OECD Economic Surveys
ESTONIA

JANUARY 2015

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OECD Economic Surveys: Estonia 2015

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Please cite this publication as:
OECD (2015), *OECD Economic Surveys: Estonia 2015*, OECD Publishing.
http://dx.doi.org/10.1787/eco_surveys-est-2015-en

ISBN 978-92-64-22680-7 (print)
ISBN 978-92-64-22722-4 (PDF)

Series: OECD Economic Surveys
ISSN 1609-7513 (print)
ISSN 0376-6438 (online)

OECD Economic Surveys: Estonia
ISSN 2221-2302 (print)
ISSN 2221-2299 (online)

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This Survey is published on the responsibility of the Economic and Development Review Committee (EDRC) of the OECD, which is charged with the examination of the economic situation of member countries.

The economic situation and policies of Estonia were reviewed by the Committee on 5 November 2014. The draft report was then revised in the light of the discussions and given final approval as the agreed report of the whole Committee on 15 December 2014.

The Secretariat's draft report was prepared for the Committee by Andrés Fuentes Hutfilter and Andreas Kappeler under the supervision of Andreas Wörgötter. Research assistance was provided by Seung-Hee Koh and Eun Jung Kim. Heloise Wickramanayake formatted and produced the layout of the document.

The previous Survey of Estonia *was issued in October 2012.*

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BASIC STATISTICS OF ESTONIA, 2013

(Numbers in parentheses refer to the OECD average)*

LAND, PEOPLE AND ELECTORAL CYCLE					
Population (million)	1.3		Population density per km²	29.5	(34.4)
Under 15 (%)	16.0	(18.3)	Life expectancy (years, 2012)	76.5	(80.2)
Over 65 (%)	17.1	(15.6)	Men	71.4	(77.5)
Foreign-born (%, 2011)	15.9		Women	81.5	(82.9)
Latest 5-year average growth (%)	-0.1	(0.6)	Latest general election	March 2011	

ECONOMY					
Gross domestic product (GDP)			Value added shares (%)		
In current prices (billion USD)	24.9		Primary sector	3.6	(2.5)
In current prices (billion EUR)	18.7		Industry including construction	28.9	(26.8)
Latest 5-year average real growth (%)	0.1	(0.8)	Services	67.5	(70.5)
Per capita (000 USD PPP)	25.6	(39.1)			

GENERAL GOVERNMENT Per cent of GDP					
Expenditure	38.9	(42.5)	Gross financial debt	13.5	(110.7)
Revenue	38.4	(36.8)	Net financial debt	-32.2	(69.9)

EXTERNAL ACCOUNTS				
Exchange rate (EUR per USD)	0.753		Main exports (% of total merchandise exports)	
PPP exchange rate (USA = 1)	0.556		Machinery and transport equipment	31.8
In per cent of GDP			Manufactured goods	15.2
Exports of goods and services	86.1	(53.4)	Miscellaneous manufactured articles	14.4
Imports of goods and services	85.2	(49.4)	Main imports (% of total merchandise imports)	
Current account balance	-1.4	(-0.1)	Machinery and transport equipment	33.8
Net international investment position	-48.9		Mineral fuels, lubricants and related materials	14.1
			Manufactured goods	13.8

LABOUR MARKET, SKILLS AND INNOVATION					
Employment rate for 15-64 year-olds (%)	68.5	(65.2)	Unemployment rate, Labour Force Survey (age 15 and over) (%)	8.6	(7.9)
Men	71.4	(73.1)	Youth (age 15-24, %)	18.8	(16.1)
Women	65.7	(57.4)	Long-term unemployed (1 year and over, %)	3.8	(2.7)
Participation rate for 15-64 year-olds (%)	75.1	(71.1)	Tertiary educational attainment 25-64 year-olds (%, 2012)	37.3	(32.2)
Average hours worked per year	1,868	(1 771)	Gross domestic expenditure on R&D (% of GDP, 2012)	2.2	(2.4)

ENVIRONMENT					
Total primary energy supply per capita (toe)	4.4	(4.2)	CO_2 emissions from fuel combustion per capita (tonnes, 2012)	12.3	(9.7)
Renewables (%)	13.0	(8.8)	Water abstractions per capita (1 000 m^3, 2012)	1.2	
Fine particulate matter concentration (urban, PM10, µg/m^3, 2011)	16.7	(28.0)	Municipal waste per capita (tonnes, 2012)	0.3	(13.5)

SOCIETY					
Income inequality (Gini coefficient, 2011)	0.323	(0.308)	Education outcomes (PISA score, 2012)		
Relative poverty rate (%, 2011)	11.7	(11.1)	Reading	516	(496)
Median equivalised household income (000 USD PPP, 2010)	10.0	(20.4)	Mathematics	521	(494)
Public and private spending (% of GDP)			Science	541	(501)
Health care (2012)	5.9	(9.2)	Share of women in parliament (%, October 2014)	19.0	(26.7)
Pensions (2011)	7.0	(8.7)	Net official development assistance (% of GNI)	0.13	(0.37)
Education (primary, secondary, post sec. non tertiary, 2011)	3.4	(3.9)			

Better life index: *www.oecdbetterlifeindex.org*

* Where the OECD aggregate is not provided in the source database, a simple OECD average of latest available data is calculated where data exist for at least 29 member countries.

Source: Calculations based on data extracted from the databases of the following organisations: OECD, International Energy Agency, World Bank, International Monetary Fund and Inter-Parliamentary Union.

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Executive summary

- *Main findings*
- *Key recommendations*

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Main findings

Estonia experienced strong growth of loan-financed domestic demand after EU accession in 2004, followed by the burst of the real estate bubble and the international financial crisis. The economy recovered quickly. Regulatory settings are generally favourable to sustain growth and the government is initiating further substantial structural reforms. The fiscal position is strong and macroprudential policies have been strengthened. However, in recent years economic growth has slowed, in part due to weak external demand. Real GDP per capita is still lower than in the boom peak of 2007. The productivity gap with respect to high-income countries is currently diminishing only slowly. Skill mismatches contribute to structural unemployment and emigration is reducing labour supply. At unchanged policies higher income growth will tend to raise greenhouse gas emissions, which are among the highest in the OECD in relation to GDP. Key challenges for Estonia are therefore to raise productivity growth, including by making the most of human capital, while containing greenhouse gas emissions.

Policies to raise productivity growth sustainably. Estonia boasts an innovative ICT services sector and strong business creation. Nonetheless, exports are concentrated in low and medium technological goods and FDI inflows in high value added activities have been small. While R&D spending has risen and reforms have improved the effectiveness of innovation policy, too few firms collaborate with research institutions. Transport infrastructure has been upgraded, but bottlenecks are still holding back private sector development. Corporate bankruptcy procedures are long, raising exit costs on entrepreneurs and uncertainty for creditors.

Reducing CO_2 emissions and energy consumption. Low energy efficiency contributes to high CO_2 emissions. Ambitious emission reduction targets are expected beyond 2020 in the context of targets set by the European Union and the economy is vulnerable to rising carbon prices in the European Union's emission trading system. Implicit tax rates per tonne of CO_2 are low on average and vary across energy sources and uses.

Making the most of human capital. Despite measures to lower income taxes and social security contributions, high labour taxation is holding back domestic labour utilisation. Important examples are the high contribution rates in the compulsory private pension scheme and generous special occupational early retirement schemes which have to be paid for with high taxes. While substantial reforms have improved the quality of vocational education, workplace-based upper secondary education is underdeveloped.

Using fiscal policy to raise sustained productivity growth. Government debt is very low and the government budget has been close to balance structurally in recent years. The government plans structurally balanced budgets or surpluses which will lead to the accumulation of financial assets. In a small and volatile economy like Estonia's a strong fiscal position is prudent. At the same time a catching-up economy like Estonia has high public spending needs to sustain productivity growth and ensure equity. There are gaps in the provision of active labour market policies and in infrastructure as well as in continued education and access to vocational education.

Key recommendations

Policies to raise productivity growth sustainably

- To strengthen knowledge transfers to domestic firms, promote applied research and improve collaboration with domestic and foreign institutions conducting applied research.
- Implement plans to expand access to European transport networks and energy supply facilities. Improve inter-modal transport connections.
- Shorten corporate insolvency procedures and improve their efficiency, for example by strengthening the use of expertise.

Reducing CO_2 emissions and energy consumption

- Gradually align and raise tax rates on energy sources according to their CO_2 emission content.
- Strengthen incentives for operators of heating networks to improve efficiency. Strengthen incentives to invest in energy efficiency of buildings.

Making the most of human capital

- Further reduce the taxation of labour earnings, in particular of low earnings. Raise more revenues from the taxation of real estate by removing exemptions and by evaluating property according to market values.
- In the compulsory private pension system, reduce costs born by workers, in particular marketing expenses. In the public pension system, phase out special occupational and sectoral pension regimes.
- Introduce a tax-free lower minimum wage for apprenticeships, improve financial support for students in vocational education and strengthen collaboration of businesses and schools at the local level.

Using fiscal policy to improve long-term growth prospects

- Create budgetary room to raise spending on active labour market policies, infrastructure and education, as well as to lower labour taxes. To this end, improve spending efficiency and prioritisation and phase out tax exemptions, notably the deductibility of mortgage interest payments. In the longer-term consider allowing a small deficit in the government budget rule.

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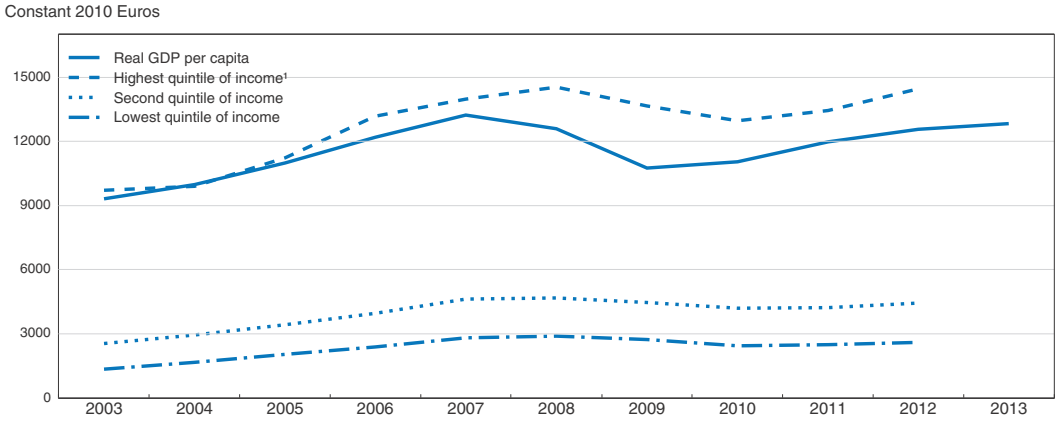
Assessment and recommendations

- *Domestic framework conditions are favourable but reforms are needed to accelerate convergence*
- *Weakening exports have detracted from economic growth*
- *Domestic financial risks are low*
- *The fiscal position is strong*
- *Raising productivity and benefitting more from openness*
- *Reducing CO_2 emissions and energy consumption*
- *Making the most of human capital*

Domestic framework conditions are favourable but reforms are needed to accelerate convergence

The Estonian economy experienced a sharp contraction of output in the context of the global financial crisis in 2008 and 2009, deepened by a domestic credit-based boom-bust cycle in the construction sector and reinforced by procyclical fiscal policy (Economic Surveys of Estonia 2011, 2012). Real GDP per capita and household incomes fell markedly (Figure 1). In the following years, the economy recovered quickly, led by exports. The banks, mostly owned by Scandinavian financial groups little affected by the global financial crisis, cleaned up their balance sheets rapidly which helped restore access to credit. Private sector indebtedness fell to sustainable levels. A very strong fiscal position also helped restore financial market confidence. However, economic growth started slowing in 2012 mainly due to weaker exports. Real per capita GDP and household incomes remain below the peak of the preceding boom. Moreover, poor households have barely benefited from the post-crisis recovery since 2010.

Figure 1. **GDP per capita and real household income[1] by income quintile**



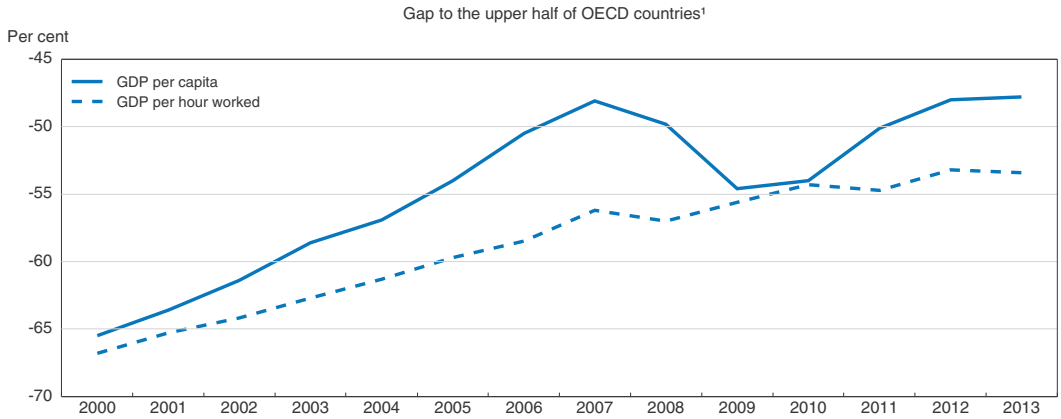
1. Equalised disposable income. Deflated with harmonised consumer price index.
Source: Statistics Estonia, Eurostat and OECD MEI Database.

StatLink http://dx.doi.org/10.1787/888933180001

The gap in labour productivity compared with the top OECD economies is large and has narrowed only slowly (Figure 2), despite the downsizing of low-productivity construction activity. Energy efficiency of production is among the lowest and CO_2 emissions per capita among the highest in the OECD, which calls the sustainability of GDP growth into question. Unemployment has fallen, but skill mismatches keep structural unemployment high. Net emigration and cross-border work have reduced labour supply.

According to OECD wellbeing indicators, Estonia lags behind with respect to subjective life satisfaction as well as household disposable income and health indicators (Figure 3).

Figure 2. **Convergence in GDP per capita and productivity**



1. Percentage gap with respect to the simple average of the highest 17 OECD countries in terms of GDP per capita, GDP per hour worked (in constant 2005 PPPs).

Source: OECD National Accounts Database and OECD Productivity Databases.

StatLink http://dx.doi.org/10.1787/888933180018

Figure 3. **Average well-being outcomes[1], 2014**

1. Each well-being dimension is measured by one to three indicators from the OECD Better life Indicator set. Indicators are normalised to range between 1 (best) and 0 according to the following formula: (indicator value-minimum value)/(maximum value/minimum value).

Source: OECD Better Life Index Database.

StatLink http://dx.doi.org/10.1787/888933180022

Despite improvement in recent years, life expectancy remains lower than in most OECD countries and health spending is modest. Unhealthy life styles, in part reflecting high alcohol and tobacco consumption, contribute to low life expectancy (*Economic Survey* of Estonia 2012, OECD, 2012).

As pointed out in the 2012 *Economic Survey* of Estonia (OECD, 2012), framework conditions are in many ways conducive to sustained economic expansion. Product and labour market regulation are business-friendly and are backed up by an effective public administration, transparent governance and efficient law enforcement. Low and simple corporate taxation supports entrepreneurship; a solid banking sector and the strong fiscal position support growth. According to PISA results, literacy, numeracy and science competences among Estonian youth are among the strongest in the OECD. Numeracy and literacy skills of the adult population are also above average (OECD, 2013d).

Further reforms are needed to improve medium-term economic growth prospects, making the most of Estonia's position as a small, highly open economy:

- To raise productivity, innovation policies need to improve the transfer of knowledge to Estonian firms. Remaining barriers to entry in some services should be removed. Infrastructure gaps need to be closed and energy efficiency improved.
- To raise labour utilisation, the tax and contribution system needs to become more employment friendly. Further reforms of vocational education can help match skills better to labour market needs.

In most of these policy areas, the Estonian government has taken substantial steps in the right direction. These issues are discussed below.

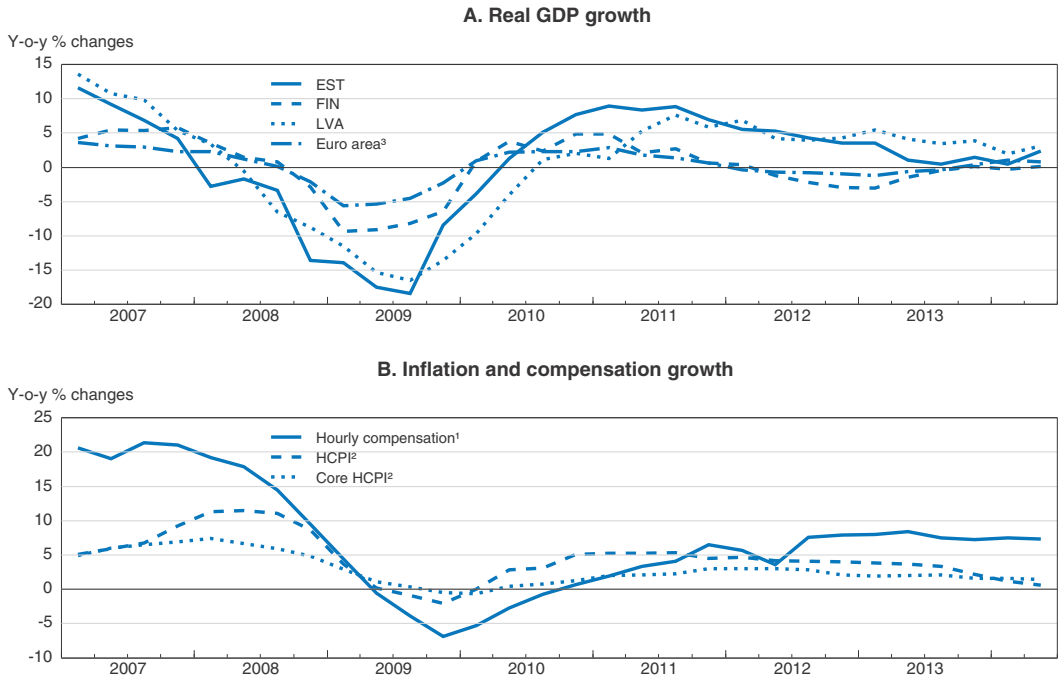
Weakening exports have detracted from economic growth

Real GDP growth slowed to 1.6% in 2013 as exports decelerated (Figure 4). Declining activity in Finland and Russia as well as the slow recovery in the euro area have contributed to weaker export demand. Public infrastructure investment also declined. However, private consumption growth was strong, fuelled by real wage gains, even though unemployment remained above 8% in 2013. GDP growth strengthened in the first half of 2014, and unemployment fell further, although export growth recovered little.

Skill shortages contribute to wage pressure, especially in skill-intensive sectors (Eesti Pank, 2014a, b). More than 10% of firms report skill shortages as the most relevant factor constraining output (Eesti Pank, 2014a). The most skilled workers have by far the lowest unemployment rates (Figure 5). Wage growth has been particularly strong in the innovative ICT services sector (Eesti Pank, 2014b), where vacancy rates are high and where Estonia has developed a marked comparative advantage. Emigration mostly of young, employed workers, has contributed substantially to falling labour supply (Figure 6), thereby also contributing to wage pressure.

Export market performance has evolved satisfactorily over the past 10 years (Figure 7). Market shares of Estonian gross exports appear to have grown broadly in line in central eastern European economies (Figure 7, Panel A). Moreover, the domestic value-added content of exports rose markedly between 2005 and 2009 (Figure 7, Panel B). However, strong wage and subdued productivity growth have pushed up unit labour costs markedly since 2011, weakening export competitiveness (Figure 7, Panel C). The share of firms reporting worsening competitiveness in business surveys has also been growing

Figure 4. **Output, labour costs and consumer prices**

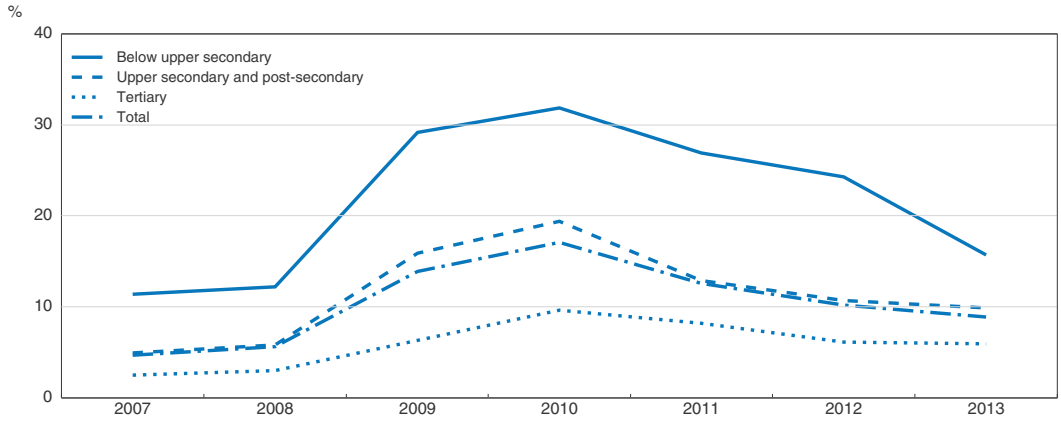


1. Working-days adjusted nominal labour costs for the industry, construction and services except activities of households as employers and extra-territorial organisations and bodies.
2. Harmonised consumer price index (2005=100). Core HCPI excludes energy, food, alcohol and tobacco.
3. OECD euro area of fifteen.

Source: OECD Economic Outlook Database and Eurostat.

StatLink http://dx.doi.org/10.1787/888933180039

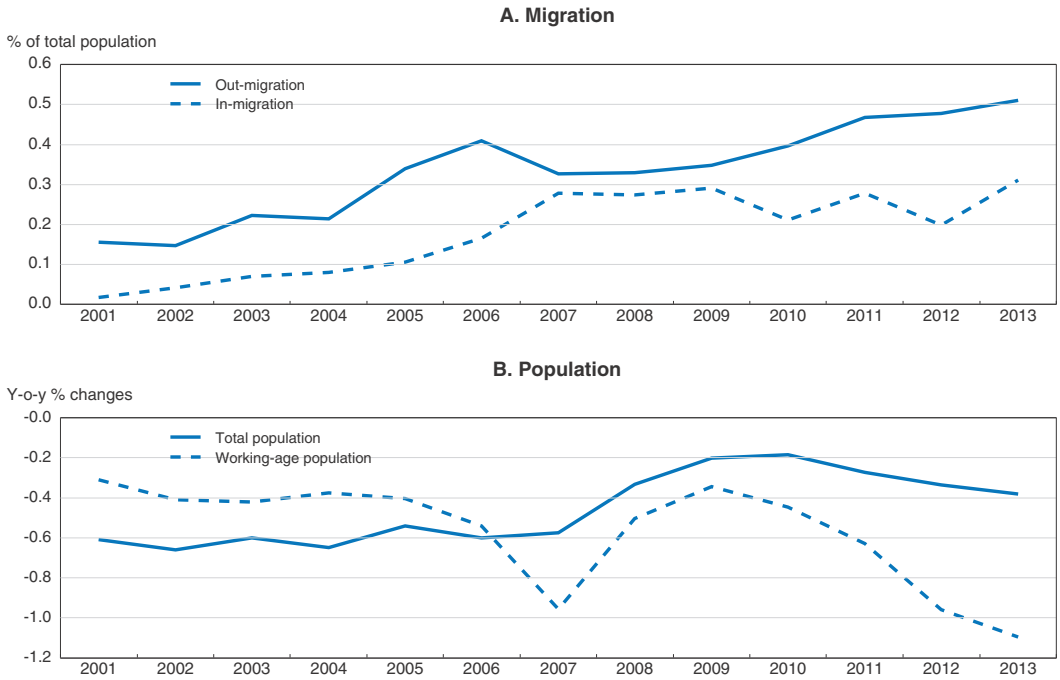
Figure 5. **Unemployment rates by educational level**



Source: Eurostat.

StatLink http://dx.doi.org/10.1787/888933180046

Figure 6. **Migration and population trends**



Source: Statistics Estonia.

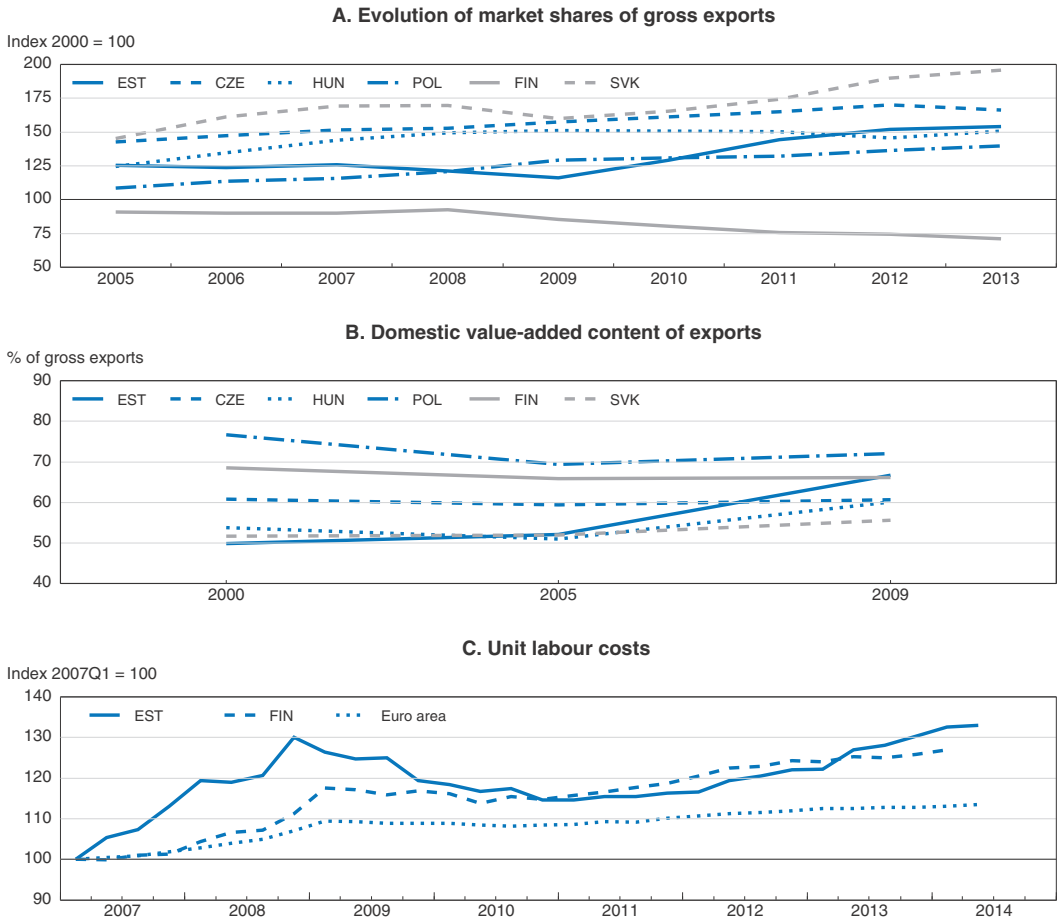
StatLink http://dx.doi.org/10.1787/888933180051

substantially recently, although a majority of firms still report improving competitiveness (Eesti Pank, 2014a).

Wage growth is expected to continue boosting private household consumption. Exports will be held back by continued weaknesses of some of Estonia's main trading partners, notably Finland and Russia, which, respectively, account for 16% and 11% of Estonia's exports. The current account balance is therefore expected to deteriorate slightly. Unemployment will continue to fall but employment gains are expected to be modest, as the population of working age is expected to continue declining.

Downward risks to the outlook remain. Economic activity may be weaker than projected in some of Estonia's main trading partners, with particular uncertainty attached to events in Ukraine. While the weight of exports to Russia seems to be modest in value-added terms, the economic slowdown in Russia and the geopolitical crisis could have marked effects on investor confidence. Weak growth in the euro area and other parts of the world would also affect the Estonian economy negatively. An ongoing decline of competitiveness of the Estonian economy could harm growth prospects. Outmigration of young Estonians risks undermining the supply side of the labour market, which could reduce the potential growth rate.

Figure 7. **Export performance and competitiveness**



Source: OECD Economic Outlook Database, OECD-WTO Trade in Value Added (TiVA) Database (May 2013) and OECD Unit Labour Costs Database.

StatLink http://dx.doi.org/10.1787/888933180061

Domestic financial risks are low

The non-performing loan ratio has fallen to 1.5% and exposure of financial intermediaries to Russia and Ukraine is low (Eesti Pank, 2014c). High profitability has allowed banks, mostly branches and subsidiaries of Nordic banking groups, to build up strong capital buffers with tier I capital of 16% of total assets on average.

Despite low interest rates, lending to the private non-financial sector has been moderate. At the same time indebtedness of the corporate and household sectors have fallen to moderate levels (Figure 8). Lending to manufacturing and to the primary sector has expanded, but lending for commercial real estate, which is typically particularly risk-prone, has declined. Mortgage lending growth for housing purposes is low. Real house prices have recovered somewhat but are well below the pre-crisis peak and are now rising only modestly.

While no financial risks result from the housing market at present, persistently low long-term interest rates could result in the re-emergence of risks in the domestic housing market. In convergence economies within the euro area, like Estonia, higher inflation is

Table 1. **Macroeconomic indicators and projections**

Annual percentage change, volume (2010 prices)

	2011 Current prices (EUR billion)	2012	2013	2014	2015	2016
Gross domestic product (GDP)	16	4.7	1.6	2.0	2.4	3.4
Private consumption	8	5.1	3.8	3.7	3.8	4.2
Government consumption	3	3.3	2.8	0.4	1.2	1.7
Gross fixed capital formation	4	10.4	2.5	2.1	2.2	4.8
Housing	0.5	15.2	6.9	7.1	2.3	4.8
Final domestic demand	16	6.2	3.2	2.6	2.9	3.9
Stockbuilding[1]	0.2	-1.4	-2.3	1.5	0.2	0.0
Total domestic demand	16	5.2	1.3	4.1	3.1	3.9
Exports of goods and services	14	8.3	2.6	2.7	3.3	4.5
Imports of goods and services	14	12.2	3.1	1.8	3.4	5.1
Net exports[1]	1	-2.9	-0.5	0.8	0.0	-0.4
Other indicators (growth rates, unless specified)						
Potential GDP	..	2.3	2.4	2.5	2.7	3.1
Output gap[2]	..	-1.0	-1.8	-2.2	-2.5	-2.1
Employment	..	2.0	0.8	0.8	0.5	0.3
Unemployment rate[3]	..	10.0	8.6	7.4	7.0	6.6
GDP deflator	..	2.7	4.5	1.7	1.6	2.0
Harmonised index of consumer prices	..	4.2	3.2	0.5	0.9	1.7
Core harmonised index of consumer prices	..	2.8	1.9	1.4	1.4	2.0
Household saving ratio, net[4]	..	-1.1	-3.6	0.7	2.8	2.4
Current account balance[5]	..	-2.1	-1.4	0.1	0.0	-0.2
General government financial balance[5]	..	-0.3	-0.5	-0.3	-0.3	-0.2
Underlying government financial balance[2]	..	0.9	0.0	0.3	0.3	0.4
Underlying government primary balance[2]	..	0.8	0.0	0.2	0.2	0.3
Government gross debt (Maastricht)[5]	1	9.7	10.1	9.5	8.8	8.0
Government gross debt[5]	2	13.2	13.5	12.9	12.2	11.4
Government net assets[5]	6	32.7	32.2	30.7	29.2	27.5
Three-month money market rate, average	..	0.6	0.2	0.2	0.1	0.1

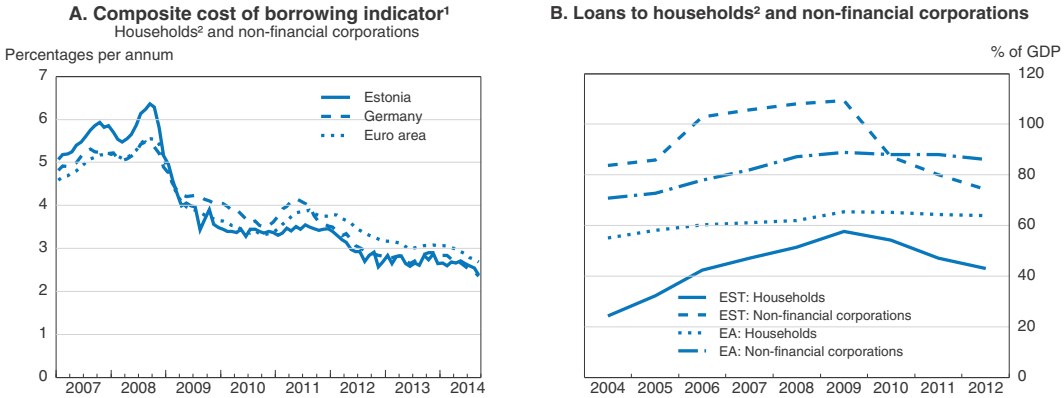
1. Contribution to changes in real GDP.
2. As a percentage of potential GDP.
3. As a percentage of the labour force.
4. As a percentage of household disposable income.
5. As a percentage of GDP.

Source: OECD Economic Outlook Database; OECD calculations; and secretariat projections.

likely to push real interest rates to particularly low levels when economic growth strengthens, which might contribute to a propitious environment for bubbles to develop. Since Estonia allows mortgage equity withdrawal for the purposes of private consumption, it is particularly important that the government end the favourable tax treatment of household borrowing for the acquisition of housing (see below).

A new macroprudential policy framework, established in 2014, is timely. It allows the Estonian central bank to take action, for example, if low interest rates result in excessive lending. The designation of the central bank as the macroprudential authority is appropriate, because it possesses both macroeconomic and financial competence (Goodhart, 2011). Eesti Pank has powers to impose additional macroprudential capital requirements, including time-variant capital buffers or limits to loan-to-income or loan-to-value ratios (IMF, 2014). It has already decided to limit housing loan values to 85% of the value of the collateral at the beginning of 2015. It has also decided to impose a systemic risk common equity capital buffer of 2% of risk-weighted assets on the large banks which

Figure 8. **Financial indicators**



1. Compiled using four categories of bank lending rates: short- and long-term lending rates to non-financial corporations and to households for house purchase, respectively.
2. Non-profit institutions serving households are included in the households sector.

Source: ECB and Eurostat.

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operate most of the lending business in Estonia. Larger capital buffers can help damp shocks, to which Estonia's small economy has been particularly vulnerable. Cross-border cooperation in banking supervision has also been strengthened, in part as a result of the introduction of common rules for the regulation of banks in the European Union as well as the euro area single supervisory mechanism.

The fiscal position is strong

The general government balance was in a small deficit in 2013. Government investment spending fell by 1% of GDP, reflecting the decline in spending of one-off revenues from the sale of Estonian CO_2 emission permits abroad, which have been earmarked to energy-saving public investment projects. This resulted in a procyclical impact. The fiscal policy stance is broadly neutral in 2014 and 2015. Tax cuts as well as higher spending on child and means-tested family cash benefits and on free school meals in 2015 are offset by some broadening of the VAT tax base as well as higher tobacco and alcohol taxes.

The sustainability of the government's financial position is strong. Its gross debt amounts to 13% of GDP and its net financial asset position to about 30% of GDP. The catch-up potential of the economy is likely to result in substantial nominal GDP growth in years to come, despite demographic ageing, further limiting the burden of outstanding government debt in the future. The impact of demographic ageing on projected social spending will be manageable as public spending on pensions is projected to remain stable at around 8% of GDP.

A new rule requires the central government to maintain a balanced budget in structural terms. It could help reduce the marked procyclical fiscal stance observed in the past, when governments targeted budget surpluses in headline terms, as noted in past Economic Surveys of Estonia (OECD, 2011b, 2012). The government aims to go beyond the rule and targets a structural surplus in order to create some margin with respect to the rule for the medium term. Local governments and public enterprises may run a deficit of at most 30% of their operating revenues, but only if they have liquid financial assets to finance such a deficit.

Maintaining budget surpluses would eventually result in the elimination of all government debt and a continuous increase in government assets. This could be costly, in that so far the central government's financial assets have earned little real return (National Audit Office of Estonia, 2013a). For instance, according to OECD long-term economic projections, maintaining a budget surplus of 0.5% of GDP would result in all government debt disappearing by 2030. The government asset position would converge to about 10% of GDP and continue growing in line with nominal GDP. Viewing the same issue differently, a budget deficit of 0.5% a year would free up funds for needed spending and result in the debt converging to only 12.5% of GDP, assuming trend nominal GDP growth of 4% a year.

Several medium-term spending priorities need to be met, a task that will be made more difficult as EU transfers, now 4% of GDP, diminish as expected after 2020. Increasing spending on well-targeted active labour market policies, which is low in international comparison, was a key recommendation of the 2012 *Economic Survey* of Estonia (OECD, 2012). The Survey also concluded that public funding is needed to improve financial incentives of employers to invest in lifelong learning, especially among low-educated and older workers and employees in small businesses. Improving life-long learning also is a priority for the government, which has taken steps to improve framework conditions. There are also spending needs to support students in vocational education as well as to address remaining bottlenecks in infrastructure (see below). The World Health Organisation (2008) noted a lack of human resources in health care. The government has already taken steps to improve the supply of ambulatory care and has stepped up efforts to promote prevention of health risks. Child poverty could be alleviated more effectively. Families need to apply for income-tested child benefits every three months and only 19% of entitled families did so before the recent increase, reflecting cumbersome application procedures. Government funding is also needed to encourage steps to move to a low carbon-emission economy. Lowering the labour tax wedge would also help boost economic growth (see below).

Improving spending efficiency and prioritisation as well as eliminating exemptions in personal income taxation would create some room for raising priority spending and for lowering the labour tax wedge. The deductibility of mortgage payments from personal income tax, in particular, lowers revenues, harms economic efficiency and mostly benefits high-income households. It has a budgetary cost of 0.1% of GDP. In the longer term budgetary rules could make room for a somewhat easier medium-term fiscal stance. It should be used to finance spending which has a higher rate of return than the interest rate the central government earns on its financial assets or the interest rate it pays on government debt. This is likely to be the case for the spending priorities noted above. A somewhat less stringent target for the budget balance would also be consistent with fiscal policy requirements in the European Union.

Recommendations on fiscal policy

- Create budgetary room to raise spending on active labour market policies, infrastructure and education, as well as to lower labour taxes. To this end, improve spending efficiency and prioritisation and phase out tax exemptions, notably the deductibility of mortgage interest payments. In the longer-term consider allowing a small deficit in the government budget rule.

Raising productivity and benefitting more from openness

Estonia is more open than most other countries, with exports and imports each amounting to roughly 90% of GDP. Estonia can do more to revitalise productivity growth and reap more benefits from its openness. A considerable potential for transfer of knowledge lies in foreign direct investment (OECD, 2008), especially for a small economy with a large productivity gap, such as Estonia. Inward foreign direct investment in manufacturing has been low in the last ten years. Manufacturing is concentrated on low-value added production (OECD, 2012; Masso et al., 2010). Collaboration between domestic and foreign firms seems to produce limited effects in terms of transfer of knowledge to Estonia and economic growth (European Research Area Committee, 2012; National Audit Office of Estonia, 2013a). Collaboration of firms with research institutions is low, further limiting transfer of knowledge (European Commission, 2014; European Commission, 2013a; European Research Area Committee, 2012). Continued reform efforts are needed to make innovation policies more effective; remove remaining barriers to entrepreneurship; and upgrade infrastructure, as discussed below.

Reaping more benefits from innovation

R&D spending in Estonia has increased considerably in recent years, reaching 2.2% of GDP in 2012. This increase may well result in improved productivity and competitiveness in the future (Andrews and Westmore, 2014). However, the economic impact of the Estonian R&D system has so far been limited (European Commission, 2013a; National Audit Office of Estonia, 2013a), which has prompted reforms by the government. For example, exports of medium and high-tech products; license and patent revenues from selling technologies; and sales of new products are still low (European Commission, 2014).

Important steps have been recently taken to improve the effectiveness of public innovation support. Estonia has developed a smart specialisation strategy which can be a useful policy framework for innovation-driven growth. It combines industrial, educational and innovation policies and rests on an interactive bottom-up approach involving all stakeholders (MER/MEAC, 2014). Moreover, responsibilities for R&D policies have been clarified and coordination across ministries has been strengthened. Considerable efforts have been made in recent years to improve evaluation of innovation policies (OECD, 2013a). Their effective design and implementation requires constant experimentation, monitoring and adaptation (OECD/WB, 2014). Therefore, evaluation should already be incorporated at the design stage. Pilot projects have proven particularly useful (Andrews and Criscuolo, 2013).

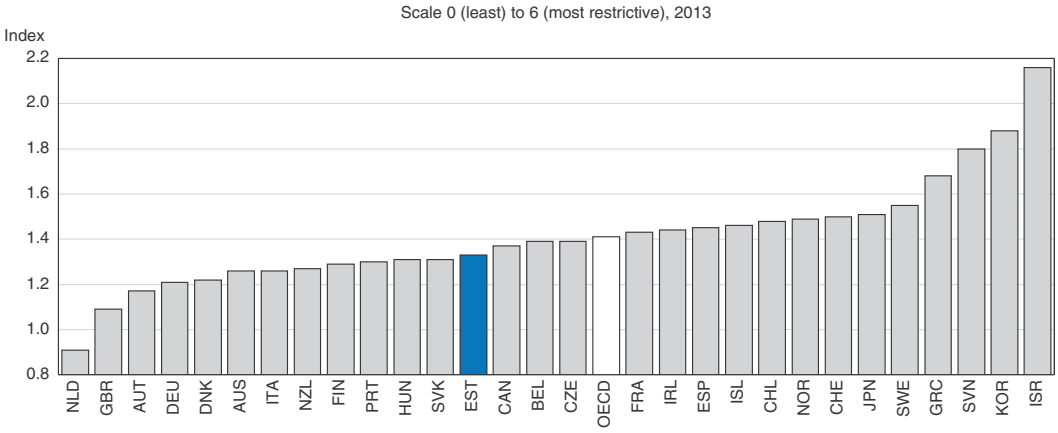
The number of firms collaborating with research institutions is low, especially among SMEs (OECD, 2013b; European Commission, 2014). There is scope to focus university research more on applied research and strengthen the collaboration of universities with domestic firms. Keeping a balance between basic and applied research is crucial for innovation and for new growth areas to emerge in the future. Further efforts are also needed to promote collaboration of firms and universities with applied research institutes, including from abroad.

Improving product market regulation

Competition-friendly product market regulation stimulates innovation, trade and investment, speeding up convergence and growth (Johansson and Olaberria, 2014).

Regulation in Estonia overall appears more competition-friendly than in many OECD countries (Figure 9). However, there is scope to further reduce entry barriers in some services. Identifying and removing these barriers would strengthen productivity growth throughout the economy because of these services' role as intermediate inputs (Bourlès et al., 2013; Barone and Cingano, 2011). Professional services in Estonia benefit from a number of exclusive rights, according to the OECD PMR indicator 2013. This is true for engineers, architects, accountants and lawyers. For instance, engineers have exclusive rights to conduct environmental assessments and monitoring of engineering projects. Unlike in many other countries, a range of audits can only be conducted by accountants. Also, some entry barriers for foreign service providers continue to exist. For instance, entry barriers are comparatively high in maritime transport services: nationality and residency conditions are imposed on registering ships and on equity and members of the board of directors for firms registered in Estonia (OECD, 2014a). Continued efforts are needed to identify and remove entry barriers that hold back competition and growth in services.

Figure 9. **Product market regulation**



Note: OECD refers to the simple average.
Source: OECD (2013), *Product Market Regulation Indicators*.

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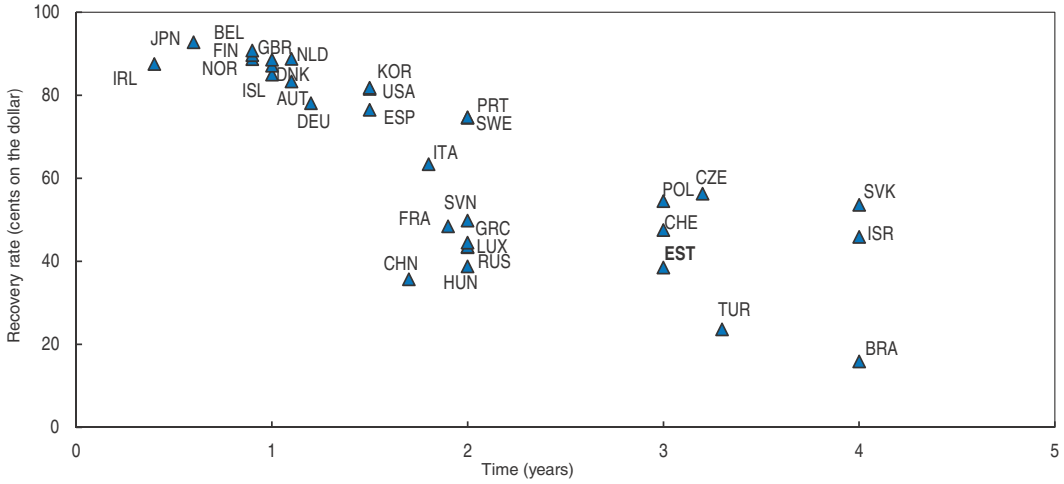
Continuing to review corporate bankruptcy procedures

Corporate bankruptcy laws which impose excessively high exit costs on entrepreneurs, including through long procedures, hold back efficient reallocation of resources, entrepreneurship and innovation. At the same time, insufficient safeguards for creditors may reduce the supply of credit (Andrews and Criscuolo, 2013; OECD, 2014b). In Estonia, corporate insolvency cases are not always resolved in a manner that contributes to an efficient allocation of resources (*Economic Survey of Estonia*, 2011). Insolvency procedures are long and recovery of creditor claims is relatively weak (Figure 10), despite progress made in the reform of bankruptcy legislation in 2011. Also, out-of-court expertise is almost never used because insolvent debtors must pay for experts but rarely have the funds to do so. Judges may not be able to draw on the necessary expertise to deal with complex cases (European Commission, 2013b; European Research Area Committee, 2012). Courts should be given the power to require the creditor to pay for experts, particularly in

Figure 10. **Bankruptcy procedures: recovery rates and duration**



Source: OECD (2013), *Entrepreneurship at a Glance*.

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more intricate corporate cases. A specialised bankruptcy court could improve judicial expertise, as suggested in previous Surveys.

Closing infrastructure gaps

Transport, communication and energy networks are key factors for internationalisation and economic growth. Estonia has made considerable progress in upgrading its infrastructure (World Economic Forum, 2013). EU transfers are high, amounting to 4% of GDP in 2012, and have mostly been spent on infrastructure projects (Eesti Pank, 2013).

There is scope to further develop infrastructure connections across borders. For instance, considerable benefits would result from implementing the planned connection to the European high-speed railway network without further delays (AECOM, 2011). The integration in European gas and, to some extent, electricity networks is still weak (IEA, 2013). Two electricity transmission links with Finland already operate. The government has developed further plans to expand connections to Nordic and Central European gas and electricity transmission infrastructure, which requires cooperation with EU countries in the region. Better integration of electricity and gas networks with the EU will enhance the diversity and security of supply, which is of increasing importance as the share of renewable energies rises and use of domestic oil shale in electricity generation needs to be scaled down in order to reduce CO_2 emissions (see below).

Some domestic infrastructure bottlenecks also remain, holding back private sector development and constraining mobility (National Audit Office of Estonia, 2013b). Funding has been primarily directed to large infrastructure projects, which can be financed with EU funds, leaving fewer funds for smaller rural projects (European Commission, 2012). There is evidence that some EU-funded projects have been designed too large (National Audit Office of Estonia, 2013a). This suggests that monitoring and decision making on how infrastructure projects are selected can be improved. There is also scope to improve intermodal connections, which would facilitate trade (European Commission, 2012).

Recommendations to raise productivity

- To strengthen knowledge transfers to domestic firms, promote applied research and improve collaboration with domestic and foreign institutions conducting applied research.
- Implement plans to expand access to European transport networks and energy supply facilities. Improve inter-modal connections.
- Shorten corporate insolvency procedures and improve their efficiency, for example by strengthening the use of expertise.

Reducing CO_2 emissions and energy consumption

Estonia has a target for greenhouse gas emissions in sectors outside the European emissions trading system (ETS) for 2020, which limits their growth to 11% from the level in 2005. While the government expects to meet this target on current policies, considerably more ambitious emission targets are expected beyond 2020 in the context of targets set by the European Union. Moreover, the economy is vulnerable to rising carbon prices in the European Union's emission trading system, as these prices are likely to rise when economic activity strengthens in Europe and stricter CO_2 emissions targets are applied.

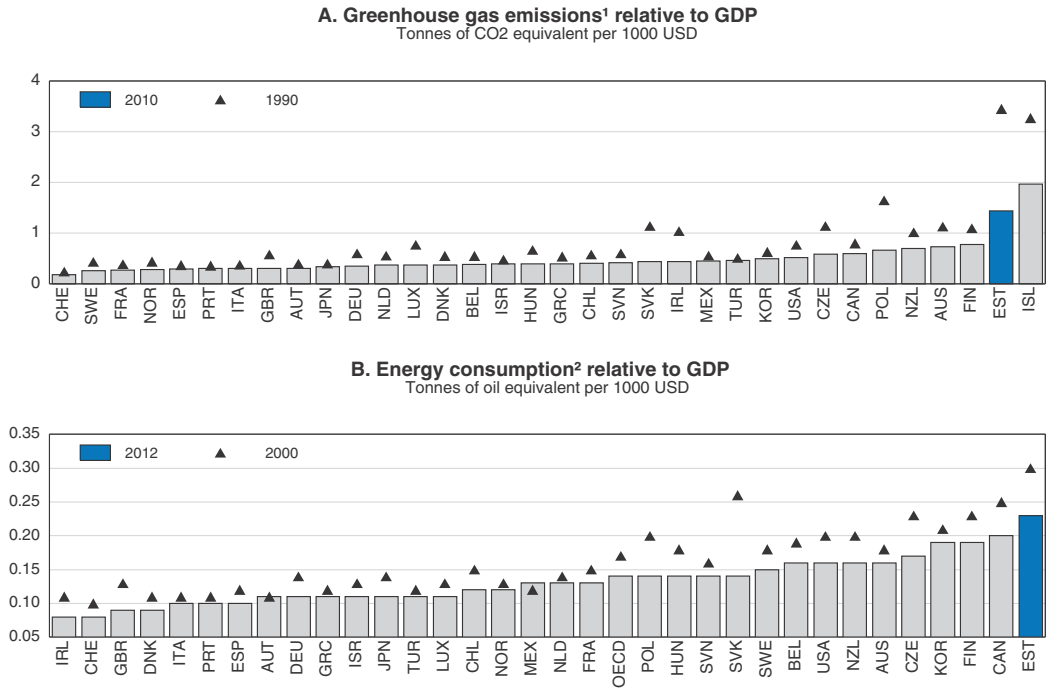
The efficient use of energy can help to raise competitiveness by reducing the economic costs of environmental damage and bolstering innovation (OECD, 2011a). Greenhouse gas emissions per unit of GDP are less than half the 1990 level but remain among the highest in the OECD (Figure 11). High emissions are largely due to the use of oil shale, which covers 70% of Estonian energy demand. Exploiting these reserves has contributed to meeting energy security objectives. However, the CO_2 intensity of oil shale combustion and energy consumption are high.

Taxation of the various energy sources should be harmonised according to their CO_2 emission content to provide effective price signals. Implicit tax rates per tonne of CO_2 are low on average in Estonia, and vary considerably across energy sources and uses. While taxes on natural gas and fuel oil have been raised, tax rates on fossil fuel use in heat and electricity generation, which are mostly based on oil shale, are much lower than on transport and this difference is larger than in many other OECD countries (OECD, 2013c). Moreover, oil shale used for heat production and electricity generation is taxed at lower rates than other fossil fuels (IEA, 2013; OECD, 2014c). The harmonisation of tax rates can be a gradual process, provided a firm commitment to future increases is made. Income support for low income households should take into account the impact of higher energy costs on poverty risks.

Processing oil shale into lighter oil products would reduce CO_2 emissions by two-thirds (IEA, 2013). Continued R&D investment is required to lower the carbon intensity of the Estonian economy, including by the private sector. Moreover, all environmental costs of oil shale use need to be internalised, in particular those due to the considerable waste amounts. It is welcome that the government is planning to revise taxes on oil-shale related activities which damage the local environment.

Estonia can reduce emissions by improving energy efficiency in district heating (European Commission, 2013b). Losses in heat networks, to which 70% of the population are connected, amount to 22% (IEA, 2013). Moreover, regulation of heat networks could

Figure 11. **Greenhouse gas emissions and energy consumption**



1. Data refer to gross direct emissions including emissions from land-use, land-use change and forestry (LULUCF). Removals/sequestration of greenhouse gas through LULUCF are deducted.
2. It refers to total primary energy supply and equals production plus net trade minus international bunkers plus or minus stock changes.

Source: OECD/IEA (2013), Emissions of CO_2, CH4, N2O, HFCs, PFCs and SF6, IEA CO_2 Emissions from Fuel Combustion Statistics Database and *OECD Economic Outlook*; and IEA (2013), *Energy Balances of OECD Countries*.

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provide stronger incentives to improve efficiency, for example by penalizing operators which fail to attain ambitious efficiency benchmarks. The government is planning to introduce regulation which will provide networks with incentives to reduce losses to 15% by 2017, which is welcome. The government has also proposed draft regulation that encourages the use of renewable biomass in district heating. However, customers with obligatory connections to district heating systems continue to be prevented from investing in economically justified high-efficiency alternatives. There is scope to raise incentives of households and building owners to invest in energy efficiency of buildings. For example, many district heating systems have inadequate or no metering. More steps need to be taken to improve energy efficiency in housing of low income households.

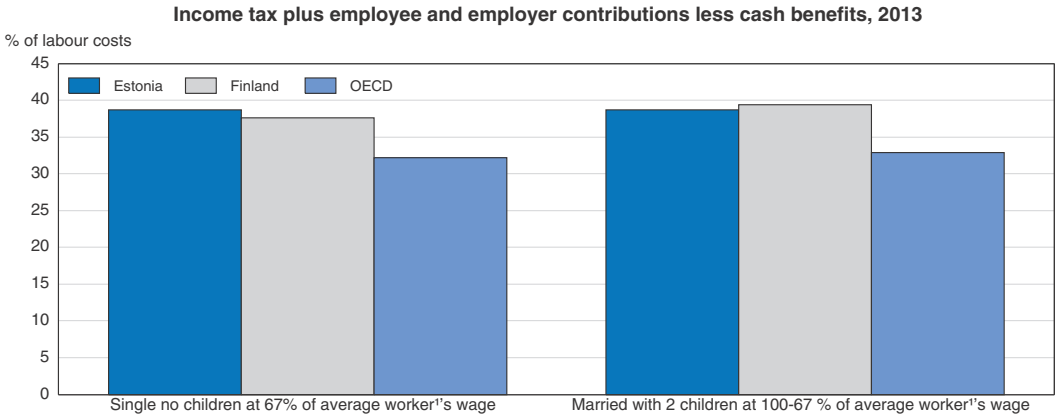
Recommendations to lower CO_2 emissions and energy consumption

- Gradually align and raise tax rates on energy sources according to their CO_2 emission content.
- Strengthen incentives for operators of heating networks to improve efficiency. Strengthen incentives to invest in energy efficiency of buildings.

Making the most of human capital

Estonia can strengthen labour utilisation by shifting the tax burden away from labour and by reducing the burden on workers in the pension system. Lowering the tax burden can raise labour utilisation and boost competitiveness, especially in the Estonian economy, where it can also influence decisions of emigrants and cross-border workers where to supply labour. Recent reductions in the labour tax wedge are welcome. However, the tax wedge on labour remains high in international comparison, especially for workers on low earnings (Figure 12), and is expected to remain so after the planned reductions in income tax and social security contributions and the increase of child benefits in 2015. The earnings gap between Estonia and Finland, where many Estonian emigrants and cross-border workers work, remains large. In 2013 take-home pay of a worker on average earnings in Estonia was less than a third of take-home pay in Finland.

Figure 12. **Labour tax wedges**



1. Working at full-time and receiving the average gross earnings.
Source: OECD (2014), *Taxing Wages 2014*.

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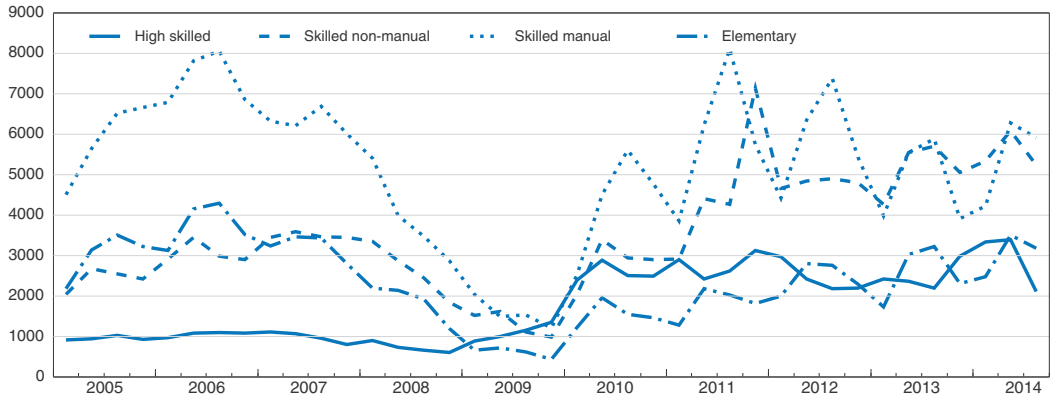
Measures to make the supply of skills more relevant for the labour market and make better use of workers' skills would also help raise labour utilisation, reducing skill mismatch and improving competitiveness. Moreover, better opportunities for young people to obtain qualifications demanded in the labour market could also make Estonia more attractive as a place to work for young people. Indeed, workers with good professional qualifications are less likely to seek employment abroad (Pungas et al., 2012) and are in high demand in Estonia. The number of vacant jobs for highly skilled workers and for skilled non-manual workers has risen well above pre-crisis levels (Figure 13). Women face barriers to make full use of their potential to contribute to output and well-being as they earn on average 30% less per hour than men.

Making the tax system more employment-friendly

While the contribution of personal income taxation to government revenues is low, reflecting the flat tax rate of 21%, social security contributions make up a large share (Table 2). Unlike personal income taxes, the burden of these contributions falls fully on labour income. By contrast, the taxation of real estate contributes relatively little to revenues, as only land (but not buildings) is taxed and the valuation of land does not reflect market

Figure 13. **Vacancies by skill level**



Source: Estonian Unemployment Insurance Fund (Eesti Töötukassa).

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Table 2. **Tax revenue composition, 2011**

Per cent

	Taxes on corporate income	Taxes on personal income	Social security and payroll	Property	Goods and services
Austria[1]	5.2	22.4	41.3	1.2	27.8
Belgium	6.6	28.3	32.2	7.3	24.7
Czech Republic	9.7	10.7	44.1	1.5	33.4
Denmark[1]	5.8	50.7	2.6	4.1	32.0
Estonia	**3.8**	**16.2**	**37.0**	**1.0**	**41.5**
Finland	6.3	29.3	28.9	2.6	32.6
France[1]	5.7	17.0	41.0	8.5	24.8
Germany	4.7	24.8	38.5	2.4	29.1
Ireland	8.9	32.1	17.4	6.8	34.3
Korea	15.5	14.8	23.8	11.4	31.4
Luxembourg	13.6	22.4	29.6	7.1	27.0
Netherlands	5.4	21.4	38.4	3.3	30.0
Norway	25.2	23.2	22.3	2.9	26.5
Poland	6.4	13.8	36.1	3.7	39.2
Portugal	9.8	18.6	28.2	3.2	39.2
Slovak Republic	8.4	8.8	42.7	1.4	37.2
Slovenia	4.6	15.4	40.6	1.6	37.4
Sweden	7.3	27.7	32.9	2.4	29.3
United Kingdom	8.6	28.2	18.7	11.6	32.3
United States	9.4	37.1	22.8	12.4	18.3
OECD-Total	**8.7**	**24.1**	**27.3**	**5.4**	**32.9**

1. The total tax revenue has been reduced by the amount of any capital transfer that represents uncollected taxes. The capital transfer has been allocated between tax headings in proportion to the reported tax revenue, except for Austria where it has been allocated to the social security contributions heading.

Source: OECD Tax Revenue Statistics.

values (OECD, 2012). Shifting some of the tax burden on labour to real estate tends to be supportive of GDP growth (Johansson et al., 2008). It could also help broaden the government's revenue base. Indeed, cross-border workers pay labour tax in Finland but mostly use public services in Estonia. The most effective way to reduce the labour tax wedge on low wage earners is to reduce their social security contributions, as these account for most of their tax wedge. Steps need to be taken to protect low-income owner occupiers, such

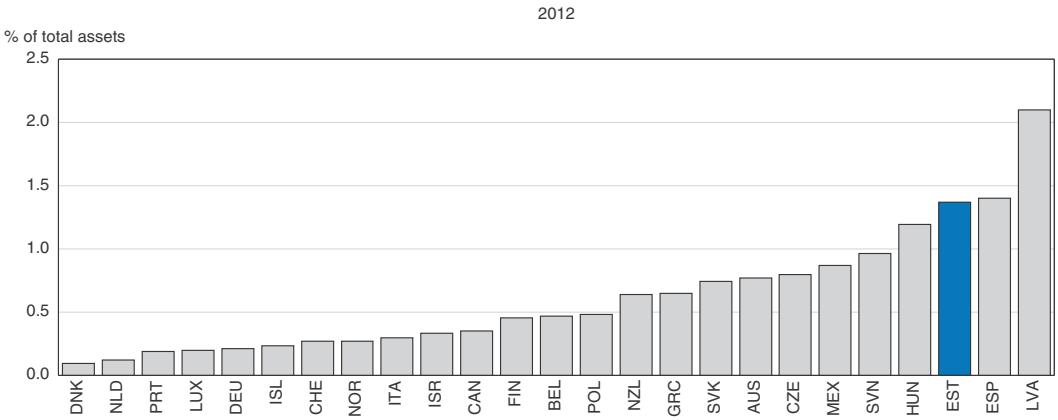
as pensioner households, who would not benefit from lower labour taxes. A basic allowance in residential real estate tax or means-tested income support would provide relief.

Employers generally have to pay a minimum lump-sum social security contribution for their workers' public pension and health insurance, although many exemptions apply. It is binding for workers on low earnings, discouraging part-time work. Indeed, Estonia has one of the lowest shares of part time work in the OECD, although this also reflects lower income levels. Evidence across OECD countries shows that removing barriers to part-time employment improves wellbeing, as part-timers benefit from better health and safety outcomes because of the improved control over working hours. Part-time work can also be a viable alternative to unemployment or inactivity (OECD, 2010). To avoid disincentives for part-time work, it would be preferable to eliminate the minimum lump-sum social security contribution.

Low returns in the second pillar pension system reduce the attractiveness of employment in Estonia

High fund managers' operating costs reduce returns in the compulsory private funded defined-contribution pension system. Costs in the pension funds born by workers are high in international comparison (Figure 14), which significantly reduces the capital workers accumulate in the fund. Since 2002, all young workers taking up employment in Estonia have been enrolled in the compulsory, private second pillar pension system, which complements the public defined-benefit system. Six per cent of workers' salaries flow into a fund chosen by each worker, of which 4 percentage points via employers' social security contributions. With lower costs, workers could pay lower contributions to attain the same pension level.

Figure 14. **Pension funds' operating expenses as a share of assets under management**



Source: OECD Global Pension Statistics and Finance Ministry of Estonia.

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To reduce costs and fees the government has taken regulatory action in recent years. To increase competition among funds, it has allowed workers to switch fund more often and has abolished issuance fees, although redemption fees, which are also paid when switching funds, are still allowed. To help workers make more informed choices, it has required the comprehensive disclosure of profits and costs and has introduced a

programme promoting financial literacy. However, there still is a need to ensure that information is disclosed in a standardized manner. The government intends to take the necessary steps. The government also plans to tighten caps on fees in the largest pension funds. It expects that these measures will lower the management fees paid by contributors to below 1% of assets by 2019.

Marketing expenditure accounts for half of pension funds' operating costs in Estonia. The government is concerned that marketing expenses cross-subsidise other activities of financial groups supplying pension funds. Empirical evidence suggests that marketing activities of fund managers with the purpose of attracting contributors to their funds has no benefit for workers. Such activities raise costs as well as suppliers' market power because they attach workers to pension funds for reasons unrelated to performance, especially low-wage contributors (Hastings et al., 2013). Contributors are likely to bear marketing costs even if such costs are not directly included in fees they pay, as market demand is perfectly inelastic.

Australia and Sweden have introduced a low-cost default-choice fund, in which contributors invest unless they take a deliberate decision to invest elsewhere. Costs in these funds can be kept low with passive investment strategies, which follow the composition of security indices, as well as by avoiding marketing expenses. Such a fund could also serve as a benchmark, helping to drive down costs in other funds. In Chile, all labour market entrants contribute to a low cost fund in their first five years. This fund is attributed in a tendering process to the supplier offering the lowest costs. The introduction of a centralised clearing house for purchases and sales of pension funds, such as in Sweden, also appears to have helped reduce costs. The Swedish authorities allow all pension fund suppliers operating outside the compulsory system to supply their funds in the compulsory system as well, provided they accept substantial rebates on the fees they charge within the compulsory system (Tapia and Yermo, 2008). This has allowed the compulsory private pension system to lower marketing costs as well as to operate without redemption fees, raising net returns to contributors substantially. If the government's efforts do not lower costs close to the levels observed in best-performing countries over the next few years, it should undertake a more fundamental reform of the compulsory private pension system, for example, along the lines of the Swedish system, including the introduction of a low-cost default fund.

In view of the evidence suggesting that competition among pension funds in compulsory systems is not effective enough, corporate governance practices in pension fund management should also have a role to play in ensuring they act in contributors' interests. Board members must represent the interest of their shareholders which can be to the detriment of contributors. There is scope to improve representation of contributors' interests in pension funds' corporate governance. Estonia has required by law that the pension fund management companies must act in the interest of contributors. In addition, introducing a position for a board member who is independent of owners' interests could strengthen representation of contributors' interests. It is welcome that the Estonian government is considering steps in this regard. Some countries, such as Australia, have gone further and have required all board members to represent contributors' interests and to be independent of shareholders.

Containing spending in public pensions can help limit social security contributions

The public pension system, which is mostly funded from social security contributions, includes early pension schemes. About 40% of men and 30% of women receive public

pensions before they attain the legal retirement age (Praxis Center for Policy Studies, 2011). The bulk are disability pensions as well as special early pension schemes for workers in specific occupations or sectors. The government plans to reform these early pension schemes. In some of the occupational and sectoral early pension schemes workers are deemed to be subject to higher health risks. However, in most cases, health risks appear not to be higher (National Audit Office, 2014). The impact on labour market participation of these early pension schemes has been limited because pension receipt is compatible with work. However, disability pensions and early occupational pensions account for about a quarter of public pension spending, which is mostly funded by social security contributions (National Audit Office of Estonia, 2014). Moreover, as the 2012 *Economic Survey* (OECD, 2012) has pointed out, disability benefit recipients do not have access to activation measures, lowering their employability when they can return to work.

Parliament is considering a reform of disability benefits to increase access to activation measures and strengthen the assessment of the capacity to work (National Audit Office, 2014). The planned reform is welcome and should be implemented. The disability pension regime has, despite its shortcomings, provided substantial poverty relief in the past. It is therefore also important that reforms limiting access to disability pensions are accompanied by steps to raise means-tested minimum income support for the unemployed, as pointed out in the 2012 *Economic Survey*. In addition, phasing out the occupational and sectoral early pension regimes would lower pension spending, allowing social security contributions to be reduced.

Another welcome development, the government is considering introducing work accident and occupational sickness insurance. Such insurance, coupled with experience-rated employer contributions, is key for employers to have adequate incentives to prevent deterioration of health outcomes at work. As the 2012 *Economic Survey* (OECD, 2012) has pointed out, work-related accidents and diseases constitute an important health risk, particularly for those in low-skill occupations.

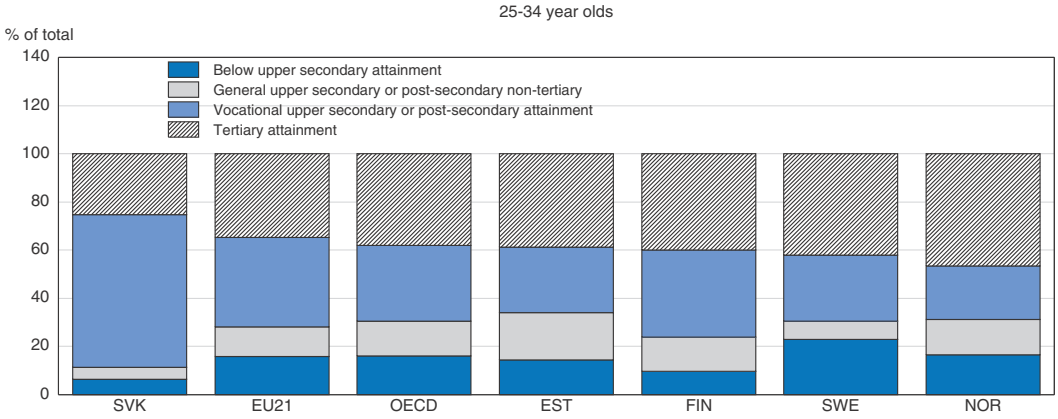
Strengthening the supply of marketable skills

The pay gap between men and women is unusually large in comparison to other European economies. The difference does not diminish if wages of men and women with a similar level of education, field of study and experience are compared (Anspal and Rõõm, 2007). Differences in gender-specific choice of occupation and sector of activity explain one third of the gap. Women's career prospects compare particularly unfavourably in managerial posts. Low availability of childcare facilities for children aged up to 1½ years, and in some municipalities for children aged up to 3 years, as well as low participation of men in providing childcare within the family contribute to inequality. Parental leave entitlements are generous in Estonia, to the point of creating risks for labour market prospects for the parent taking the leave. It is almost only taken up by women. To reduce the gender pay gap, the Estonian Government launched an action plan 2012-2015. The action plan includes steps to improve the implementation of gender equality legislation; improve reconciliation of work, family and private life; encourage gender mainstreaming, especially in education; reduce gender segregation in the labour market; and to review the organizational practices and pay systems in the public sector.

The share of youth leaving the education system without an upper secondary degree has declined from 14% in 2009 to 10% in 2013. Youth who have not been in education and employment for 4 months receive an education, training or employment offer from the

government. Nonetheless, many young people do not have qualifications which prepare for labour market entry. This includes youth who obtain academic upper secondary degrees but do not proceed to tertiary academic education (Figure 15). Indeed, evidence across European economies shows that youth leaving the labour market at the level of upper secondary education obtain better labour market outcomes if they follow vocational education courses (ECDVT, 2013) in terms of employment rates, stability of employment, initial salaries and an improved match of the supply and demand of skills.

Figure 15. **Highest educational attainment of young adults**



Source: OECD (2013), *Education at a Glance 2013*.

StatLink http://dx.doi.org/10.1787/888933180148

Labour market outcomes of vocational graduates compare less favourably than elsewhere in Europe (ECDVT, 2013). Hence, overall, employment rates of youth who have graduated from upper secondary degrees are relatively weak whereas they are strong for tertiary graduates (Table 3). This indicates that the labour market relevance of vocational education needs to improve. Evidence across European OECD economies shows that labour market outcomes of vocational graduates improve if substantial work-based training is built into programmes (ECDVT, 2013). The Estonian government has taken substantial measures to make vocational education more relevant for the labour market. It has set up a task force to anticipate future skills demand. The task force is also required to propose institutional reforms to improve cooperation of stakeholders for the monitoring of employment needs. The government has supported upgrading the technical equipment of vocational schools. It has also adopted a life-long learning strategy. However, workplace-based education remains modest. Most students in vocational education only complete a 4-6 months internship. Only 2% enrol in an apprenticeship. Apprenticeships help reduce skill mismatch (OECD, 2014d).

A constraint to the development of apprenticeships appears to be the small size of many firms. To overcome this, Norway has developed a system in which firms share apprenticeship places and which helps to inform schools and their pupils about local firms' training needs (Kuczera et al., 2008). Local links between firms and schools can also be fostered by allowing practitioners to teach part-time in schools. Indeed, local partnerships between training providers and employers encourage training provision which is sensitive to labour market needs (OECD, 2014d and references therein). Local

Table 3. **Employment rates of young people up to 3 years after graduation by educational attainment level**

Per cent, 15-34 year olds, 2013

	Upper secondary and post-secondary non-tertiary education (levels 3 and 4)	First and second stage of tertiary education (levels 5 and 6)
Euro area (13 countries)	66.7	79.0
Czech Republic	73.9	85.6
Denmark	78.6	84.3
Estonia	**65.8**	**85.4**
Latvia	70.1	84.1
Poland	61.7	81.3
Slovenia	62.0	79.3
Slovakia	61.4	76.7
Finland	75.2	85.7
Sweden	78.1	89.8
United Kingdom	72.3	87.6

Source: Eurostat.

flexibility in curricula provides a powerful support for local provider-employer partnerships. For example, in Germany each individual vocational school has some flexibility in its curriculum to adapt it to local needs.

A barrier to the development of apprenticeships is the requirement to pay the national minimum wage to trainees. At 40% of the median wage, the minimum wage is likely to be too high for training purposes in many cases. However, since trainees may not be able to cover living expenses if they are paid substantially less than the minimum wage, government financial support is needed. However, as the previous *Economic Survey* of Estonia has pointed out, there also is a need to monitor the quality of work practice schemes and to develop quality assurance for apprenticeships as well as to ensure time for school-based instruction of apprentices is sufficient (OECD, 2012).

Recommendations to make the most of human capital

- Further reduce the taxation of labour earnings, in particular of low earnings. Raise more revenues from the taxation of real estate by removing exemptions and by evaluating property according to market values.
- In the compulsory private pension system, reduce costs born by workers, in particular marketing expenses. Improve representation of contributors' interests in pension fund governance.
- In the public pension system, phase out special occupational and sectoral pension regimes. Reform disability pensions as planned, while expanding the safety net for unemployed workers.
- Encourage equal pay between women and men. Require both parents to take up parental leave in order for parents to qualify for the full leave entitlement. Identify and address barriers to female entrepreneurship. Consider requiring firms to identify and address pay inequalities between men and women.
- Introduce a tax-free lower minimum wage for apprenticeships, improve financial support for students in vocational education and strengthen collaboration of businesses and schools at the local level.

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ANNEX

Progress in main structural reforms

This annex reviews action taken on recommendations from previous Surveys. They cover the following areas: fiscal policy, labour market policies, education policies, health policies, public sector efficiency, globalisation, financial sector and green growth. Each recommendation is followed by a note of actions taken since the October 2012 Survey. Recommendations that are new in this Survey are listed in the relevant chapters.

Improve the fiscal framework

Recommendations from previous surveys	Action taken since October 2012 survey
Avoid procyclical fiscal policy. Introduce multi-year expenditure ceilings, covering also tax expenditure and local level spending. Be prepared to implement discretionary fiscal policy measures to address long-lasting booms associated with accumulation of imbalances that threaten macroeconomic stability. Ensure sufficient independence of the newly established fiscal institution, while leveraging the analytical capacity of existing institutions.	The new budget law requires the general government budget to be in structural balance or in surplus. The rule is consistent with EU rules, including the fiscal compact of the Treaty on Stability, Coordination and Governance in the Economic and Monetary Union.
Augment the work on estimates of the structural balance. Publish more detailed information about the business cycle and the underlying fiscal position, reflecting associated uncertainties.	No action taken.
Task the new independent fiscal institution with assessing the cyclical indicators; monitoring the budget outcomes, and, when appropriate, recommending discretionary policy measures.	An independent fiscal council was implemented in 2014.
The high labour tax wedge should be reduced by increasing the share of less distortionary taxes, such as property and environmental taxes and excise duties and reducing tax expenditures. Reductions in direct taxes should be tilted towards low-earners.	The government increased the income tax-free allowance from EUR 145 to EUR 154 in 2014 and plans to lower the income tax rate from 21% to 20% in 2015. The unemployment insurance contribution rate will be lowered from 3.2% to 2.4% in 2015. However, taxation of the land underneath detached houses was abolished in 2013.
Phase out exemptions and preferential rates and further strengthen VAT administration. Apply the standard rate to all goods and services.	Measures are planned to reduce VAT fraud.
Consider introducing a tax on the use and the registration of motor vehicles differentiated by air pollution and energy consumption characteristics.	No action taken.
Align the tax assessment of land value more closely with the market value by regularly updating assessments and enlarging the tax base to include buildings.	No action taken.
Consider phasing out the tax deductibility of mortgages in the medium term to avoid further amplifying the cycles in the housing markets. Consider phasing out the loan guarantee programme to reduce distortions in housing investment.	No action taken.
Refocus the social protection system on activation and return to work, underpinned with stronger inter-agency co-operation. Swiftly conclude the analysis phase of preparing internet-based e-services. All working-age people with some capacity to work should become clients of local unemployment insurance fund offices and be encouraged to participate in job search and activation activities.	The parliament is considering a reform of disability benefits to increase access to activation measures and strengthen the assessment of the capacity to work. The planned reform also foresees to tie the receipt of benefits to the obligation to use activation services.
Continue the reform of the disability pension system by giving employers a stronger role in prevention and rehabilitation.	The planned reform of disability benefits foresees provision of rehabilitation services as early as possible.
The role of subsistence benefits should be reduced and municipalities should focus on addressing other problems such as social exclusion. Unemployment assistance should become the main source of basic income support and be subject to tight job search and training conditionality.	No action taken.
Family support should be more oriented towards better reconciling the obligations from parenthood and labour force participation, including through better provision of childcare services.	The government is planning to address local gaps in the provision of formal childcare with structural funds from the European Union.

Improve labour market performance

Recommendations from previous surveys	Action taken since October 2012 survey
Continue to increase spending on active labour market policy, and better target spending. Ensure stronger co-operation among local governments, education institutions and the Unemployment Insurance Fund.	Spending on ALMPs has increased significantly in recent years. New measures targeted at long-term unemployed have been introduced, including for job counselling and training. The government is planning to raise spending in the public employment service further until 2020, introducing new measures co-funded by the European Union. Support targeted at youth will include wage-subsidies and training
Increase the effectiveness of activation programmes by allowing public procurement to take greater account of the quality of training courses, encouraging greater involvement of employers, and by targeting hiring subsidies to firms committed to net hiring.	The programmes are monitored and qualification criteria set for service providers. Qualification criteria are defined for each public procurement process individually. Information and training events as well as meetings with employers are regularly organised.
Develop electronic registration of the initial action plan in the first month of unemployment. Delay the face-to-face part of the Individual Action Plan to after 3 months for most newly unemployed. Meanwhile devote more resources to at-risk groups from the first month.	Online application (for registration, benefit claims and making appointments with employment advisors) has been available since June 2014.
Monitor the quality of work practice (internship) schemes and increase employers' compensation for the cost of the supervision and instruction. Measures to promote workplace training, such as subsidies, should be more targeted.	The quality of work practice is reviewed in regular meetings with employers. Cooperation agreements have been initiated with larger employers covering also on-the job-training offers for PES clients.
Ensure that the PES internet portal is used by employers to regularly notify current vacancies and skills shortages. To this end, provide PES consultant assistance to employers.	Individual employers are contacted and meetings are organised with employers at regional and local level by the European Union Integration Fund (EUIF). The EUIF has also identified priority areas for training in economic sectors with growth potential. Task forces have been created to determine training needs, diagnose quality issues and identify other training policy issues.
Prioritise training funds for language training for ethnic non-Estonians.	Funds from the European Union are used to improve opportunities to learn and practice Estonian.

Make the education system more efficient

Recommendations from previous surveys	Action taken since October 2012 survey
Ensure that the new means-tested support to tertiary education students is sufficient, and expand the student loan scheme so that students with weaker socio-economic background can stop working during study.	The new support scheme, launched in 2013, will be regularly evaluated. Tuition fees for higher education have been abolished between 2013 and 2014.
Strengthen student counselling by providing high quality information about labour market needs on every educational level.	The government's Life-Long Learning Strategy 2014-2020 envisages improving information and counselling services especially for students in the final stage of basic education.
Consider establishing an obligation to offer learning opportunities through formal education, workplace training or apprenticeships until the age of 18 for youth neither in education, employment or training.	The EU youth guarantee scheme has been implemented. Youth who have not been in education and employment for 4 months receive an education, training or employment offer from the government.
Further strengthen co-operation with employers and consider giving subsidies for offering apprenticeship places for youth in vocational education. Increase the permeability between different educational levels.	The government plans to substantially increase funding of apprenticeships.
Develop quality assurance for apprenticeship places and ensure that the time for instruction is sufficient relative to productive work.	No action taken.
Increase the financial incentives of employers to invest in lifelong learning. Target public co-financing toward low educated and older workers, as well as toward employees in SMEs.	No action taken.
Make lifelong learning more attractive for adults by ensuring that training leads to the acquisition of qualification and by providing information about the return from different programmes.	No action taken.

Make health care more efficient

Recommendations from previous surveys	Action taken since October 2012 survey
An update of the hospital network plan for active treatment should reflect changing healthcare consumption patterns of the population.	The government approved the National Health Plan until 2020 in 2014. It strengthens collaboration between regional and county hospitals.
Ensure quality of care and consider developing a wider system of quality indicators, also through international collaboration on establishing benchmarks and specialised care.	The National Health Plan until 2020 focuses on results and quality of health care institutions. Indicators for comparing the results of different hospitals and doctors will be established. 97% of general practitioners have joined the general practitioners quality system.
Increase the role and importance of primary care by boosting the responsibilities of family doctors.	The National Health Plan until 2020 will provide additional financing for family doctors who have two nurses in their team. This will strengthen the gate-keeping role of family doctors. The plan also envisages a quality bonus system.
Improve health outcomes and reduce health outcome gaps by strengthening health spending efficiency, promoting healthy lifestyles and improving access for disadvantaged groups.	The National Health Plan until 2020 sets targets for raising the average age to which citizens are living in good health as well as average life expectancy.
Introduce a means tested cap on out-of-pocket payments to improve the situation of low income households and protect the chronically ill. Alternatively, this issue could be addressed through existing benefits such as the subsistence minimum. Ensure adequate accessibility of healthcare, in particular dental care, for financially distressed households.	From January 2015 onwards, the Estonian Health Insurance Fund reimburses 50% of patients' expenditure on reimbursable medicines exceeding 300 euros per year, and 90% for patients whose expenditure exceeds 500 euros per year.
Continue with the promotion of generics and least expensive drugs both among patients as well as doctors: monitor prescribing and dispensing patterns and investigate and sanction those that deviate excessively from norms.	Doctors are obliged to prescribe, in general, medicines by generic name and pharmacists are obliged to offer patients the cheapest option. Doctors and pharmacists compliance is controlled by an electronic prescription database.

Enhance public sector efficiency

Recommendations from previous surveys	Action taken since October 2012 survey
Reform local governments either by merging or requiring greater co-operation, also over a broad territorial area. Consider imposing minimum population requirements.	The government initiated a local government reform in 2014, including funding and the assignment of responsibilities. An evaluation of the funding and implementation of spending responsibilities (through inter-municipal cooperation, municipal associations, State government offices) is underway. Local governments have established formal cooperation in public transport, waste management, water and sewage for example. These initiatives have generally been supported with central government funding.
Develop further indicators and monitor quality standards of public service provision to help to build up an argument for consolidation of local government, especially for those municipalities that would be underperforming.	The planned government reform will facilitate the establishment of joint-authorities for implementing local government tasks.
Strengthen the revenue raising possibilities of local municipalities by giving them more autonomy over setting the land tax. One possibility for enlarging revenues from this tax is to enlarge the tax base to include buildings.	No action taken.
Consider tightening the equalisation scheme, for example by looking at real and normative costs set uniformly by the central government. Consider reviewing the existing earmarking and block grants to evade overlaps.	Ministry of Finance is measuring the local governments` real costs of providing public services. The results will be used to further develop the equalisation scheme.

Make the most of globalisation

Recommendations from previous surveys	Action taken since October 2012 survey
Contain the threats to competition emanating from public monopolies and local authority sectors.	No action taken.
Do not adhere to numerical targets for R&D spending; projects should be pursued according to their intrinsic worth.	A set of qualitative and quantitative indicators has been developed to measure the effectiveness of policies aimed at R&D, including measuring behavioural changes of actors.
Consider introducing tax incentives for R&D.	No action taken.
Rebalance public resources for innovation support to prepare Estonian firms to export and make sure the necessary services for small exporting firms are available at reasonable costs.	Increasing exports is one of the main pillars of the new "Entrepreneurial Growth Strategy 2020". Export advice is offered by Enterprise Estonia at a reasonable price.
Switch resources to the promotion of non-high tech areas which can benefit from high-tech inputs.	The "Entrepreneurial Growth Strategy 2020" places a strong focus on increasing the added-value of non-high tech areas through a new policy instrument – "tailor-made support for enterprises". The policy instrument aims at companies with significant growth potential. One of the smart specialisation growth areas is "ICT supporting other sectors", which targets growth in non-high tech sectors with the help of ICT.

Stability of the financial sector

Recommendations from previous surveys	Action taken since October 2012 survey
Mitigate credit cycles. Calibrate and prepare to implement macroprudential tools, starting from countercyclical capital buffers. In regard with cross-border co-operation increase efforts to effectively implement a wider set of tools.	The amendments to the credit institutions act that transposed CRD IV requirements into the Estonian legislation came into force in May 2014. A systemic risk common equity capital buffer of 2% of risk-weighted assets on large banks is effective as of August 2014. Eesti Pank also started to develop an analytical framework to assess countercyclical capital buffer requirements. It also plans to introduce in 2015 three new macro-prudential instruments targeted to borrowers of housing loans: Caps on loan-to-value and debt service-to-income ratios as well as a maximum maturity for loans.
Further enhance cross-border supervisory co-operation, notably by developing joint stress tests and crisis management exercises in the Nordic-Baltic Stability Group. Widen the scope for the role of out-of-court restructuring. Actively promote financial literacy, including awareness about risks of variable interest borrowing.	The Debt Restructuring and Debt Protection Act has been amended in January 2014. The Financial Supervision Authority Act was amended in July 2013. The aim was to promote the population's awareness of the financial services and financial products. Several multilateral meetings between the representatives of Scandinavian and Baltic supervisory authorities were held in 2013 and 2014.
Introduce a specialist bankruptcy court to improve the expertise applied to debt restructuring and bankruptcy proceedings; ensure that the court has the capacity to determine whether company directors have met their obligations to petition for bankruptcy. Develop as a stop-gap measure quantitative indicators to determine whether these obligations have been met.	No action taken.
Give the existing court the power to require the creditor to pay for experts, particularly in more intricate corporate cases.	No action taken.
Develop a more detailed set of economic and financial principles for judges to take account of when deciding whether a debt restructuring plan for individuals should be approved or not.	No action taken.

Climate change mitigation and green growth

Recommendations from previous surveys	Action taken since October 2012 survey
Strengthen policies to reduce energy and resource intensiveness through appropriate pricing and setting better incentives for energy saving programmes.	A New Energy Sector Development Plan as well as an Oil Shale Development Plan are currently being developed. The government is also planning to introduce regulation in district heating, which will provide networks with incentives to reduce losses from 22% currently to 15% by 2017.
Continue with ecological tax reform pursuing both environmental and revenue-raising objectives.	A stepwise increase in the excise duty payable on oil shale used for the production of heat is envisaged over the next five years.

Thematic chapters

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Chapter 1

Raising productivity and benefitting more from openness

Estonia can revitalise productivity growth and reap more benefits from its openness. Productivity is relatively low in manufacturing and in large firms, as the manufacturing sector focuses on low-technology goods exports to only a small number of destinations. The economic impact of the Estonian R&D system still appears to be limited, also because of a lack of knowledge transfer. Building on Estonia's favourable business environment, productivity growth could be raised by promoting smart specialisation and innovation; removing remaining barriers to entrepreneurship and competition; ensuring access to finance for SMEs; upgrading infrastructure; and improving energy efficiency.

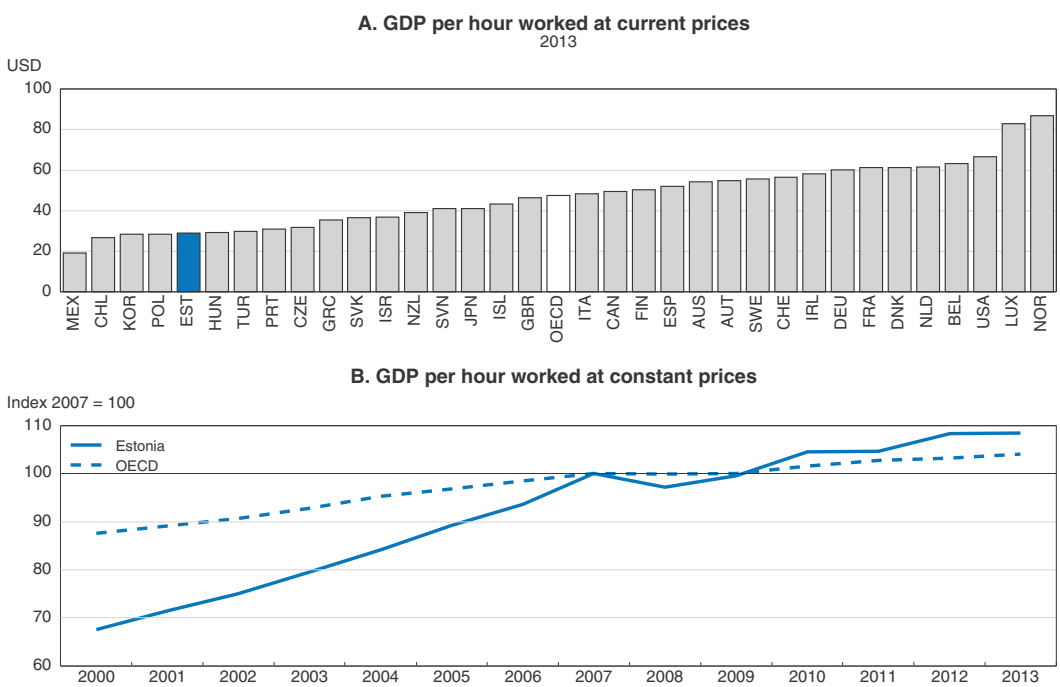
The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law

Modest productivity growth slows income convergence

Estonia has a large productivity catch-up potential. Although GDP per hour worked and incomes are considerably lower than in most OECD countries, labour productivity growth has slowed down since 2008 and is now in line with average productivity growth across OECD countries (Figure 1.1). Measuring productivity at the sectoral level is difficult. OECD data suggest that productivity has weakened in the services (Figure 1.2) more than in other OECD countries and is broad-based, extending to professional, financial and information services and, to some extent, wholesale and retail trade (OECD, 2013c). Labour productivity growth in manufacturing has held up, but over the past 15 years, productivity gains have been smaller than in some other countries with similar or higher income levels, such as the Slovak or Czech Republics. In construction, productivity growth increased, mainly because employment declined massively.

Productivity levels are especially low among big firms (Figure 1.3). Many of them are manufacturing firms, which often focus on low technology exports in a small number of varieties that are easy to imitate. Also, their innovation activity is limited (Benkovskis and Rimgailaite, 2011; *Economic Survey of Estonia* 2011, OECD, 2011f). Productivity and R&D

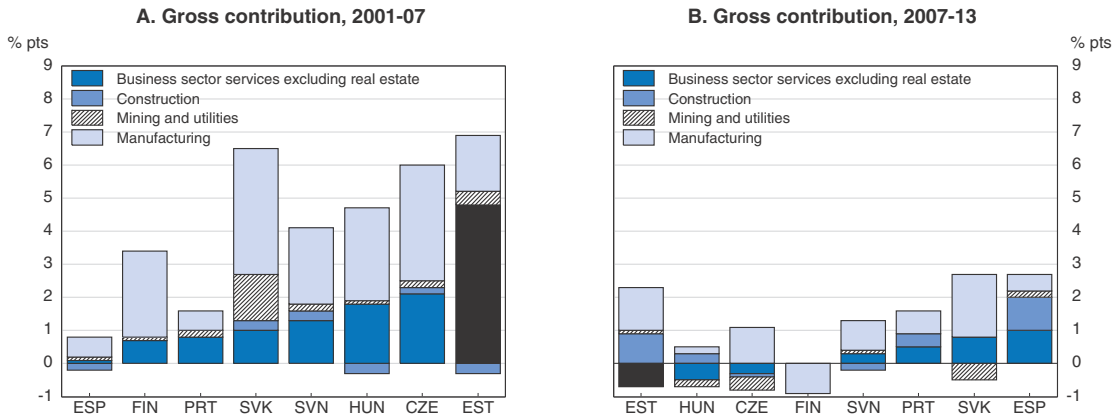
Figure 1.1. **Evolution of productivity**



Source: OECD Productivity Database.

StatLink http://dx.doi.org/10.1787/888933180159

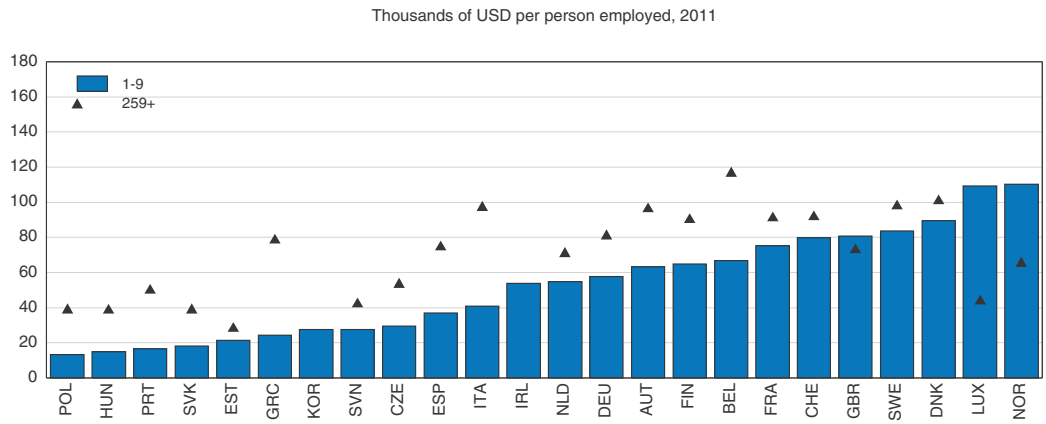
Figure 1.2. **Contribution to growth in real business sector value added per hour worked**



Source: OECD Productivity Database.

StatLink http://dx.doi.org/10.1787/888933180161

Figure 1.3. **Labour productivity levels by enterprise size, total economy**



Source: OECD (2014), *Entrepreneurship at a Glance*.

StatLink http://dx.doi.org/10.1787/888933180175

activity is also fairly low among small firms (OECD, 2013b). Small firms are internationally oriented, which may open the door to higher productivity in the future. The share of fast growing innovative firms is the 9th highest in a sample of 18 OECD countries (OECD, 2014d).

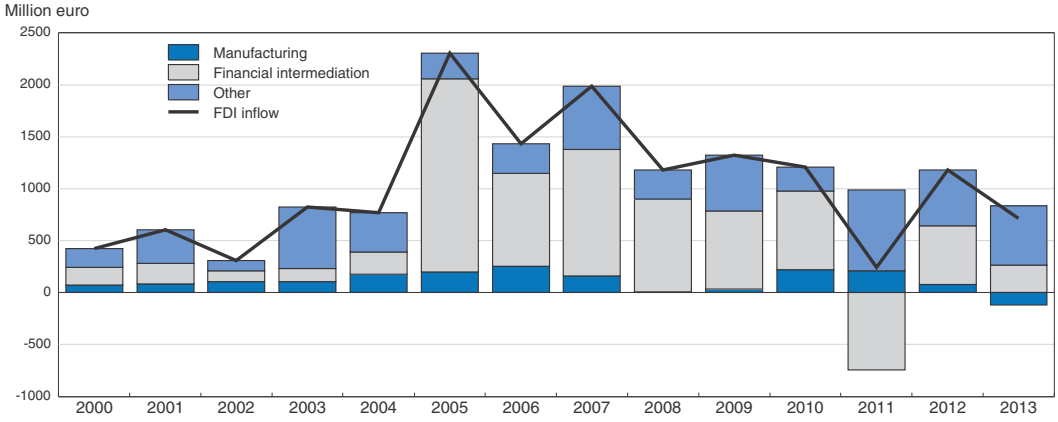
Openness and high value added foreign direct investment boost productivity and innovation

For a small economy, openness is a key source of income convergence. It provides small fast growing firms with access to foreign markets and is a source of knowledge transfer (Andrews and Westmore, 2014). Estonia is one of the most open economies in the world, with exports and imports each about 90% of GDP. However, exports are concentrated in low and medium technological goods and appear to be comparatively un-diversified geographically (*Economic Survey of Estonia* 2012, OECD, 2012c). Only 2% of enterprises have

more than 14 export destinations. Evidence suggests that Estonian firms expanding their export activity are often more productive than those keeping their export mix unchanged or decreasing its breadth (Masso and Vahter, 2014).

Foreign direct investment (FDI) inflows in high value added activities entail considerable long-term benefits (Vahter, 2011). FDI entails a considerable potential for transfer of knowledge, especially for a small economy with a large productivity gap, such as Estonia (OECD, 2008b). Estonia's inward FDI stock is large, accounting for roughly 90% of GDP in 2012. However, a large share of inward FDI flows is directed towards financial intermediation. Inward FDI directed towards manufacturing is low (Figure 1.4) and concentrated on low-value added manufacturing goods (Masso et al., 2010). This is also reflected in a low participation in global value chains compared to other small open economies (OECD, 2013a).

Figure 1.4. **Foreign direct investment inflows by sector**



Source: Estonian Central Bank.

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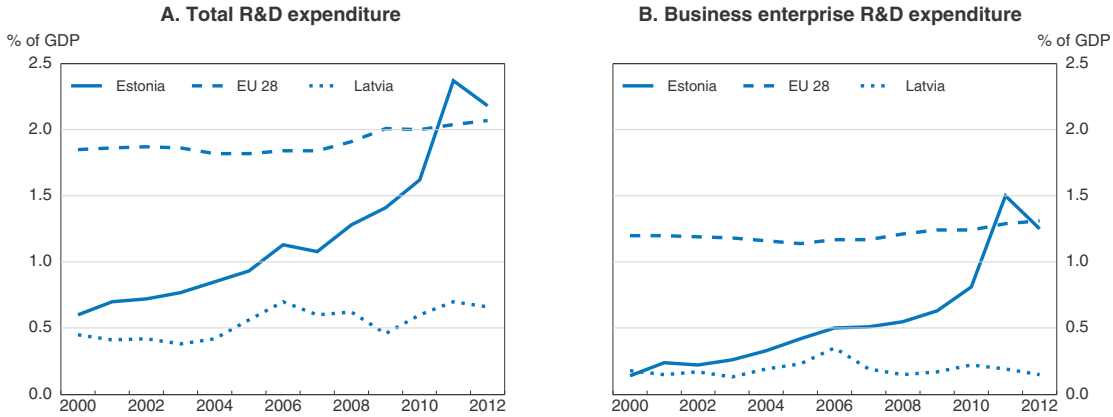
Structural reforms can help to reap more benefits from Estonia's openness and strengthen growth. Continued efforts are needed to promote smart specialisation and innovation; remove remaining barriers to entrepreneurship and competition; ensure access to finance for SMEs; upgrade infrastructure; and raise energy efficiency, as discussed below.

Reaping more benefits from innovation

Estonia scores well on innovation activity, low productivity growth notwithstanding. R&D spending in Estonia has increased considerably in recent years, to 2.2% of GDP in 2012 (Figure 1.5). This increase may well result in improved productivity and competitiveness in the future (Andrews and Westmore, 2014). However, the remarkable growth in R&D in 2010 and 2011 was partly the result of considerable one-off investments in the oil shale industry. R&D spending by the government, non-profit organisations and, to some extent, businesses increased in 2012 (Statistics Estonia, 2013). Services are active in business R&D and the share of young enterprises is comparatively large (OECD, 2012b; OECD, 2014d), especially in the ICT sector where Estonia has developed a marked comparative advantage (OECD, 2013b; OECD, 2012a). Manufacturing is characterised by relatively low R&D spending

Figure 1.5. **R&D spending**



Source: Eurostat.

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and a low share of young enterprises (OECD, 2014d). This reflects the focus of manufacturing on low technological goods in a small number of varieties that are easy to imitate and are most often unprotected by patents (Benkovskis and Rimgailaite, 2011; *Economic Survey* of Estonia 2012, OECD, 2012c).

The economic impact of the Estonian R&D system appears to have been limited so far (European Commission, 2013d; National Audit Office of Estonia, 2013a; National Audit Office of Estonia, 2014a), which has prompted reforms by the government. Exports of medium and high-tech products; licence and patent revenues from selling technologies; and sales of new products are low (European Commission, 2014a; OECD, 2014c). One reason is that R&D policies have been fragmented and have duplicated support (European Commission, 2010; European Research Area Committee, 2012).

Estonia's smart specialisation strategy is at the core of its efforts to reap more benefits from innovation, and thereby revitalise convergence of GDP per capita and productivity (Box 1.1). The strategy identifies ICT, healthcare and resource efficiency as having the

Box 1.1. **Smart specialisation and its implementation in Estonia**

Smart specialisation is a policy framework combining industrial, educational and innovation policies (including their design, implementation and evaluation) to promote new growth opportunities. Countries or regions should identify and select a limited number of priority areas for knowledge-based investments. Thereby they should account for: regions' comparative advantages; effective use of public resources; creating synergies between public and private innovation efforts; and evidence-based monitoring and evaluation. Recognising the lack of information at the aggregate level, smart specialisation rests on an interactive bottom-up approach involving all stakeholders, including the private sector, scientists and all levels of government. This process defined as "entrepreneurial discovery" distinguishes smart specialisation from traditional industrial and innovation policies (OECD, 2013f). Specialising smart, by allowing resources to allocate flexibly towards their most effective use, is becoming even more important in a fast changing globalised world (Johansson and Olaberria, 2014; Johansson and Nicoletti, 2014).

Box 1.1. **Smart specialisation and its implementation in Estonia** *(cont.)*

Estonia has developed its own smart specialisation strategy. The *Estonian Entrepreneurship Growth Strategy 2014-20* is Estonia's third strategy on research and development and innovation (MER/MEAC, 2014; Ministry of Economic Affairs and Communications, 2013). The previous strategies focused primarily on developing Estonia's capability in research, development and innovation. Instead, the new strategy aims at enhancing the impact of research, development and innovation on economic growth. The development of priorities is supported by a regional development strategy determining regional sectors with growth potential. In numerical terms, the aim is to increase private R&D spending to 2% of GDP, raising the share of Estonia's exports in world trade to 0.11% and labour productivity to 80% of the EU average by 2020. The strategy lists three areas where co-operation between businesses and researchers has the greatest potential to create added value: information and communication technology; healthcare technologies and services; and more efficient use of resources.

Besides ministries and different levels of government, the following institutions are involved in implementing the smart specialisation strategy:

- Estonian Development Fund – carries out development surveillance necessary for long-term policy making and direct investment of venture capital until the launch of the national venture capital fund.
- KredEx Foundation – offers different financial instruments, including loans, credit insurance and state guarantees. It will soon start to manage a venture capital fund of funds.
- KredEx Credit Insurance Foundation – a state owned insurance company that helps Estonian enterprises to mitigate risks related to exports and domestic sales.
- Enterprise Estonia – one of the largest institutions within the national support system for entrepreneurship, providing financial assistance, counselling, cooperation opportunities and training for entrepreneurs, research institutions, the public and non-profit sectors.
- Innovation and Enterprise Policy Committee – advises the Ministry of Economic Affairs and Communications on the development and implementation of policies.

greatest potential to create added value in the future in Estonia. For instance, in the ICT sector there is scope to diversify from the provision of services more towards the development of manufacturing goods, though that would require higher upfront investment (Estonian Development Fund, 2013). Smart specialisation is considered a useful regional policy framework for innovation driven growth. However, in Estonia, there seems to be scope to implement the smart specialisation strategy more effectively and raise its economic impact by enhancing framework conditions. Also, a particular focus should be put on promoting transfer of knowledge and enhancing management skills in the private sector, as discussed below.

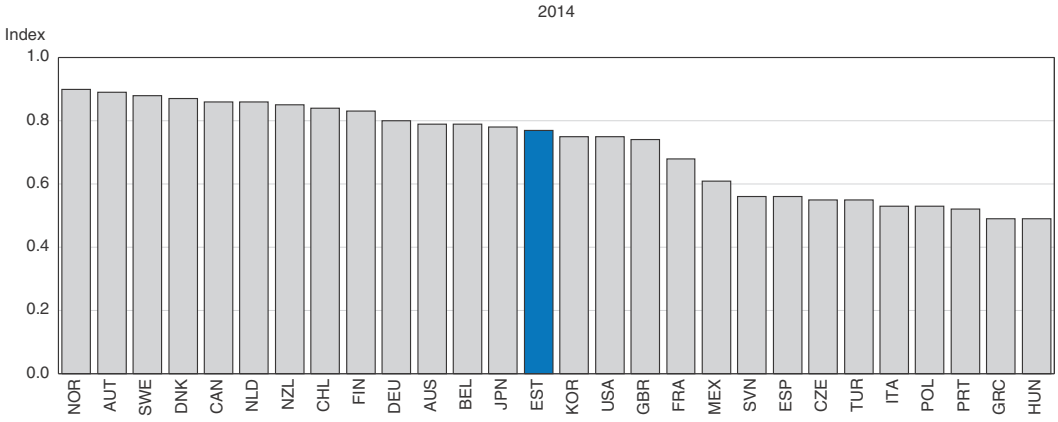
Enhancing framework conditions for innovation

The main responsibility for innovation strategy and implementation is shared by the Ministry of Education and Research and the Ministry of Economic Affairs and Communications. Coordination and collaboration between the two ministries was strengthened within the new innovation strategy (MER/MEAC, 2014). Effective innovation

policy also requires close co-operation with private actors who are often better placed than governments to identify barriers to innovation or policy action (OECD/WB, 2014). Accordingly, Estonia set up a Steering Committee, which includes representatives from different ministries, industry and academia. To ensure effectiveness, such inter-ministerial working groups should be held accountable and their performance reviewed regularly. Collaboration on innovation could be strengthened further, for instance by promoting horizontal ways of working across ministries (OECD, 2011b). This also applies to innovation measures that require cross-ministerial finance decisions (National Audit Office of Estonia, 2014a). Promoting effective collaboration among ministries may also be beneficial to promote energy efficiency, where research and development is key to improved performance (see below).

There are concerns that entrepreneurs and civil society organisations are not sufficiently represented in the political decision process (European Research Area Committee, 2012; European Commission, 2013b; OECD, 2013f). Private sector participation and rights to petition the government for information have improved considerably but remain below those of innovation leaders such as the Nordic countries (Figure 1.6). More can be done to hold public institutions accountable between elections and thereby enhance transparency; also, more opportunities for citizens' engagement in the policy-making process can be provided (OECD, 2014e). Moreover, business sector representatives have argued that notification periods about changes in laws and regulation are often short in practice.

Figure 1.6. **Level of public participation and right to petition the government**



Source: The World Justice Project (2014), WJP Rule of Law Index 2014.

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A number of OECD countries introduced independent productivity commissions that act as review and advisory bodies on microeconomic policy reform and regulation with the aim of achieving better informed policy decisions through independent, published analysis and advice (OECD, 2013i). For instance, in the Netherlands a Council of Chief Economists meets every month to discuss policy initiatives and outcomes. The Australian Productivity Commission played an important role in boosting the productivity performance of the Australian economy in the sixties and seventies. New Zealand and Norway have established a similar institution more recently. Denmark set up an independent standing productivity commission with a life of two years in 2012. The benefit of such a cross-

cutting institution in Estonia could be to gain a better understanding of the factors behind the slow and volatile convergence, despite overall good framework conditions.

There seems to be scope to improve the responsibilities and corporate governance of public bodies implementing innovation policies (European Commission, 2013d). Board members were replaced repeatedly in 2014 upon strong political pressure in Enterprise Estonia, one of the largest institutions within the national support system for entrepreneurship (see Box 1.1). Also, overlapping activities may reduce effectiveness and accountability. Some innovation instruments are duplicated by multiple institutions, which may result in large administration overheads and reduce their impact (European Research Area Committee, 2012). Against this backdrop, the scope to enhance the corporate governance of implementing institutions and make them more independent from the government should be reviewed. This would also strengthen the capacity of these institutions to get more involved in evidence-based policy development (OECD, 2011b).

Considerable effort has been made in recent years to improve evaluation of innovation policies (OECD, 2013f). Evaluation has become more independent from the Ministry of Economic Affairs and Communication. Effective design and implementation of innovation policies also requires constant experimentation, monitoring and adaptation (OECD/WB, 2014). In practice this means to experiment with new policy instruments on a small scale, to evaluate them thoroughly and, if proving effective, apply them on a larger scale. Evaluation should already be incorporated at the design stage. Pilot projects should test the practical feasibility of new research and innovation instruments and their potential to promote smart specialisation. This could also serve to reassess the effectiveness of existing innovation support instruments and whether they crowd out private innovation spending (Andrews and Criscuolo, 2013).

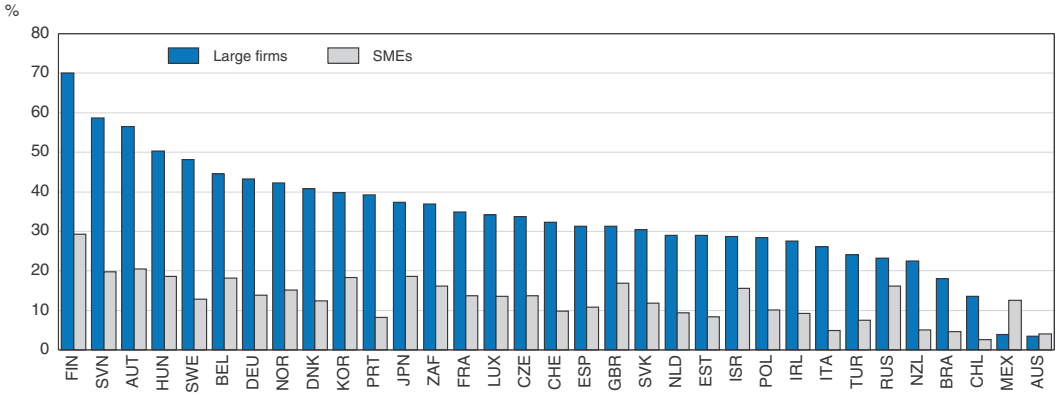
Estonia also applies regulatory impact assessments on a sectoral basis, following OECD best practice. A regulatory impact assessment identifies and quantifies benefits and costs of a proposed regulation if adopted. The focus of Estonia's regulatory impact assessments is on reducing administrative burdens. In general, the trade and investment impacts of new regulations are only assessed for legislation which is drafted at EU level and affects external trade. In other cases, the approach may overlook negative implications of regulation for trade and investment (OECD, 2011a).

Promoting knowledge transfer between private and public institutions

R&D collaboration of firms across borders is comparatively widespread in Estonia (OECD, 2013b). However, international collaboration of firms seems to result in only limited transfer of knowledge (European Research Area Committee, 2012). Moreover, the share of firms collaborating on innovation with higher education and government research institutions is low, especially among SMEs (Figure 1.7; European Commission, 2014a; European Commission, 2013d). One reason may be that Estonia has few universities and research institutions and that collaboration with research units abroad is difficult. There is scope to focus university research more towards applied research and areas identified in Estonia's smart specialisation strategy and to strengthen collaboration of universities with domestic firms. At the same time, keeping a balance between basic and applied research is key for future innovation and for new growth areas to emerge. Further efforts are also needed to promote collaboration of firms and universities with applied research institutes, including from abroad, such as VTT in Finland and Fraunhofer in Germany. Government support dedicated to fostering international collaboration is low (MER/MEAC, 2014).

Figure 1.7. **Collaboration of firms on innovation with higher education or public research**

as a percentage of product and/or process innovative firms in each size category, 2008-10



Source: OECD (2013), *OECD Science, Technology and Industry Scoreboard.*

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The government should continue to move ahead with the open data initiative (European Commission, 2013c). Making publicly collected statistical information available more widely potentially increases government transparency and public awareness of government programmes and activities. It also helps to generate insights into how to improve government performance. Increased data transparency may provide new ways of collaboration among government and research institutions on R&D policies and collaboration in the creation of innovative, value-added public services (Ubaldi, 2013). The potential of the open data initiative is particularly large in Estonia due to its leading role in e-governance. When implementing the open data initiative, it should be ensured that technical, legal and financial restrictions do not limit data accessibility and reusability (Ubaldi, 2013).

Promoting managerial and entrepreneurial skills

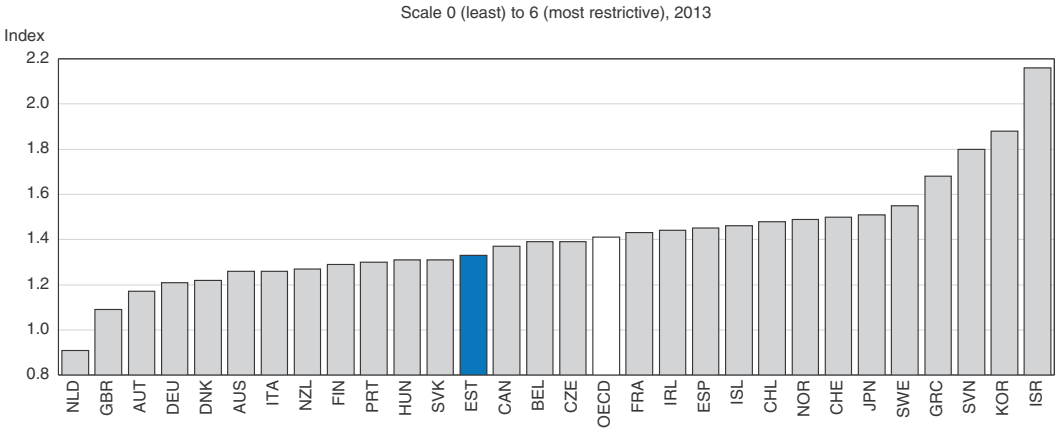
Limited economic outcomes of international collaboration may reflect a limited capacity of local firms to absorb knowledge from collaboration with foreign affiliates (UNCTAD, 2011). Managerial and entrepreneurial skills are important for putting innovative ideas into practice and enabling organisations to adapt in competitive environments as well as absorb technological knowledge from abroad (Andrews and Westmore, 2014; OECD, 2011e). Estonia suffers from a lack of managerial skills needed to grow and internationalise a business (European Commission, 2013b; Andrews and Westmore, 2014). The aim of the smart specialisation strategy to strengthen the development of management competencies and long-term planning in enterprises is welcome (Ministry of Economic Affairs and Communications, 2013). Promoting international and applied management skills could be particularly beneficial given the size of the economy. This also requires competition among firms and limiting management structures that tend to be less successful, such as family owned firms managed by family members (Andrews and Westmore, 2014). There is also scope to enhance teaching at school of how to run a business. School education in entrepreneurship is weaker in Estonia than in most other OECD countries (OECD, 2013h). Early exposure to managerial and entrepreneurial skills has considerable long-term benefits (OECD, 2011e).

The government's "e-residence initiative" is a promising step to strengthen the country's international profile. E-residence facilitates persons across the world to do business with and in Estonia. For instance it will be possible to register a company, to pay fees and open a bank account in Estonia from abroad. It may also make it easier for foreign investors to play a more active role in the management of companies located in Estonia (Taavikotka, 2014).

Improving product market regulation

Competition-friendly product market regulation stimulates innovation and technology diffusion by ensuring flexible resource allocation and faster convergence to the productivity leaders (Johansson and Olaberria, 2014; Andrews and Westmore, 2014). Overall regulation in Estonia appears more competition-friendly than in OECD countries on average (Figure 1.8). However, there is scope to strengthen competition and the effective use of resources by removing remaining entry barriers for foreigners and continuing the reform of corporate bankruptcy procedures.

Figure 1.8. **Product market regulation**



Note: OECD refers to the simple average.
Source: OECD (2013), *Product Market Regulation Indicators*.

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Removing entry barriers for foreigners

Continued efforts are needed to identify and remove remaining entry barriers that hold back competition and growth, especially in services. Entry barriers can hold back productivity growth throughout the economy because of the services' role as intermediate inputs. Excessive regulation of professional services has particularly strong negative growth effects in downstream service intensive industries (Bourlès et al., 2013; Barone and Cingano, 2011). In Estonia, the services account for 58% of total value added and over half of domestic value added in exports. The regulatory regime is overall conducive to fostering competition in the services (OECD, 2014b). However, some entry barriers remain in the services, notably:

- Some professional services in Estonia benefit from a number of exclusive rights, according to the OECD PMR indicator 2013. For instance, engineers have exclusive rights to conduct environmental assessments and monitoring of engineering projects. Unlike

in many other countries, a range of audits can only be conducted by accountants. For some of these exclusive rights it would be possible to open the market to a broader range of providers without harming service quality or endangering consumer protection.

- Entry barriers are high for non EU-foreigners in some professional services, notably in legal services. There is no process for the recognition of foreign qualifications in regulated professions except for countries with which Estonia has signed special agreements. Re-qualification exams have to be taken in Estonian, which imposes unnecessary entry barriers, including on entrants from EU countries. Similar language restrictions may also exist in other cases. Also, only lawyers who are fully licenced in an EU Member state may own shares and be partners in law firms (OCED, 2014b).
- In maritime transport, nationality and residency conditions are imposed on registering ships. Government plans to facilitate market access for foreigners are welcome. A majority of the board of directors in maritime transport firms registered in Estonia must be Estonian citizens. Moreover, maritime and air transport are the only service sectors in which Estonia employs foreign equity restrictions, with a maximum foreign equity share of 49% (OCED, 2014b).

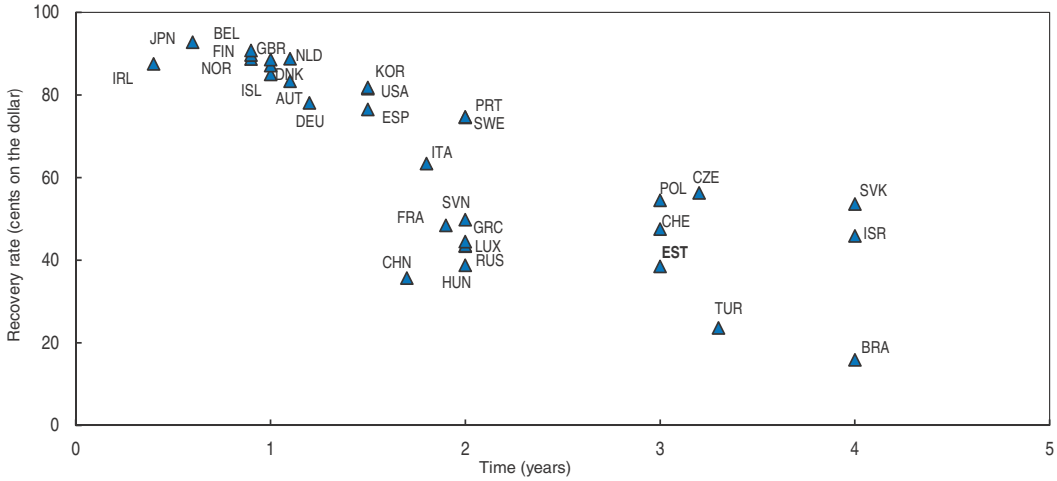
Another barrier for foreigners to do business in Estonia are restrictions for non-EU citizens to purchase land in eastern border areas of the country, even if they reside in Estonia (OECD, 2011f). There is also scope to further expand the use of English in the administration. Some domestic standards are not available in English (OECD, 2011a). To furnish an already transparent regulatory environment, authorities may consider translating into English those domestic standards currently available only in Estonian, including at the local level.

Continuing to review corporate bankruptcy procedures

Corporate bankruptcy laws which impose excessively high exit costs in the event of business failure may make entrepreneurs less willing to experiment and thus hold back the efficient reallocation of resources and innovation (Andrews and Criscuolo, 2013). At the same time, bankruptcy codes that do not provide sufficient safeguards for creditors may reduce the supply of credit, so some balance is required (Andrews and Criscuolo, 2013; OECD, 2014d). Estonia made considerable progress with reforming bankruptcy legislation in 2011. Nonetheless, recovery of creditor claims is relatively weak and insolvency procedures are long (Figure 1.9). This may also be one reason for the fairly negative attitude of the public towards entrepreneurs on a second start after failure (European Commission, 2013a; OECD, 2013h). Lengthy procedures may be one reason for low recovery rates, also because it raises uncertainty. Efforts should continue to reform insolvency procedures and make them more efficient. In particular, the duration of insolvency procedures should be reduced and recovery of creditor claims increased. It should also be considered whether a voluntary non-judicial debt settlement process can raise efficiency. Such a settlement process has been introduced for example in the United Kingdom ("Company Voluntary Arrangements"), where the debtor appoints an insolvency practitioner to draw up a debt restructuring plan, allowing the company to continue to operate if creditors agree.

There are concerns that corporate insolvency cases are not always resolved in a manner that contributes to an efficient allocation of resources (*Economic Survey of Estonia* 2011, OECD, 2011f). The decision to liquidate or rehabilitate a company can be complex, and require economic expertise. Judges may not be able to draw on the necessary expertise

Figure 1.9. **Bankruptcy procedures: recovery rates and duration**



Source: OECD (2013), *Entrepreneurship at a Glance*.

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to deal with complex cases (European Commission, 2013b). Debt restructuring procedures allow outside expertise, but it is almost never used because insolvent debtors must pay for the experts and they rarely have the funds to do so. Courts should be given the power to require the creditor to pay for experts, particularly in more intricate corporate cases. A specialised bankruptcy court could ensure that sufficient judicial expertise is applied to bankruptcy procedures, as suggested in previous Surveys.

Ensuring access to finance for SMEs

Foreign banks, mostly from Nordic countries account for 94% of total bank assets (Eesti Pank, 2013). Foreign ownership cushioned the impact of the crisis on the country's financial system (Eesti Pank, 2013; OECD, 2011c). Foreign-owned banks rely on scoring and hard verifiable information for lending decisions and real estate as collateral (Beck et al., 2008; OECD, 2011c). As a result, interest rates on bank loans may be higher for SMEs or their applications more likely to be rejected. Smaller companies are harder to assess for banks, as usually their financial reports contain less information and their credit histories are short (Eesti Pank, 2014).

Access to bank lending is more difficult for SMEs than in many other EU countries (European Commission, 2013b; OECD, 2013b, World Bank, 2014). The share of small firms using external funding is one of the lowest in the EU. Instead, funding through sources outside the financial sector is more widespread. The share of SMEs whose loan application is rejected is fairly high (European Commission, 2013g). It is welcome that the availability of venture capital has improved recently. Small enterprises with less than 250 employees account for 78.4% of total value added, more than in most other OECD countries (OECD, 2014d).

Savings and loan associations are considered to be particularly conducive to SME lending (Ayadi, R. et al., 2010). Through relationship lending, they reduce asymmetric information which is likely to limit SMEs' access to funding. Savings and loan associations also diversify financial intermediation, which is conducive to greater financial stability and regional growth (Chiaramonte et al., 2013). Local banks are also more likely to use savings

to fund investment in the same region, which tends to favour development of regions with relatively low income levels. In the absence of local banking, credit rationing may hit poor regions particularly hard because of lower initial endowments, which may, for example, restrict available collateral (Hakenes et al, 2009). Savings and loan associations may also contribute to lower borrowing costs for enterprises by increasing competition. They have a long tradition, for instance in Germany, where they account for 13% of total bank assets, and in Austria (Ayadi, R. et al., 2010).

Twenty savings and loan associations existed in Estonia in January 2014. Their loan volume increased by more than 70% since 2012, mainly on account of rising business loans. Nonetheless, they only account for 0.1% of total lending (Eesti Pank, 2014; OECD, 2011a). Loans tend to be small on average, 6 000 euros for private individuals and 43 000 euros for companies, mostly SMEs. Savings and loan associations offer higher interest rates on deposits than banks, what makes them attractive for depositors especially in the current low interest environment. The proportion of non-performing loans is comparatively small (Eesti Pank, 2014).

Savings and loan associations are not supervised by the Financial Supervision Authority, as they do not have a banking licence. They are regulated by the Savings and Loan Associations Act. They accept deposits only from members and their deposits are not covered by deposit insurance. Loans may not exceed the contribution paid in by a member more than 20 times, nor may it exceed 20% of the association's equity. This limits the growth potential of these associations. Obtaining a banking licence could help savings and loan associations to expand. However, requirements for savings and loan associations to receive a banking licence are stringent.

The EU banking sector directive allows for some leeway to reduce regulatory burdens on small licenced banks, regarding for instance the conditions capital instruments have to meet to qualify as Common Equity Tier 1 instruments (European Commission, 2013e; European Commission, 2013f). Also, the administrative burden and information requirements related to recovery and resolution plans can be reduced considerably for small credit institutions (European Commission, 2014b). This leeway is not being used fully in Estonia. Unnecessary barriers for savings and loan associations to apply for a banking licence should be addressed. Moreover, unlike banks, cooperatives do not benefit from an exemption of interest on deposits from personal income tax (Eesti Pank, 2014), distorting competition for deposits.

Several governments of OECD countries attempted to facilitate lending relationships by reducing asymmetric information between lenders and borrowers, which is particularly marked in the case of small borrowers. In some countries, independent public institutions conduct an assessment of credit worthiness, for example with the support of the central bank, as in France. Credit mediators may also be entrusted with other “soft” functions, such as monitoring the financing framework, assessing the difficulties encountered by SMEs and providing advice to competent authorities. In general, credit mediation schemes depend entirely on public funding (OECD, 2013d). In the wake of the 2008-2009 global financial crisis, a number of European OECD countries introduced credit mediation schemes intended as temporary mechanisms. In France and Belgium credit mediation schemes evolved into longer term initiatives (OECD, 2013d).

The relatively short time of operation of these credit mediation services and the lack of firm-level data do not yet allow definitive conclusions about their economic impact to be

drawn. However, available evidence suggests that credit mediation schemes have been effective in responding to the needs of SMEs that had been denied credit (OECD, 2013d; Banque de France, 2011). Such instruments may turn out to be particularly useful in economic downturns or financial crises.

Closing existing infrastructure gaps

Transport, communication and energy networks are key factors for internationalisation and economic growth. They reduce isolation, open new markets and encourage companies to invest (European Commission, 2012). Estonia has made considerable progress in upgrading its infrastructure (World Economic Forum, 2013). Investment in infrastructure is high compared to most other EU countries (Wagenvoort et al., 2010). One reason is EU funding, which is used to a large extent to finance infrastructure projects and accounted for 4% of GDP in 2012 (Eesti Pank, 2013). However, a number of cross-border and domestic infrastructure bottlenecks remain, holding back private sector development and constraining mobility (National Audit Office, 2013b).

- Transport infrastructure links to the rest of the EU should be improved, particularly for railways, and the Baltic-Adriatic highway link further developed (European Commission, 2012). The Rail Baltica project, which will connect Estonia with the EU via high-speed railway needs to be realised without further delays (AECOM, 2011; IMF, 2014).
- Integration of Estonia in the European gas network remains weak. The Estonian gas market is small and is at present fully dependent on Russian gas imported by the monopolist company Eesti Gaas, which is majority-owned by Russia's Gazprom (IEA, 2013). To address these weaknesses, the government has developed further plans to diversify gas imports. Plans to better integrate in the EU gas networks and install a regional liquefied natural gas terminal together with Finland should be implemented rapidly to enhance the security of supply. This is of increasing importance in an uncertain geopolitical environment; with the share of renewable energies continuing to rise; and domestic oil shale being increasingly used for fuel instead of electricity production.
- Estonia has made considerable progress with integrating in the European electricity market. Two electricity transmission links with Finland already operate. However, synchronised operation within the EU electricity network is not envisaged before 2025. This requires cooperation with EU countries in the region (IEA, 2013).
- Funding for domestic infrastructure projects was primarily directed to large projects, which can be financed with EU funds, leaving fewer funds for smaller rural projects. There is evidence that some EU-funded projects have been designed too large (National Audit Office of Estonia, 2013a). Instead, the quality of the road and rail network is low, particularly in rural areas (European Commission, 2012); the availability of high-speed broadband seems to be limited in rural areas (OECD, 2013b); and investment in renovation is low (National Audit Office of Estonia, 2013b). This suggests that there is scope to improve monitoring and decision making on how infrastructure projects are selected. As Estonia continues to upgrade its infrastructure, it should be ensured that sufficient funding is directed towards balanced regional development. This could also help to overcome the spatial mismatch of jobs and job searchers.
- Continued efforts are needed to better connect transport modes, including railway, ports and airports (European Commission, 2012). Insufficient connection of modes may limit

mobility and constrain economic activity and exports. There is also scope to harmonise travel schedules of different transport modes (European Commission, 2013b).

- Gaps in public water supply and sewerage treatment remain, despite large investments over the past decade. Waste water is still not collected in the required quantities and its treatment does not always meet requirements. Access to drinking water of sufficient quality is not guaranteed in some areas (National Audit Office of Estonia, 2013c). This is reflected in a fairly low satisfaction with water quality (OECD, 2013g). Remaining gaps in the provision of high quality drinking water and sewerage treatment should be closed.

Reducing CO_2 emissions and energy consumption

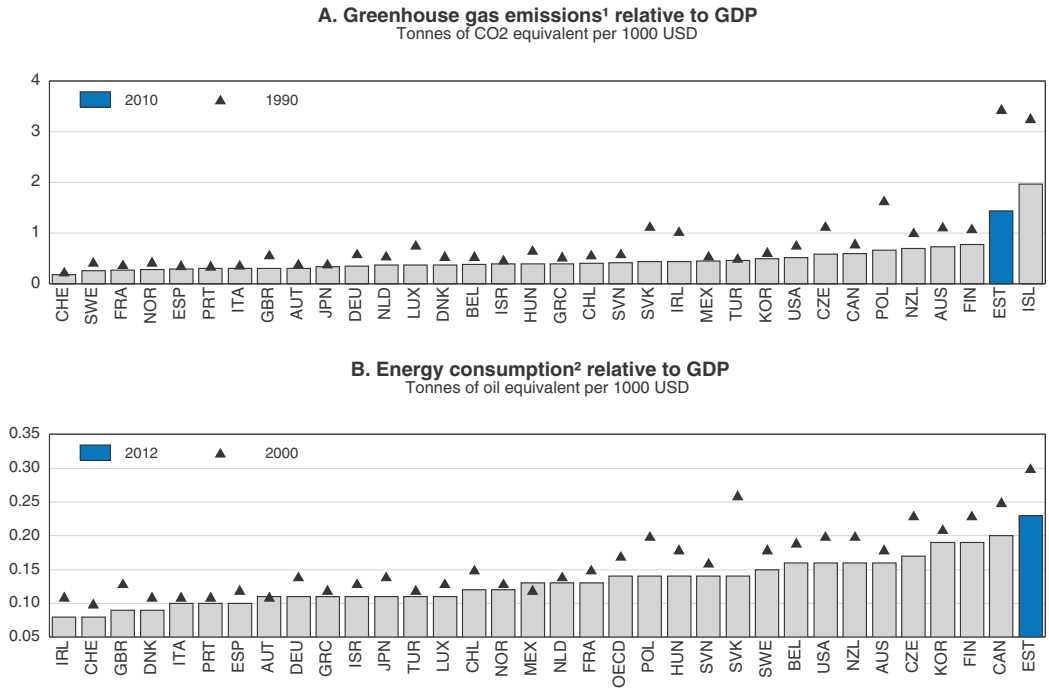
The efficient use of energy can raise competitiveness by bolstering innovation and reducing costs, including those of environmental damage (OECD, 2011d). The cost of high energy use will increase when CO_2 prices in the European Union's emissions trading system rise from currently unsustainably low levels. It has also an important environmental dimension. Greenhouse gas emissions per unit of GDP are less than half the 1990 level but remain among the highest in the OECD (Figure 1.10). High emissions are largely due to the use of oil shale especially in electricity generation, of which part is exported, as well as in heating and industrial process use. Estonia has large oil shale reserves and is the only country in the world in which oil shale is the primary source of energy, covering 70% of energy demand. Exploiting these reserves has contributed to meeting energy security objectives. However, the CO_2 intensity of oil shale combustion is particularly high. CO_2 emission intensity of electricity and heat is among the highest in the OECD (IEA, 2013), whereas emissions in transport are comparatively low (OECD, 2013e). The amount of CO_2 emissions and oil shale ash created per unit of oil shale energy and heat production has increased by 11% between 2007 and 2012 (National Audit Office of Estonia, 2014b).

High CO_2 emissions may become very costly in the future. Carbon prices in the European Union's emission trading system are likely to rise when economic activity strengthens in Europe and stricter CO_2 emissions targets are applied. Estonia has set a target for greenhouse gas emissions in sectors outside the European emissions trading system (ETS) for 2020, which limits their growth to 11% from the level in 2005. While the government expects to meet this target on current policies, more ambitious emission targets may have to be met beyond 2020 in the context of targets set by the European Union (OECD, 2014a). Estonia has also committed to increasing the share of renewable energy to 25% of gross final energy consumption. It reached 14.1% in 2012, with the largest part being generated by the use of biomass, mainly for heating purposes (IEA, 2013).

Reviewing tax incentives to promote energy efficiency

Implicit carbon tax rates, defined as tax revenue per tonne of CO_2, are low on average and vary considerably across energy sources and uses. Tax rates on fossil fuels used in heat and electricity generation are much lower than on transport and these differences are bigger than in many other OECD countries (OECD, 2013e). Moreover, oil shale used for heat production and electricity generation is taxed at lower rates than other fossil fuels (IEA, 2013; OECD, 2014a). Natural gas is only taxed when used for heating; instead, coal used for heating is untaxed. Also, gasoline is taxed at a higher rate than diesel, both in terms of energy and CO_2 content. Tax rates should reflect the CO_2 emission content of each energy

Figure 1.10. **Greenhouse gas emissions and energy consumption**



1. Data refer to gross direct emissions including emissions from land-use, land-use change and forestry (LULUCF). Removals/sequestration of greenhouse gas through LULUCF are deducted.
2. It refers to total primary energy supply and equals production plus net trade minus international bunkers plus or minus stock changes.

Source: OECD/IEA (2013), Emissions of CO_2, CH4, N2O, HFCs, PFCs and SF6, IEA CO_2 Emissions from Fuel Combustion Statistics Database and *OECD Economic Outlook*; and IEA (2013), *Energy Balances of OECD Countries*.

StatLink http://dx.doi.org/10.1787/888933180105

source to provide effective price signals (OECD, 2013e). This can be a gradual process, provided a firm commitment to future increases is made.

More efforts are needed to identify and internalise externalities generated by oil-shale use (National Audit Office of Estonia, 2014b). Important goals of the government's oil shale development plan have not been achieved, including to mine and use oil shale more efficiently and reduce the environmental impact thereof (National Audit Office of Estonia, 2014b). It is welcome that the government envisages a new oil shale development plan and intends to increase taxes on oil-shale related activities which damage the environment. Raising taxes on oil shale use and harmonizing tax rates according to the CO_2 emission content of energy sources would help to encourage processing oil shale into lighter oil products instead of using it for electricity generation which would reduce CO_2 emissions from oil shale use by two-thirds (IEA, 2013). Also, continued R&D investment is needed to lower the carbon intensity of the Estonian economy, including by the private sector and Eesti Energia (IEA, 2013). Further efforts are also needed to internalise the costs of reusing or recycling the considerable waste amounts generated in oil shale use (National Audit Office of Estonia, 2013a). Moreover, it should be ensured that the state receives an appropriate share of revenues from oil shale mining and use (National Audit Office of Estonia, 2014b).

Fuel poverty is of increasing concern as energy costs rise (Thomson, 2013; Association for the Conservation of Energy, 2013). It is usually defined as the percent of household disposable income spent on energy; for instance more than 10% is often characterised as energy poverty. Low-income households should receive more financial support for energy-saving investments, such as for the purchase of energy-saving household appliances (IEA, 2012). Currently subsidies are available only to improve energy efficiency of family houses and apartment buildings by Kredex (see Box 1.1). Subsistence payments should be regularly adjusted for changes in energy prices, for instance due to increases in energy taxes. This would preserve incentives to save energy.

Enhancing energy efficiency of district heating and buildings

Emissions can be reduced considerably by improving energy efficiency in district heating (European Commission, 2013b). The sector is predominantly operated by privately owned entities and, in some areas, municipalities. Losses in heat networks, to which 70% of the population are connected, amount to 22% (IEA, 2013). The government's plans to introduce regulation which will provide networks with incentives to reduce losses to 15% by 2017 are welcome. The government has also proposed draft regulation that encourages the use of renewable biomass in district heating.

Regulation of heat networks should be reviewed for scope to raise incentives for efficiency improvements. Currently, regulation of prices is based on an ex-ante cost-based principle, which may entail limited incentives to invest (Égert, 2009; IEA, 2013). It should be considered whether incentives for efficiency improvements in the network could be enhanced, for example by penalizing operators which fail to attain ambitious efficiency benchmarks (yardstick competition). Using the costs and quality standards achieved by other service providers for regulating prices of each service provider generates incentives to improve quality and reduce costs. These incentives are partly lost if price regulation is based on each provider's own costs (OECD, 2006).

There is scope to raise incentives of households and building owners to invest in energy efficiency of buildings. Many district heating systems have inadequate or no metering. Also, landlords have few incentives to invest in efficiency improvements which will mainly benefit the tenant. Tenants have few incentives to make investments in a residential property they do not own. The government may need to adopt targeted measures to address "split incentives" between landlords and tenants. For instance, tax incentives may be provided to landlords or it should be ensured that investment costs can be passed on to the tenant or beneficiary of the reduced energy bills (OECD, 2008a; IEA, 2012). Moreover, customers with obligatory connections to district heating systems may be prevented from investing in economically justified high-efficiency alternatives. Some local governments establish district heat supply areas, in which customers cannot change the type of heat supplied unless they switch to renewable energy (IEA, 2013).

Behaviourally informed policies can promote energy efficiency

Traditional incentive and regulatory instruments can be effectively supplemented by behavioural regulatory measures in many cases, including to promote energy efficiency. Behaviourally informed regulation, while preserving free choice, aims at designing the decision context so to make better-informed decisions more likely. Often behaviourally informed policies are low-cost and strengthen the effectiveness of incentives provided, for example, by taxes or regulation. Though, their design may require considerable research

efforts. An empirical approach, using local policy trials and experiments to test behaviourally informed ideas is most promising, as experience from other countries suggests (Lunn, 2014). For instance, in the UK behaviourally informed policy instruments are used to encourage households to install better insulation in cases where there is a tendency to underinvest (Box 1.2). Upgrading energy efficiency of buildings is one of Estonia's most significant energy efficiency challenges.

Box 1.2. **Using behavioural science to encourage investment in insulation – evidence from the UK**

The UK Behavioural Insights Team, which acts as an internal consultancy for UK policy makers, has organised a series of trials that use behavioural science to encourage households to install better insulation (Lunn, 2014). The primary problem to overcome, according to behavioural economic research, is that householders are likely to weigh immediate costs disproportionately relative to benefits that only accrue over many years. While individuals tend to be sure of immediate costs, they may be more uncertain about the scale of future benefits than available data warrant. Moreover, when individuals are unsure about decisions, they often copy the decisions of others around them. This strengthens the impact of policies improving informed decision-making.

The UK Behavioural Insights Team, in partnership with local authorities and retailers, used this evidence to design and test four behavioural mechanisms for their potential to increase the take-up of insulation: an upfront reward (for instance in form of a voucher or a one-month holiday from local taxation); discounts for signing up neighbours for energy efficiency improvements; community rewards for signing up additional households; and subsidised loft clearance. While full comparative results are not yet published, one perhaps surprising finding to emerge from the trials is that the impact of subsidising loft clearance turned out to be particularly strong, resulting in a four-fold increase in the probability of installing loft insulation.

Estonia should consider engaging more in local policy trials and experiments to promote energy efficiency through behaviourally informed policies. Such policies may be designed and monitored by a Behavioural Policy Unit, following the example of the UK Behavioural Insights Team (see Box 1.2). Information policies may also help to realise considerable energy saving efforts, for example by providing a regular indication of energy costs to households, even in cases where end-user metering is not economic (IEA, 2013).

Recommendations to raise productivity and benefit more from openness

Reaping more benefits from innovation

- To strengthen knowledge transfers to domestic firms, promote applied research and improve collaboration with domestic and foreign institutions conducting applied research. Move ahead with the open data initiative.
- To raise the effectiveness of innovation policies, ensure inter-ministerial working groups are held accountable and their performance is regularly reviewed. Assess the need for an independent review and advisory body on microeconomic policy reform and regulation with the aim of achieving better informed policy decisions.

Recommendations to raise productivity and benefit more from openness *(cont.)*

- Enhance effectiveness of evaluation of innovation policies by incorporating monitoring and evaluation already at the design stage. Test individual instruments through pilot projects.
- Extend the impact assessment of regulations to systematically capture implications for trade and investment.
- Promote international and applied management skills and enhance the teaching of skills to run a business at school.

Removing barriers to entrepreneurship

- Shorten corporate insolvency procedures and improve their efficiency. Strengthen expertise to deal with complex insolvency cases, for example by giving courts the power to require the creditor to pay for experts. Review the need for a specialised bankruptcy court.
- Continue efforts to identify and remove entry barriers in services that hold back competition and growth, including in professional and transport services. Consider relaxing restrictions on land purchases by non-EU citizens with a permanent residence permit. Promote the use of English in the administration.
- To remove barriers to SME lending, consider making it easier for savings and loan associations to apply for a banking licence. For instance, reduce capital requirements and requirements for recovery and resolution plans. Tax returns on bank deposits equally across all banks. Assess the need of a credit mediation programme.

Removing remaining infrastructure bottlenecks

- Implement plans to expand access to European high-speed rail networks and energy supply facilities.
- Provide sufficient funding for small, rural infrastructure projects. Improve inter-modal transport connections. Close remaining gaps in the provision of high quality drinking water and sewerage treatment.
- Raise efforts to monitor the effectiveness and efficiency of infrastructure spending.

Raising energy efficiency

- Gradually align and raise tax rates on the various energy sources according to their CO_2 emission content. Ensure income support for low income households accounts for the impact of higher energy costs on poverty risks.
- Continue efforts to process oil shale into lighter oil products instead of using it for electricity generation. Internalise all social and environmental costs of oil shale.
- Strengthen incentives to improve efficiency in the regulation of heating networks.
- Strengthen incentives to invest in energy efficiency of buildings.
- Consider engaging more in local policy trials and experiments to promote energy efficiency through behaviourally informed policies.

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Chapter 2

Making the most of human capital

Labour input in Estonia remains lower than before the crisis. Skill mismatches between workers and jobs contribute to structural unemployment. Emigration, notably among young, employed workers, has reduced labour supply. Although the government has lowered labour taxes and further reductions are planned, government revenues still rely heavily on taxing employment. Shifting some of the tax burden on labour to real estate would make the tax system more employment friendly. High costs reduce the returns workers earn on the assets in the compulsory private pension system, effectively raising the tax burden on labour. There is scope to reduce costs. In the public pension system, phasing out early retirement schemes for workers in specific sectors or professions would make room for lower social security contributions. They pay gap between men and women is substantial and further steps could be envisaged to reduce it. Reforms to improve the skills of Estonian workers have a high pay-off in view of increased demand for skilled workers. The recent initiatives of the government to foster life-long learning and improve financial support for students from low-income families in tertiary education are welcome. There is scope to promote apprenticeships, for example by fostering cooperation between local firms and local schools. This would help reduce skill mismatch. More financial support is needed for students, especially to ensure youth have access to upper secondary vocational education.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Labour supply is declining and structural unemployment remains high

Labour utilisation in 2013 remained well below levels observed in 2008. The economic recovery since 2010 has only partly offset the fall in labour input during the crisis (Table 2.1). Lower average hours worked per worker have contributed to the fall in labour utilisation. In part, this trend reflects rising part-time employment and female employment. However, hours worked remain among the highest, and the share of part-time employment among the lowest, in the OECD. Unemployment fell, but not all the way to pre-crisis levels. The share of the population of working age has declined. Rising cross-border work has detracted about 1 percentage point from domestic labour utilisation since 2007. The effect of cross-border work is not included in Table 2.1, which covers the resident population. At present 4% of Estonian employees work abroad, mostly in Finland.

Table 2.1. **Decomposition of labour utilisation growth**

Per cent

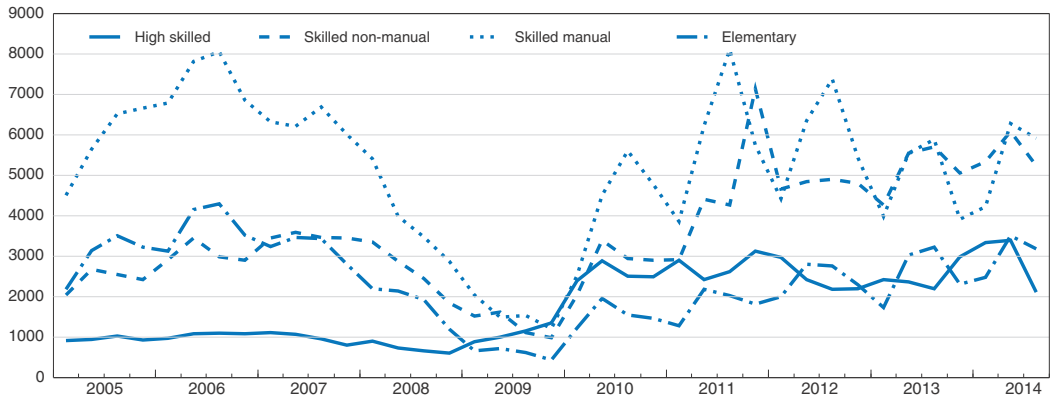
Growth rate	2007-13	2010-13
Labour utilisation[1]	-10.4	10.7
Of which		
Average hours worked per worker	-5.4	1.2
Employment rate[2]	-4.3	9.6
Participation rate	2.7	2.5
Share of the working population in total population	-2.2	-1.7

1. Labour input (total hours worked) relative to total population.
2. Employment divided by labour force.

Source: OECD Productivity Database and OECD Annual Labour Force Statistics Database.

Skill mismatch appears to contribute to structural unemployment. Shortages of skilled workers have been one of the drivers of rising unit labour costs in 2013 (Eesti Pank, 2014b). The number of vacant jobs for highly skilled workers and for skilled non-manual workers has risen well above pre-crisis levels whereas it has fallen for unskilled and manual jobs (Figure 2.1). The number of vacancies is relatively large in the ICT industry, a sector in which Estonia has developed a strong comparative advantage. Nonetheless, in international comparison, unskilled workers have relatively low unemployment rates (Table 2.2). In part, this reflects low income support for the long-term unemployed, as well as flexible wage bargaining and a minimum wage which remains relatively modest (OECD, 2012a), despite recent increases. Upper secondary qualifications do not appear to reduce the risk of unemployment as much as in other European OECD economies. By contrast young tertiary graduates have considerably lower unemployment rates than young upper secondary graduates and this difference is bigger in Estonia than in many countries.

Figure 2.1. **Vacancies by skill level**



Source: Estonian Unemployment Insurance Fund (Eesti Töötukassa).

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Table 2.2. **Unemployment rates by age group and education level, 2013**

Per cent

	All	Lower secondary and lower	Upper secondary and post-secondary non-tertiary	Tertiary
		PANEL A: 15 – 39 years		
Euro area (13 countries)	15.7	27.0	13.8	10.4
Czech Republic	8.8	32.4	8.7	3.9
Denmark	9.4	14.4	8.2	6.2
Estonia	10.9	16.8	12.5	6.8
Latvia	13.5	27.4	14.5	6.4
Poland	12.9	27.7	15.0	7.4
Slovakia	17.5	53.1	17.4	9.7
Finland	10.8	25.5	10.6	5.3
Sweden	11.9	30.9	10.7	5.4
United Kingdom	10.6	23.0	11.8	4.8
Norway	5.4	10.7	4.2	2.9
		PANEL B: 40 – 64 years		
Euro area (13 countries)	9.1	16.5	7.2	4.9
Czech Republic	5.5	20.4	5.4	1.7
Denmark	5.2	7.9	4.9	3.6
Estonia	7.2	13.4	7.9	5.3
Latvia	10.9	22.0	12.4	5.7
Poland	7.9	16.4	8.4	2.8
Slovakia	11.0	33.7	10.8	3.9
Finland	6.2	11.0	7.1	4.0
Sweden	5.0	10.0	4.4	3.5
United Kingdom	4.9	8.6	4.8	3.2
Norway	1.8	3.8	1.7	1.2

Source: Eurostat.

A substantial share of the recent decline in the working-age population reflects net emigration, which amounted to 0.2% of the population in 2012 (Figure 2.2) according to official statistics, which may underestimate emigration. Finland has been the preferred destination of Estonian migrants and cross border workers because it is geographically close, a similar language is spoken and wages are considerably higher. In 2013 take-home pay of a worker on average earnings in Estonia was less than a third of take-home pay in Finland. Most Estonians emigrants in recent years were young, were employed and possessed low skills before leaving (Box 2.1). In the longer term ageing is also expected to reduce labour supply relative to the total population, particularly after 2030 (Figure 2.3). Emigration of young people may also reinforce the longer-term consequences of ageing on labour supply beyond what is projected, in part through reduced fertility (Eesti Pank, 2014b).

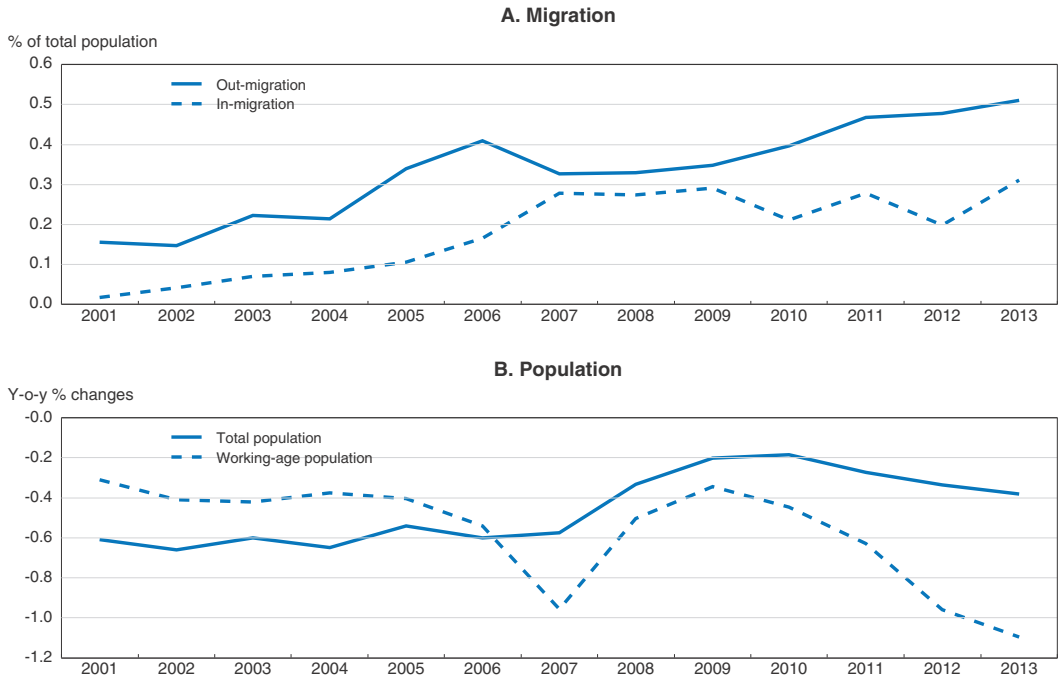
Emigration and cross border workers have important benefits for the workers concerned, including wage gains as well as valuable experience and training abroad. Moreover, while the income Estonian cross-border workers earn abroad does not contribute to GDP, it contributes to income of Estonian households. Migrants' remittances also boost Estonian household incomes. According to balance of payment statistics, income of cross border workers amounts to about 2% of GDP while private current transfers from abroad, mostly emigrants' remittances, amount to about 1.5% of GDP. However, since most emigrants are young employed workers, the share of the economically active in total population shrinks, weighing on per-capita potential income growth and reducing the revenue base to pay for government-provided services. The significant number of cross-border workers who pay labour tax in Finland but use public services in Estonia reinforce this point. Remittances from emigrants who do not return may also decline over time.

Policies encouraging equal pay between men and women have benefits for labour utilisation

While women's labour market participation rate is little lower than men's and unemployment rates are broadly similar, women earn on average 30% lower salaries than men. This gap is unusually large in comparison to other European economies. It is also considerably larger than in neighbouring Baltic and Nordic economies. Moreover, the difference does not diminish once differences in workers' characteristics, such as level of education, field of study and experience are taken into account. By contrast, the difference in the distribution of employment across occupations and sectors between men and women explains almost one third of the gap (Anspal and Rõõm, 2007). For example, women are more likely to take up certain jobs in the public sector, such as teaching, where pay may be relatively low, given educational requirements. Differences in pay between men and women are particularly large at the high end of the wage distribution. Women on managerial and senior jobs are paid much less than men and these differences cannot be explained by differences among the companies they work in (Anspal and Rõõm, 2007).

These findings suggest that policies encouraging equal pay between men and women could have substantial benefits for labour utilisation. Underutilisation of human capital in managerial jobs is particularly harmful to productivity performance. To reduce the gender pay gap, the Estonian Government launched an action plan 2012-15. The action plan includes steps to improve the implementation of gender equality legislation; improve reconciliation of work, family and private life; encourage gender mainstreaming, especially

Figure 2.2. **Migration and population trends**



Source: Statistics Estonia.

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Box 2.1. **Migration and cross-border work in Estonia**

Emigration

The most frequent destination of Estonian emigrants is Finland, followed by the United Kingdom, Sweden and Norway. 45% of surveyed people intending to work abroad claim that the main reason for leaving is higher wages. Personal development and better working conditions have also been important motivating factors. Open labour markets within the European Economic Area have been a driving foce (Puur et al., 2013; Tarum, 2014). More than half of emigrants are less than 30 years old. More recently, families with young children have migrated in larger numbers (Anniste et al., 2012). Survey evidence suggests that the unskilled are most likely to emigrate, whereas highly skilled workers are underrepresented among emigrants, in contrast to emigrants in many Eastern European countries (OECD, 2013a). However, recently, highly skilled health care workers have also been leaving Estonia. Generally, Estonian low skill workers can expect a bigger wage gain than highly skilled workers if they migrate to Finland (OECD, 2013c). Some young people appear to emigrate from Estonia before they have completed their education. Many emigrants appear more motivated to improve their education level after emigration (OECD, 2013a). Most emigrants work in the construction sector but this share has fallen and the professional background of Estonian residents considering working abroad has become more diverse. The intention to work abroad has increased among people working in the sectors of education, accommodation and catering, wholesale and retail, and healthcare and social welfare. The emigrants' unemployment rate is broadly aligned with the national average.

Box 2.1. **Migration and cross-border work in Estonia** *(cont.)*

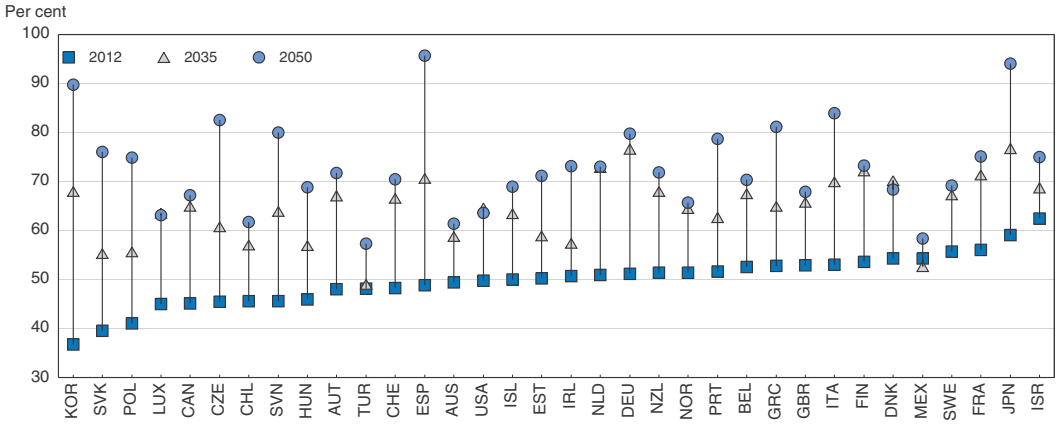
Immigration

In 2012, 58% of those who moved to Estonia were return migrants with Estonian citizenship. Return intentions increase with the age of emigration. According to the trend of the past years, 30-40% of Estonian citizens having emigrated from Estonia return. According to Pungas et al (2012) individuals who moved primarily for better earnings and are employed in their country of destination possess a relatively high willingness to return. Individuals who do not identify themselves as ethnic Estonians are less willing to move back (Pungas et al., 2012). Those who are living with a host country partner are also less interested in returning. Emigrants with tertiary-level education are relatively likely to return to Estonia.

Cross-border work

In 2013, 3.7% of the total employed population worked across the order, mostly in Finland. Most are men, in the age group 25-49 and possess a secondary education degree. 41% of cross-border workers are employed in construction and most are manual workers. About 20% of cross-border workers have tertiary education, less than the national average. The number of cross-border workers rose steadily until 2010 but fell in 2013, as labour market conditions improved in Estonia and deteriorated in Finland.

Figure 2.3. **Projections of total dependency ratio**



Source: OECD Population Statistics Database.

StatLink http://dx.doi.org/10.1787/888933180222

in education; reduce gender segregation in the labour market; and to review the organizational practices and pay systems in the public sector.

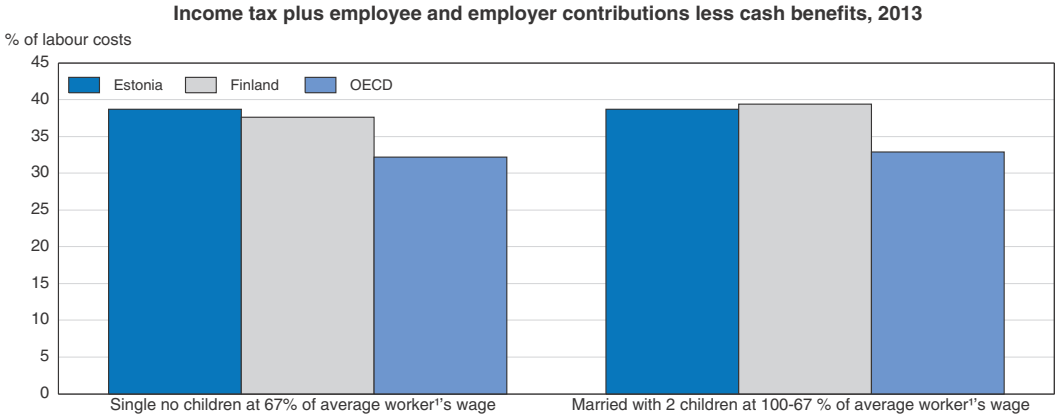
Participation of men in providing childcare within the family, a task mostly carried out by women, could be encouraged. Parental leave entitlements are long in Estonia, to the point of creating risks for labour market prospects for the parent taking the leave, as previous *Economic Surveys* have pointed out. It is almost only taken up by women (Turk et al, 2010). In this context, low availability of childcare facilities for children below 1½ years old and for children between 1½ and 3 years old in some municipalities also limits women's career prospects. One option is to require both parents to take up parental leave in order for parents to qualify for the full leave entitlement. Barriers to female

entrepreneurship could also be identified and addressed. Another option, suggested by Turk et al (2010), is to require firms to identify and address pay inequalities between men and women.

Making the tax system more employment-friendly

Evidence across OECD countries shows that shifting the tax burden from labour to less distortive taxes raises labour utilisation and GDP growth (Johansson et al., 2008). The benefits are likely to be especially large in Estonia, as such a shift can make domestic employment more attractive relative to employment abroad. It is therefore welcome that some steps have been taken to lower taxation of labour and personal income in recent years. The unemployment insurance contribution rate was lowered by 1.2 percentage points in 2012 and the basic income tax allowance was raised from EUR 145 to EUR 154 in 2014. A further reduction of unemployment insurance contributions by 0.6 percentage points, to 2.4%, is planned in 2015. The labour tax wedge remained high in international comparison in 2013 especially for workers on low earnings (Figure 2.4) and this is will not change markedly as a result of the planned tax reductions and the increase of child benefits in 2015. The most effective way to reduce the labour tax wedge on low wage earners is to reduce their social security contributions, as these account for most of their tax wedge. Reducing the tax wedge for low wage earners could strengthen employment as well as encourage some young workers on low pay to stay in Estonia and reduce poverty risks.

Figure 2.4. **Labour tax wedges**



1. Working full-time and receiving average gross earnings.
Source: OECD (2014), Taxing Wages 2014.

StatLink http://dx.doi.org/10.1787/888933180119

Unlike personal income taxes the burden of social security contributions falls fully on income earned on domestic employment, including self-employment. By contrast, personal income taxes are also paid on all capital income of households, including from foreign sources. Since no social security contributions are paid on such income, it is taxed lower. Nonetheless, increasing the basic income tax allowance also is a possibility to increase the attractiveness of Estonia as a location for earning income.

Social security contributions, which are levied on wage and self-employment income, make up a large share of total tax revenue, although this share is now somewhat smaller

than indicated in Table 2.3. The contribution of personal income taxation to government revenues is smaller than in many OECD economies, reflecting the flat tax rate of 21%. Taken together, social security contributions and personal income taxes make up a somewhat bigger share than in OECD countries on average. By contrast, the taxation of real estate contributes relatively little to revenues, as only land (but not buildings) is taxed and the valuation of land does not reflect market values (OECD, 2012). Moreover, as past *Economic Surveys of Estonia* (e.g. OECD, 2012) have pointed out, the assessment of land for taxation purposes does not reflect market values. Houses and apartments are not taxed and taxation of the land underneath detached houses was abolished in 2013. Shifting the tax burden to real estate is likely to be particularly effective in encouraging employment as the incidence of real estate taxes is likely to fall mostly on real estate owners, owing to the fixed supply of land.

Table 2.3. **Tax revenue composition, 2011**

	Taxes on corporate income	Taxes on personal income	Social security and payroll	Taxes on property	Taxes on goods and services
Austria[1]	5.2	22.4	41.3	1.2	27.8
Belgium	6.6	28.3	32.2	7.3	24.7
Czech Republic	9.7	10.7	44.1	1.5	33.4
Denmark[1]	5.8	50.7	2.6	4.1	32.0
Estonia	**3.8**	**16.2**	**37.0**	**1.0**	**41.5**
Finland	6.3	29.3	28.9	2.6	32.6
France[1]	5.7	17.0	41.0	8.5	24.8
Germany	4.7	24.8	38.5	2.4	29.1
Ireland	8.9	32.1	17.4	6.8	34.3
Korea	15.5	14.8	23.8	11.4	31.4
Luxembourg	13.6	22.4	29.6	7.1	27.0
Netherlands	5.4	21.4	38.4	3.3	30.0
Norway	25.2	23.2	22.3	2.9	26.5
Poland	6.4	13.8	36.1	3.7	39.2
Portugal	9.8	18.6	28.2	3.2	39.2
Slovak Republic	8.4	8.8	42.7	1.4	37.2
Slovenia	4.6	15.4	40.6	1.6	37.4
Sweden	7.3	27.7	32.9	2.4	29.3
United Kingdom	8.6	28.2	18.7	11.6	32.3
United States	9.4	37.1	22.8	12.4	18.3
OECD-Total	**8.7**	**24.1**	**27.3**	**5.4**	**32.9**

1. The total tax revenue has been reduced by the amount of any capital transfer that represents uncollected taxes. The capital transfer has been allocated between tax headings in proportion to the reported tax revenue, except for Austria where it has been allocated to the social security contributions heading

Source: OECD Tax Revenue Statistics.

The social security benefit system, which covers health, unemployment and old-age insurance, funds some redistributive benefit entitlements which are not linked to workers' labour earnings records, so could be more appropriately funded from general tax revenue. In the pension system, for example, redistributive spending across individuals within the same age cohort includes survivors' pensions, pension entitlements for people who have raised children and minimum pensions. Funding such spending from general tax revenue could help reduce the labour tax wedge.

Minimum social security payments discourage part-time employment

Public pension and health insurance contributions are subject to a lump-sum minimum "social tax" payment which is binding for workers on low earnings. It amounts to 33% of full-time earnings for workers who are paid the minimum wage. The minimum social tax is binding for most workers who work half-time and who earn less than the median wage. Its payment is generally required for adults to have access to health insurance benefits, although students, pensioners and parents of children less than 3 years old are exempt from the requirement. Workers with several jobs can also combine the contributions from different employers in order to fulfil the minimum requirement. In addition, adults not in employment are exempt if they register as unemployed. The minimum lump-sum payment pushes up the effective tax rate for part-time workers, reducing incentives to take up part-time work. At 7½ per cent, Estonia has one of the lowest shares of part time employment in the OECD. The small number of part-time workers is however also likely to reflect relatively low income levels in Estonia compared to most OECD countries. Higher income levels tend to reduce the number of hours workers supply to the labour market. The minimum social tax also raises poverty risks in households in which part-time employment is the main source of income.

Evidence across OECD countries shows that appropriate incentives for part-time work help create more job opportunities for people out of work (OECD, 2010a). Removing barriers to part-time employment also improves wellbeing, as it allows workers to adapt working hours to their needs. Part-time workers often benefit from better health and safety outcomes. Part-time employment opportunities also make it easier to take up continued and vocational education (OECD, 2010b). Raising participation in such education is a key policy priority for Estonia (see the 2012 Economic Survey and further below).

Since some individuals out of work fail to register as unemployed, the current system results in health insurance coverage gaps. Around 7% of the population are not covered. Lack of coverage results in health and wealth risks for affected individuals. In addition, it harms efficiency in the provision of health care services, as individuals without health insurance may seek emergency hospital care which is available to all but is often relatively expensive. The current system is also likely to result in higher administrative burdens for the public employment service. Some individuals are likely to register as unemployed to be exempt from the minimum contribution even though they may not genuinely be looking for employment.

To avoid disincentives for part-time work, it would be preferable to eliminate the lump sum minimum social tax, at least with respect to the pension insurance contribution. Instead, this contribution could be levied at the standard proportional rate for all workers. With respect to health insurance, an alternative could be to transform the minimum payment obligation into a lump-sum capitation fee for adults subject to a means test on household income. Such a system could be integrated in the taxation of household income and could automatically exempt all low-income households from the contribution, such as for example in Switzerland. It would require high-income households with non-working spouses to make a bigger contribution to the funding of health insurance. Reforms along these lines would reduce disincentives to take up part-time employment, reduce poverty risks, raise health insurance coverage and help the public employment service reduce administrative costs. They could also broaden the revenue base for health insurance, including to all types of household income.

Broadening tax bases would make some room for reductions of taxes on labour income

Some exemptions in personal income taxation lower revenues. Eliminating them would create some room for a lower labour tax wedge. Moreover, some exemptions benefit mostly high-income households and may harm economic efficiency. The tax deductibility of mortgage payments risks encouraging excessive mortgage borrowing. The tax subsidy also favours owner-occupied over rented housing, which tends to reduce labour mobility of workers and can thereby contribute to mismatch of workers and vacancies (OECD, 2006), a key concern in Estonia. It tends to favour middle and high-income households, in part because mortgage tax deductibility raises house prices, crowding out low-income households with low borrowing capacity from home ownership (Andrews et al., 2011). By contrast, in the taxation of rental income, deduction of maintenance costs from owners' taxable income should be allowed. Voluntary contributions to private pension funds are heavily subsidized. Contributions can be deducted in full (up to a ceiling) from personal income tax and social security contributions. Resulting pension payments are also tax free, provided they are made in the form of regular payments in retirement age. Reduced tax rates apply to other forms of pay-outs.

The pension system creates unnecessary burdens on workers

Public pension spending is expected to remain stable at about 8% of GDP until 2060 (European Commission, 2013) despite demographic ageing. In part this is because public pensions entitlements will rise less than wages, as public pensions are revalued over time according to an index determined by social security contribution revenues and price inflation. Public pension entitlements will hence also be damped as demographic ageing reduces social security contribution revenue growth. A mandatory, private funded pension system was introduced to supplement public pensions. Nevertheless, overall average pension benefit replacement rates are expected to fall from 45% to below 40% after 2030.

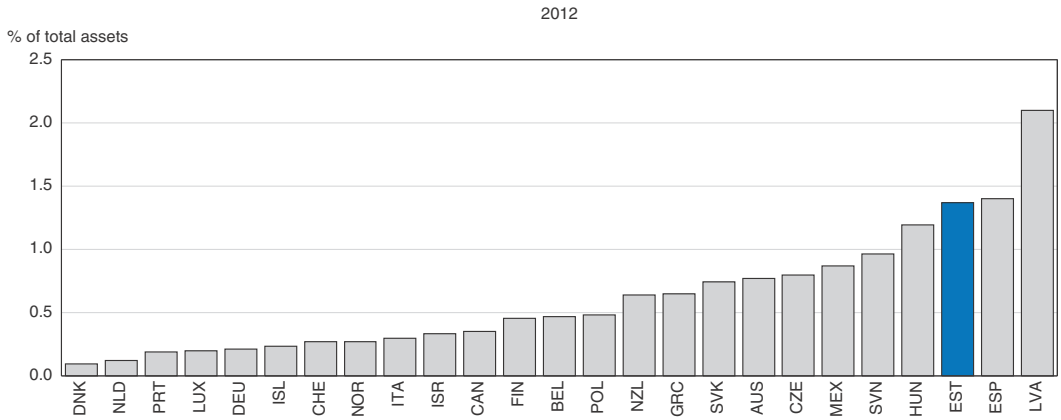
The net returns in the compulsory private funded pension pillar have been low

Since 2002, all young workers entering the Estonian labour market are enrolled in the compulsory, private, defined-contribution pension system. Many older workers have also enrolled in it voluntarily. For voluntary members, the decision to join the second pillar is irreversible. For enrolled workers, 6% of workers' salaries flow into an accredited fund chosen by each worker, of which 4 percentage points via employers' social security contributions.

However, since its inception net real returns after operating costs in the private pension system have been only 0.4% according to the Ministry of Finance. The National Audit Office (2014) has estimated a return of 0.0%. To some extent, the real exchange rate appreciation, which is typically associated with convergence of real income in catch-up economies such as Estonia, reduces the real return. The average gross nominal return in the second pension pillar has amounted to about 4% and the gross real return 2%.

Returns have been reduced by high costs. According to the Ministry of Finance, fund managers' operating costs have amounted to 1½ percentage points of asset value on average since 2002. Recent evidence from survey data collected by the OECD for purposes of international comparison suggests that fees and other operating costs borne by workers are relatively high in international comparison (Figure 2.5). Differences in the scale of pension fund systems do not seem to contribute much to explaining international

Figure 2.5. **Pension funds' operating expenses as a share of assets under management**



Source: OECD Global Pension Statistics and Finance Ministry of Estonia.

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differences in fees and costs borne by contributors (Tapia and Yermo, 2008). The negative impact of fees on future pensions can be substantial. An increase in the annual management charge of 1% of funds under management can reduce accumulated assets by as much as 20% over a 40 year contribution period (Whitehouse, 2001), assuming constant gross returns. Moreover, according to IOPS (2011), available empirical evidence does not suggest that higher costs and fees result in improvements in terms of higher gross returns or improved quality of service. High costs imply that the contributions needed to finance a given expected pension pay-out must be higher, which, like a tax on labour, is a disincentive to work in Estonia. Moreover, high costs also result in a loss of wealth for private households, but (unlike a tax) do not generate revenues to government.

Pension funds' marketing accounts for half of their operating costs. Marketing activities are largely unregulated, although pension funds have been barred from making presents to new clients and from bundling pension funds in the compulsory system with other financial products. Marketing may result in large deadweight loss, especially in the context of a compulsory system, in which competition among pension funds is limited to attracting clients from other funds, and in which some contributors lack financial education. Moreover, scope for institutional investors to outperform each other in the long-term through superior investment strategies is likely to be limited, reducing any benefits marketing may have. Marketing expenses charged to pension fund members may also be used by financial groups to cross-subsidise their other activities. Hastings et al (2013) found that marketing activities of fund managers with the purpose of attracting contributors to their funds lowered the responsiveness of contributors to differences in costs among pension funds, especially among low-wage workers. Such activities did not serve to inform workers about the effective prices of the options available to them. Instead, they fostered brand loyalty. As a result, advertising resulted in higher costs borne by contributors. Berstein and Micco (2003) show that, in oligopolistic market structures, pension funds have incentives to engage in marketing that reduces social welfare but generates costs to raise profit margins. The government will implement a national program promoting financial literacy from 2014 to 2020. However, this step may not reach everybody covered in the compulsory system and will have a budgetary cost to the government.

To improve net returns, the government has tightened regulation on the fees charged by pension funds and has broadened the types of assets they can invest in. Issuance fees, which are paid at the point of purchase of fund shares and therefore discourage switching, were prohibited in 2009. Regulatory ceilings on the management fee were lowered for funds deemed to follow a conservative investment strategy, from 1.5 to 1.2% of assets under management. Ceilings for management costs were lowered for funds managing large asset volumes starting in 2011. In addition the government expects the management fees to fall further in the longer term, as it plans to apply stricter rules on the calculation of management fee ceilings in the largest pension funds from 2015 onwards. It expects that these measures will lower the management fees paid by contributors to below 1% of assets by 2019. The government also plans to allow pension funds to invest in non-quoted stocks and precious metals to give them more room to raise gross returns. Nonetheless, scope to improve the fee structure remains to encourage cost-cutting competition among pension fund providers. In particular, redemption fees, which discourage switching as much as issuance fees, are substantial. They are allowed on the grounds that switching generates costs for pension fund managers.

To strengthen competition among pension funds, the government has strengthened requirements on the disclosure of fees, costs and other financial information from pension funds to improve transparency. The government has also allowed workers to switch fund up to four times a year, rather than once. The government is planning to create and launch a website providing information on pension funds. These steps are welcome. Nonetheless, transparency could be improved further. There is still a need to ensure that the information is disclosed in a standardized manner so that members can easily comprehend and compare the information provided by different pension funds. The government intends to take the necessary steps. Investment funds are not obliged to disclose costs resulting from fees of other investment funds in which they invest. It is welcome that the government plans to force pension funds to disclose such costs.

In view of the evidence suggesting that competition among pension funds in compulsory systems is not effective enough, corporate governance practices in pension fund management also have a role to play in ensuring they act in contributors' interests. Since 2010, Estonia has strengthened the legal provisions to prevent conflicts of interest in pension funds and asset management companies. These provisions set out that the management companies must act in the interest of the pension fund and its members. Estonia has also taken regulatory action to limit the use of pension funds to finance other activities of the pension fund supplier. Nonetheless, board members have incentives and a legal obligation to act in the interest of their shareholders which can be to the detriment of pension fund members. The establishment of a position for an independent board member in pension fund management companies could help improve representation of contributors' interests. The Estonian government is considering taking such a step. Some countries, such as Australia, have gone further and have required all board members to represent contributors' interests and to be independent of shareholders.

Several countries such as Australia and Sweden – have made policy reforms to reduce costs in private pension schemes (OECD, 2013b). Australia and Sweden have introduced a low-cost default-choice fund, in which contributors invest unless they take a deliberate decision to invest in another fund. Costs in these funds can be kept low with passive investment strategies, which follow the composition of security indices, and by doing away with marketing. Such a default-choice fund helps avoid that uninformed contributors'

invest in funds where high costs depress returns. They also serve as low-cost benchmarks and may therefore also help to drive down costs in other funds. In Sweden the default-choice fund is managed by a government agency. In Chile, all labour market entrants contribute to a low cost fund in their first five years. This fund is attributed in a tendering process to the supplier offering the lowest costs. Several countries have outlawed advertising in compulsory funded pension systems, such as Poland and Sweden.

Sweden appears to have been particularly successful in reducing fund management costs (Box 2.2). Sweden has facilitated entry, by allowing all pension funds operating outside the compulsory system to be supplied inside the compulsory pension system as well, without further requirements, except the willingness of suppliers to accept substantial discounts with respect to the fees they charge outside the compulsory pension system. By contrast, Estonia requires pension funds to be specifically set up for the compulsory system. The centralisation of transactions in Sweden also appears to have lowered costs and strengthened competition. By doing away with pension funds' marketing activities, the system is likely to have reduced scope for cost-inflating cross-subsidisation of other activities of the financial groups. In the same vein, Japan set up a new authority in 2010 to run public schemes at a lower cost, while centralised private pension management is a policy objective in Mexico and the United Kingdom (OECD, 2013b).

If the government's efforts do not lower costs close to the levels observed in best-performing countries over the next few years, it should undertake a more fundamental reform of the compulsory private pension system, for example, along the lines of the Swedish system, including the introduction of a low-cost default fund.

Box 2.2. **The Swedish drive to reduce fees in the private compulsory pension system**

The creation of the *Premium Pension Authority* in 1998 was key to reducing management costs in the compulsory, funded pension system in Sweden. Its responsibilities were taken over by the *Swedish Pension Authority* (SPA) in 2010. The SPA acts as a clearing house in the market of pension funds within the system. Pension fund suppliers wishing to participate in the Swedish compulsory private pension system have to accept management fee rebates. The SPA has set rebates of about two thirds with respect to the fees charged on the same funds offered outside the compulsory system (Tapia and Yermo, 2008), although the rebates tend to be smaller for small investment funds. In addition, since 2014, the SPA has imposed caps on fee levels. Workers choose among these investment funds. The SPA then carries out the transactions and allocates fund shares to individual accounts accordingly. The centralization of the transactions helps to reduce transaction costs. As a result, contributors do not face any charges for switching funds and there are no limits on how often members can switch funds. The Authority also provides uniform information on fees and costs which are deducted from gross returns. Advertising is banned. Because of the intermediation role of the SPA, suppliers cannot identify individual investors having chosen their funds The large rebates have not discouraged entry. More than 900 investment funds have entered the market, including many small funds.

Containing spending in public pensions can help limit social security contributions

Disability pensions as well as special pension regimes for workers in specific occupations and sectors account for about a quarter of public pension spending (National Audit Office, 2014), which is mostly funded from social security contributions. While these pensions are often low, about 40% of men and 30% of women receive public pensions before they attain the legal retirement age. The average age of first pension receipt is 52 years (Center for Policy Studies, 2011). In part special pension regimes exist because workers in these occupations or sectors are presumed to face higher health risks. However, in most cases, their health risks appear not to be higher (National Audit Office, 2014). The impact on labour market participation of these special pension regimes has been limited because pension receipt is compatible with work and employed pensioners benefit from tax advantages, including reduced employer social security contribution payments for workers receiving special occupational and disability pensions. However, as the 2012 Economic Survey (OECD, 2012) has pointed out, disability benefit recipients do not have access to activation measures, lowering their employability.

Parliament is considering a reform of disability benefits. The planned reform aims at reducing inflows into and raising outflows out of disability by strengthening assessment of the capacity to work, and making activation measures available to disability benefit recipients, including individual-based training and job-seeking services. The planned reform also foresees provision of rehabilitation services as early as possible and to tie the receipt of benefits to the obligation to use activating services (National Audit Office, 2014).The government also plans to reform the occupational and sectoral early pension schemes.

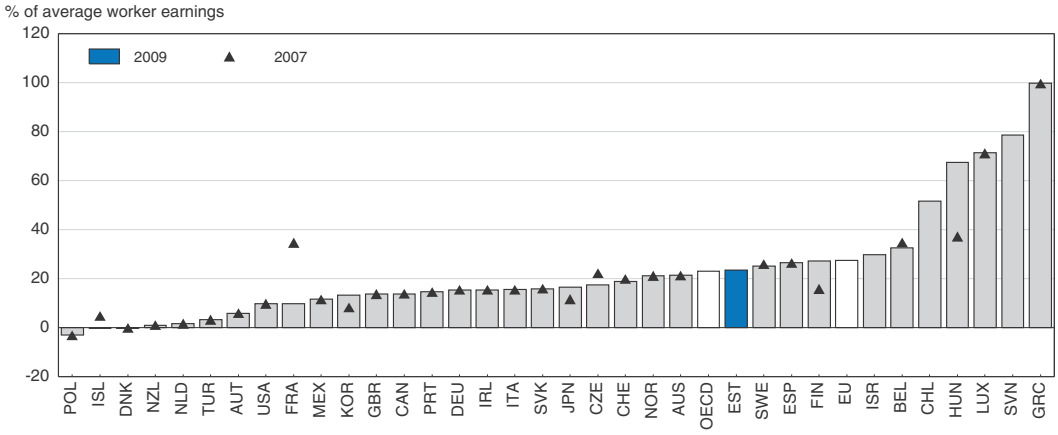
However, Estonia still does not have work accident and occupational sickness insurance. Such insurance, coupled with experience-rated employer contributions, is key for employers to have adequate incentives to prevent deterioration of health outcomes at work. As the 2012 Economic Survey has pointed out, work-related accidents and diseases constitute an important health risk in Estonia, particularly for workers in low-skill occupations. Disability pensions have provided substantial poverty relief in the past. It is therefore also important that reforms limiting access to disability pensions are accompanied by steps to provide more generous, means-tested minimum income support for the unemployed, combined with more effective activation policies, as pointed out in the 2012 Economic Survey (OECD, 2012).

One option to avoid falling pension benefit replacement rates without raising contribution rates is to raise the retirement age. Pension reform introduced in 2012 will gradually raise the legal retirement age from 63 to 65 for men and from 60.5 to 65 for women between 2017 and 2026, helping to contain pension spending. The legal retirement age could be indexed to gains in life expectancy after 2026. There also is room to improve incentives for later retirement. The average age of first regular old age pension receipt is 59 years, significantly below the legal retirement age of men and women.

As most OECD countries, Estonia allows retirement on old-age pensions before and after the legally defined age subject to discounts for earlier retirement and supplements for later retirement, provided the pension entitlements exceed minimum pensions. According to OECD estimates, workers' net pension wealth decreases if they decide to retire later, resulting in a positive implicit tax on continued work without pension receipt. Hence, workers may have incentives to draw old-age pensions early resulting in costs for

government finances. While an implicit tax on later retirement has also been estimated in pension systems of other OECD countries, it is relatively large in Estonia, according to estimates with 2009 data (Figure 2.6). In a similar vein, more recent evidence shows that postponing the retirement age from 60 to 65 reduces the present value of old-age pension payments of Estonian workers (OECD, 2013b), even though Estonian employers continue to pay substantial pension contributions (20% of the gross salary) for workers who decide to continue working between the age of 60 and 65. Incentives to retire early can also have a regressive effect, as workers with poor earnings record may not be able to take advantage of it as they may not have acquired rights exceeding the minimum pension before the legal retirement age.

Figure 2.6. **Implicit tax on continued work: old-age pensions**[1]



1. Implicit tax on continued work in regular old-age pension system, for 60 year olds.
Source: Duval, R. (2003), "The Retirement Effects of Old-Age Pension and Early Retirement Schemes in OECD Countries", *OECD Economics Department Working Papers*, No. 370, OECD Publishing and OECD calculations.

StatLink http://dx.doi.org/10.1787/888933180238

Strengthening the supply of marketable skills has been on the forefront of the government agenda

According to PISA results, literacy, numeracy and science competences among Estonian youth are strong. Numeracy and literacy skills are also above average among OECD countries for the adult population, although results for problem-solving skills have been somewhat less favourable (OECD, 2013f). Estonia has made progress in reducing early school drop-out, as the share of youth leaving the education system without an upper secondary degree out has declined from 14% in 2009 to 10% in 2013. This share is now lower than in most OECD countries. The government has also implemented the European Union's "youth guarantee" programme. In particular, youth who have been inactive for 4 months receive an education, training or employment offer from the government. The government has also taken steps to make the supply of skills more relevant for the labour market. It has set up a task force to anticipate future skills demand. It will establish regular consultations between the government, employer representatives and unions on a nationwide, sectoral level. The task force is also required to propose institutional reforms to improve cooperation of stakeholders for the monitoring of skill mismatches. The government has adopted the Estonian Lifelong Learning Strategy 2014-20 (Box 2.3).

Box 2.3. **The Estonian life-long learning strategy 2014-2020**

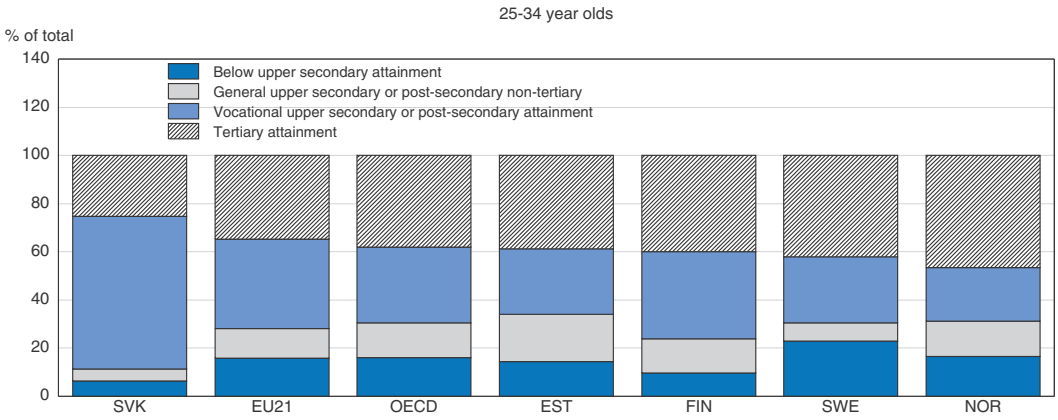
The Strategy aims at meeting labour market needs better, as well as at meeting well-being objectives. It will serve as the basis for decisions for educational policy and funding. Programmes to implement the Strategy are being elaborated by the Ministry of Education and Research. To monitor the application of the strategy, a steering committee will be formed, which will include experts from the field of education and employment. Every two years, it will revise implementation. The Strategy fixes targets, for example on participation in life-long learning, the number of people with professional or vocational qualifications, digital skills and the use of digital technology as well as equal opportunities. Progress is also measured by key targets covering labour market outcomes, numeracy and literacy skills. Learning opportunities should be improved particularly for those with weak performance in the labour market. A regular nation-wide survey will be conducted to measure stakeholders' satisfaction with the outcomes.

The measures envisaged include reviewing content and volume of education programmes, changing assessment and evaluation principles, developing teacher training as well as strengthening educational research. Providing information and counselling services will be improved with priority placed on the final stage of basic education. Strengthening of international experiences and competences will be supported. The study of sciences will be promoted especially among girls. The government, in cooperation with employers, will forecast and monitor labour market needs.

Furthermore, a draft *Adult Education Act* is in preparation to set quality standards as well as to increase the visibility of adult training.

Despite the decline in the early drop-out rate, 30% of young people do not have a professional or vocational qualification which prepares for labour market entry. Relatively many young people obtain upper secondary academic degrees but do not continue studying at university. The share of young people whose highest educational attainment is a general upper secondary degree is relatively large (Figure 2.7). Only 34% of students attend vocational courses, fewer than in most European countries (OECD, 2013b). Academic upper secondary degrees do not prepare for immediate labour market entry in Estonia. The

Figure 2.7. **Highest educational attainment of young adults**



Source: OECD (2013), *Education at a Glance 2013*.

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government aims at reducing the share of young people without professional or vocational qualification to below 25%. To reach this target, it aims at raising participation in vocational education and training. The new framework to forecast skills demand should also help more youth obtain professional qualifications.

Across European countries, employment prospects for youth holding at most upper secondary degrees are better if their degree is vocationally-oriented than academically oriented (ECDVT, 2013). Vocational education graduates move more quickly from school to a job. Their job tenures tend to be longer. They are more likely to obtain permanent contracts and less likely to experience qualification mismatch. Their income prospects are also better initially, although the relationship tends to reverse beyond the age of 30. Moreover, graduates from work-based vocational education and training (VET) fare better than those from school-based programmes. The probability of being employed is significantly higher for work-based VET graduates and their transition from school to work quicker. There also is an income premium of work-based VET graduates relative to school-based graduates. Evidence across OECD economies also shows that labour market outcomes of vocational graduates improve if substantial work-based training is built into programmes (OECD, 2014).

The benefits of vocational education on labour market performance in terms of raising employment rates and reducing qualification mismatch are less marked in Estonia than in other European economies (ECDVT, 2013). Graduates from upper secondary vocational education are even subject to a higher risk of over qualification than graduates from academic upper secondary education who enter the labour market. Moreover, as the 2012 Economic Survey noted, dropping-out is still high specifically in vocational schools (OECD, 2012). Drop-outs from these schools have remained high in recent years. Estonian vocational graduates earn lower wages than their general education peers although the gap has diminished according to data from Statistics Estonia.

Young tertiary graduates perform well in the Estonian labour market in international comparison. 85% of young people aged 15-34 year olds who graduated from higher education less than 3 years earlier are in employment. In most European OECD economies this share is substantially lower. By contrast only 67% of young people with an upper secondary degree are in employment up to 3 years after graduating, less than in many European OECD countries (Table 2.4). Estimated rates of return to tertiary education are also high. This applies both to private returns, which accrue to graduates in terms of higher net wages, as well as to the returns accruing to government, which result from higher tax revenues and lower benefit spending for the unemployed (Figure 2.8). The fact that highly skilled young people do not tend to emigrate to higher-income countries in Europe confirms that such skills are in high demand in Estonia.

These findings suggest that improving access to upper secondary vocational education while expanding its work-place -based content as well as improving access to higher education for all talented youth would improve skills supply, reduce skill mismatches and improve employability and productivity performance. Improving access to education may also encourage some young people to stay in Estonia rather than emigrate.

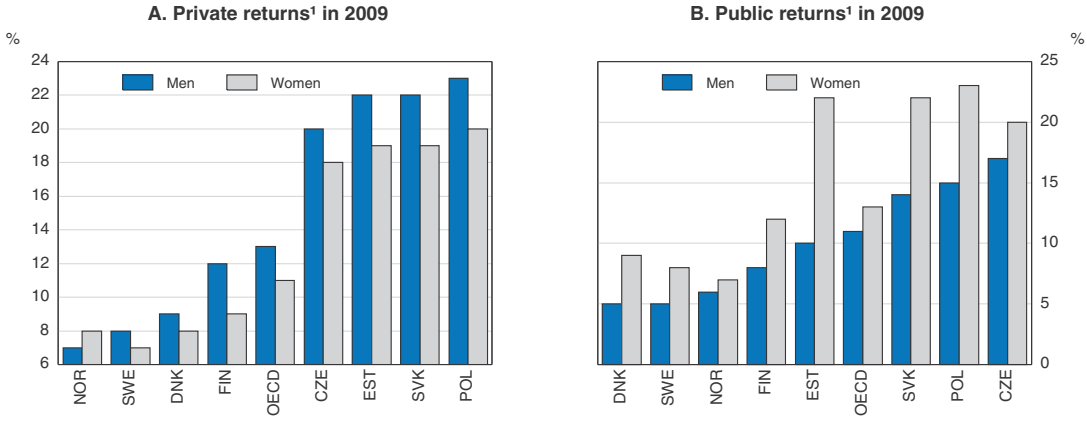
Table 2.4. **Employment rates of young people up to 3 years after graduation by educational attainment level**

Per cent, 15-34 year olds, 2013

	Upper secondary and post-secondary non-tertiary education (levels 3 and 4)	First and second stage of tertiary education (levels 5 and 6)
Euro area (13 countries)	66.7	79.0
Czech Republic	73.9	85.6
Denmark	78.6	84.3
Estonia	**65.8**	**85.4**
Latvia	70.1	84.1
Poland	61.7	81.3
Slovenia	62.0	79.3
Slovakia	61.4	76.7
Finland	75.2	85.7
Sweden	78.1	89.8
United Kingdom	72.3	87.6

Source: Eurostat.

Figure 2.8. **Private and public returns to tertiary education**



1. Internal rate of return.
Source: OECD (2103), *Education at a Glance*.

StatLink http://dx.doi.org/10.1787/888933180242

Improving vocational education

The government has taken substantial steps to improve vocational education in recent years. It has supported upgrading the technical equipment of vocational schools, in part financed with European Union funds. Vocational schools' programmes have been based on occupational standards. Teaching in vocational schools has also been opened up to practitioners from businesses. Labour market outcomes of graduates from individual schools have been benchmarked. Individual schools' graduates' average earnings are published by Statistics Estonia, facilitating choice and strengthening competition among education institutions. These steps may well have contributed to the trend improvement in earnings of graduates from vocational education relative to graduates from general education. However, practitioners can as yet not combine work in their businesses with part-time teaching in a vocational school. Such part-time arrangements have proven effective in reinforcing links between the business community and vocational education institutions across OECD countries (OECD, 2014).

An attractive vocational education system can also contribute to improving the continuous education system. Adults are increasingly seeking to improve their skills through continuous education offered by vocational education schools. To make vocational education and training attractive for the adult population, flexible ways of recognising skills should be encouraged, including both recognition of prior learning and competence-based examinations. To meet the needs of adults, flexible forms of provision are useful, including part-time, modular arrangements, distance learning and competence-based approaches. As the 2012 *Economic Survey* pointed out, there is a need to provide public co-financing for continuous education, especially of low educated and older workers, as well as towards employees in SMEs.

The still relatively weak performance of the vocational education system can in part be related to the fact that businesses remain little involved in the provision of vocational education and training, as pointed out in the 2012 *Economic Survey of Estonia*. In particular, vocational education is little workplace-based. Most students attend school-based education, where students typically only complete 4-6 months of internships. Only 2% of youth who complete vocational education do an apprenticeship. The government aims at raising this share to 7%.

One constraint on the development of firm-based training appears to be the small size of many firms. Norway has developed a system in which firms can share apprenticeship places. It also helps providing information about local firms' skill needs to schools and their pupils. Students are placed in apprenticeships through training Offices for Vocational Training at the local level. Firms with common skill needs cooperate in these Offices, through which they can offer joint apprenticeships. Municipal school authorities have a secretariat that provides support in running them. There are teachers in most schools who maintain contacts with enterprises as a regular part of their job (Kuczera et al., 2008). Networks of two or more firms that jointly offer apprenticeship training have also been found to be effective in fostering apprenticeship supply by Muehlemann and Wolter (2013). Partnerships between training providers and employers encourage training provision which is sensitive to labour market needs, familiarise employers with vocational programmes and qualifications, and help teachers of vocational subjects to keep up-to-date (OECD, 2014f). Local flexibility in curricula supports such partnerships. For example, in Germany, each individual vocational school has some flexibility in its curriculum to adapt it to local needs. Steps to provide such flexibility are being considered in the United Kingdom in its reform of vocational education (OECD, 2014f).

A barrier to the development of apprenticeships is the requirement to pay the national minimum wage to trainees. At 40% of the median wage, the minimum wage is likely to be too high for training purposes in many cases. Since trainees may not be able to cover living expenses if they are paid substantially less than the minimum wage, government financial support for students from low-income households is needed. However, granting an exception from the minimum wage for trainees requires that sufficient training is indeed provided. As the previous *Economic Survey of Estonia* pointed out, there still is a need to monitor the quality of work practice schemes and to develop quality assurance for apprenticeships (OECD, 2012). Quality standards for work-based learning help to avoid the allocation of students to unskilled tasks and ensure they acquire useful occupational skills. Such standards may cover the content and duration of training, the assessment of training outcomes and the competences of those who supervise trainees. The work-based learning should be systematic, quality-assured and credit-bearing. Requiring didactic skills from

workplace-based trainers has been found to improve training outcomes in Germany (OECD, 2010b). In Germany, the cost of courses preparing for the exam for trainers is mainly covered by the participants, whose training qualifications lead to better career prospects and a higher salary. In Germany, Denmark and Switzerland permission for training is withdrawn from companies that provide sub-standard training (OECD, 2010b). A clear legal framework can be an important support for work-based learning (OECD, 2014f).

Independent and professional career guidance backed by solid career information at the end of lower secondary education plays an important role for youth career prospects (OECD, 2014f). The Estonian government's Lifelong Learning Strategy recognises the need to provide such guidance. Mandatory short internships towards the end of compulsory school can play a useful role, as research suggests that young people value information on jobs and careers if obtained in a real workplace and through contacts with working people (Transition Review Group, 2005).

Youth attending vocational education away from home do not receive financial assistance to bear the additional costs, except some subsidies to cover costs of transport as well as access to subsidised meals and lodging. More financial support for these young people would make it easier for them to choose vocational education away from home, helping to improve matching of youth to firms' skill needs. It may be particularly important in Estonia to foster mobility of students owing to low population density. More financial support would also help to reduce drop-out, which is highest in rural areas, where vocational schools are more likely to be distant. Such financial support needs to be directed at families with low income and parental education.

Youth are 2-to-3 times as likely to drop out from lower or upper secondary education if neither parent have at least upper secondary education than youth whose parents have graduated at a higher level. These parents are more likely to underestimate the benefits of education and to be less able to support their children. Male youth in these families are especially likely to drop out, perhaps because gender stereotypes put particular pressure on them to take up paid work early on to supplement family income. Help for these families to meet the costs of upper secondary education may therefore be particularly effective in reducing the risk of drop-out.

Grants for vocational students could also support the acquisition of vocational education and training abroad. Grants for international activities have been argued to help improve qualifications of vocational education students (ECDVT, 2013) and may be particularly useful for Estonia, as they could reinforce the transfer of technology from higher-income countries.

Improving access to tertiary education, notably for the disadvantaged

Strong PISA results, relatively favourable employment outcomes of young tertiary graduates, high returns to tertiary education and rising vacancies for highly skilled workers suggest that widening access to university education has substantial economic benefits. As pointed out in the 2012 *Economic Survey,* students from families with modest socio-economic background had particularly limited access to university education. By contrast, PISA results of pupils with weak socio-economic background are particularly strong in international comparison (OECD, 2013g) underlining the benefits of removing barriers for students with low socio-economic background to access tertiary education. While university fees have been abolished, wealth in many Estonian households is still

modest, making it more difficult for families to contribute to students' living expenses. Moreover, families with low socio-economic background tend to underestimate the benefits of post-compulsory education, including tertiary education.

It is therefore welcome that an improved needs-based study grant system was implemented in 2013. Grants vary from EUR 75 to 220 per month, paid 10 months a year, and depend mostly on students' and/or their family income. Students with excellent study results may apply for an additional grant of EUR 100 per month. From 2014 students studying in "smart specialisation" priority areas defined by the Estonian government (ICT, health technology and resource efficiency) may apply for higher grants (EUR 160-320 per month). To qualify, students must pass the full study programme each semester. Failing to pass an exam may result in loss of entitlement in the following semester. Grants can be used for study abroad up to a year.

Spending on income-dependent student grants is expected to rise from 8 million to 16 million (0.1% of GDP) in 2016. Relative to GDP, spending will remain lower than in most OECD countries for which comparable data is available (OECD, 2013b). While Estonian students do not have to pay fees, transfers to private households for tertiary education relative to GDP are also lower than in continental European countries where fee levels tend to be modest. For example, in Nordic countries, where students also do not pay fees, such transfers range between 0.3% of GDP (Finland) to 1% of GDP (Norway). It may be worthwhile assessing whether the conditionality concerning study progress as currently defined deters young people from disadvantaged socio-economic background. Extending the portability of grants to foreign universities, which is currently limited to one year, may widen the scope for students to pursue specialised studies abroad and which Estonia, because of its small size, may not be able to offer. Studies abroad may in some cases also contribute to knowledge transfer from abroad.

Student loans could also be further developed. Full-time resident students can apply for state guaranteed loans. Estonian citizens or persons with a permanent residence permit, with full-time studies, have the right to obtain a study loan. The maximum amount is EUR 1 920 per academic year, which may insufficient to cover study costs. Moreover repayments of the loans are not income contingent.

The Russian-speaking minority suffers from relatively high unemployment

About 30% of the resident population is considered "ethnic non-Estonian", of which most are of Russian origin. Many are not Estonian native speakers. Fifteen percent of the resident population in Estonia are Russian native speakers. While labour market statistics by language background are not available, the unemployment rate of ethnic non-Estonians was 12.4% whereas for Estonians it was 6.8% in 2013, despite broadly similar educational attainment levels. This difference has fallen little over the past 25 years (OECD, 2010c). Higher unemployment rates among ethnic Russians, who mostly live in the north-east of the country, contribute to regional differences in unemployment rates. One reason for poorer employment prospects may be lack of Estonian language skills, as argued in OECD (2010c). However, recent empirical evidence suggests that Estonian language skills raise wage prospects only for a small minority of Russian-speakers at the lowest end of the wage spectrum (Toomet, 2011). This finding suggests that other factors contribute to their worse labour market outcomes. In any case, the government funds Estonian language courses. Self-evaluated knowledge of Estonian has improved, but 31% of non-native speakers continue to lack basic Estonian language skills.

Close to one half of native Russian speakers are stateless and therefore face considerable disadvantages with respect to their labour market prospects. They do not have access to jobs in the civil service, they face restrictions on the ownership of land, and they may be excluded from certain private sector jobs (OECD, 2010c). As they are not nationals of an EU country, they do not have full access to the rights associated with such citizenship within the European Union. For example, unlike Estonian nationals, they do not have access to higher education in other EU countries on the same terms as nationals of the country concerned. Adults aged 16 or older have to prove sufficient language skills to obtain Estonian citizenship through naturalization. They also have to prove knowledge of the Estonian constitution and history (OECD, 2010c). More than half of adult Russian-speaking Estonians who attempt to pass language tests fail them. Individuals who fail their exam are not reimbursed the costs of the Estonian language course. Children below the age of 16 can obtain citizenship without proof of language skills, although this requires a formal application. The government has developed an action plan to reduce the number of people with undetermined citizenship in its 2013-20 Integration Strategy (OECD, 2013b). Improving access to Estonian citizenship could strengthen labour market prospects of the stateless. For example, steps could be taken to make it easier to prove Estonian language skills.

Recommendations to make the most of human capital

Encourage equal pay between women and men

- Require both parents to take up parental leave in order for parents to qualify for the full leave entitlement. Identify and address barriers to female entrepreneurship. Consider requiring firms to identify and address pay inequalities between men and women.

Tax system

- Further reduce the taxation of labour earnings, in particular of low earnings, by reducing social security contributions on low wage earners. Raise more revenues from the taxation of real estate. To this end, broaden the tax basis of real estate taxes to include buildings, remove exemptions in land tax and evaluate property according to market values.
- Abolish the lump-sum minimum social tax.
- Broaden the base of personal income taxation, notably by eliminating the deductibility of mortgage interest payments.

Compulsory private pensions

- Reduce costs born by workers, in particular marketing expenses.
- Consider a fundamental reform of the compulsory private pension system, along the lines of the Swedish system, including the introduction of a low-cost fund to which new contributors are assigned by default.
- Improve disclosure of information on costs to the public in a standardized manner.
- Remove limits on switching between funds. Abolish redemption fees.
- Improve representation of contributors' interests in pension fund governance.

Recommendations to make the most of human capital *(cont.)*

Public pensions

- Phase out special occupational and sectoral pension regimes. Reform disability pensions as planned, In particular, increase access to activation measures and strengthen the assessment of the capacity to work. At the same time expand the safety net for unemployed workers.
- Index the legal retirement age to changes in life expectancy once the retirement age of 65 years is fully phased in 2027. Improve incentives for continued work in the old-age pension system.
- Introduce accident and occupation illness insurance with experience-rated employer contribution rates.

Improving the supply of skills

- Introduce a tax-free lower minimum wage for apprenticeships in firms which meet accredited training standards and improve financial support for students.
- Strengthen collaboration of businesses and schools at the local level.
- Provide independent and professional career guidance at the end of lower secondary education, including short internships towards the end of compulsory school.
- Lower barriers for the integration of Russian speakers in the labour market for example by providing more help to prepare to pass exams required for Estonian citizenship.

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(10 2015 02 1 P) ISBN 978-92-64-22680-7 – 2015

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Volume 2015/3
January 2015

OECD publishing
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ISSN 0376-6438
2015 SUBSCRIPTION
(18 ISSUES)

ISBN 978-92-64-22680-7
10 2015 02 1 P

9 789264 226807