. However, employment reacted with delay – between September 2007 and 2008 employment in construction declined only by 5% (Statistics Estonia).
6. Estonia's mortgage interest spreads – defined as the difference between mortgage interest rates and the Bank of Estonia's base rate – were one of the lowest among the NMS in 2004.
7. In 2005, the banks started to offer consumer credit as well, but at about 11% of total debt, its share in the total loans remains low.
8. Until mid-2007, the subdued growth of financial assets of the Estonian households reflected mainly preferences for real estate investment. With plummeting real estate prices, the "corrected" measure of wealth – including financial and real wealth – relative to GDP has started to decline (UniCredit Group, 2007).

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9. Only 12% of households with monthly income up to 2 000 Estonian kroons (EUR 133) have a housing loan as opposed to 35% of households with income above 8 000 kroons (EUR 670). The distribution of household debt by age exhibits the typical hump shape – with only 12% of households aged 18-24 years and 7% aged 60-74 years holding a household loan (Bank of Estonia). However, these households may be more vulnerable to fluctuations in wealth, as the value of their assets declines.
10. A mortgage loan to households is defined as the primary loan product used to fund purchases of residential property and secured by that property.
11. In most countries, consumers tend to prefer simple mortgage contracts with the lowest initial cost. The advice households receive about various mortgage products, mostly from lenders, seem to greatly influence their decisions (IMF, 2004).
12. Fixed-rate loans accounted for less than 5% of all outstanding loans at the end of 2007, but their share exceeded 10% among new loans in 2008, reflecting the higher interest rates (Bank of Estonia).
13. There is no direct impact of unexpected interest rate increases on households holding fixed-rate loans. However, the households will ultimately bear the risk through their shareholdings in the financial institutions or – in case of securitised mortgages – through the value of pension funds (Debelle, 2004a).
14. The concentration of the debt among higher-income households is a mitigating factor to income risk, as these households are less likely to become unemployed and have more assets than poorer households.
15. The amount of total overdue loans as a share of all loans increased from 0.2% in September 2006 to 1.7% in November 2008.
16. Lengthening the maturity of housing loans would also smooth the effects of interest rate changes on the household debt service payments, but the average and median maturity has already been increased following the house price boom during the recent years.
17. Mortgage covered bonds and residential mortgage-backed securities (RMBS) are securitisation schemes in which bonds backed by mortgages pooled by lenders are sold to investors through a secondary market. In case of covered bonds, loan assets – and hence credit and prepayment risks – remain on the lender's balance sheet, but are removed in case of RMBS (OECD, 2005a). Since in case of covered bonds the lending institutions do not transfer the credit risk, incentives of these institutions for prudent assessment of such risks are enhanced (ECB, 2008).

Bibliography

Bernanke, B. and M. Gertler (1989), "Agency costs, net worth, and business fluctuations", *American Economic Review*, Vol. 79, pp. 14-31, March.

Debelle, G. (2004a), "Macroeconomic implications of rising household debt", *BIS Working Papers No.* 153.

Debelle, G. (2004b), "Household debt and the macroeconomy", *BIS Quarterly Review*, pp. 51-64, March.

European Central Bank (2008), "Covered bonds in the EU financial system", December (ECB: Frankfurt).

European Central Bank (2003), "Structural factors in the EU household markets", ECB, Frankfurt, March.

FitchRatings (2008), "Emerging Europe's current account deficits: mind the gap", *International Special Report*, 31 January 2008.

Girouard, N., M. Kennedy and C. André (2006), "Has the rise in debt made households more vulnerable?", *OECD Economics Department Working Papers,* ECO/WKP(2006)63.

Hilbers, P., Q. Lei and L. Zacho (2001), "Real estate market developments and financial sector soundness", *IMF Working Papers* WP/01/129.

Hypostat (2008), "A review of Europe's mortgage and housing markets", November.

International Monetary Fund (2009), "Republic of Estonia: Financial system stability assessment", *IMF Country Report* 09/89.

International Monetary Fund (2008a), *World Economic Outlook*, April.

International Monetary Fund (2008b), "The European credit cycle: diverging patterns", in *IMF Regional Economic Outlook for Europe*, November.

International Monetary Fund (2007a), "Denmark: financial sector assessment program technical note – the Danish mortgage market – a comparative analysis", *IMF Country Reports No.* 07/123.

International Monetary Fund (2004), *World Economic Outlook,* September.

Jacobsen, DH. (2005), "Housing prices in Norway", *Economic Bulletin* 05 Q1, pp. 1-13.

Johansson *et al.* (2008), "Taxation and economic growth", *OECD Economics Department Working Papers* No. 620.

Joumard, I. and PM. Kongsgrud (2003), "Fiscal relations across government levels", *OECD Economic Studies*, No. 36, 2003/1.

Kiyotaki, N. and J. Moore (1997), "Credit cycles", *Journal of Political Economy*, Vol. 105, No. 2, pp. 211-248.

Kolbre, E. and A. Kallakmaa-Kapsta (2007), "Housing market development in Estonia: Is there a real estate boom?", *Tallinn University of Technology Working papers*, TUTWPE No. 146, *http://deepthought.ttu.ee/majandus/tekstid/TUTWPE_06_146.pdf*.

Miles, D. (2003), "The UK mortgage market: taking a longer-term view", *Interim Report*.

Muellbauer, J. (2005), "Property taxation and the economy after the Barker Review", *The Economic Journal*, 115, March.

Van den Noord, P. (2003), "Tax incentives and house price volatility in the euro area: Theory and evidence", *OECD Economics Department Working Papers* No. 356. Lattemae, R. and K. ouart (2006), "The structure and development of the Estonian housing market", Kroon&Economy 2/2006, pp. 8-13.

OECD (2005a), *Housing Finance Markets in Transition Economies: Trends and Challenges*, OECD, Paris.

OECD (2005b), *OECD Employment Outlook*, OECD, Paris.

OECD (2006a), *OECD Economic Surveys: Ireland*, OECD, Paris.

OECD (2006b), "Taxation of capital gains of individuals", *OECD Tax Policy Studies*, No. 14, OECD, Paris.

OECD (2007), *OECD Economic Surveys: Hungary*, OECD, Paris.

OECD (2009), *OECD Economic Surveys: Slovak Republic*, OECD, Paris.

Ortalo-Magne, F. and S. Rady (2006), "Housing market dynamics: on the contribution of income shocks and credit constraints", *Review of Economic Studies,* Vol. 73, Issue 2, pp. 459-485.

Palacin, J. and R. Shelburne (2005), The private housing market in Eastern Europe and the CIS, *United Nations Economic Commission for Europe Discussion Papers*, No. 2005.5.

Stock, J. and M.W. Watson (1993), "A simple estimator of co-integration vectors in higher order integrated systems", *Econometrica,* Vol. 61, No. 4.

Tamm, M. (2007), "Housing Finance in Estonia: A Short Note on Recent Developments", *Kroon&Economy*, Vol. 2, pp. 18-27.

UniCredit Group (2007), *CEE households' wealth and debt monitor*, UniCredit Group/Bank Austria, November.

White, W. (2006), "Measured wealth, real wealth and illusion of saving", *IFC Bulletin No.* 26, pp. 1- 11.

World Bank (2007) "Credit Expansion in emerging Europe: A cause of concern?", *World Bank EU8+2, Regular Economic Report,* Part II: Special Topic, January.

ANNEX 3.A1

Explaining house price developments in Estonia

This annex provides empirical evidence on the drivers of house prices in Estonia. There are few quantitative studies on Central and Eastern European countries and even less studies focusing on Estonia. This is partly because of a lack of sufficiently long time series data for these countries (Égert and Mihaljek, 2007 and OECD, 2009).

The analysis of house prices is based on a theoretical modelling framework where house prices are determined by supply and demand in the long run. Housing demand is captured by two main factors: households' real disposable income and the user cost of housing. The user cost is simply the after-tax interest rate on housing loans. Housing supply is measured by the housing stock per person. Both households' income and housing stock per person have been increasing during most of the study period, while interest rates have been decreasing.

The time series cover quarterly data for the period from mid-2007 to early 2008. House price and housing loan interest rate data are available on quarterly frequency and are deflated by consumer prices. The after-tax housing loan interest rate is computed as (1-*t*)*i*–À where *t* is the income tax rate. The quarterly dwelling stock series are obtained by extrapolating using data on completed dwellings. All variables except the interest rate are expressed in logarithms. Standard unit root test indicate that all the variables are non-stationary which suggests that there may exist a co-integration relationship between the variables. Indeed, independent of the estimation method co-integration tests indicate to the existence of such a relationship.

The empirical specification is estimated using an error correction model capturing the long-run determinants of house prices and short-run dynamics. The focus is on the long-run results as this allows for the analysis of long-run fundamentals and also the assessment of house prices misalignment. The error correction model is first estimated using Engle-Granger two-steps approach, *i.e.* estimating long-run and short-run parameters in two separate steps with OLS. However, the estimates derived using this approach may be biased in small samples.* To correct for this potential bias, two other estimation methods are used: *i*) the two-step approach with dynamic OLS which incorporates lags and leads of the regressors in first differences accounting for the serial correlation in residuals; and *ii*) the approach of estimating an error correction model using the auto-regressive distributed lag (ARDL).

* See Stock and Watson (1993).

Table 3.A1.1 summarises the main results. The error correction term is negative in all the estimations showing that differences between actual and the long-run house prices based on fundamentals are corrected over time. The adjustment of actual house price to their long-run fundamental level is relatively rapid in the Estonian housing markets, *i.e.* the error correction term is relatively large. Households' real disposable income and real after-tax interest rate have expected signs and are statistically significant whereas the housing stock is not statistically significant in any of the specifications. Excluding the housing stock as a regressor does not change the results concerning findings on the households' income and after-tax interest rate. The results are robust to change in the estimation method, except for the housing stock which seems to have an unexpected sign in the estimation based on the Engle-Granger two-steps approach. The housing stock is included with a lag in the long run equations to avoid the endogeneity problem, *i.e.* house price driving housing investment. All estimations include constant and seasonal dummies.

Table 3.A1.1. **Results on house price regressions**

	OLS	DOLS	ARDL
Real disposable income	1.76***	2.10***	2.00**
	(3.5)	(3.3)	(2.1)
Real after-tax mortgage rate	–2.84***	–2.24**	–2.31*
	(–2.9)	(–2.2)	(–1.8)
Housing stock per person	0.01	–3.02	–1.81
	(0.0)	(–0.4)	(–0.2)
ECT	–0.83***	–0.66***	–0.85***
	(–5.7)	(–4.3)	(–4.5)
Noobs.	40	40	40
Adj R2	0.48	0.34	0.42

Several different specifications were estimated to check the robustness of results: *i)* to capture the importance of potential first-time buyers, the population of the age group 25-29 was considered and thus the housing stock was divided by the number of persons in this age group (OECD, 2006a and b and OECD 2009). The quarterly population series for the age group 25-29 were derived by linear extrapolation and using quarterly data on age groups in EuroStat Labour Force Survey; *ii)* another robustness check was to consider real wage instead of real disposable income. In addition, the effect of differences in the period of analysis was examined. The results are relatively robust to these changes in the baseline specifications.

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Chapter 4

Increasing flexibility and reducing segmentation of the labour market

In recent years, the Estonian labour market was characterized by rising employment, declining unemployment, and skill and labour shortages that contributed to large wage increases. Labour productivity grew rapidly, but the level remains low. While the aggregate labour market outcomes improved, differences persisted among ethnic groups, regions, and workers with different skill levels. As Estonia entered recession in 2008, unemployment increased from 4% in the 2nd quarter to 7.6% in the 4th quarter, and is expected to rise further in 2009 and 2010.

More flexible labour markets will be a key adjustment mechanism in the current recession as well as in the medium term if Estonia is to become a knowledge-based economy. This chapter focuses on: i) removal of barriers that hamper worker reallocation into more productive jobs; and ii) a better integration of ethnic non-Estonians and foreign workers into the labour market.

The labour market: outcomes and challenges ahead

Labour productivity grew rapidly during 2000–07

During 2000-07 Estonia's real GDP grew faster than in most emerging market economies. One of the main contributing factors was high labour productivity growth, even relative to Latvia and Lithuania that also recorded high GDP growth rates during this period (Table 4.1). At sector levels, high productivity growth was driven by market services and manufacturing (Figure 4.1), and within services financial intermediation grew faster than

Table 4.1. **Labour productivity in Estonia, Latvia and Lithuania, 2000-07**

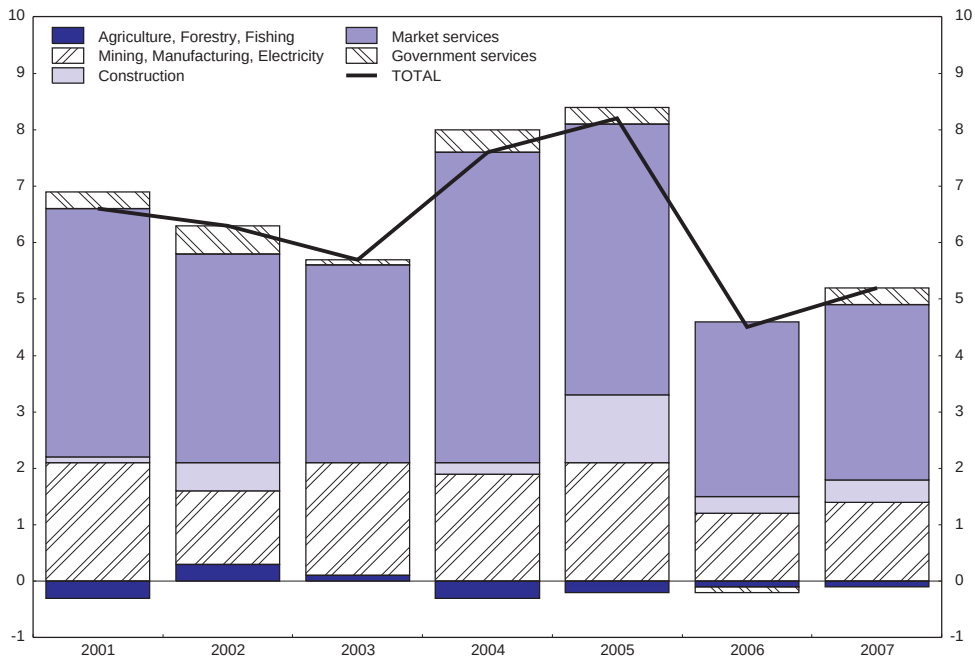
GDP per person employed, Index, 1999 = 100

	2000	2001	2002	2003	2004	2005	2006	2007
Estonia	113	120	128	136	147	160	168	179
Latvia	110	116	122	129	138	150	161	172
Lithuania	108	120	124	134	144	151	160	171

Source: European Commission.

Figure 4.1. **Sectoral composition of labour productivity growth**

% points of contribution to total growth



StatLink http://dx.doi.org/10.1787/561403833187

Source: Statistics Estonia.

other service sub-sectors. Nevertheless, the level of labour productivity amounted to only about 62% of the EU27 average at the end of 2007.

Within-sector efficiency gains rather than sectoral reallocation drove productivity growth

As in other transition economies, the 1990s in Estonia were characterized by large shifts in the sectoral composition of GDP and employment, with adjustment towards the economic structures of the EU15.[1] However, this intensive sectoral reallocation played only a minor role in productivity growth, which resulted mostly from improvements within sectors (Table 4.2)[2]. In 2000s, within-sector gains drove productivity, pointing to the importance of education, an enabling business environment, and innovation (Chapter 5).

Table 4.2. **Estonia – Labour productivity: structure and growth**

%

	1996-2000	2001-07
Total productivity growth	8.4	6.3
Of which:		
Productivity growth effect	7.2	6.7
Structural change effect	1.5	0.0
Interaction effect	–0.3	–0.5

Source: Secretariat estimates.

Intensive inter-sectoral reallocation has not improved the quality of jobs

In spite of the relatively high rate of tertiary graduates in the labour force, Estonia has low shares of employment in high-tech and knowledge intensive sectors relative to the EU27 average.[3] Most of the new jobs created during 2000-07 were in construction, manufacturing, and trade – sectors with low shares of employees with tertiary education (Figure 4.2). As in other NMS, worker reallocation in 2000s has not changed much the quality of jobs as measured by median wage (Eurofound, 2008).[4] In contrast, in the EU15 countries, and especially in Finland and Sweden, most of the new jobs were of above average quality and located in business services, health, and education. Over the medium term, stimulating job creation in high-tech sectors and knowledge intensive services is needed to bring Estonia closer to a knowledge-based economy (Chapter 5).

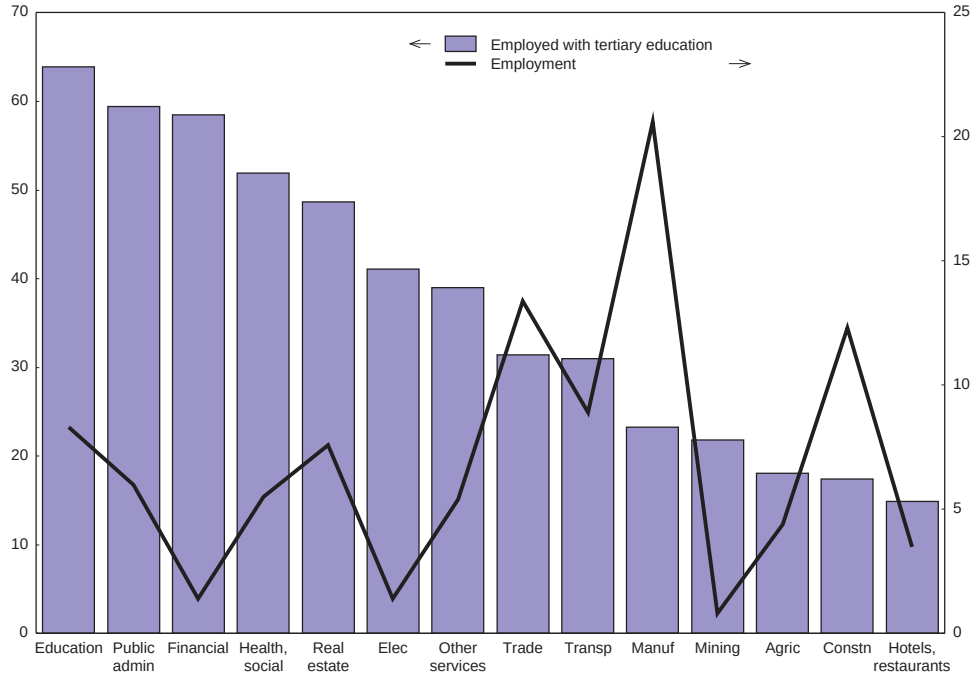
Outcomes for low-skilled workers were poor

In spite of the boom, the 2007 employment rates of the low-skilled workers (with less than upper secondary education) remained well below those of workers with the upper secondary or tertiary education (Figure 4.3). Estonia's employment rates of the low-skilled workers were also below those of the EU27 average. Experience of the OECD countries suggests that the high tax wedge and the rapid growth of minimum wages have likely contributed to the persistently low employment rates of the low-skilled workers (Bassanini and Duval, 2006).

Timely recovery from the cyclical downturn will require enhanced flexibility

The rapid GDP growth of the recent years was accompanied by a disproportionate share of the labour force employed in non-tradables. The share of employment in construction in Estonia increased from 7 to 12% between 2000 and 2007, and was

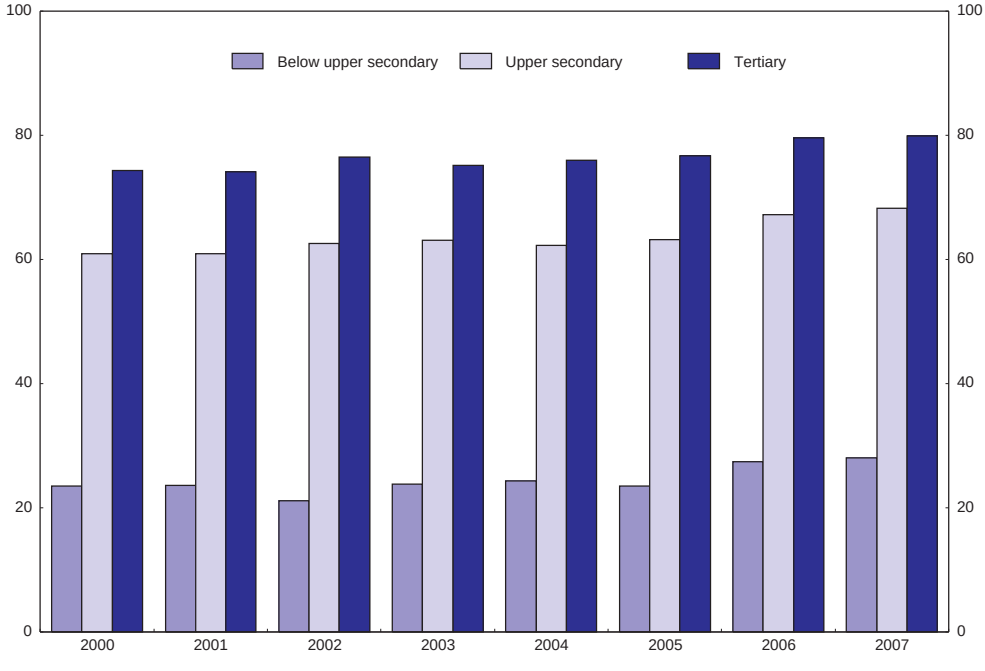
Figure 4.2. **Employed with tertiary education and by sector, 2007**
% of total employment



StatLink http://dx.doi.org/10.1787/561446641431

Source: Statistics Estonia.

Figure 4.3. **Employment rates by education**
Employment as % of population aged 15-74



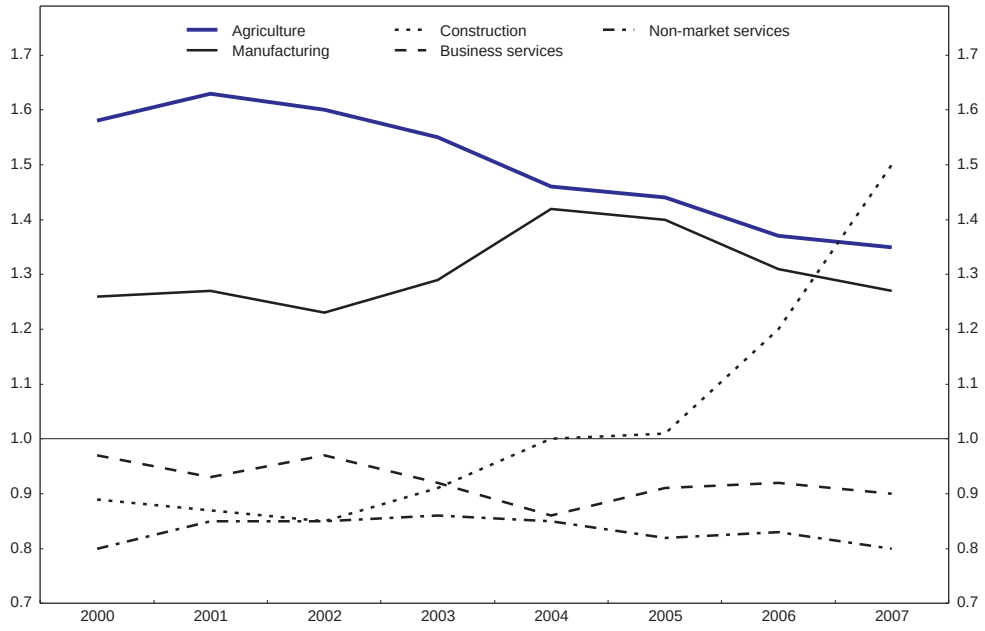
StatLink http://dx.doi.org/10.1787/561457374377

Source: Statistics Estonia.

approaching that of Spain (13% of total employment), a country that experienced a major real estate boom. The index of similarity of employment structures between Estonia and the EU15 (Figure 4.4) also illustrates that the share of construction in Estonian employment relative to that of the EU15 countries increased in recent years from "slightly under-represented", with a value below 1 to "heavily over-represented".[5] However, the high employment in the construction sector was not reflected in the value added and productivity in that sector. In contrast, the share of the service sector in Estonia remains below that of the EU15 and Finland, with business services, financial intermediation, real estate, and health services particularly underrepresented. As Estonia's production and employment structure evolves, more flexible labour markets will be crucial.

Figure 4.4. **Structural similarity in employment**

Employment share in Estonia relative to that in EU15



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Note: A ratio of less than one indicates a lower share of employment in a sector in Estonia than in EU15. Business services are: Wholesale and retail trade; Hotels and restaurants; Transport, storage and communication; Financial intermediation; and Real estate, renting and business activities. Non-market services include: Public administration and defence; Social Security; Education; Health and social work; and Other economic activities.

Source: OECD calculations based on data from Eurostat and Statistics Estonia.

Estonia's labour markets in the mid-1990s were characterized by much higher worker and job flows than in most other transition economies (Vodopivec, 2000), but worker flows slowed in the 2000s (Masso, Eamets and Phillips, 2005). Specifically, the flows out of unemployment increased with the economic boom, but the dynamism in other segments of the labour market has slowed, as more workers stayed in the same jobs and fewer of them became unemployed. The recovery from the current downturn will largely depend on how quickly productive resources can shift to export industries. The speed at which workers will reallocate to these sectors will indicate whether the recent lower turnover of the employed was only due to the improved economic situation or also due to more rigid and/or better enforced institutions than in the 1990s.

Population decline will present a challenge over the longer term

Since the early 1990s, Estonia's population has been declining, getting older and becoming less ethnically diverse, posing a challenge to sustainable growth. The population declined by 15% during 1991-2008, with most of the decline occurring during the 1990s when population shrank by 13%. Massive net emigration, mostly by ethnic Russians, Ukrainians and Belarusians returning to their home countries, was the main factor. In the 2000s ethnic Estonians emigrated as well, mostly for economic reasons to the EU countries, especially Finland, and the United States. Specifically, 27 000 Estonian citizens (or almost 2% of the population) emigrated during 2000-2007 (Statistics Estonia). While emigration has been irregular, immigration has grown over the years with the rising living standards. (Box 4.1). Natural attrition due to low birth rates has contributed to continued population decline (Figure 4.5).

The population decline occurred in parallel with changes in ethnic and age composition**.** The age composition of the Estonian population has been approaching that of the average of EU15 countries (Figure 4.6). The share of ethnic Russians in the population

Box 4.1. **Migration in Estonia – Current situation and future challenges**

Who are the Estonian working migrants?

In January 2008, the Bank of Estonia conducted a Survey to analyze the extent and structure of Estonia's migration flows in 2007. The Survey was conducted via Internet, and responses were obtained from 592 companies (with a total of 54 500 employees, *i.e.* covering 9% of the Estonian labour force). By its design, the Survey covered only cross-border flows of employees.

The results showed that the typical Estonian emigrant in 2007 was young (less than 35 years old), male, ethnic Estonian, with secondary or basic education, and a skilled technical worker by profession. A Recent study on migration during 2000-07 conducted by the Statistics Estonia (2009) confirmed these finding. Among workers with basic education, the share of emigrants was three times higher than among workers with higher education, confirming that poor employment prospects for low-skilled workers pose a challenge (Bank of Estonia, 2008).

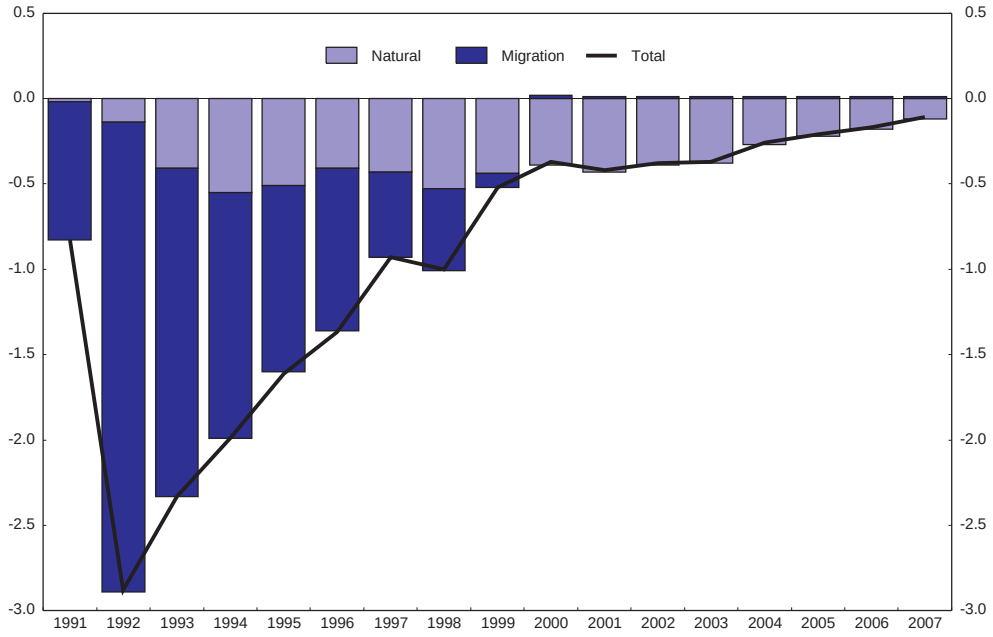
Emigration as a possible buffer during the current downturn

The study states that, on balance, Estonia could become a net emigration country again during the current downturn. While economic conditions have deteriorated in the rest of the Europe as well, an extra stimulus may be provided through the removal of remaining restrictions on free movement of labour in the EU. While the opportunity to emigrate or work abroad (especially in nearby Finland) may act as a stabilizing mechanism for unemployment during the downturn, the focus of the policymakers should remain on growth with job creation at home and adequate security for the most vulnerable segments of population.

Medium term perspective – Estonia as a net immigration country

Taking a historical perspective on migration, Münz (2008) suggests that if not already, most of the new EU member countries will most likely become net immigration countries in the future, similar to countries of western Europe that have all become destinations for international migrants and asylum seekers during the past 60 years. To adapt better to the changing realities and mitigate declining population, Estonia will need to develop policies toward integrating migrants over the medium term.

Figure 4.5. **Sources of population changes**
Changes as % of total population



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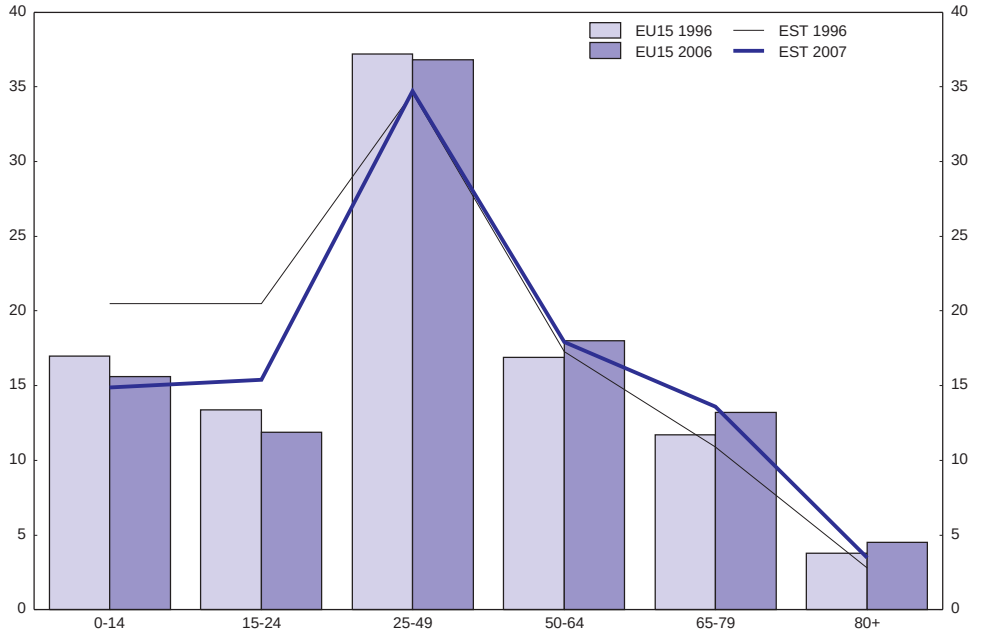
Note: Natural change is births minus deaths during a year. The graph shows this as a percentage of the population at the end of the year. Migration is the residual of total and natural change.
Source: OECD calculations based on data from Statistics Estonia.

Figure 4.6. **Age composition of the population**
% of total



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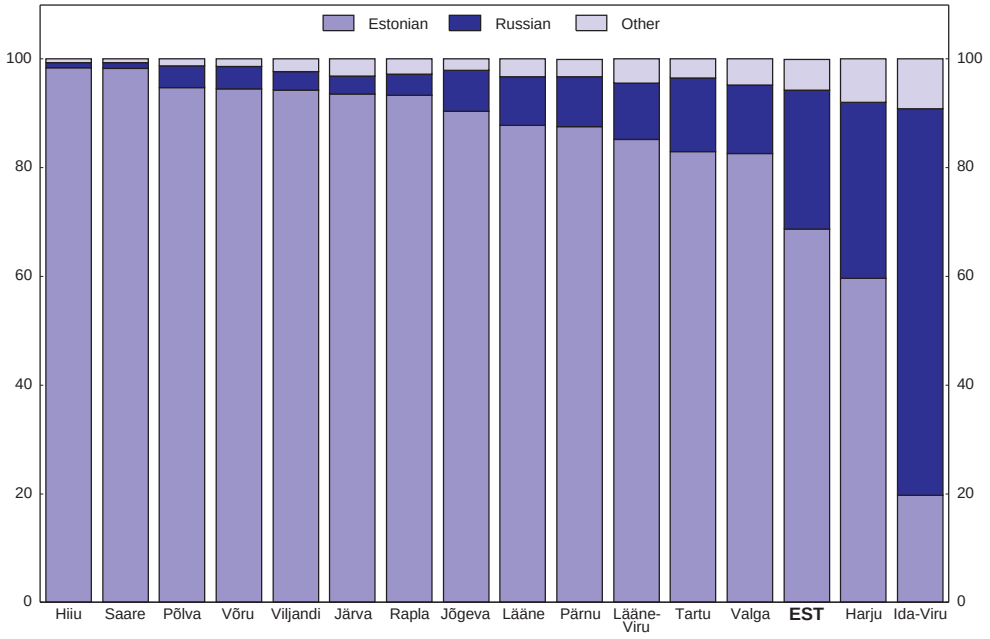
Note: Refer to Glossary for country codes.
Source: Eurostat; Statistics Estonia.

declined from 30% in 1989 to 26% in 2007. Ethnic Russians are currently concentrated in the Northeastern region (Ida-Viru county) and in Tallinn (Harju county), where they account for about 70% and 36% of the total population, respectively (Figure 4.7). Other ethnic minorities (mostly Ukraininans and Belorussians) accounted for less than 6% of the total population in 2007.

Figure 4.7. **Ethnic composition of the population**

% of total



StatLink http://dx.doi.org/10.1787/561663043841

Note: Counties of Estonia, 1 January 2008.

Source: Statistics Estonia.

Making labour market institutions more flexible

In the current recession, a pressing issue for the Estonian policymakers is how to facilitate the reallocation of workers across jobs, sectors and regions to more productive activities, while taking into account the social and fiscal costs.[6] Given the low level of synchronization of Estonia's business cycles with those of the euro area, labour market flexibility is also the main adjustment mechanism in case of asymmetric shocks over the medium term.

The recently adopted Employment Act makes employment protection legislation lighter

Current employment protection legislation (EPL)

Estonia's current EPL, adopted in 1992, is more rigid than in central European countries (Table 4.3); it is also above the average of OECD countries (Figure 4.8). The overall rigidity stems mainly from regulation of regular contracts, notably relatively long notice periods for workers with short tenure; strict definition of unfair dismissal; and the right to re-employment or high compensation in cases of unfair dismissal. Rules guiding collective

Table 4.3. **Employment protection legislation in central European countries (2003) and in Estonia**

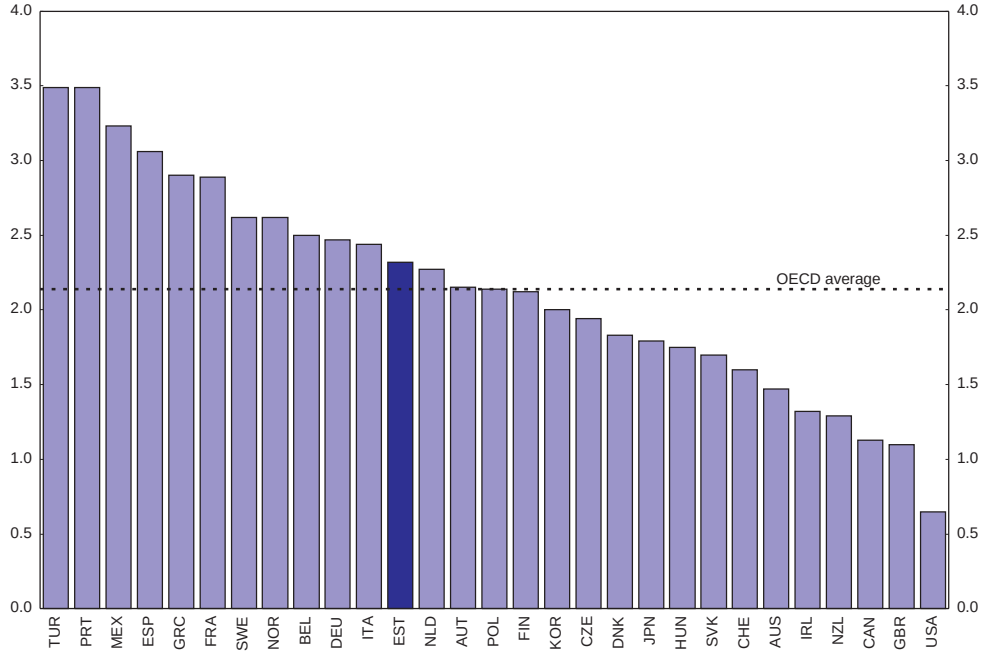
(June 2008): range 0-6, with higher value indicating greater protection

	Regular employment	Temporary employment	Collective dismissals	Overall
Estonia	2.52	1.75	3.25	2.32
OECD average	2.14	1.78	3.06	2.14
Poland	2.23	1.25	4.13	2.14
Czech Republic	3.31	0.50	2.13	1.94
Hungary	1.92	1.13	2.88	1.75
Slovak Republic	2.30	0.38	3.80	1.70

Source: OECD *Employment Outlook 2004*; Estonia: Country response to OECD EPL questionnaire.

Figure 4.8. **Employment protection**

Index of 0 to 6 from least to most restrictive legislation



StatLink http://dx.doi.org/10.1787/561681061430

Note: Employment protection overall. Data refer to 2008 for Estonia and 2003 for the other countries.

Source: Estonia-country response to the OECD EPL questionnaire; *OECD Employment Outlook 2004*.

dismissals are strict because of obligations to inform the third party. Regulations of temporary employment are also stricter than those of other countries of central Europe.[7]

Deregulation of the EPL in the recently adopted Employment Act

To increase flexibility, the Estonian parliament adopted the new Employment Act in December 2008, effective in July 2009.[8] The Act introduces comprehensive changes to the EPL and will make Estonia's score comparable to those of the central European OECD members (the Czech Republic, Hungary, Poland and the Slovak Republic). While EPL reforms in several OECD countries were piecemeal and focused on temporary contracts, the Act also tackles the EPL for regular contracts. In particular, the Act reduces the notice

period and the amount of severance payments pertaining to regular contracts. The terms for notice of redundancy will be set to 15-90 working days, depending on the length of the employment relationship. Severance payments will be also cut, and the cost will be shared between the employer and the Unemployment Insurance Fund. The positive aspects of these changes include:

- Reducing the notice periods and severance payments for workers with short tenure is particularly appropriate for young workers with lack of experience or skills (OECD, 2005).
- Making temporary contracts accessible but simultaneously cutting the cost of employing regular workers reduces incentives to create dual labour markets.
- Reducing bureaucracy, including through merging the Labour Market Board and the Unemployment Insurance Board.

While the impact of EPL deregulation on unemployment is ambiguous, it increases worker and job turnover – and thus mobility – through both easier dismissals and hiring (OECD, 2004; Micco and Pages, 2006). In the Estonian context, the easing of hiring and firing restrictions is particularly needed to reallocate workers from non-tradable to tradable sectors and spur the recovery.[9] In the medium term, the added flexibility will also allow firms to periodically change the skill compositions of their workforces and adjust to global conditions. Looking ahead, Estonia should consider replacing severance payment with an Austrian type savings scheme, to further facilitate workers' movement across employers. The Austrian reform of severance payments in 2002 is an example of a particularly comprehensive EPL reform, which improved incentives for workers' mobility and reconciled flexibility with security (Box 4.2). By replacing severance payments with transferable savings accounts, the Austrian system removed obstacles to workers' mobility between different employers, although at the cost of slightly higher tax wedge.

In the past it was not clear to what extent private firms actually adhered to the formal strict EPL regulations, especially given the high job and worker turnover. Eamets and Masso (2005) examined regulation enforcement in the Baltic countries in the early 2000s and found that the private enterprises had often disregarded the regulations in place. The markedly higher number of labour disputes per employee in Estonia than on average in the EU also suggested violations (Bank of Estonia, 2006). The newly adopted EPL should be fully implemented as stipulated in the Act.

The Act balances employment protection with income security

Negotiations between the government, employers' representatives and trade unions on the changes in the Act lasted several years, mainly because of social partners' concern about reduced employees' security resulting from a lighter EPL. As a compromise solution, the new Employment Act raises the income security of the unemployed. The initial replacement rate under the unemployment insurance scheme will increase and the eligibility for unemployment insurance ease.[10] The Act also stipulates that laid off workers can collect their severance payments only on a monthly basis and start receiving unemployment benefits only after severance payments have expired, thus moving back the end day of the unemployment benefit collection.

The evidence from theoretical and empirical literature shows that high and long-lasting unemployment benefits increase the rate of unemployment (OECD, 1994; OECD, 2006; European Commission, 2006b). The evidence from the empirical literature is also conclusive that higher benefits are associated with longer spells of unemployment

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Box 4.2. **Austria's 2002 EPL reform**

Many of the EPL reforms undertaken by the OECD countries of the past decade were on the margins, modifying the rules pertaining to the temporary contracts. In contrast, the 2002 Austrian Severance Act shifts from a conventional system of severance payments to a system of individual saving accounts.

Under the new system, employers contribute 1.54% of the payroll bill to each worker's individual account, from the first days of employment until the termination. If dismissed, workers with at least three years of tenure can receive severance payment drawn from their account (same rules as under the previous scheme apply) or take the accumulated balance to their next employer. The workers who are dismissed during their first three years on the job or quit voluntarily can also leave the accumulated balance in the account. The separation allowance can be accumulated by the employee over the entire working life, constituting an additional retirement account.

From the employers' perspective, the system reduces the marginal cost of firing and the uncertainty related to this cost at the time of hiring. While the overall labour costs increase by the amount of the contribution, they are most likely considered as deferred wage payments and will furthermore not pose liquidity concerns in the event of job termination. Moreover, according to OECD (2001), under the traditional severance pay system, the rate of layoffs tended to jump prior to employment tenure associated with discrete increases in claims on severance payments, which would no longer be the case under the new system. The new system also eliminates incentives to lay-off workers in low-skilled jobs early to avoid accumulation of severance payment claims not matched by productivity.

From the employee's perspective, the reform replaces the worker's security based on employment relationship between one worker and one employer with an employee benefit provision fund operated at the national level. Moreover, the new system extends the entitlement to severance payment, as it: *i)* starts after one month; *ii)* is independent of the way the contract is terminated; and *iii)* the severance claim increases progressively with time. Workers therefore will not hold onto their existing jobs only for the fear of losing the severance payment entitlements.

Source: OECD (2001), OECD (2004), OECD (2006), European Commission (2006a) and Hofer (2006).

(Vodopivec, Wörgötter and Raju, 2005). An empirical literature examining OECD countries also shows that the length of the benefits matters – unemployed workers tend to notably intensify their job search about 1 month before their period of unemployment benefit entitlements ends (OECD, 2005).

In the case of Estonia, the new Act distorts the incentives of the unemployed workers and firms in several ways. First, the rise of the initial replacement rates is likely to reduce the unemployed workers' job search, especially during the downturn period when chances of exiting unemployment are lower. The requirement that unemployment benefits can be collected only at the end of the severance notice period "penalizes" workers for finding jobs early, by making them to forego a larger part of the unemployment benefits. Second, higher unemployment benefits will also reduce the willingness of workers to accept lower wages. Third, employers' contributions to the Unemployment Insurance Fund will likely need to increase to cover the higher benefits. This will further reduce incentives to create jobs and thus amplify the cycle. In the current recession the changes to the unemployment

insurance scheme are likely to extend the average unemployment duration and lead to a high unemployment trap.

No new activation strategies are being designed

To offset the impact of increases in unemployment benefits and their duration, the Estonian policy makers should strengthen the activation component of active labour market policies. The experience of OECD countries shows that increases of unemployment benefits and duration should be conditional on work availability and active job search (OECD, 1994; Grubb, 2005; and OECD, 2006). This is because well designed and targeted policies geared towards engaging workers in the job search, reducing search cost, and improving quality of the matches, mitigate the disincentives stemming from changes in the unemployment benefit system. Through the "loss of leisure" element, the policies supporting active job search also ensure that benefits are provided to those who need them the most.[11]

Regarding effectiveness of different activation approaches, OECD (2005) found that job search assistance or "work first" strategies tend to have a large impact and low cost. These measures are particularly useful in the context of the fiscal constraints. Long-term labour market programmes alone, such as training, often have no or even negative impact in the short term, but have favourable impact on employment and earnings two or three years after the individuals completed these programmes. Mixed strategies combining job search and selective training programme participation seem to be most effective.

Other key labour market institutions remain mostly unchanged

Over time, the labour market institutions in Estonia have approached those of the EU countries, but some aspects are less flexible. Except for supporting life-long learning, remaining key labour market institutions are unchanged, with potentially negative impacts on outcomes.

- In the wage setting process, union involvement is among the lowest in the EU (Estonia's unions covered only 8% of the labour force in 2006). Wages in most sectors and companies adjust flexibly to reflect productivity changes (Maivali and Lubenets, 2007; Room, 2008).
- The unions are involved in wage negotiations in some large industrial enterprises and in the public sector, as well as in negotiations of the nation-wide minimum wage. In 2006 and 2007, average collectively-agreed public sector wage increases, adjusted for inflation, were among the highest in the EU. Public sector wages grew faster than the nation-wide labour productivity, undermining competitiveness and the reallocation of labour into export activities. Increases in public sector wages should therefore be kept in line with private sector productivity growth.
- In 2007, the minimum wage was only at about 32% of the average wage, but the nominal increases in the past several years have been substantial (about 20%). In real terms, minimum wage increases were above the EU average and exceeded labour productivity growth, thus "pricing out of jobs" low-wage workers for whom the minimum wage constitutes a binding constraint. In order to avoid further pressures on the employability for low skilled workers, increases of minimum wages should be limited to private sector productivity growth. Such negotiations should consider the recommendations of an expert committee. (See below.)

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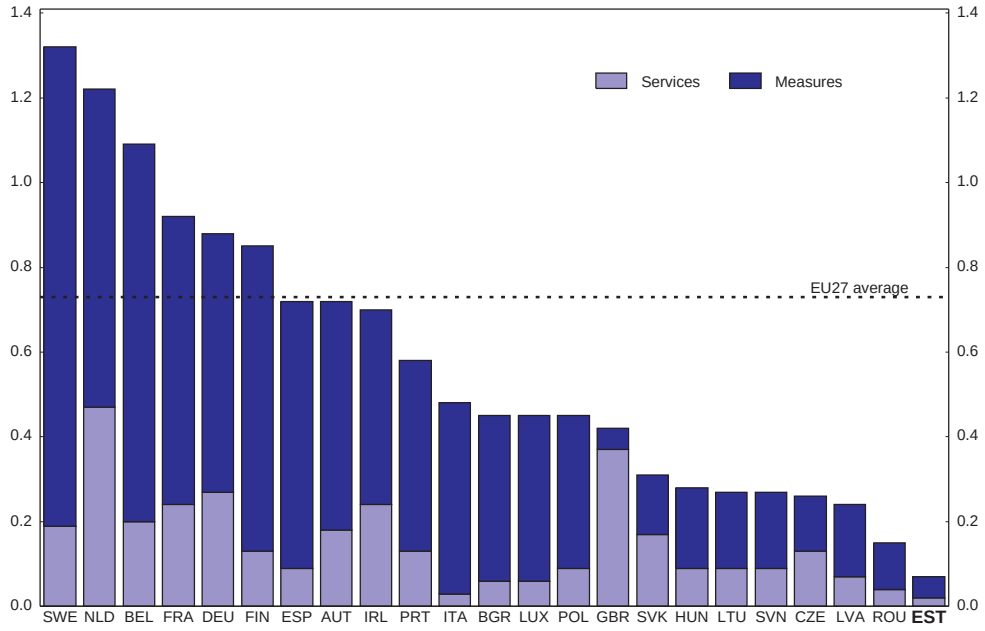
- At about 38% of labour costs the tax wedge was close to the EU15 and the EU27 averages in 2006, as was the tax wedge for low-wage earners. Surveys conducted by the Estonian Research Institute indicate that the high tax on labour is a key factor behind undeclared work (Leetmaa and Vork, 2007). At 33% of wages, the high social security contributions by employers impede SME development and job creation. Budgetary room should be created to lower the high tax wedge, in particular the social security contributions paid by employers. (See below.)
- At 0.07% of GDP in 2006, Estonia's expenditures on ALMPs were the lowest in the EU (Figure 4.9) and the number of participants in these programmes was low. In 2007 only about 14% of the registered unemployed took part in training and 20% in career counselling (Ministry of Social Affairs, 2008).The active labour market policies thus played only a minimal role in facilitating workers' exit from unemployment. Activation strategies, including support for job search and increased placement services will be necessary in order to counter the incentive effects of adopted changes in unemployment benefits. (See below.)
- As in other European emerging market economies, the participation of adult working population in training is relatively low, especially among people with less than upper secondary education. The new Employment Act supports life-long learning by granting all employees the right to take study leave for up to 30 days a year, but the financial support for such a leave is limited and relies on employers. To encourage workers' life-time employability and adaptability to changing labour market conditions, the government should support life-long learning.

Figure 4.9. **Public expenditure on active labour market policies**

% of GDP



StatLink http://dx.doi.org/10.1787/561701858788

Note: Labour market measures include training and counselling. Data refer to 2006.

Source: Eurostat.

Reforms could go further to improve incentives and Estonia could draw on experiences of OECD countries

Studies of labour market reforms in the OECD countries underscored the importance of reform complementarities and well-designed incentive structure (Elmeskov, Martin and Scarpetta, 1998). The 2006 reassessment of the Job Strategy identified two successful policy packages: *i)* emphasizing product and labour market flexibility, even at the expense of income inequalities (in place in Australia, Canada, Japan, Korea, New Zealand, Switzerland, the United Kingdom and the United States); and *ii)* combining flexibility with security, leading to more equitable outcomes, but at higher cost (Austria, Denmark, Ireland, the Netherlands, Norway and Sweden). All successful reformers deregulated their product markets and maintained macroeconomic stability (Annett, 2007). Most also strongly supported job search (OECD, 2006). The changes in the Act, in particular the reduced employment protection/increased unemployment benefit, suggest that Estonia aims to move towards the "flexibility with security" group.

Based on the experience of OECD countries, Estonia would improve effectiveness of its ALMPs at a given level of expenditures through linking unemployment benefits to ALMPs and monitoring performance of the employment offices (OECD, 2006). More specifically, the unemployed should receive the higher unemployment benefits only if they participate in job search programs, and be sanctioned for non-compliance. Over the medium term, well designed increases in ALMPs would enhance workers' employability as well as the role of automatic stabilizers.

According to Bassanini and Duval (2006) the high tax wedges are most detrimental to employment in countries with high minimum wages, as the tax burden cannot be passed onto workers. In the Estonian context this provides additional reason (besides macroeconomic considerations and possible inflationary pressures) why increases of minimum wage should kept in line with productivity growth and at a level where they do not reduce employment options of low-productivity workers.Since the minimum wages are determined at the national level by agreement between trade unions and employers' association, these discussions could benefit from the outside expertise (an independent committee) that would also bring the macroeconomic perspective (as, for example, in Ireland; the United Kingdom and Australia). Given the relatively high tax wedge especially on low income workers, the social security contribution paid by employers should be reduced once alternative sources of revenues are found.

To illustrate the impact of reforms of labour market institutions in the Estonian context, the activation programs, changes in unemployment benefits, minimum wages, and social contributions paid by employers are formally analyzed in the standard search-matching model (Box 4.3 and Annex 4.A1).

Box 4.3. **Framework for assessing reforms of labour market institutions in Estonia**

Reforms of labour market institutions are formally examined in a somewhat modified search-matching model with compulsory participation in ALMPs of Van Ours (2007), applied to Estonia (Annex 4.A1). The focus is on the effect of these reforms on incentives for the unemployed workers to search for jobs and for private firms to hire workers. The implications of policies geared specifically towards active job search are highlighted. Changes in minimum wages and social contributions of employers are also examined.

Box 4.3. **Framework for assessing reforms of labour market institutions in Estonia** *(cont.)*

Summary of the results of the model

Higher unemployment benefits reduce workers' incentives to search by making employment relatively less attractive. Since delaying the time when unemployment benefits can start to be collected until workers receive all severance payments will postpone serious search effort, the steady state unemployment level and duration would rise. These negative unemployment outcomes could be offset by the following policies:

- Linking receipt of unemployment benefits to participation in job search assistance programmes would reduce unemployment by improve workers' incentives to search for jobs, through reducing the value of being unemployed and search costs.
- While lower minimum wages would somewhat hamper incentives of the low-wage unemployed to search for jobs, firms would be more willing to hire. The unemployment rate would decline as long as the current minimum wage level is found to be binding.
- A lower tax wedge due to cuts in firms' social security contributions would raise firms' payoff from filled jobs, and hence their incentives to post vacancies. Search effort of workers would also increase, as their chances of finding jobs would improve. Both the steady state unemployment level and duration would decline.

Empirical and applied research on the speed of adjustment and transition costs

While the results presented here and in the model in the Annex focus on the longer-term outcomes, the above measures would also affect the speed of adjustment and the associated transition costs, and hence the political support for the reforms. For example, Mourougane and Vogel (2008) examined the nature and the length of adjustments to selected structural reforms in the OECD countries and found that the impact of structural reforms spread out over many years. As reallocation of resources is costly, the efficiency gains from changes in replacement ratio, tax wedge, EPL, etc., take time to materialize. Effective monetary policy and well-functioning financial markets can reduce the adjustment speed and transition cost. Analyzing the effects of changes in the EPL, Caballero *et al.* (2004) found that in countries with strong rule of law, increasing job security (by moving from the 20th to the 80th percentile of protection) would reduce the annual speed of adjustment to shocks by a third, while subtracting one per cent from productivity growth.

Integrating ethnic non-Estonians and foreign workers into the labour market[12]

Non-Estonian ethnic minorities, which comprise 32% of the total population of Estonia, have been facing economic challenges since the early 1990s.[13] To facilitate their better inclusion into the economy is important not only for prosperity of the entire country, but also for its political stability and social sustainability.

Labour market outcomes and social indicators of ethnic non-Estonians lag behind, but the gap has narrowed in some areas

In recent years, the labour market was characterized by one of the highest employment rates among the emerging European countries, but employment and especially unemployment rates between ethnic Estonians and non-Estonians continued to differ. The gap narrowed during the boom, widened again during the recession, with the longer term trend pointing to a gradual convergence. Nevertheless, the differences in youth unemployment rates (workers aged 15-24 years) are particularly striking, and the ethnic

non-Estonians also account for a disproportionate share of the long-term unemployed (Table 4.4). As many of the ethnic non-Estonians reside in the Northeastern region dominated by large industrial enterprises, their high unemployment rates reflect also weaknesses of regional economic policy.

Table 4.4. **Share of non-Estonians among the unemployed, by duration, 2000-07**

Total	2000	2001	2002	2003	2004	2005	2006	2007	2008
	(in per cent of total)								
Less than 6 months	46	38	45	46	46	48	45	46	47
6 to 11 months	49	48	53	49	55	58	55	57	53
More than 12 months	49	51	50	59	64	61	61	56	53

Source: Statistics Estonia.

Labour market outcomes have also been characterised by large income disparities, and the gap between the average wages of ethnic Estonians and non-Estonians remains wide. According to Leping and Toomet (2008) the substantial gap between earnings of Estonians and non-Estonians cannot be explained by factors causing differences in productivity, such as human capital.[14] The authors found that an ethnic non-Estonian with characteristics similar to an ethnic Estonian earned on average 10-15% less in the mid-2000s.[15] About 2-4 percentage points of this gap can be explained by the lack of Estonian language skills. Entry barriers to the labour market and separate social networks were also considered key factors.

Ethnic non-Estonians have exhibited markedly worse social indicators than ethnic Estonians, and the difference has widened since the early 1990s. For example, during 1989-2000 differences in life expectancy between the two groups increased from 0.4 years to 6.1 years for men and from 0.6 years to 3.5 years for women. In 2000, ethnic non-Estonians had a higher mortality than Estonians in all age groups. The largest differences were found for alcohol-related causes of death (Leinsalu, Vagero and Kunst, 2004). The weak social indicators are particularly acute in the Northeastern region, where the ethnic non-Estonians account for more than 70% of the population (Table 4.5). Finally, the Internet literacy is also lower among ethnic non-Estonians than among Estonians (Chapter 5).

Table 4.5. **Selected social indicators, by regions**

	Northern	Central	Northeastern	Western	Southern
Life expectancy at birth, 2005					
Males	68.8	67.1	62.2	67.5	68.1
Females	78.2	77.5	76.0	78.8	79.2
Female fertility rates, 2005	1.55	1.51	1.41	1.51	1.44
Risk of poverty (% of population), 2006	11.2	23.0	32.6	21.6	23.0

Source: Statistics Estonia.

On a positive side, a study by the Institute of International and Social Studies at the University of Tallinn found that the socioeconomic conditions of ethnic non-Estonians have been converging to those of ethnic Estonians. Specifically, the occupational segregation has weakened, as more young non-Estonians obtained higher education and moved into knowledge-intensive service sectors. Moreover, the wage gap has been narrowing for the young non-Estonians with tertiary education.

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The government could do more to bridge the ethnic divide

Language matters for citizenship and income…

The unemployment outcomes differ markedly according to the first language spoken (Table 4.6), underscoring the importance of language training availability for all residents. Income of ethnic Russians seems to be also strongly determined by their citizenship, as ethnic Russians with Estonian citizenship earn more than ethnic Estonians (Figure 4.10). However, for the most part citizenship again reflects language skills as the Law on Citizenship stipulates that those wishing to acquire Estonian citizenship must know the Estonian language. Accordingly, in 2005 about 71% of ethnic Russians with Estonian citizenship had advanced Estonian language skills in contrast with only 5% of ethnic Russians with Russian citizenship (Karu and Roosaar, 2006). The unemployment outcomes broken down by citizenship and language also point to language as more important factor (Table 4.7).

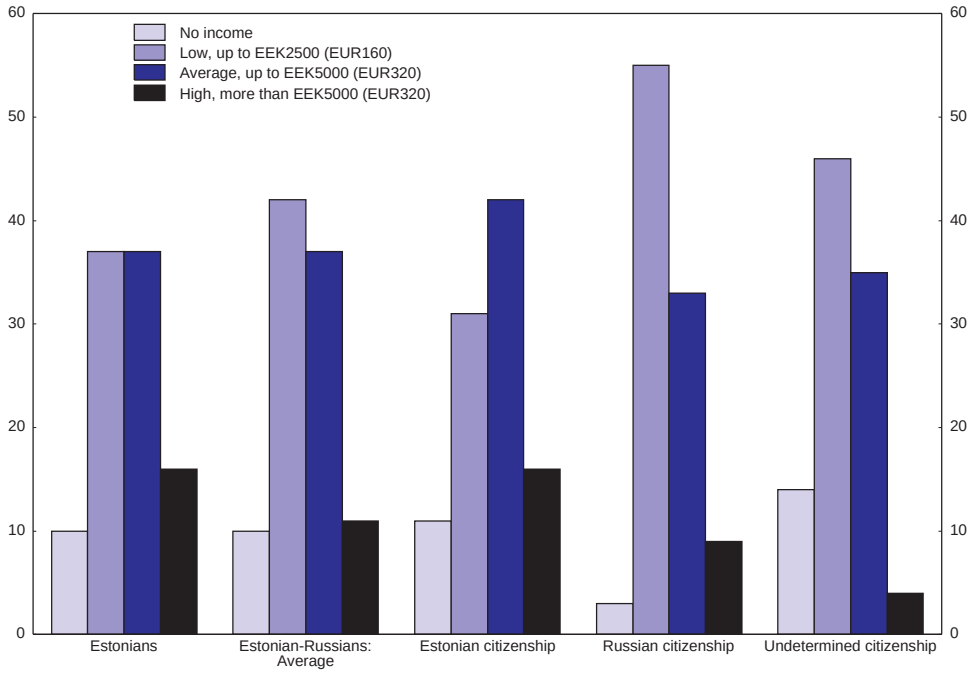
Table 4.6. **Unemployment rate by the first language spoken, 2000-07**

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Other than Estonian	18.1	16.7	15.1	15.5	16.0	13.1	9.7	7.1	8.0
Estonian	11.0	10.3	7.8	7.1	6.1	5.1	4.0	3.4	4.3

Source: Statistics Estonia.

Figure 4.10. **Ethnic Estonians and Russians by monthly net income**

% of total



StatLink http://dx.doi.org/10.1787/561706772520

Source: Eurofound.

Table 4.7. **Unemployment rates by citizenship and language skills, 2002-07**

In % of the relevant labour force

	2002	2003	2004	2005	2006	2007
Ethnic Estonians	7.9	7.3	6.4	5.3	4.0	3.9
Ethnic non-Estonians						
with citizenship, with knowledge of Estonian language	8.5	9.4	8.6	6.5	4.9	3.9
without citizenship, with knowledge of Estonian language	12.3	15.8	12.4	7.5	8.6	5.2
with citizenship, without knowledge of Estonian language	13.9	17.3	17.5	23.8	15.0	8.0
without citizenship, without knowledge of Estonian language	23.6	20.9	20.7	20.3	12.9	11.0

Source: Statistics Estonia.

... but also for the attitude toward integration

The attitude towards integration and perception of Estonia as a homeland is also stronger among ethnic non-Estonians who speak the Estonian language (and are Estonian citizens) and those who do not.[16] The government could ease the integration of the ethnic non-Estonians into the economy by further expanding language and professional training (including on the use of the Internet) for this part of the population. To overcome some of the negative attitudes among ethnic non-Estonians, the government could conduct a well-targeted outreach on benefits of the command of the Estonian language.

Additional measures could be taken to improve integration of foreign workers

To mitigate declining population Estonia will need to develop effective policies toward integrating foreign workers in the medium term. Some progress towards this goal was already made in 2008, when parliament adopted simplifying procedures for employing non-EU migrant workers and allowed for an increased annual immigration quota, doubling it from 0.05% to 0.1% of the population. The legislation also abolished the government's right to exclude certain groups of people from the quota (Nurmela, 2008).[17] The recent reforms notwithstanding, the overall policies pertaining to non-EU foreign workers are considered restrictive. Estonia could therefore draw on good practices implemented in other countries, including streamlining the work permit system and adopting a green card system, as was recently done in the Czech Republic. Establishing qualification recognition schemes would help attract foreign workers with the right skills. In addition, basic skills and language training could be further developed to help non-EU migrants better integrate into the labour market.

Box 4.4. **Policy recommendations: increasing flexibility and reducing segmentation of the labour market**

Increase labour market flexibility and strengthen incentives for job search

- Reducing lay-off notice periods and severance payments as stipulated in the newly adopted Employment Act is a welcome step. Implement the EPL changes fully as stipulated in the Act.
- Over the medium term, consider replacing severance payment with an Austrian type savings scheme to facilitate mobility across employers.
- Given that the new Employment Act increased unemployment benefits and *de facto* prolonged their duration, make benefit increases conditional on participation in active job search. Impose sanctions for non-compliance.

Box 4.4. **Policy recommendations: increasing flexibility and reducing segmentation of the labour market** *(cont.)*

- Reduce tax wedge by reducing social contribution paid by employers, especially on low-wage workers.
- Keep increases in public sector wages in line with private sector productivity growth.

Reduce employment disincentives for low-wage workers

- Keep rises of minimum wages in line with productivity. Reduce politicisation of decisions on minimum wage increases by bringing outside expertise into the negotiations between trade unions and employers' confederation.

Encourage life-time employability

- Encourage further life-long learning and skill upgrading.
- Consider well designed and implemented increases in ALMPs over the medium term, given their currently very low level.

Facilitate labour market integration of ethnic non-Estonians and foreign migrants

- Increase access of these groups to the Estonian language and professional training, including on the use of the Internet services. Conduct well-targeted outreach on benefits of knowledge of the Estonian language.
- Simplify the work permit process for non-EU foreign workers (as was done in the Czech Republic). Establish a system of formal recognition of migrants' qualifications.

Notes

1. Intensity of worker reallocation during 2004-07 can be measured by an index of mobility of the employment structure, that is $\sum\left|\frac{N_i}{N}(2007)-\frac{N_i}{N}(2004)\right|/2$, where N_i denotes employment in sector *i* and *N* denotes total employment. This index indicates that during 2004-07, intensity of change of sectoral employment was three times as high in Estonia than in the EU15 countries, Finland, and the regional peers Czech Republic and Slovenia (7% *vs.* 2-3%).
2. The impact of structural change on aggregate labour productivity growth can be decomposed into: *i)* the static shift effect, *i.e.* effect due to workers shifting from low to high productivity sectors, *ii)* dynamic shift effect, effect due to labour reallocation into different sectors, and *iii)* within growth effect, effect due to changes of productivity within sectors (Havlik, 2005).
3. More specifically, while in Estonia about 35% of employed workers had a tertiary education in 2006 *vs.* the EU27 average of 30%, only 3.6% of all workers were employed in high-tech industries, *vs.* 4.4% in the EU27. High-tech industries are defined according to their R&D intensity.
4. The method was developed by J. Stiglitz and expanded by the sociologists E. O. Wright and R. O. Dwyer. It consists of analyzing the evolution of employment within each country for specific combinations of occupations and sectors ("jobs"), ranked by their median hourly wage (Eurofound, 2008).
5. Definition of the index is $I_{ij}=\sum_k \frac{N_{ik}/N_i}{N_{jk}/N_j}$, where I_{ij} denotes the index of similarity of employment structures between countries *i* and *j*, N_{ik} is the employment in sector *k* in country *i* and N_i denotes total employment in country *i*.
6. Experience from a number of countries indicates that creation of an adequate social safety net is particular important for gathering sufficient support for the reforms (Vanhuysse, 2008).
7. Estonia has the lowest share of workers in temporary employment among NMS. Almost 90% of temporary contracts were taken up involuntarily (Baranovska and Gebel, 2008).
8. The current Estonia's Employment Contract Act, drafted in the early 1990s, provided initial rules for the transition economy. In the early 2000s changes were adopted to make the Law acceptable for the EU accession, but most of the other provisions are obsolete (Muda, 2006).

9. Moreover, the effects of the EPL deregulation vary across different groups, and are particularly beneficial to first-time entrants (mainly young people) and re-entrants (prime-age women).
10. The first replacement rate would rise to 70% of the average salary during the first 100 days and 50 percent afterwards. The lowest level of the unemployment benefit would be set at 50% of the minimum wage. In case of a voluntary unemployment, workers would receive 40% of the average salary, provided that they contributed to the insurance fund for at least 4 out of past 5 years. The initial replacement rates will become one of the highest among EU countries.
11. However, this element of the activation programs should be set at a moderate level, *i.e.* they should not be equivalent to blank denial of the benefits (OECD, 2005).
12. The vast majority of them are Russian speakers, accounting for 30% of the total population.
13. Before the World War II, ethnic Estonians accounted for about 94% of the population. After the war, as Estonia received steady inflows of Russian speaking workers from other parts of the Soviet Union, the importance of the Russian language increased (Leping and Toomet, 2008).
14. Evidence of an "unexplained" wage gap between ethnic non-Estonians and Estonians emerging during transition was also found in an earlier study by Kroncke and Smith (1999).
15. The magnitude of the unexplained wage gap has changed over time – while it was close to zero in the late 1980s, it rose to 15% in the late 1990s, peaked at 25% in 2003, before declining to 10% in 2005.
16. Ethnic Russians with Estonian citizenship who also speak the Estonian language may have been already better integrated prior to accepting the Estonian citizenship than ethnic Russians without the Estonian citizenship and Estonian language skills.
17. To attract skilled labour, the recent legislation established that the minimum wage for migrant workers in 2008 was set at 13 962 kroons, or about triple of the minimum wage for the Estonian workers.

Bibliography

Annett, A. (2007), "Lessons from successful labour market reformers in Europe", *IMF Policy Discussion Papers* PDP/07/01.

Babecky, J. (2008), "Aggregate wage flexibility in the new EU member States", *AUCO Czech Economic Review 2,* Volume 2, pp. 123–145.

Bank of Estonia (2008), "Institutional developments of the labour market", *Labour Market Review*, Vol. 1, pp. 30-33.

Bank of Estonia (2007), *Quarterly economic policy statement of Eesti Pank – Economic forecast for 2007-2009*, Bank of Estonia, Tallinn.

Bank of Estonia (2006), "Institutional developments of the labour market", *Labour Market Review*, 15-19 October.

Baranovka, A. and N. Gebel (2008), Temporary employment in Central and Eastern Europe: individual risk patterns and institutional context, *Mannheim Centre for European Social Research Working Papers,* No. 106.

Bassanini, A. and R. Duval (2006), Employment patterns in OECD countries: reassessing the role of policies and institutions, *Social, Employment and Migration Working Papers,* No. 35, OECD, Paris.

Brixiova, Z., W. Li, and T. Yousef (2009), "Skill shortages and labour market outcomes in central Europe", *Economic Systems*, forthcoming.

Caballero, RJ., DN. Cowan, E. Engel, and A. Micco (2004), "Effective labour regulation and microeconomic flexibility", *Federal Reserve Bank of Boston Working Papers,* No. 04-06.

Eamets, R. and J. Masso (2005), "Paradox of the Baltic States: labour market flexibility but protected workers?", *European Journal of Industrial Relations*, Vol. 11, No. 1, pp. 71-90.

Ederveen, S. and L. Thissen (2007), "Can labour market institutions explain high unemployment rates in the new member States?", *Empirica*, Vol. 34, pp. 299-317.

Elmeskov, J., J.P. Martin and S. Scarpetta (1998), "Key lessons for labour market reforms: evidence from OECD countries' experiences", *Swedish Economic Policy Review*, Vol. 5, pp. 205-252.

European Commission (2006a), "Green paper: modernizing labour law to meet the challenges of the 21st century", European Commission, Brussels.

European Commission (2006b), "Flexibility and security in the EU labour markets", in *Employment in Europe 2006*, European Commission, Brussels.

Eurofound (2008), "More and better jobs: patterns of employment expansion in Europe", Eurofound, Dublin.

Grubb, D. (2005), "Trends in unemployment insurance, related benefits and active labour market policies in Europe", in Keum (2005), *Employment Insurance and Public Employment Services in Selected Countries*.

Havlik, P. (2005), "Structural change, productivity and employment in the new EU member States", *WIIW Research Reports*, No. 313.

Hofer, H. (2006), "Reform of severance pay law in Austria", *Institute for Advanced Studies Discussion Papers*.

Holm, P., P. Sinko and P. Tossavainen (1999), "Labour market policy and unemployment: a job flow model of Finland", *VATT Discussion Papers,* No. 210.

Kallaste, E. and K. Nurmela (2007), "Cheap labour is no longer an effective strategy", *Eurofound EIROnline*, June.

Karu, M. and L. Roosaar (2006), "Trends in labour market participation, income and job satisfaction among non-nationals", *Eurofound EWCO*, September.

Kroncke, C. and K. Smith (1999), "The wage effects of ethnicity in Estonia", *Economics of Transition*, Vol. 7(1), pp. 179-99.

Leetmaa, R. and A. Vork (2007), "Article on undeclared work from SYSDEM correspondent: Estonia", *European Employment Observatory*, May.

Leetmaa, R. and A. Vork (2004a), "Social insurance and social assistance in Estonia", World Bank, draft.

Leetmaa, R. and A. Vork (2004b), "Do post-Soviets behave according to search models? Econometric analysis of the effects of incentives in the Estonian unemployment insurance system on unemployment duration", *PRAXIS Working Papers*.

Leinsalu, M., D. Vagero, and A. Kunst (2004), "Increasing ethnic differences in mortality in Estonia after the collapse of the Soviet Union", *Journal of Epidemiology and Community Health*, Vol. 58, pp. 583-89.

Leping, K.-O. and O. Toomet (2008), "Emerging ethnic wage gap: Estonia during political and economic transition", *Journal of Comparative Economics,* Vol. 36, pp. 599-619.

Maivali, M. and N. Lubenets (2007), "Managed *vs.* free wage-setting in Finland and Estonia: optimizing outcomes", *ECOFIN Country Notes*, Vol. IV, Issue 10.

Masso, J., R. Eamets and K. Phillips (2005), "Job creation and job destruction in Estonia labour reallocation and structural changes", *IZA Discussion Papers,* No. 1707.

Micco, A. and C. Pages (2006), "The economic effects of employment protection: evidence from international industry-level data", *IZA Discussion Papers,* No. 2433.

Ministry of Social Affairs of the Republic of Estonia (2008), *Health, labour and social sector in 2007*, Ministry of Social Affairs, Tallinn.

Mortensen, D. and C. Pissarides (1999), "New developments in models of search in the labour market", in Ashenfelter, O. and D. Card (eds.), *Handbook of Labour Economics*, Vol. 3, pp. 2567–2627, North-Holland, Amsterdam.

Mourougane, A. and V. Lukas (2008), "Speed of adjustment to selected labour market and tax reforms", *OECD Economics Department Working Papers*, No. 647.

Muda, M. (2006), "Evolution of employment law in Estonia", in *The Evolution of labour law in the new member States of the European Union: 1995-2005 country studies on Estonia, Latvia and Lithuania*, European Commission, Brussels.

Münz, R. (2008), "Migration, labour markets, and integration of migrants: an overview for Europe", *World Bank Social Protection Discussion Papers,* No. 807.

Nurmela, K. (2008), "Better provisions for non-EU migrant workers", *Eurofound EIROnline,* April.

OECD (2006), *OECD Employment Outlook*, OECD, Paris.

OECD (2005), *OECD Employment Outlook*, OECD, Paris.

OECD (2004), *OECD Employment Outlook*, OECD, Paris.

OECD (2001), *OECD Economic Surveys: Austria*, OECD, Paris.

OECD (1994), *The OECD Jobs Study: Facts, Analysis, Strategies*, OECD, Paris.

Room, T. (2008), "The principles of wage formation in Estonian companies", Bank of Estonia, draft.

Van Ours, J. (2007), "Compulsion in active labour market programs", *National Institute Economic Review*, No. 202, pp. 67-78, October.

Van Ours, J. and M. Vodopivec (2004), "How changes in benefits entitlement affect job-finding: lessons from the Slovenian experiment", *IZA Discussion Papers*, No. 1181. Vodopivec, M. (2000), "Worker reallocation during Estonia's transition to market: how efficient and how equitable?", *World Bank Social Protection Discussion Paper*s, No. 18.

Shimer, R. (2005), "The cyclical behaviour of equilibrium unemployment and vacancies", *American Economic Review,* 95, pp. 24-49, March.

Vanhuysse, P. (2008), "Divide and pacify: strategic social policies and political protest in post-communist democracies", *European Sociological Review*, 24(3):409-410.

Vodopivec, M., A. Wörgötter and D. Raju (2005), "Unemployment benefit system in Central and Eastern Europe: a review of the 1990s", *Comparative Economic Studies*, Vol. 47, pp. 615-651.

Zhou, J. (2006), "Reforming employment protection legislation in France", *IMF Working Papers,* WP/06/108.

ANNEX 4.A1

Model of reforming labour market institution: application to Estonia[1]

The model outlined below is a somewhat modified version of Van Ours (2007), which extends the search-matching framework of Mortensen and Pissarides (1999) by adding a compulsory participation in active labour market programs (ALMPs).[2]

In the model, workers can be either employed in the private sector or unemployed. Unemployed workers receive benefits *b*, value their leisure as *l*, and search for jobs with intensity $x \geq 0$ while incurring cost $k(x) = \frac{x^2}{2\gamma}$, where $\gamma > 0$.[3] Employed workers receive wage *w*. Firms post vacancies to fill jobs at cost *c*. Each filled job results in output *y*, with $y > w$. The key component of the model is a matching function $A = A(xu)^{1-\eta}v^{\eta}$, where $A > 0$ denotes the efficiency of the matching and $\eta \in (0,1)$ is the elasticity of matches with respect to vacancies. The workers' search results in job offers, which arrive at rate $\mu(\theta)x = A\theta^{\eta}$, where $\theta = \frac{v}{xu}$ denotes the ratio of vacancy rate, *v*, to unemployment rate, *u*, *i.e.* it describes the tightness of the labour market from firms' perspective. Conversely, firms fill their vacancies at rate $\frac{\mu(\theta)}{\theta} = A\theta^{\eta-1}$. All job matches dissolve at rate δ, and firms pay to each laid-off worker a severance payment *K*. The employment rate, *e*, and unemployment rate, *u*, change according to:

$$\dot{e} = A\theta^{\eta-1}v - \delta e \tag{1}$$

$$\dot{u} = \delta e - A\theta^{\eta}xu \tag{2}$$

With normalizing the labour force to 1, that is $1 = e + u$, the steady state equilibrium unemployment decreases with search effort and tightness of the labour market:

$$\bar{u} = \frac{\delta}{\delta + A\bar{\theta}^{\eta}\bar{x}} \tag{3}$$

To illustrate the impact of mandatory participation in ALMPs on workers' search, a scenario where all unemployed workers can receive unemployment benefit only if they participate in the job search assistance program is considered. Participation in such program lowers the value of leisure for the unemployed by fraction $z \in (0,1)$ and their search cost by a fraction $\sigma \in (0,1)$. Workers accept jobs only when the value of employment, V_E, exceeds the value on unemployment, V_U:

$$\rho V_U = \max_x \left(b + (1-z)l - \frac{(1-\sigma)x^2}{2\gamma} + A\theta^{\eta}x(V_E - V_U) \right) \tag{4}$$

$$\rho V_E = w + \delta(V_U - V_E) \tag{5}$$

where ρ is the discount rate. Denoting J_E as value of filled job and J_V as value of vacancy, the corresponding Bellman equations are:

$$\rho J_E = y - (1 + \tau)w + \delta(J_V - J_E - K) \quad (6)$$

$$\rho J_V = -c + A\theta^{\eta-1}(J_E - J_V) \quad (7)$$

where y is the output from the filled vacancy, $w\tau$ is the social contribution tax paid by the employer, and K is the severance cost incurred by the firm. Under the standard assumption of free entry into the job-creation, value of posting a vacancy is $J_V = 0$. (6) and (7) can therefore be reduced to:

$$\frac{y-(1+\tau)w-\delta K}{\rho+\delta} = \frac{c\theta^{1-\eta}}{A} \quad (8)$$

The optimal search intensity x can be derived directly from (4):

$$\bar{x} = \frac{\gamma}{(1-\sigma)} A\theta^{\eta}(V_E - V_U) \quad (9)$$

The search effort thus increases with higher leisure disutility created by participation in the search program as well as with lower search costs.

To complete characterization of unemployment outlined in (3), solution for the tightness of the labour market, θ, needs to be obtained through deriving wages. Regarding wage determination, flexible wages reflect productivity changes: $w = \phi y$, where $\phi \in (0,1)$, which is the most common situation in Estonia.[4] Under such flexible wages, workers receive a fixed portion of output.

Comparative Statics

The solution for the steady state search effort and unemployment rate can be derived from (1)–(9). The comparative statics relevant to the Estonian context are:

Table 4.A1.1. **Comparative statics in the job search-matching model**

Effect of an increase in:	On search effort of the unemployed x	On unemployment rate u
Loss of utility from less leisure z	+	–
Search cost reduction σ	+	–
Matching efficiency A	+	–
Minimum wage $w^{min} > \phi y$	+	+
Unemployment benefit b	–	+
Payroll tax τ	–	+
Firms' severance cost K	–	+
Separation rate δ	–	+

Source: Secretariat's calculations.

The search effort of the unemployed increases with higher disutility of participating in job search program, lower unemployment benefits, reduced search cost, improved matching efficiency, and reduced separation rate.The ALMPs then could improve employment outcomes through increasing matching efficiency (by dissemination of information) or reducing search cost and separation rate (through participation in job search programs, training).

Policy simulations

To illustrate the impact of changes in labour market institutions on search of the unemployed and unemployment outcomes, the model is simulated using parameters from

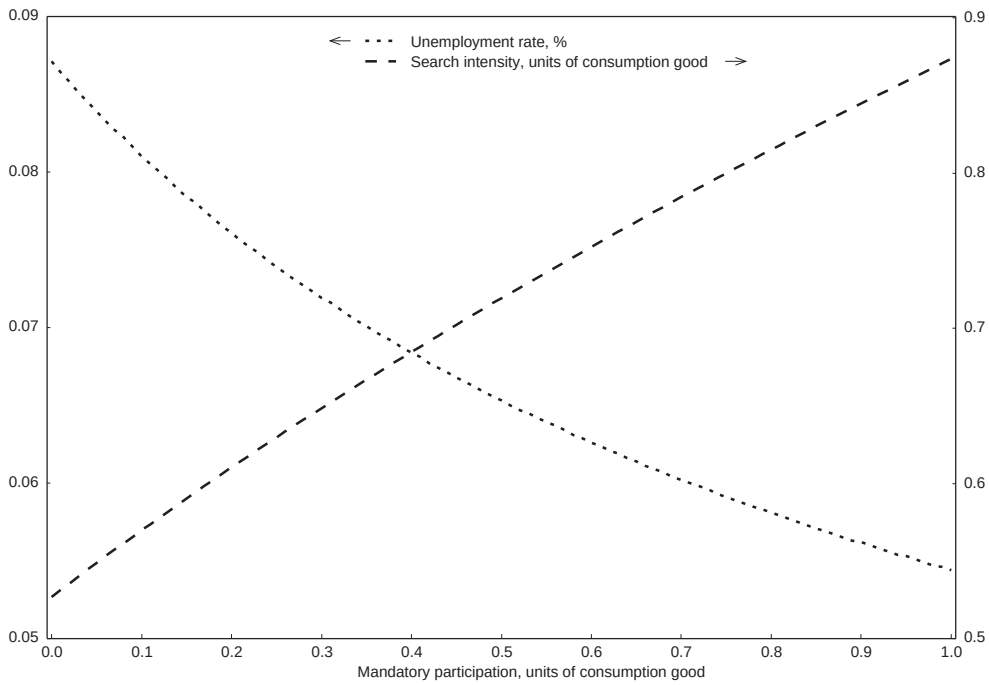
existing studies and the Estonian labour market data. The base period is one quarter, and parameters are specified as follows:

Table 4.A1.2. **Parameters of the model**

Parameter	Definition	Value	Source
y	Output (productivity)	1	Van Ours (2007)
δ	Separation rate (quarterly)	0.045	Statistics Estonia
τ	Social security contribution (% of wage)	0.33	Ministry of Finance, the Republic of Estonia
c	Cost of posting vacancies	6	Set so that vacancy-unemployment ratio corresponds to the steady state value of 0.8 (based on past outcomes)
η	Elasticity of matching to Vacancies	0.5	Zhou (2006), van Ours (2007), Holm, *et al.* (1999)
ρ	Discount rate	0.025	Van Ours (2007)
A	Efficiency of matching Function	1	Zhou (2006), van Ours (2007)
b	Unemployment benefit, Including value of leisure	0.4	Shimer (2005)
b_u	Replacement rate (part of b)	0.25	Set at the current rate of 50% – Estonian Ministry of Labour and Social Affairs
γ	Cost of job search	0.9	Set to obtain steady state unemployment of 6.5%
ϕ	Share of wage (labour income) in output	0.5	Share of compensation of employees in GDP (without irregular income) – growth accounting exercise, Chapter 1.

Figures 4.A1.1 and 4.A1.2 illustrate that compulsory participation in active labour market program, especially job search activation programs, would increase workers search efforts through two channels: 1) by reducing the value of leisure and hence increasing

Figure 4.A1.1. **Impact of mandatory participation in labour market policies on search and unemployment**

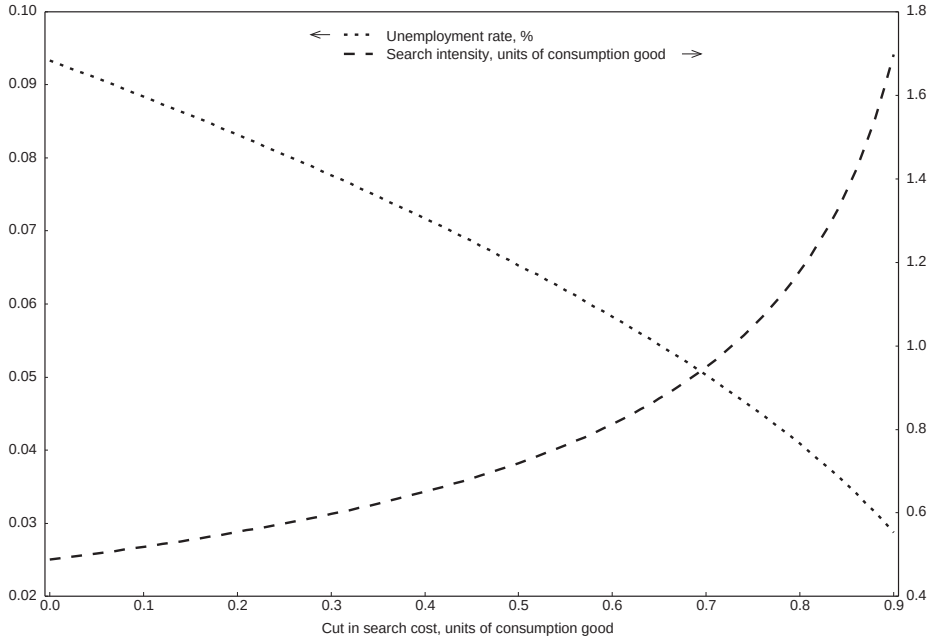


StatLink http://dx.doi.org/10.1787/561733122203

Note: Unemployment rate is number of unemployed as % of labour force. For units of consumption good, the price of the consumption good is normalised to one. Mandatory participation represents foregone leisure.

Source: OECD calculations.

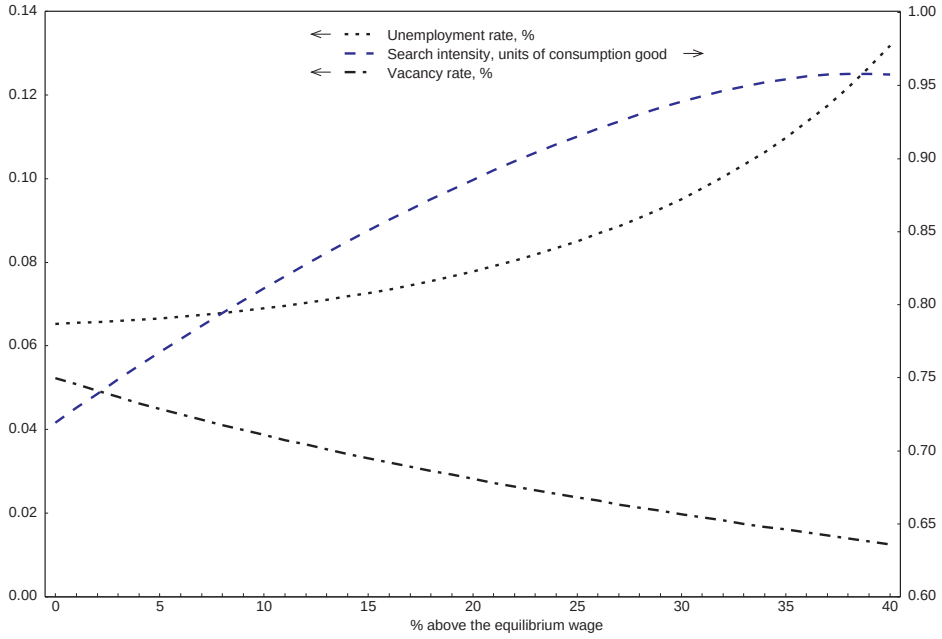
Figure 4.A1.2. **Impact of search cost cuts on search and unemployment**



StatLink http://dx.doi.org/10.1787/561815043158

Note: Unemployment rate is number of unemployed as % of labour force. For units of consumption good, the price of the consumption good is normalised to one.
Source: OECD calculations.

Figure 4.A1.3. **Impact of minimum wage increase on search, unemployment and vacancies**



StatLink http://dx.doi.org/10.1787/561816445052

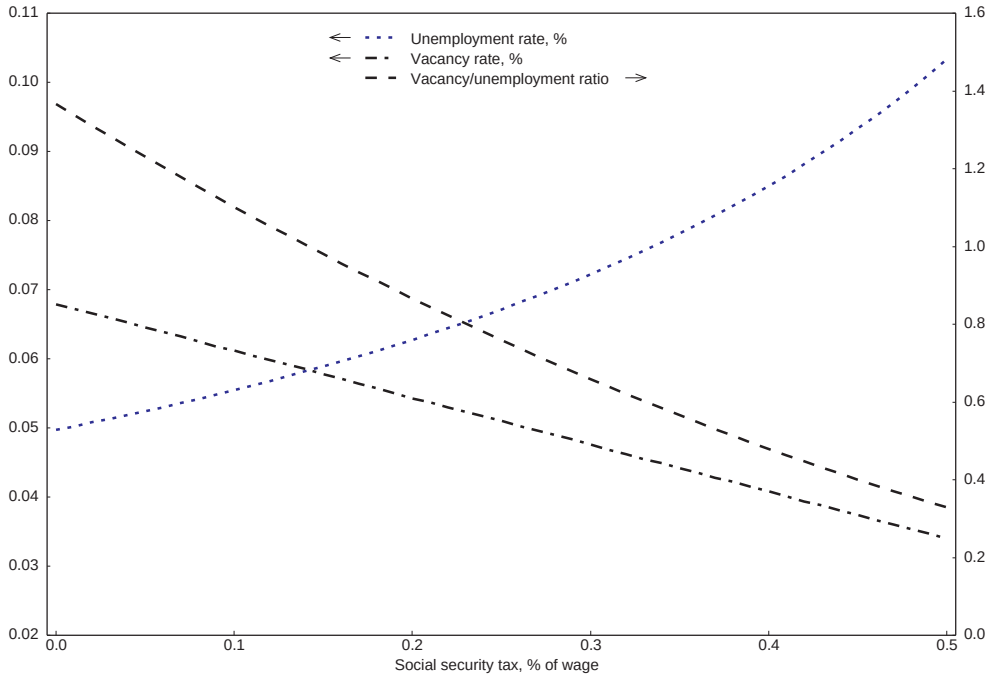
Note: Unemployment and vacancy rates are respectively the number of unemployed and vacancies as % of labour force. For units of consumption good, the price of the consumption good is normalised to one.
Source: OECD calculations.

relative payoffs from working and 2) by reducing the workers'cost of search through training, and dissemination of information. As a result of workers' increased search, unemployment would decline in both cases.

Figure 4.A1.3 illustrates how impact of increases in minimum wages on the low-wage unemployed workers for whom they may be a binding constraint. While workers would increase their search effort because of a higher payoff from working, the positive impact would be more than offset by firms'posting fewer vacancies because of lower profits.

Figure 4.A1.4 illustrates the likely impact of cuts in social contribution tax paid by employers. The direct consequence would be a higher profitability of firms and hence more vacancies/lower unemployment rate, provided that the lost revenues are replaced by less distortionary taxes.

Figure 4.A1.4. **Impact of social security tax on vacancies and unemployment**



StatLink http://dx.doi.org/10.1787/561816446403

Note: Unemployment and vacancy rates are respectively the number of unemployed and vacancies as % of labour force. The vacancy/unemployment ratio is the vacancy rate divided by the unemployment rate.

Source: OECD calculations.

Notes

1. So far the search-matching model has not been applied to Estonia, even though empirical work of Leetma and Vork (2004b) found that search models would provide a useful framework for analyzing the labour market dynamics. In addition to labour market institutions, changes in the labour force, speed of restructuring, governance, and monetary policy influence labour market outcomes in NMS (Ederveen and Thissen, 2007).
2. The unemployed participate in such programs in order to be eligible for collecting benefits.

3. The search effort could be also interpreted as effort that the unemployed workers put into training and acquiring new marketable skills. Brixiova, Li and Yousef (2009, forthcoming) examine the impact of different ways of financing such training on incentives of the unemployed.

4. Several studies found that wages in Estonia are mostly flexible (Maivali and Lubenets, 2007; Room, 2008). Using macroeconomic data on wages, productivity, inflation, and unemployment, Babecky 2008 found that in Estonia real wages followed closely labour productivity during 1995-2004. The assumption that wages reflect productivity changes allows for analytical solution, but does not affect the key results of the model.

ANNEX 4.A2

Current labour market institutions in Estonia

Unemployment benefit system

The Estonian unemployment insurance program consists of unemployment insurance and unemployment assistance. These parts are complementary – unemployment assistance benefit is paid in cases where the individual is not eligible for unemployment insurance benefit or is unemployed for a period longer than the period stipulated for unemployment insurance (Leetmaa and Vork, 2004a). While the unemployment insurance benefits are financed from statutory contributions, the unemployment assistance benefits are financed form the State budget. Contributions to the unemployment insurance fund are compulsory for both employees and employers, with the contributions linked to wages.

The initial replacement rates of the unemployment insurance benefits are relatively modest, set at 50% of previous income for the first 100 days and 40% afterwards. Depending on the length of contributions to the fund, the duration of benefits ranges from 180 to 360 days. After the insurance expires, the unemployed can apply for unemployment assistance benefits for another 90 days and social assistance afterwards, conditional on income. When combined with the maximum length of severance payment (3 months), workers could be on severance and unemployment benefits for up to 36 months after being laid off.[1]

Trade unions and collective bargaining

Union membership and collective agreement coverage are low in comparison with other EU countries, and the bargaining power of the unions weak. The coverage has been steadily declining since its peak in 1992 due to privatization and shift of the labour force from manufacturing (with strong unions) to services (with weak ones). Coordination is also weak, in particular in small and medium-sized enterprises. The unions play an important role in large industrial companies, including in textile, road and railway transport, and postal sector.

Wage setting

Given the low level of trade union membership, the wage setting is almost fully decentralized, with wages determined mostly within firms, with the exception of minimum wage (see below), wages in the civil service sector (set by government regulations) as well as wages in selected heavily unionized industries. According to Room (2008) and Maivali and Lubenets (2007) wage adjustments are frequent, with substantial cyclical fluctuations and sectoral dispersion. While until 2004 wage increases reflected

closely productivity gains, in recent years the real wage increases were above productivity due to labour and skill shortages.

Minimum wages

Minimum wage is determined annually through agreement between trade unions and representatives of employers; it covers all employees. According to Room (2008) and other estimates, currently approximately 6% of private sector workers earn minimum wage. But in some unionized enterprises (textile), minimum wages constitute a basis from which wages of all workers are derived and stipulated in collective agreement. While at about 32% the ratio of minimum wage to the average wage is low, its increase in the past several years has been very rapid – for over 20% in 2007, 2008 *vs.* 9 and 12% in 2005 and 2006, respectively (Annex 4.A2).

Table 4.A2.1. **Evolution of the minimum wage**

	2002	2003	2004	2005	2006	2007	2008
Monthly minimum wage (EEK)	1 850	2 160	2 480	2 690	3 000	3 600	4 350
Minimum wage/Average wage (%)	30	32	34	35	32	32	…

Source: Bank of Estonia.

Tax burden on labour[2]

The Estonian labour costs are considered relatively high partly because of social contribution tax imposed on employers (amounting to 33% of wages, split into 13% for health insurance contributions and 20% for pension contributions). One of the proposals of the employers' representatives is to shift the burden of taxation from employers to workers, by splitting the contribution.

Compulsory job search in ALMPs

The complusory element to search for jobs consists of the requirements that the unemplyed workers: *i)* contact the relevant labour market board at least once a month, either by phone or in person; *ii)* follow Individual Action Plan designed together with the board; *iii)* accept suitable employment (for the third time). If the unemployed do not comply with these requirements, they would lose their registration as unemployed and hence entitlement to unemployment benefits.

Notes

1. In 2007 only about 20% of the registered unemployed received the unemployment insurance benefits and about 45% unemployment assistance benefits. Unemployment has been identified as one of the main risks for poverty.
2. The tax wedges are calculated on the basis of tax legislation in force, by expressing the sum of personal income tax, employee's plus employer's social security contributions together with any payroll tax, as a percentage of total labour costs (Eurostat).

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Chapter 5

Enhancing the business environment to foster productivity

Estonia swiftly established a modern market economy. Today, the country is considered to have one of the most open and competitive economies in the world. The dynamism of the business environment is reflected in higher rates of firm and job creation than in other European emerging market economies, as well as in large foreign direct investment inflows. Estonia is particularly well regarded in ICT network readiness and well-functioning e-government. However, the share of production in high tech and knowledge intensive sectors is relatively low, and the growth of high technology products in exports slowed down even before the recession. For Estonia to become a knowledge-based economy, its production must shift to knowledge-intensive sectors, and productivity gains from innovation will need to drive future growth.

The 2007 PMR indicator confirms Estonia's overall progress with competition-friendly regulatory reforms. Remaining challenges should be addressed to increase the scope for competition in network industries, in particular electricity.

Estonia's framework conditions mostly support a well-functioning business environment

General business environment framework conditions, such as product market regulation, openness to foreign direct investment, the tax system, access to financial markets, infrastructure including ICT, and labour market regulation, are a precondition for enhancing productivity and investment. For example, OECD work (Jaumotte and Pain, 2005a; b) shows that such policies have a stronger impact on R&D and patenting activity than many innovation–specific policies. The combination of the framework conditions rather than a reform in one area matters for the long–run economic performance (Taylor, 2008).

In Estonia, the framework conditions are in many ways supportive for productivity and investment. The favourable business environment was a key factor behind the rapid productivity catch up (Polt *et al.*, 2007). Product markets are relatively deregulated and the flat tax system is transparent and simple. Estonia has hardly any restrictions on foreign direct investment (FDI) which is important for international technology transfer and diffusion of know-how. Estonia's pioneering policy in e-government is also likely to support productivity growth.[1] However, as discussed in Chapter 4, labour markets are less flexible. This may hamper the reallocation of resources and future productivity catch-up that needs to occur through shifting resources across sectors, occupations, and regions.

E-government plays a key role

In its broadest sense, e-government represents providing higher quantity or quality public services more efficiently and effectively by using ICT as a tool. Specifically, the use of ICT in public services can improve efficiency in public administration operations, boost the provision of online services, and achieve better outcomes in key policy areas such as health, welfare services, security, and education (OECD, 2003). Furthermore, it can improve business productivity by reducing administrative barriers.

Estonia – pioneering country in e-government

Estonia's e-government is often quoted as an outstanding example in central Europe, and in several aspects exceeds standards of the average of the OECD countries. Estonia was among the first countries in the world to set up an e-government policy strategy in the mid-1990s. In recent years, it provided technical assistance and training in developing e-government to other countries (especially in the CIS region). In the framework of OECD work, Estonia can provide information on best practices and benchmarking in e-governance.

Estonia is ranked among top performing countries in many e-readiness indicators. For example, United Nations (2008) ranks Estonia among top 15 countries based on index measuring the online presence of governments, the level of telecom infrastructure, and human capital. Specifically, Estonia had 57 internet users per 100 persons, above the OECD average of 52 users (Table 5.1). Also, broadband connectivity was around the OECD average whereas mobile phone usage was considerably higher.

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Table 5.1. **Telecommunication infrastructure in OECD countries 2007/2008**

	Internet users per 100 persons	PC users per 100 persons	Mobile phones per 100 persons	Main telephone lines per 100 persons	Broadband per 100 persons
Australia	75.1	76.6	97.0	48.8	19.2
Austria	51.2	61.1	112.8	43.4	17.4
Belgium	45.7	37.6	92.6	45.2	19.1
Canada	67.9	87.3	52.5	64.1	23.6
Czech Republic	34.7	27.4	119.0	31.5	10.6
Denmark	58.2	69.5	107.3	56.9	31.7
Estonia	**57.4**	**48.9**	**125.2**	**40.9**	**17.2**
Finland	55.6	50.0	107.8	36.5	27.1
France	49.6	57.9	85.1	55.8	20.9
Germany	46.7	60.5	101.9	65.5	17.0
Greece	18.4	9.2	99.6	55.5	4.4
Hungary	34.8	14.9	99.0	33.3	9.7
Iceland	65.3	48.3	110.6	65.2	29.5
Ireland	34.1	53.0	111.4	49.8	12.3
Italy	49.6	37.0	123.1	43.1	14.9
Japan	68.3	67.5	79.3	43.0	20.1
Latvia	46.7	24.5	95.1	28.6	4.8
Lithuania	31.7	18.0	138.1	23.2	10.8
Mexico	16.9	13.1	52.6	18.3	3.4
Netherlands	88.9	85.6	97.2	46.6	31.7
New Zealand	78.8	51.6	87.6	42.9	14.2
Norway	87.8	59.4	108.6	44.3	27.5
Poland	28.6	24.0	95.5	29.8	6.9
Portugal	30.5	13.4	116.0	40.1	13.9
Korea	71.1	53.2	83.8	56.0	29.3
Slovakia	41.8	35.7	90.6	21.6	5.9
Slovenia	63.6	41.1	92.6	42.6	13.4
Spain	42.8	28.1	106.4	42.4	15.3
Sweden	77.0	83.5	105.9	59.5	25.9
Turkey	16.6	5.6	71.0	25.4	3.7
United Kingdom	56.0	76.5	116.4	56.2	21.7
United States	69.1	76.2	77.4	57.2	19.3
OECD	52.2	48.7	96.7	45.6	17.7

Source: UN E-Government Survey 2008.

Factors behind Estonia's success in e-governance

Key factors behind Estonia's success in e-governance include: *i)* political will; *ii)* close collaboration of several government agencies; *iii)* effective public-private partnerships; *iv)* a relatively high level of education, including ICT skills; and *v)* a low level of corruption. The early deregulation of the telecommunication sector and the commitment to connect every school in Estonia to the Internet helped achieving well-functioning e-government. In addition, the legal environment allowing the use of ICT technologies, for example the Digital Signature Act approved in 2000, contributed significantly. The private sector also played a prominent role, for example, through the creation of internet banking.

E-government supports a well-functioning business environment

An effective e-governance supported the start-up of new enterprises. Administrative and compliance burdens were eased through public online services. One important early initiative in this area was the introduction of the e-Tax Board in 2000, which enables

taxpayers to file, view and correct their income tax returns online. It also allows firms to file VAT returns, submit VAT refund applications, calculate social tax, and view tax account balances. This service is the one most used by private businesses.

Since January 2007, entrepreneurs are able to submit data to the Commercial Register through the Company registration e-Filing portal. Registry documents can be processed on the next working day. Persons are identified by using the Estonian ID-card and digital signature. Improvements in online services include: *i)* the possibility to submit their annual accounts electronically through the Company Registration Portal; and *ii)* the e-Notary system that speeds up the information exchange on notary transactions. Recently, Mobile-ID service was launched expanding options for a person's identification.

Challenges ahead

Effectiveness of the e-government depends crucially on the co-operation within and between different government agencies as well as on common infrastructure and standards. This, in turn, requires strong involvement of agencies at different levels of governance. Estonia has a local government structure that is characterised by a large number of small municipalities, which are likely to lack resources in implementing the most recent e-governance applications. This leads to the inequity in the provision of e-government services in different regions, and could make some aspects of the e-government vulnerable to new challenges, such as cyber attacks (Tallo, 2007).

Table 5.2. **Access to Internet in 2005-07, by groups**

Per cent of total

	2005	2006	2007
	Households having access to internet at home, by regions		
Total Estonia	39	46	53
Harju county	49	53	60
Tallinn	50	54	61
Hiiu county	**21**	**27**	**29**
Ida-Viru county	30	41	51
Jõgeva county	**18**	**32**	**32**
Järva county	34	37	59
Lääne county	40	31	39
Lääne-Viru county	32	39	39
Põlva county	**26**	**29**	**36**
Pärnu county	26	42	54
Rapla county	35	57	52
Saare county	32	35	42
Tartu county	40	52	56
Valga county	**30**	**35**	**34**
Viljandi county	36	36	46
Võru county	23	33	49
Internet access by occupation			
Total Estonia	59	61	64
White collar workers	87	91	92
Blue collar workers	54	56	57
Internet access by ethnicity			
Ethnic Estonians	63	66	68
Ethnic non-Estonians	51	52	55

Source: Statistics Estonia.

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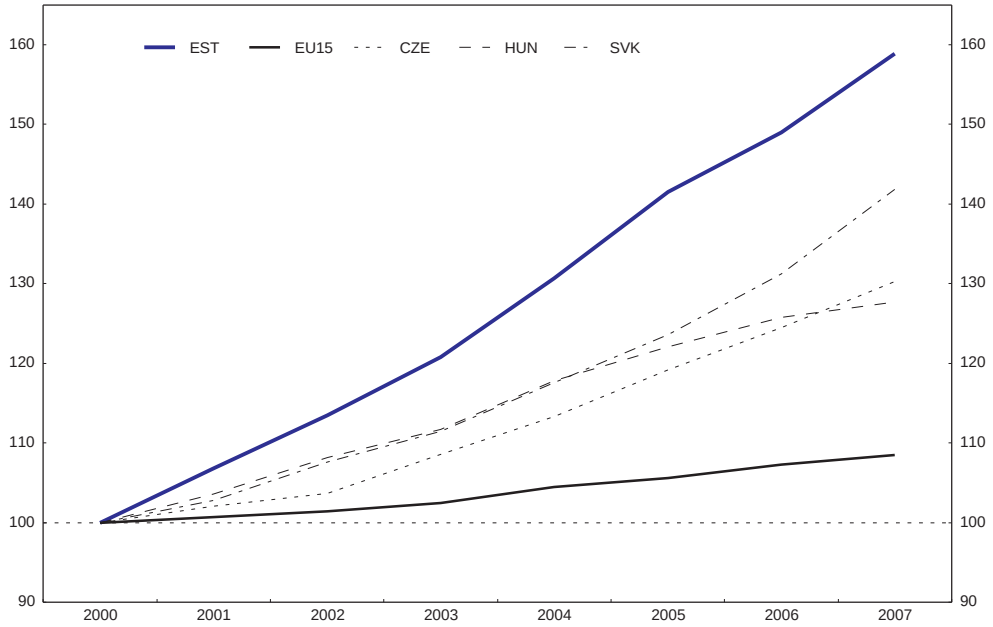
Another challenge to effective e-government is digital divide. In 2002, several groups of population did not use Internet at all. The users of Internet accounted for only about 42% of the population between 15-74. Non-users were: *i)* blue collar workers (27% of non-users); and *ii)* people outside of the labour force (28% of non-users). According to the Statistics Estonia, the number of Internet users increased to 61.2% of the population in the age bracket of 16-74 in 2006, while regional differences in access to Internet at home narrowed. Nevertheless, Estonian households still lag behind business and the public sector in internet use. Moreover, gaps in the Internet access persist between ethnic Estonians and ethnic non-Estonians as well as between blue collar and white collar workers (Table 5.2). The continued digital divide will require identifying and addressing main barriers to the Internet use for these groups.[2]

Catch-up has been fast, but a gap with the productivity level of advanced OECD countries remains

Estonia experienced a rapid productivity growth and catch-up in several sectors of the economy (Figure 5.1). However, the level is still low and in recent years large differences among sectors emerged (Figure 5.2). Competitiveness *vis-à-vis* other countries weakened mainly due to strong real wage growth exceeding productivity growth. In order to continue the catch-up process, Estonia has to increase its labour productivity as it cannot rely on low labour costs as a competitive advantage for the long term.

Figure 5.1. **Labour productivity**

Index, 2000 = 100



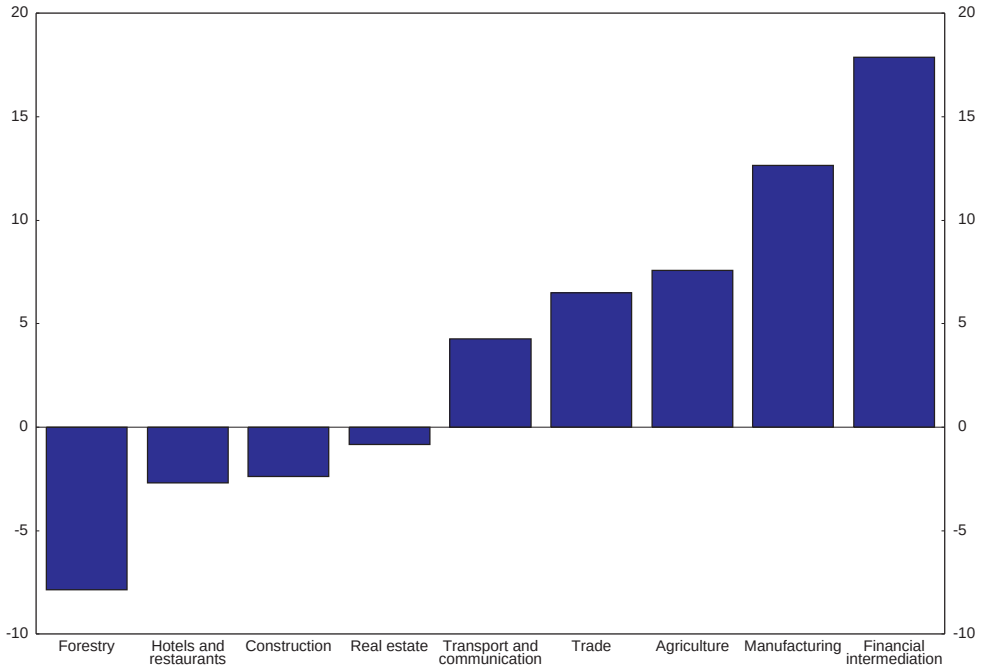
StatLink http://dx.doi.org/10.1787/561822476567

Note: Refer to Glossary for country codes.

Source: European Commission, Employment in Europe (2008).

Figure 5.2. **Average labour productivity growth by sectors, 2005-07**

Per cent, annual basis



StatLink http://dx.doi.org/10.1787/562002648635

Source: Statistics Estonia.

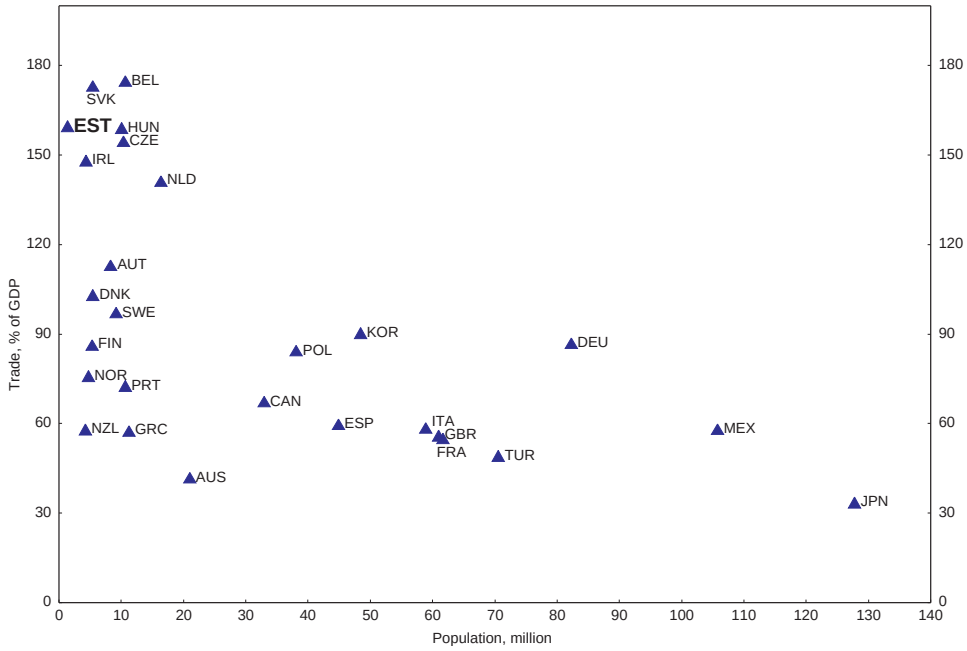
As shown in Chapter 1, both capital deepening and multifactor productivity (MFP) growth were important for generating labour productivity growth. This chapter looks at the impact of policies on some drivers of MFP, namely entrepreneurship, R&D and innovative activities, FDI, and trade.[3]

The economy is characterised by a high share of trade and foreign direct investment

Estonia is a very open economy, with trade (exports and imports) amounting to over 170% of GDP in 2008 (Figure 5.3).[4] One-third of the export is in the form of services, especially transport and tourism. In addition, Estonia exports construction works, telecommunication, and financial services. In manufacturing the export of goods is often based on subcontracting between local and foreign companies; this is especially the case in production of machinery and electrical equipment which have the largest share (21%) in commodities exports (Figure 5.4). Forestry and wood–processing constitute a traditional comparative advantage, with a share of 13% of the total commodities exports in 2007 (Box 5.1).

The EU is currently Estonia's main trading partner, with the Nordic countries – especially Finland and Sweden – having a long-standing prominent position. Although Russia remains an important trading partner, Estonia has reoriented a considerable share of its exports toward the EU countries. Among the emerging market EU countries, intra-regional trade in the Baltics plays an important role. A similar trend also occurred in imports (Obiora, 2009).

Figure 5.3. **Trade and population**



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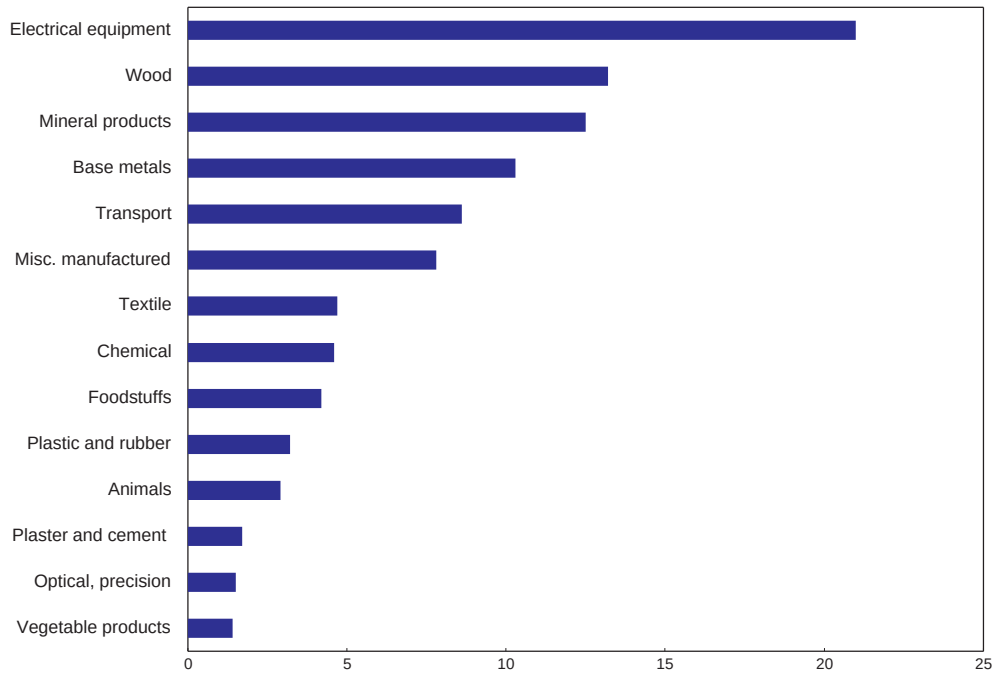
Note: Trade is exports plus imports of goods and services (2007).
Source: *OECD Economic Outlook Database*; Statistics Estonia.

Figure 5.4. **Exports**

% of total



StatLink http://dx.doi.org/10.1787/562037788112

Note: Exports are commodities and represent 97.5% of all of Estonia's commodity exports. More detail on commodities is in the Statistical International Trade Classification (SITC) Revision 4. Data refer to 2007.
Source: Statistics Estonia.

Box 5.1. **Forestry and related industries**

Forests are among Estonia's most important natural resources. Although forestry accounts for only 1.2% of Estonia's workforce and 1.7% of production, it provides raw material for timber, paper and furniture production. These industries make up another 8% of the overall production and employ more than 7% of the workforce. A majority of the output of forestry and related industries is exported to Finland, Sweden, Germany, Norway and Great Britain.

To enhance sustainable use of forests, the Estonian Forestry Development Programme sets government objectives and policies in land ownership, forest management, environment, as well as research and education. Some of the main measures include: *i)* abandoning area restrictions in privatisation; *ii)* enhancing and monitoring reforestation; *iii)* legal guarantees for the protection of forest design as prevailing naturally developing areas; *iv)* directing public support to reforestation; *v)* making the management of state-owned forest more efficient; and *v)* giving a priority to forestry education and research in the allocation of state budget resources.

As mentioned in the Estonian Forestry Development Programme, research and innovation activities are important for improving efficiency of the usage of forest and supporting environment–friendly technologies. Moreover, such activities facilitate the transformation of these industries from traditional manufacturing towards high-value added and high-tech industries. Another way to enhance innovation is to co-operate with research institutes, universities, and the private companies. The study by Ukrainski and Varblane (2005) shows that in Estonia links between universities and other research institutions are almost non-existent. Improving knowledge creation and diffusion in the forest and wood processing industries will require joint efforts of the government and the private sector.

Source: Estonian Ministry of the Environment (2002) and Ukrainski and Varblane (2005). See also Web Encyclopedia Estonica and web page of Estonian Forest Industries association.

The cumulative FDI inflows per capita during 1989-2007 reached $5 960, the second highest amount among the NMS (EBRD, 2008). During 1996-2007, the FDI inflows averaged 8.5% of GDP per year. Initially a large part of the investments were made through privatisation but gradually the emphasis shifted towards investments into other enterprises and establishing new companies; currently a notable part of the new direct investments is created through reinvesting profits in existing enterprises.

Nordic countries, namely Finland and Sweden, have a dominant FDI position in Estonia. The majority of FDI went to the non-tradable sector, especially to the financial and real estate sectors (33% and 27%) as well as the wholesale and retail trade (13%). Only around 15% of FDI went to the manufacturing sector. In recent years, a large part of the foreign direct investments occurred through reinvesting profits in the existing enterprises, coinciding with the introduction of the exemption of reinvested earnings from corporate profit taxation in 2000 (Table 5.3). While the increase in reinvested earnings reflects the overall business-friendly investment climate, the zero tax on reinvested earnings had likely an amplifying effect.

The share of high-tech sectors in exports and FDI is below the OECD average

To become a knowledge-based economy, Estonia needs to move gradually towards higher value added production and services. Towards this goal, increasing the share of high

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Table 5.3. **FDI inflows and their composition, 1995-2007**

	1995-99	2000-07	1995-2007
	In per cent of GDP		
Total	5.9	10.2	8.5
Equity	3.1	4.3	3.8
Reinvested earnings	**0.8**	**5.0**	**3.4**
Other (loans, etc.)	2.0	1.0	1.4

Source: Bank of Estonia.

technology and value added sectors in exports and FDI inflows is key (Table 5.4). However, according to the indicator developed by Hausmann, Hwang and Rodrik (2007), Estonia's export's sophistication is appropriate for its level of GDP.

Table 5.4. **Export shares in manufacturing, by skill intensity, 2005**

	High technology	Medium-high technology	Medium-low technology	Low technology
Austria	14.1	43.7	17.4	24.8
Belgium	20.3	44.9	14.9	19.9
Bulgaria	5.4	23.3	27.4	43.9
Czech Republic	15.8	46.7	20.1	17.4
Denmark	23.2	29.8	11.7	35.3
Estonia	**23.8**	**23.9**	**14.8**	**37.5**
EU15	25.7	44.6	12.9	16.8
Finland	26.7	29.8	17	26.5
France	24.4t	42.2	13.3	20.1
Germany	20.5	51.8	13.7	14
Greece	14.8	19.1	25.7	40.4
Hungary	32.8	43.6	9.4	14.2
Ireland	52.8	32.2	2.4	12.6
Italy	11.8	41.7	17.7	28.8
Japan	27.1	55.7	12.8	4.4
Latvia	7.7	17.4	13	61.9
Lithuania	11.3	29.5	15.5	43.7
Netherlands	34.7	31.7	10.2	23.4
Poland	6.8	40.4	24.3	28.6
Portugal	12.5	32.6	16.6	38.3
Romania	4.2	32.3	17.5	45.9
Slovakia	12.9	46.9	19.3	20.8
Slovenia	10.4	45	19.9	24.7
Spain	11.9	47.3	18.2	22.6
Sweden	24	38.9	15.3	21.8
United Kingdom	33.8	37.8	12.1	16.4
United States	36.1	40	10.1	13.8
World	27.8	37.5	14.3	20.5

Source: OECD Analytical Database.

R&D intensity has steadily increased and firm creation has been high

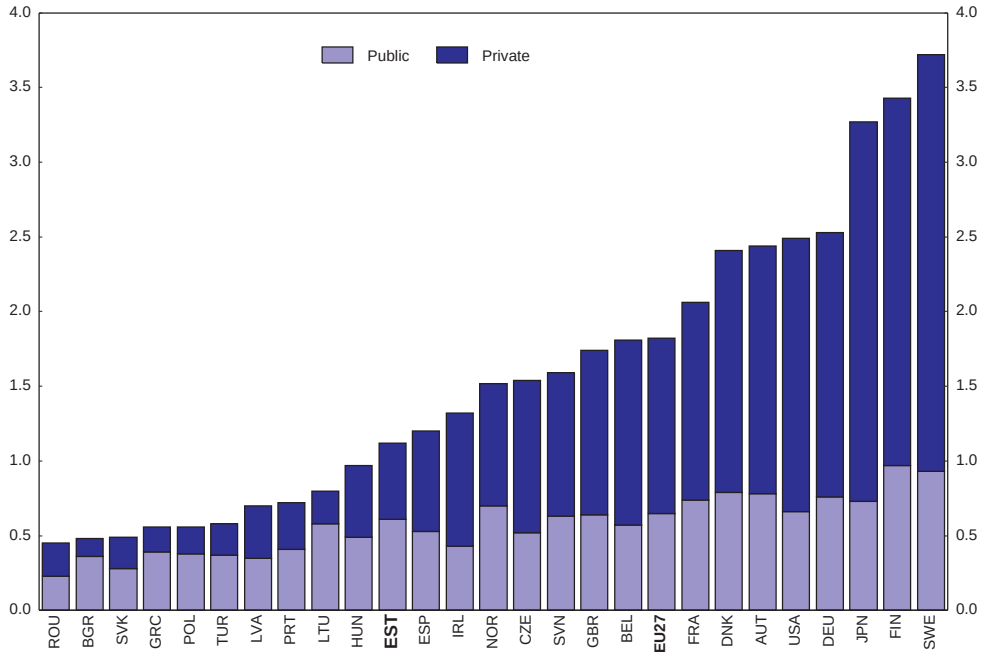
While R&D intensity (defined as the share of R&D expenditures in GDP) has steadily increased during the recent decade, reaching 1.14% of GDP in 2006, the level is lower than the OECD average (2.26%). Specifically, the level is higher than in other countries of central Europe except the Czech Republic, but well below the intensity levels in Finland and Sweden, the leaders in this area. (Figure 5.5).[5] In international comparison, the share of

private sector expenditures on R&D is low relative to the total R&D expenditure, the recent growth of the private sector R&D expenditures notwithstanding.[6]

Firm entry rates show that Estonia has had a relatively high creation of new businesses. In particular, firm entry has been intensive in construction, trade, financial intermediation, and real estate activities. In contrast, it has been low in ICT intensive manufacturing industries, telecommunication, and other network industries. This finding supports the evidence in Chapter 4 showing that most of the sectoral reallocation has not been to production for exports in high-tech and knowledge-intensive sectors.

Figure 5.5. **R&D expenditure**

Per cent of GDP



StatLink http://dx.doi.org/10.1787/562086413457

Note: Public expenditure refers to that financed by the higher education and government sectors. Private expenditure refers to that financed by the business sector. Data refer to 2006 or latest available year.

Source: Eurostat.

The tax system could do more to support investment, innovation and entrepreneurship

The tax system is in many ways supportive for productivity and investment. The overall tax burden (total tax revenue/GDP) is relatively low, 32%, compared to the OECD average of 36%. The tax system is simple and transparent, reducing compliance costs and incentives for tax evasion. According to the World Bank Doing Business (2008) indicator on paying taxes, in 2007 Estonia was clearly below the OECD in several areas: *i)* number of tax payments (8 payments relative to the OECD average of 13 payments); and *ii)* the time it takes to prepare, file and pay the corporate income tax, the value added tax and social security contributions (81 hours per year relative to the OECD average of 211 hours per year).

In 1994, Estonia introduced a flat tax system where personal and capital income is taxed at the same single rate (Box 5.2). Currently, the flat tax rate is 21%. Consumption is

Box 5.2. **Flat tax: concept and Estonia's experience**

Pros and cons of introducing a flat tax

Hall and Rabushka (HR) first proposed the flat tax in the early 1980s. They suggested to tax labour income and net business cash flow (sales minus investment and labour costs) in the United States at a single rate. The proposal consisted of: *i)* a consumption tax base; *ii)* a single tax rate; and *iii)* simple tax rules. Income taxes would be paid only when income is earned, interest deductions would be eliminated, and depreciation schedules would be replaced by an immediate write-off. The system is neutral both horizontally and across time (Hall and Rabushka, 1985).

The flat tax is simple, which is important in countries with limited administrative capacity such as Estonia. Its merits have been extensively debated.

- Proponents claim that it: *i)* encourages a better income reporting and tax compliance through clearer rules; *ii)* stimulates saving and investment through lower marginal tax rates on high income; and *iii)* encourages labour supply from highly skilled workers.
- Opponents point out that: *i)* savings and investment depend more on the overall business environment than taxes; *ii)* without allowances labour supply at low income brackets could be discouraged, although such allowances compromise simplicity; and *iiii)* equity is likely to deteriorate (Gale, 1998).

The HR proposal in practice

In its pure form, the HR proposal has so far not been implemented. Countries that introduced the flat tax modified the HR design to their own circumstances (Table 5.5). Hence the impact of the tax needs to be considered on a case by case basis. The performance of a flat tax is typically evaluated around: *i)* revenue collections; *ii)* work incentives; and *iii)* equity considerations. In practice, the most common usage of the term "flat tax" refers to personal taxation, where the single tax rate is often accompanied by non-taxable allowances. The tax liability then takes the following form:

$$T_F(Y) = max[t(Y - A_F),0]$$

where $T_F(Y)$ is the tax liability on personal income Y, t is the constant tax rate, and A_F is non-taxable allowance.

Table 5.5. **Selected flat-tax systems on personal income**

	Year when introduced	Personal income tax rate (%)			Allowances	Unified CIT rate?
		Prior	Subsequent	2008		
Estonia	1994	16; 24; 33	26	21	Subst. incr.	Y
Lithuania	1994	18-33	33	15 and 24	Subst. incr.	N
Latvia	1995	10 and 25	25	25	Incr.	Y
Russia	2001	12-30	13	13	Incr.	N
Slovak Rep.	2004	10-38	19	19	Incr.	Y
Ukraine	2005	10-40	13	15	Incr.	N
Georgia	2005	12-20	12	12	Incr.	N
Romania	2005	18-40	16	16	Incr.	Y
Czech Republic	2008	12-32	15	15	Incr.	N

Source: Keen *et al.* (2006) and Deutsche Bank Research (2008).

Box 5.2. **Flat tax: concept and Estonia's experience** *(cont.)*

Application in Estonia

In 1994 Estonia was the first country to introduce a flat tax, by applying the same rate (26%) to personal and corporate income and capital gains. Starting in 2005, the tax was gradually reduced to 21% in 2008 and 2009, while the personal non-taxable minimum has more than doubled from 12 000 EEK in 2003 to 27 000 EEK in 2009. Since 2000 undistributed profits have been exempted from corporate taxation, equivalent to introducing an unlimited loss carry-forward or backward. The majority of the population and most political parties have consistently supported the flat tax regime.

With the flat tax, the country enhanced simplicity, transparency, and easy compliance. The tax also eliminated the requirement for frequent adjustments of the brackets to inflation, even though the non-taxable allowance still needs to be adjusted annually. Moreover, the reform reduced the negative impact of uncertainty on investment and established neutrality between different economic activities. Following Estonia's example, the flat tax became popular in central and east European (CEE) countries eager to establish an enabling business climate (Table 5.5).

Impact on tax revenues

Measuring impact of the flat tax on revenues is complex, given the many factors involved. The 1994 PIT and CIT revenue shares in GDP fell, albeit only marginally. During 1995-2007 the PIT revenues declined from about 8% to 6% of GDP, and the CIT revenues declined from 2.4 to 1.7%, reflecting declining rates, increased allowances and exemptions. Keen *et al.* (2006) concluded that there were no signs of Laffer-type gains from the flat tax reforms in the CEE.

Efficiency and equity trade-off

A comprehensive study of the efficiency and equity consequences of the flat tax in Estonia has so far not been undertaken. The composition of tax revenues points to a larger share from indirect than direct taxes relative to the EU15 and the OECD central European members (Table 5.6), in line with the efficiency consideration and objective to gear taxation toward consumption. Such a structure is also favoured by the OECD ECO-CTP tax and growth project (Johansson *et al.*, 2008). One concern is the possibly negative impact of the flat tax on labour force participation of low-income workers. Staehr (2008) examined the effects of the flat PIT and found that reducing the tax burden on lower income individuals would trigger a notable increase in their labour force participation and welfare.

Table 5.6. **Structure of tax revenues, 2006 (in % of total tax revenues)**

	Estonia	Czech Republic	Hungary	Poland	Slovak Republic	EU15
Indirect tax	44.0	30.9	41.0	42.8	39.6	37.6
Direct tax	23.0	24.4	25.3	22.2	20.4	32.1
Social Security contribution	33.0	44.7	33.7	35.0	40.0	30.3

Source: Eurostat (2008) and the Ministry of Finance of the Republic of Estonia (2009).

The flat tax has made PIT less progressive, although some progressivity has been kept through non-taxable allowances. However, as pointed out in Chapter 4, the relatively high income inequality in Estonia is mainly due to persistent differences across regions and worker skill-levels, as well as the social security system currently in place.

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taxed with few exemptions at a rate of 18% (VAT). Books, medical products and hotel services are taxed at reduced rates that increased from 5% to 9% starting in 2009. The VAT exempt goods and services include postal, health, insurance, and social services as well as supply of immovables and leasing and letting of immovables.

In 2000, the corporate income tax (CIT) system was reformed so that corporations are exempted from the income tax on undistributed profits, while dividends are taxed at the shareholder level, currently at 21%. Dividends paid to residents are not subject to further tax, while a withholding tax at a rate of 21% is levied on dividends paid to non-resident shareholders; thus these dividend payments are subject to double taxation. Starting from 2009 the withholding taxation on dividends paid to non–residents will be fully abolished. As there are no taxes on corporate income *per se*, there is no basis for different allowances or other tax credits deducted from taxable income. Capital gains remain untaxed in incorporated Estonian firms. When capital gains accrue to a natural person or non-incorporated company, they are taxed at 21%.

The zero corporate income tax on undistributed profits introduced in Estonia is unique and no OECD country has a similar feature.[7] The main argument for introducing it was the positive effect on investment and reinvesting profits. Following the reform, reinvested profits and total investment have been steadily increasing from 2000 to mid-2007 (Table 5.3).[8] As this period has been characterised by strong economic growth, it is difficult to distinguish between the effects of the tax reform and other factors.

The Estonian tax system relies on a mix of relatively low personal and corporate income taxes as well as a property and a broad-based consumption tax. This is in line with findings that indirect taxes are less distortionary than direct ones (Johansson *et al.*, 2008). However, as discussed in Chapter 4, the total tax wedge on labour is higher than on average in OECD countries due to high employers' social security contribution, thus discouraging employers to hire workers. In cases where firms can pass on social security contributions to employees as lower wages, workers have disincentives to supply labour.

Corporate taxation may distort investment and restructuring

While the Estonian corporate tax system is attractive in its simplicity and efficiency, some of its aspects may hamper growth by distorting incentives and hindering restructuring. The main justification for not taxing retained profits is to encourage investment.[9] However, in addition to distorting decisions between and within different economic sectors and agents, such incentives may be inequitable. Furthermore, other factors such as labour taxes and product market regulation may matter more for the investment decisions of multinational enterprises than corporate taxes (Hajkova *et al.*, 2006).More broadly, a stable and predictable environment and a simple tax system are more likely to boost investment than tax incentives (IMF, 2005).

The zero-rate tax on undistributed corporate profits may be inefficient in encouraging investment in several ways. First, retained earnings can be used to accumulate liquid funds and to buy financial assets. Second, since corporate taxes affect the relative price of capital and labour, the zero-tax rate distorts the efficient allocation of inputs leading to less usage of labour inputs (or possibly both labour and capital) in a firm and/or industry (Johansson *et al.*, 2008). Finally, since taxation of unincorporated business income favours incorporation, welfare losses occur if unincorporated business would be preferred without the tax consideration (OECD, 2007).

The corporate tax policy may also hinder restructuring between industries, as capital would remain within old firms and industries due to lock-in effects (Norregaard and Khan, 2007; and IMF, 2005). Put differently, the system discourages distributing dividends to shareholders and thus impedes capital mobility and investment in potentially more productive projects in other firms and industries. Thus, the lock-in effects impedes reallocation of resources within and across industries essential for the short-run recovery and sustainable longer-term growth.[10]

Hazak (2007) carried out an empirical analysis of capital structure and dividend decisions of 51 000 Estonian companies during 1995-2004. He found that the share of external financing in total capital of these enterprises is lower under the distributed profit taxation than under gross capital taxation. While the distributed profit tax system led Estonian companies to pay out lower portion of profits as dividends, the undistributed profits were partially retained as surplus cash, instead of being reinvested into long term productive assets. While zero tax on retained earnings strengthened liquidity of the Estonian companies, it also contributed to potentially inefficient allocation of funds.

Given that taxation of distributed corporate profits creates distortions in allocation of resources and restructuring, the impact of corporate tax liability on distributed profits should be carefully monitored and this tax regulation reconsidered if it is established that these distortions are serious.A well administered tax system and predictable corporate tax policy together with a moderate general corporate income tax may better encourage investment with fewer distortions.

Product market regulations facilitate competition, but some aspects call for further reforms

Experience of the OECD countries over the past decade shows that market deregulation and competition enhance economic performance through several transmission mechanisms. Liberal product market regulations (PMR) stimulate innovation and technology diffusion, by speeding up adjustment through which countries or sectors catch-up to the productivity leader and absorb positive productivity shocks (Conway *et al.*, 2006). Moreover, Alesina *et al.,* 2005 found that countries with liberal PMR incorporate ICT into their production more frequently than relatively restrictive ones.

Since Estonia's continued catch up to income levels of the more advanced EU countries hinges on innovation-driven productivity gains, product market regulations (PMR) encouraging competition are crucial. Enabling PMR would also speed up the country's move to a knowledge-based economy.

The 2007 PMR indicator compares favourably to those of the OECD and emerging market economies

Estonia swiftly deregulated its economy, and in 2007 the overall stance of PMR in Estonia restricted competition less than in OECD countries on average (Figure 5.6). Moreover, Estonia's overall product market rules are more supportive of competition than in the OECD emerging market economies and the central European countries.[11] Estonia also achieved lower scores on all sub-components of the overall PMR index – state control, barriers to entrepreneurship, and barriers to trade and FDI – than the OECD countries on average. Moreover, Estonia's regulations in these areas are less restrictive than in the OECD emerging market countries and central European countries. Relative to the United States, though, Estonia's overall PMR index and all its subcomponents are still more restrictive (Figure 5.7).

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Figure 5.6. **Product market regulation, 2007**

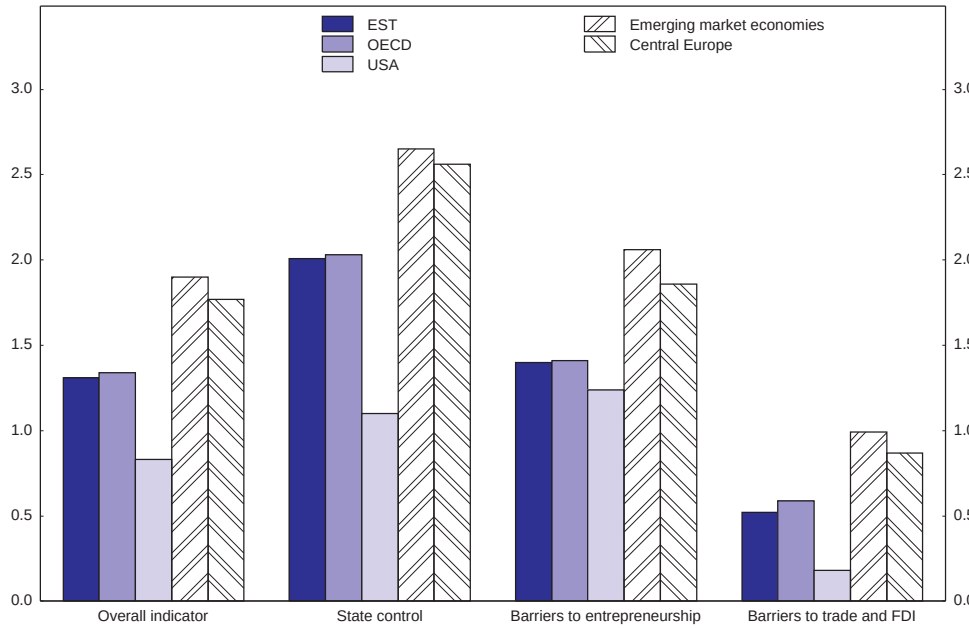
Index of 0 to 6 from least to most regulated

StatLink http://dx.doi.org/10.1787/562141888854

Source: OECD, Product market questionnaire 2008.

Figure 5.7. **Product market regulation, 2007: main components**

Index of 0 to 6 from least to most regulated



StatLink http://dx.doi.org/10.1787/562153886564

Note: Emerging market economies are Czech Republic, Hungary, Poland, Turkey and Mexico. Central Europe comprises Czech Republic, Poland and Hungary (data for the Slovak Republic is not available).

Source: OECD, Product market questionnaire 2008.

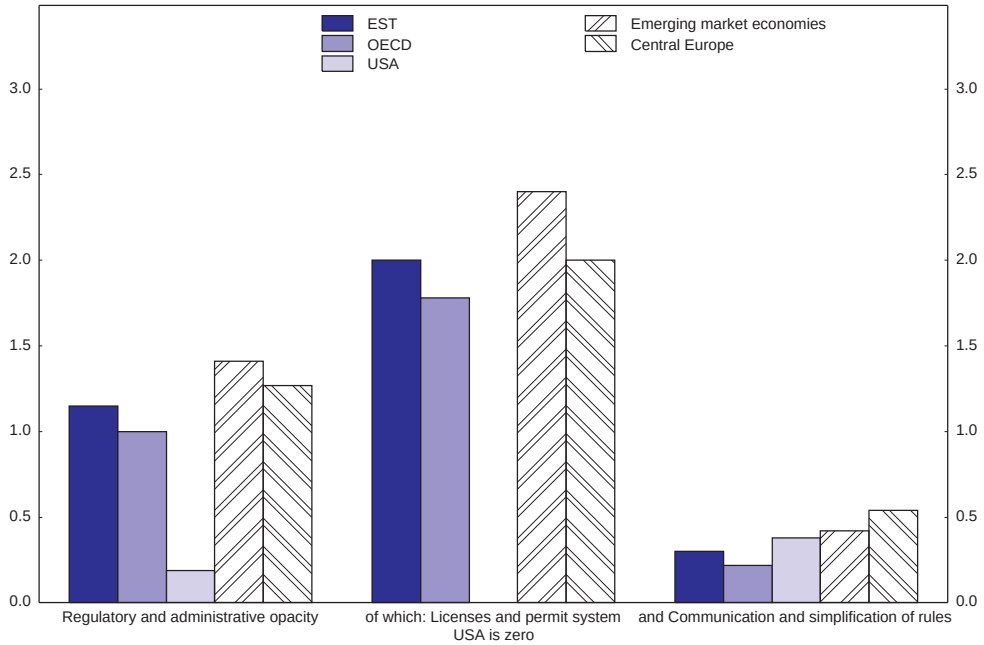
Estonia's achievements in establishing a modern market economy notwithstanding, the PMR index hints at the need for further reforms in specific areas. The three main areas of regulation examined below are: *i)* barriers to entrepreneurship; *ii)* state control (*i.e.* inward policies); and *iii)* barriers to trade and investment (outward policies). The regulatory stance in network industries is also examined.

Sub-indicators suggest that barriers to entrepreneurship are low

On the positive side, Estonia performs well in most areas covered by the sub-indicator of barriers to entrepreneurship. Market reforms carried out since 1991 simplified rules and reduced the legal barriers to competition and administrative burden on corporations below the average of the OECD countries. Estonia's regulatory procedures have been also consistently considered more streamlined and transparent than those of regional peers and highly rated by international organisations. However, the indicator of regulatory and administrative opacity is above the OECD countries on average even though well below those of the OECD emerging market economies. Licensing and permit system is one area where regulations could be streamlined further (Figure 5.8).

Figure 5.8. **Barriers to entrepreneurship: opacity, 2007**

Index of 0 to 6 from least to most regulated



StatLink http://dx.doi.org/10.1787/562162653238

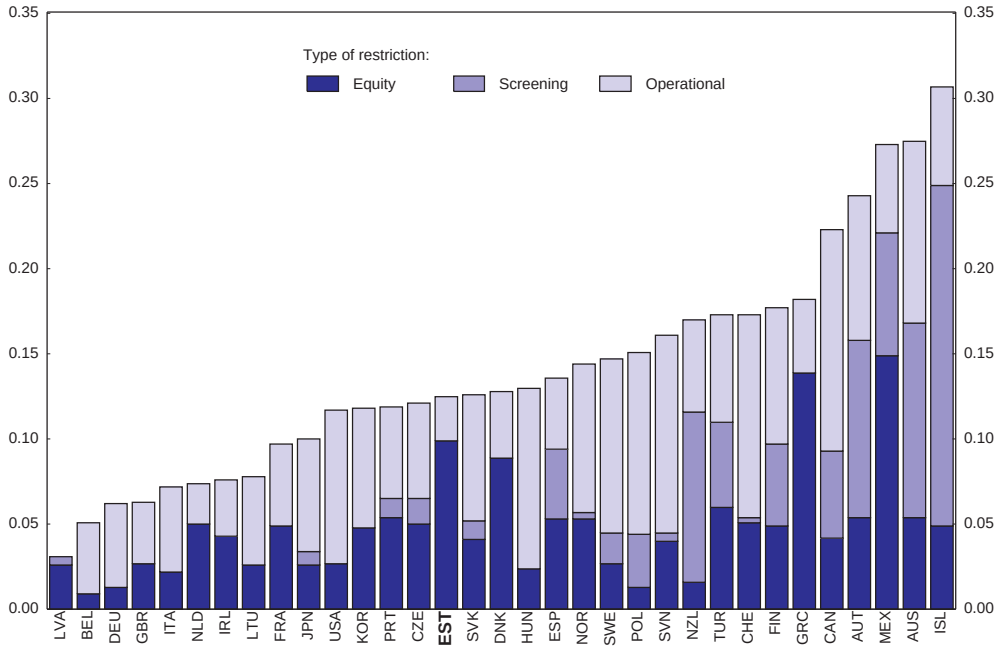
Note: Emerging market economies are Czech Republic, Hungary, Poland, Turkey and Mexico. Central Europe comprises Czech Republic, Poland and Hungary (data for the Slovak Republic is not available).

Source: OECD, Product market questionnaire 2008.

The indicator of barriers to trade and investment reflects the high degree of openness of the Estonian economy. The OECD FDI Regulatory Restrictiveness Index also suggests that foreign direct investment is deregulated relative to many OECD countries (Koyama and Golub, 2006), even though restrictions on foreign ownership are found in some network industries (Figure 5.9).

Figure 5.9. **FDI regulation**

Index of 0 (most open regulation) to 1 (prohibition of FDI)



StatLink http://dx.doi.org/10.1787/562185243171

Note: Equity refers to restrictions on foreign ownership, for example, limiting the share of companies' equity capital that can be held by non-residents. Operational refers to constraints on the ability of foreign nationals either to manage or to work in affiliates of foreign companies and other operational controls on these businesses. Screening refers to obligatory screening and other discriminatory approval procedures.

Source: OECD, Directorate for Financial and Enterprise Affairs.

In some areas state involvement in the economy is still relatively high

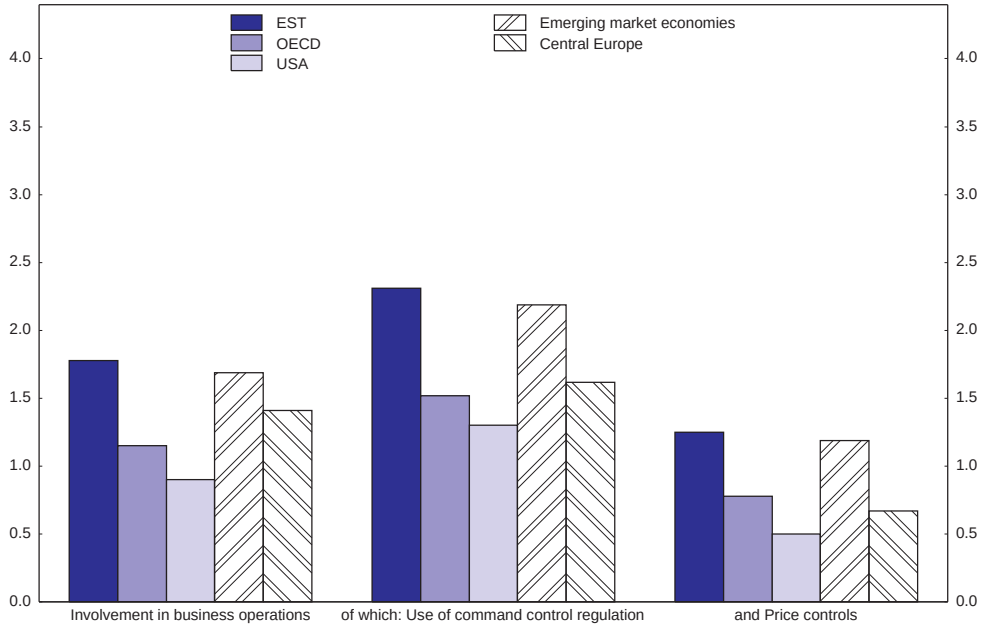
The state control in product markets in Estonia is relatively high. The PMR indicator shows that direct government interference (typically through special voting rights) in private firm activities as well as price controls are more prevalent in Estonia than in OECD countries on average as well as in the other comparators, that is OECD emerging market economies and central European members. State ownership is particularly high in all dimensions of the electricity sector (*i.e.* electricity distribution, generation, import, supply and transmission), but is also prevalent in airlines (state has 34% stake in the Estonian air), post (100%), and telecoms (state has 25% stake in Eesti Telecom). However, the state's share in production of electricity is expected to drop to 90% in 2009. Regulated prices account for 20% of the CPI. For example, price controls are used in electricity, gas, and some areas of retail trade, whereas the government can use special voting rights in airlines. Restrictions on sale of stakes held by the government exist for rail, water and air transport companies.

The electricity sector remains excessively regulated

The electricity sector is one of the network industries that is still more regulated than many other sectors in Estonia and the electricity sector in the OECD countries (Box 5.3). It is highly concentrated and dominated by a state-owned company, Eesti Energia, with only 13% of the retail market open to consumers.[12] Currently, there is no liberalised wholesale market for electricity. Evidence shows that introducing a liberalised wholesale market and

Figure 5.10. **State control: involvement in business operations, 2007**

Index of 0 to 6 from least to most regulated



StatLink http://dx.doi.org/10.1787/562185501741

Note: Emerging market economies are Czech Republic, Hungary, Poland, Turkey and Mexico. Central Europe comprises Czech Republic, Poland and Hungary (data for the Slovak Republic is not available).

Source: OECD, Product market questionnaire 2008.

opening a spot market for wholesale electricity reduces industrial and residential end-user electricity prices (Steiner, 2000).

According to the EU accession treaty the main step towards full opening of the Estonian electricity market is expected to take place only by 2013. The Estonian electricity transmission company OÜ Põhivõrk, together with its parent company Eesti Energia, has the main responsibility in preparation of the opening of the wholesale electricity market under the supervision of the Estonian Competition Authority. The opening of an energy exchange in Estonia by the end of 2008 in co-operation with the Nordic exchange Nord Pool is the highest priority in this area.

The electricity sector is subject to price regulation. The main justification has been the need to guarantee a sustainable level of electricity prices under limited competition. The prices are set by the regulator, based on a price cap for the customers not eligible to the retail market. The eligible consumers can also purchase electricity with regulated price. However, once they selected the free market option, they cannot change back to regulated price within one year. The regulated prices for oil-shale based electricity generation and supply are calculated *ex-ante* relative to proposed operating profit. The price controls for the oil-shale based electricity generation and supply will be abolished in 2013.

Given the potential benefits to competition and electricity prices, increasing the share of retail markets open to consumers and creating a liberalised wholesale market in the electricity sector should be a key priority of the government and the competition authority. However, the success of the opening of the electricity market depends on the sufficient

Box 5.3. **The electricity sector in Estonia – background**

The Estonian energy system is predominantly oil-shale-based, and around 90% of the electricity is produced in from oil shale. The electricity production is concentrated in North-East Estonia, where several power stations are also located. In addition, a large power station is located in Tallinn. The great bulk of the electricity is currently produced by the state-owned Eesti Energia, which is also engaged in sale and transmission of electric and thermal power as well as in the construction and maintenance of energy systems. Oil shale is also extracted from mines owned by the company.

In the financial year 2007, Eesti Energia sold 9 716 GWh of electricity, of which 6 992 GWh was used domestically and 2 725 GWh, was exported. The Estonian electricity power grid is connected to three neighbouring countries – Russia and Latvia and, from 2006, Finland – through an underwater cable, ESTLINK. Eesti Energia is also involved in an investment project to build a second undersea cable from Finland to Estonia by 2013.

To harmonise Estonian legislation with the EU directives, four separate laws were adopted in 2003. The Electricity Market Act stipulates the separation of vertical segments in the electricity sector on a legal or accounting basis and defines the rules for the operation of the new electricity market. The need to fulfill EU directives on environmental protection, pollution, waste, greenhouse gas (GHG) emissions also implies substantial changes over the coming years, in particular concerning oil-shale production technologies.

Koskela *et al.* (2007) assess three different future electricity supply scenarios for Estonia in 2020 – domestic oil shale, imported natural gas, and imported nuclear power scenarios. They find that the least the "nuclear scenario" is the least damaging, with nuclear energy as the main energy source. This best scenario, however, depends on the weight of accidental releases or other impacts not defined in this context.

interest of independent producers and sellers and their commitment to invest in electricity generation capacity.[13]

Effectiveness of policies supporting innovation and entrepreneurship could be enhanced

The medium-term objective of the government is for Estonia to become a knowledge-based economy. A high level of research and development (R&D) and innovative entrepreneurship are considered to be key elements in achieving this objective (Dahlman, C. J., *et al.*, 2007). However, the return to R&D efforts and the success of entrepreneurial activity are uncertain, and often the benefits for society exceed those for the private sector, leading to underinvestment in R&D by the private sector. Thus, like many other countries, Estonia has introduced policies to encourage R&D and entrepreneurship. The Research and Development and Innovation Strategy for 2007-13 – Knowledge-Based Estonia and the strategy for enterprise activity "Estonian Enterprise Policy 2007-2013" lay out guidelines and policies in these areas.

Financial constraints are often major obstacles for innovative and new firms

Financial markets developed rapidly, but most of the business sector finance is still provided by the banking sector or by foreign investors. The size of corporate bond and equity markets is small and access to them limited, particularly for small and medium enterprises (SMEs). This is particularly the case for entrepreneurs with no track record, few tangible assets to be used as collateral, and projects requiring several years before generating profits.

The emergence of a high-risk capital market, in particular venture capital and business angel funds, is thus crucial for financing innovative investment projects.

The survey by Praxis (2005) found that Estonian companies rank the shortage of financial sources among the top factors hindering their innovation projects. The main source of financing was in the form of self-financing or loans from family and friends. In particular, the survey found that the likelihood that the project was self-financed was particularly high in high tech the companies.[14] Thus, the current severe downturn further amplifies SME's financing constraints.

Several programmes have been introduced to ease the financial constraints

To ease financial constraints faced by innovative and start-up firms, the authorities established several grant, loan and guarantee programmes. They are implemented by two government agencies operating under the supervision of the Ministry of Economic Affairs and Communication. *Enterprise Estonia* manages programmes supporting start–up and development, export marketing, technology investment, business infrastructure development, and R&D. *KredEx* extends loans and loan guarantees to businesses and exports from nine different programmes. In addition, the Estonian development fund (*Arengufond*) invests in start-ups and growth-oriented technology firms together with the private sector.

Through *Enterprise Estonia*, the authorities also set up several other programmes to promote entrepreneurship and innovation that are not based on direct grants or loans. These include programmes for start-up and exporters with training, consulting, export marketing, information sharing, and services for foreign investors. Different programmes were adapted to help restructuring in the traditional industries, aiming at better technology utilisation. Innovations are also undertaken together with the private sector and universities, establishing competence centres and science and technology parks.

The size of the various *Enterprise Estonia's* programmes varies considerably. One of the largest, in terms of budget, is the R&D financing programme, with programme funding ranging between 35 to 70% of the cost of the financed project. Other important programmes are the export marketing and start-ups. The former is offering grants to ease the access of Estonian entrepreneurs to foreign markets and the latter to new firms. *Enterprise Estonia* has also become a major channel for EU Structural Funds into the Estonian businesses. During the current seven-year period (2007-13), Estonia will receive EEK 53.2 billion, or about 4% of annual GDP, from the structural funds.

Enterprise Estonia also co-ordinates, together with *KredEx,* start-up guarantee programme with the maximum guarantee of 75% of the loan value and the amount of loan varying between EEK 30 000-500 000, or about EUR 1.9-32 thousands. In 2007, the value of these guarantees was almost 300 million kroons. In addition, *KredEx* offered bank loan and leasing guarantees for more than 50 million kroons. All the loan and guarantee programmes were targeted at SMEs. Finally, *KredEx* provides short- and long-term credit risk, pre-shipment risk and investment guarantees for exporting companies, with coverage up to 100% for political risk and up to 90% for commercial risk.

The number of different innovation and entrepreneurship supporting programmes is high and likely leads to overlapping activities and co-ordination problems. Moreover, direct subsidies tend to have a minor impact on innovation activities (Jaumotte and Pain, 2005a; b) and picking the future "winners" distorts incentives and ultimately lowers productivity. Continued high importance should be thus given to the evaluation of efficiency and impact of these

programmes, for example by intensifying the outside assessment of independent domestic and foreign institutions. Merging different grant and support programmes should be also considered.

Private sector development in poorer regions should be encouraged

Even though Estonia rapidly developed a modern market economy, poorer regions still lack a dynamic private sector and entrepreneurship. Ida-Viru county in the Northeastern region particularly illustrates this point, with the lowest share of private-sector employment in the country (Table 5.7). This region continues to be also characterised by very low rates of business creation. During 2000-07, it housed only about 5% of total enterprises in Estonia, compared to its 13% share in population (Table 5.8). Similar observations apply to poor rural counties such as Voru and Polva.

Table 5.7. **Share of the private sector in total employment, by county (%, 3-year moving averages)**

	2000	2001	2002	2003	2004	2005	2006	2007
Total	69.7	70.5	71.9	72.8	73.8	74.5	74.9	75.4
Harju	72.1	72.9	73.9	74.4	75.7	76.9	78.0	78.6
Tallinn	71.6	73.0	74.0	74.2	75.6	77.4	78.6	78.5
Hiiu	71.3	72.3	72.9	73.4	74.3	73.9	72.8	74.0
Ida-Viru	**56.0**	**58.6**	**63.3**	**66.2**	**65.7**	**65.0**	**64.2**	**65.4**
Jõgeva	70.1	67.2	68.4	69.0	70.9	71.9	73.0	71.8
Järva	73.8	74.9	76.8	78.3	79.6	79.2	78.7	78.8
Lääne	68.0	66.7	68.6	67.5	67.8	66.4	69.7	73.8
Lääne-Viru	76.9	75.9	76.0	76.9	77.7	77.9	76.4	77.3
Põlva	63.8	63.6	66.7	69.8	71.4	70.2	69.5	71.2
Pärnu	73.8	74.2	75.4	76.5	77.7	80.0	80.7	81.2
Rapla	74.8	73.9	75.5	78.0	78.3	74.4	72.2	72.4
Saare	72.9	74.1	73.6	72.0	71.8	75.9	76.9	78.3
Tartu	66.8	68.5	69.7	69.8	71.1	72.3	72.6	71.1
Valga	67.1	71.5	75.0	76.6	76.8	77.2	76.7	74.5
Viljandi	74.6	73.4	72.4	73.5	76.7	76.5	75.7	75.6
Võru	68.9	67.2	66.1	64.4	66.4	67.7	70.2	71.2

Source: Statistics Estonia and OECD Secretariat calculations.

Table 5.8. **Share of active enterprises, by counties, % of total, 2000-07**

	2000	2001	2002	2003	2004	2005	2006
Whole country	100	100	100	100	100	100	100
Harju county	60.4	60.6	61.8	62.0	62.2	62.3	62.3
..Tallinn	53.5	53.5	54.4	54.1	53.5	53.2	52.3
Hiiu county	0.6	0.6	0.6	0.6	0.6	0.6	0.5
Ida-Viru county	**5.6**	**5.4**	**5.3**	**5.2**	**5.2**	**5.0**	**4.8**
Jõgeva county	1.2	1.2	1.2	1.2	1.2	1.2	1.1
Järva county	1.4	1.4	1.4	1.3	1.3	1.3	1.3
Lääne county	1.5	1.4	1.4	1.3	1.3	1.3	1.3
Lääne-Viru county	3.1	3.0	3.0	2.9	2.9	2.9	2.9
Põlva county	1.3	1.2	1.1	1.1	1.2	1.2	1.2
Pärnu county	5.8	5.9	5.6	5.7	5.5	5.6	5.5
Rapla county	1.7	1.8	1.7	1.8	1.8	1.7	1.8
Saare county	2.0	1.9	1.8	1.8	1.8	1.8	1.8
Tartu county	10.3	10.5	10.1	10.3	10.2	10.2	10.4
Valga county	1.4	1.3	1.3	1.2	1.3	1.2	1.3
Viljandi county	2.2	2.2	2.2	2.1	2.2	2.3	2.2
Võru county	1.6	1.6	1.5	1.4	1.4	1.4	1.5

Source: Statistics Estonia and OECD Secretariat calculations.

Obstacles faced by SMEs in the poorer regions include credit constraints, but also heavy taxation of labour, a lack of skilled workers, and underdeveloped infrastructure (EBRD, 2006). To further support private sector growth, access to financing of SMEs in these regions needs to be improved, possibly through the development of a broader range of financial instruments including microfinance.

Summing up

Overall, Estonia has an investment and productivity enhancing business environment. However, challenges remain in some areas of the economy. Box 5.4 summarises the recommendations concerning policies to improve the business environment further.

Box 5.4. **Policy recommendations to enhance productivity**

Increase competition to foster productivity

- In selected network industries, reduce state control through privatisation. Limit special voting rights and restrictions on the sale of stakes held by the government.
- Increase the share of electricity retail markets open to consumers and create an expanded, liberalised wholesale market in the electricity sector.

Reduce investment distortions in the corporate tax system

- The impact of limiting the corporate tax liability to distributed profits should be carefully monitored and this tax regulation reconsidered if it is established that serious distortions arise.

Increase efficiency and effectiveness of innovation policies

- Give high importance to the evaluation of the efficiency and impact of different programmes supporting business and innovation activities, for example by raising the role of the outside assessment of independent domestic and foreign institutions.
- Consider merging some of the business and innovation support programmes.

Encourage private sector development in poorer regions

- To support private sector growth in poorer regions, improve access of local SMEs to financing, possibly through development of a broader range of financial instruments such as microfinance.

Notes

1. Clarke (2008) found a strong correlation between exporting and internet access at the enterprise level.
2. In 2008, Praxis conducted a follow up study about the Internet connectivity. It found that gaps in the Internet usage persisted between: *i)* blue collar and white collar workers; and *ii)* ethnic Estonian and ethnic non-Estonians. The retired persons also formed a large share of non-users. However, most non-users benefited from the Internet indirectly, through their families.
3. Other important factors contributing to MFP are high-skilled labour force and education.
4. With its relatively low income per capita, Estonia looks much less "trade intensive" than the advanced OECD countries. For example, according to the World Bank's development indicators, in 2007 Estonia's trade (*i.e.* sum of exports and imports) per capita amounted to $25 777 *vs.* Finland's $38 933.

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5. During 2001-07 the average growth rate of the research and development intensity in Estonia was 8%, second in the EU (Statistics Estonia). At the same time, as Polt *et. al.* (2007) point out, there is no optimal R&D investment rate that applies to all countries and all industries.
6. OECD research shows that while tax incentives to invest in R&D are more effective than direct subsidies, the overall framework is more important for boosting R&D investment than direct subsidies.
7. Only Moldova has introduced a similar corporate tax system in 2008.
8. Theoretical analysis with a calibration of tax-adjusted q-model of investment by Funke (2002) supports the argument of positive effects of reduction in the corporate rate on investment.
9. The system also treats debt and equity financing broadly uniformly which is an additional advantage.
10. An additional concern often related to the zero-tax rate of undistributed corporate profits and taxing only dividend is that it is likely to lead to tax revenue losses.
11. In addition to comparing Estonia's PMR rating with the OECD countries' average, Czech Republic, Hungary and Poland are also used as a benchmark. Extending the comparison to the OECD emerging market economies provides comparison with other OECD middle income countries. Estonia is also compared with the United States, which in many areas has the least restrictive PMR.
12. Non-eligible customers can purchase their electricity from the grid company they are physically connected to or from the seller named by that grid company.
13. Other risks may be related to large-scale cheap import which can harm local production and investments, and make the country dependent on neighbouring states.
14. This could mean that market failure exists in the financial sector and that companies have sufficient self-financing for innovative projects. At the same time, not all innovations presume significant investments.

Bibliography

Alesina, A., S. Ardagna, G. Nicoletti and F. Schiantarelli (2005), "Regulation and Investment", *Journal of the European Economic Association*, 3, pp. 791-825, June 2005.

Clarke, G. (2008), "Has the Internet increased exports for firms from low and middle-income countries?", *Information Economics and Policy*, *Vol. 20, Issue 1*, March 2008.

Conway, P, D. de Rosa, F. Steiner and G. Nicoletti (2006), "Regulation, competition and productivity convergence", *OECD Economic Studies, No.* 43/2 2006.

Dahlman, CJ., J. Routti, and P. Ylä-Anttila (2007), *Finland as a knowledge-based economy: elements of success and lessons learned*, World Bank Institute, World Bank, Washington, DC.

Deutsche Bank Research (2008), "Taxation of income in the globalization era: Treading the line between fairness and efficiency", *Current Issues*, October.

Estonian Ministry of Environment (2002), "The Estonian forestry development programme until 2010", Estonian Ministry of Environment, Tallinn.

European Bank for Reconstruction and Development (2008), "Transition report 2008: Growth in transition", EBRD, London.

European Bank for Reconstruction and Development (2006), "Strategy for Estonia", Document approved by the Board of Directors EBRD, London.

Eurostat (2008), "Taxation trends in the European Union", *Eurostat Statistical Books*.

Gale, W. (1998), "The flat tax in theory and practice: simple, efficient, fair. Or is it?", *The Brookings Review*, pp. 40-45, June.

Hajkova, D., G. Nicoletti, L. Vartia and KY. Yoo (2006), "Taxation and business environment as drivers of foreign direct investment in OECD countries", *OECD Economic Studies, No.* 43/2 2006.

Hall, R.E. and A. Rabushka (1985), *The Flat Tax,* Hoover Institution Press, Stanford, CA.

Hausmann, R., J. Hwang and D. Rodrik (2007), "What you export matters", *Journal of Economic Growth,* Vol. 12, 1-25.

Hazak, A. (2007), "Companies' financial decisions under the distributed profit taxation regime of Estonia", *Tallinn University of Technology Working Papers,* No. 155.

International Monetary Fund (2005), "Estonia: A Program of Tax Reform", *IMF Fiscal Affairs Department Report*.

Jaumotte, F. and N. Pain (2005a), "From ideas to development: the determinants of R&D and patenting", *OECD Economics Department Working Papers*, No. 457.

Jaumotte, F. and N. Pain (2005b), "Innovation in the business sector", *OECD Economics Department Working Papers*, No. 459.

Johansson, Å., C. Heady, J. Arnold, B. Brys and L. Vartia (2008), "Tax and economic growth", *OECD Economics Department Working Papers*, No. 620.

Keen, M., Y. Kim and R. Varsano (2006), "The flat tax(es): Principles and evidence", *IMF Working Papers*, No. WP/06/218.

Koskela, S., J. Seppälä, A. Lipp, M.-R. Hiltunen, E. Põld and S. Talve (2007), "Estonian electricity supply scenarios for 2020 and their environmental performance", *Energy Policy,* 35(2007).

Koyama, T. and S. Golub (2006), "OECD's FDI regulatory restrictiveness index: revision and extension to more economies", *OECD Working Papers on International Investment* 2006/4.

Ministry of Finance of the Republic of Estonia (2009), "Questions and answers: Estonia flat income tax system", Ministry of Finance, Tallinn.

Norregaard, J. and TS. Khan (2007), "Tax policy: recent trends and coming challenges", *IMF Working Papers*, WP/07/274.

Obiora, K. (2009), "Decoupling from the east towards the west? Analyses of spillovers to the Baltic countries", *IMF Working Papers*, forthcoming.

OECD (2007), "Fundamental Reform of Corporate Income Tax", *OECD Tax Policy Studies* OECD, Paris.

OECD (2003), OECD e-government studies: E-government imperative, OECD, Paris.

Polt, W., P. Koch. and A. Wolters. (2007), "Evaluation of Estonian RTDI policy mix", *Innovation Studies*, Tallinn.

Praxis (2005), "Business support measures in the state budget strategy for 2007-2013", *Policy Analysis* No. 9/2005.

Staehr, K. (2008), "Estimates of employment and welfare effects of labour income taxation on flat-tax country: The case of Estonia", *Working Papers of Eesti Pank*, No. 3/2008.

Steiner, F. (2000), "Regulation, industry structure and performance in the electricity supply industry", *OECD Economics Department Working Papers*, No. 238.

Tallo, I. (2007), "Creating single governance space: e-government lessons from Estonia", presentation.

Taylor, A. (2008), "Trade and financial sector reforms: interactions and spillovers", paper presented at the "Conference on the Causes and Consequences of Structural Reforms", IMF, Washington, DC, February 2008.

Ukrainski, K. and U. Varblane (2005), "Sources of in the Estonian forest and wood cluster", University of Tartu, Faculty of Economics and Business Administration.

United Nations, Department of Economic and Social Affairs (2008), Division for Public Administration and Development Management (2008), "UN e-government survey 2008 – From e-government to connected governance" (New York: United Nations).

World Bank (2008), *Doing Business 2009*, World Bank, International Finance Corporation, and Palgrave Macmillan.

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