



# OECD Economic Surveys ESTONIA

SEPTEMBER 2017





# **OECD Economic Surveys: Estonia 2017**

This document, as well as any data and map included herein, are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

**Please cite this publication as:**

OECD (2017), *OECD Economic Surveys: Estonia 2017*, OECD Publishing, Paris.  
[http://dx.doi.org/10.1787/eco\\_surveys-est-2017-en](http://dx.doi.org/10.1787/eco_surveys-est-2017-en)

ISBN 978-92-64-28115-8 (print)  
ISBN 978-92-64-28116-5 (PDF)  
ISBN 978-92-64-28118-9 (epub)

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

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

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.

**Photo credits:** Cover © iStockphoto.com/Oleksiy Mark.

Corrigenda to OECD publications may be found on line at: [www.oecd.org/about/publishing/corrigenda.htm](http://www.oecd.org/about/publishing/corrigenda.htm).

© OECD 2017

---

You can copy, download or print OECD content for your own use, and you can include excerpts from OECD publications, databases and multimedia products in your own documents, presentations, blogs, websites and teaching materials, provided that suitable acknowledgment of the source and copyright owner is given. All requests for public or commercial use and translation rights should be submitted to [rights@oecd.org](mailto:rights@oecd.org). Requests for permission to photocopy portions of this material for public or commercial use shall be addressed directly to the Copyright Clearance Center (CCC) at [info@copyright.com](mailto:info@copyright.com) or the Centre français d'exploitation du droit de copie (CFC) at [contact@cfcopies.com](mailto:contact@cfcopies.com).

---

## Table of contents

<b>Basic statistics of Estonia, 2016</b> .....	8
<b>Executive summary</b> .....	9
<b>Assessment and recommendations</b> .....	13
Introduction.....	14
Growth is projected to gather pace.....	17
Fiscal and social policies could better sustain inclusive growth.....	24
Unleashing productive investment and export performance.....	35
Transitioning to a greener economy.....	50
Bibliography.....	54
Annex. <b>Progress in structural reform</b> .....	57

### Thematic chapters

<b>Chapter 1. Getting the most out of trade</b> .....	63
Estonia is well integrated in global trade.....	64
Policies can further deepen integration in global trade and boost productivity... ..	72
Making trade work for all.....	84
<i>Recommendations for capitalising on trade</i> .....	91
Bibliography.....	92
<b>Chapter 2. Reviving productive investment</b> .....	95
Introduction.....	96
Moving towards more productive investment.....	97
Improving investment conditions.....	105
Addressing skill shortages.....	114
Improving infrastructure investment.....	118
Supporting green investment.....	123
<i>Recommendations to revive productive investment</i> .....	127
Bibliography.....	128

### Boxes

1. Draft budget plans.....	26
1.1. Estonia's specialisation.....	70
1.2. Higher productivity of exporters – Estonian firm-level data analysis.....	73
1.3. Building Estonia's brand name.....	83
1.4. Active labour market policies in Estonia.....	86

2.1. Fintech in Estonia. . . . .	112
2.2. Capacity utilisation in rail and ports. . . . .	121

### Tables

1. Macroeconomic indicators and projections. . . . .	17
2. Possible shocks to the Estonian economy . . . . .	24
3. Budgetary and fiscal reforms planned for 2018-20 . . . . .	26
4. Past recommendations for improving fiscal policy. . . . .	28
5. Breakdown of social spending . . . . .	30
6. Past recommendations for reducing poverty. . . . .	32
7. Past recommendations for improving business conditions . . . . .	50
8. Past recommendations for reducing CO <sub>2</sub> emissions and energy consumption . . . . .	53
1.1. Conditions of various labour immigration routes . . . . .	81
1.2. Breakdown of social spending . . . . .	90
2.1. Fintech providers of debt and equity funding in Estonia . . . . .	112

### Figures

1. Income convergence has slowed down . . . . .	14
2. Well-being can be improved . . . . .	15
3. Estonia lags behind in terms of income inequality and poverty . . . . .	16
4. Economic indicators . . . . .	18
5. Labour market conditions have tightened . . . . .	19
6. Unit labour costs have increased fast . . . . .	19
7. Investment has lost ground . . . . .	20
8. Skill shortages are a major obstacle to investment . . . . .	21
9. House prices are recovering . . . . .	21
10. The financial sector is well capitalised and profitable . . . . .	22
11. Macroeconomic vulnerabilities have diminished since 2007 . . . . .	23
12. Fiscal policy has been prudent. . . . .	25
13. Fiscal space is large . . . . .	27
14. Taxes on immovable property are among the lowest in the OECD. . . . .	28
15. High taxes on low wage earners are set to decrease . . . . .	29
16. Health outcomes vary strongly with socio-economic background. . . . .	31
17. The gender pay gap is high. . . . .	33
18. Gender stereotypes are pronounced . . . . .	34
19. Export orientation and gains in export market shares are comparable to peers. . . . .	35
20. Value added per worker embodied in foreign demand is low . . . . .	36
21. The business environment is favourable . . . . .	37
22. Credit recovery is low . . . . .	38
23. The insolvency regime is inefficient . . . . .	38
24. Employment and participation rates are high. . . . .	40
25. Labour migration is modest . . . . .	40
26. A large share of Estonians feels under-skilled. . . . .	41
27. Businesses are little involved in the provision of vocational education and training . . . . .	42
28. Participation in lifelong learning is good but low educated lag behind. . . . .	44
29. Estonia is a frontrunner in alternative finance but amounts are low . . . . .	45

30. The quality of infrastructure is average . . . . .	46
31. The quality of logistics infrastructure is poor . . . . .	46
32. Investment in intangible capital is well below OECD standards. . . . .	48
33. Innovation capacity is low . . . . .	48
34. Fixed broadband penetration and ICT use could improve. . . . .	49
35. Green growth indicators . . . . .	51
36. Energy consumption is high by international standards . . . . .	53
1.1. Export orientation and gains in export market shares are comparable to peers . . . . .	64
1.2. A snapshot of Estonian foreign trade . . . . .	66
1.3. Unit labour costs have increased fast . . . . .	67
1.4. Estonia is well integrated into global value chains and mostly as a service provider . . . . .	68
1.5. Exporters could import more value added from abroad . . . . .	69
1.6. Complexity of exported goods . . . . .	70
1.7. Employment in exports of higher value added activities increased modestly . .	71
1.8. Domestic value added of exports remains limited though on a par with peer countries . . . . .	72
1.9. Performance of export entrants. . . . .	73
1.10. Scope to improve regulation affecting trade . . . . .	75
1.11. Business-driven innovation and spending on R&D are low . . . . .	76
1.12. Innovation activity is limited . . . . .	77
1.13. Labour migration is modest . . . . .	81
1.14. Annual quota were reached recently, while the number of highly skilled migrants is modest . . . . .	82
1.15. Routine intensive jobs are at risk of automatisaton . . . . .	84
1.16. Some groups of population are consistently left behind . . . . .	85
1.17. Businesses are little involved in the provision of vocational education and training . . . . .	87
1.18. Spending on active labour market policies is low . . . . .	89
1.19. The share of social benefits received by the poor is low and has declined . . .	90
2.1. Low investment has curbed growth . . . . .	96
2.2. Investment has lost ground . . . . .	98
2.3. Investment intensity has declined in most sectors . . . . .	98
2.4. FDI inflows have dropped and are mostly reinvested earnings . . . . .	99
2.5. Intellectual property products account for a small share of total investment. . .	100
2.6. Fixed broadband penetration and ICT use could improve. . . . .	100
2.7. Innovation capacity is low . . . . .	101
2.8. Low demand and labour shortages are viewed as main obstacles to business growth. . . . .	102
2.9. The GDP slowdown does not fully explain the recent drop in investment . . . .	103
2.10. Increasing savings have not been used to invest . . . . .	103
2.11. Capital intensity remains well below the OECD average . . . . .	105
2.12. The business environment is favourable . . . . .	106
2.13. Credit recovery is low . . . . .	107
2.14. The insolvency regime is inefficient . . . . .	108
2.15. Firms mainly use internal funds to finance investment . . . . .	110

2.16. A large share of firms does not apply for bank financing because of possible rejection . . . . .	110
2.17. Estonia is a frontrunner in alternative finance but amounts are low . . . . .	113
2.18. A large share of Estonians feels under-skilled. . . . .	114
2.19. Parental leave is the lengthiest in the OECD . . . . .	117
2.20. The quality of infrastructure is average . . . . .	118
2.21. Investments in road and rail have been high . . . . .	119
2.22. The quality of logistics infrastructure is poor . . . . .	120
2.23. Freight flows have declined . . . . .	121
2.24. The share of renewables in electricity is low . . . . .	124



This Survey is published on the responsibility of the Economic and Development Review Committee 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 19 July 2017. 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 03 August, 2017.

The Secretariat's draft report was prepared for the Committee by Caroline Klein and Zuzana Smidova under the supervision of Pierre Beynet. The Survey also benefitted from contributions by Lorenzo Casullo, Olena Havrylchyk and Veiko Lember. Statistical research assistance was provided by Corinne Chanteloup and editorial assistance by Heloise Wickramanayake.

The previous Survey of Estonia was issued in February 2015.

Information about the latest as well as previous Surveys and more information about how Surveys are prepared is available at [www.oecd.org/eco/surveys](http://www.oecd.org/eco/surveys).

## Follow OECD Publications on:



[http://twitter.com/OECD\\_Pubs](http://twitter.com/OECD_Pubs)



<http://www.facebook.com/OECDPublications>



<http://www.linkedin.com/groups/OECD-Publications-4645871>



<http://www.youtube.com/oecdilibrary>



<http://www.oecd.org/oecddirect/>

## This book has...

**StatLinks** 

A service that delivers Excel® files from the printed page!

Look for the **StatLinks**  at the bottom of the tables or graphs in this book. To download the matching Excel® spreadsheet, just type the link into your Internet browser, starting with the <http://dx.doi.org> prefix, or click on the link from the e-book edition.

**BASIC STATISTICS OF ESTONIA, 2016**  
(Numbers in parentheses refer to the OECD average)\*

**LAND, PEOPLE AND ELECTORAL CYCLE**

Population (million)	1.3	Population density per km <sup>2</sup>	30.3	(37.2)	
Under 15 (%)	16.2	(17.9)	Life expectancy (years, 2015)	77.7	(80.5)
Over 65 (%)	19.1	(16.6)	Men	73.2	(77.9)
Foreign-born (% , 2015)	10.2		Women	82.2	(83.1)
Latest 5-year average growth (%)	-0.4	(0.6)	Latest general election	March 2015	

**ECONOMY**

Gross domestic product (GDP)		Value added shares (%)			
In current prices (billion USD)	23.3	Primary sector	2.9	(2.5)	
In current prices (billion EUR)	21.1	Industry including construction	26.7	(26.7)	
Latest 5-year average real growth (%)	2.6	(1.8)	Services	70.4	(70.8)
Per capita (000 USD PPP)	29.6	(42.0)			

**GENERAL GOVERNMENT**

Per cent of GDP

Expenditure	40.1	(40.8)	Gross financial debt	13.0	(108.8)
Revenue	40.3	(38.7)	Net financial debt	-43.2	(69.8)

**EXTERNAL ACCOUNTS**

Exchange rate (EUR per USD)	0.904	Main exports (% of total merchandise exports)		
PPP exchange rate (USA = 1)	0.541	Machinery and transport equipment	32.3	
In per cent of GDP		Miscellaneous manufactured articles	15.3	
Exports of goods and services	79.0	(53.9)	Manufactured goods	12.6
Imports of goods and services	75.2	(49.5)	Main imports (% of total merchandise imports)	
Current account balance	2.0	(0.3)	Machinery and transport equipment	32.9
Net international investment position (2014)	-39.4		Commodities and transactions, n.e.s.	13.8
			Manufactured goods	12.6

**LABOUR MARKET, SKILLS AND INNOVATION**

Employment rate for 15-64 year-olds (%)	72.1	(66.9)	Unemployment rate, Labour Force Survey (age 15 and over) (%)	6.8	(6.3)
Men	75.7	(74.7)	Youth (age 15-24, %)	13.5	(13.0)
Women	68.6	(59.3)	Long-term unemployed (1 year and over, %)	2.1	(2.0)
Participation rate for 15-64 year-olds (%)	77.4	(71.7)	Tertiary educational attainment 25-64 year-olds (% , 2015)	38.0	(35.0)
Average hours worked per year	1 855	(1 763)	Gross domestic expenditure on R&D (% of GDP, 2015)	1.5	(2.4)

**ENVIRONMENT**

Total primary energy supply per capita (toe, 2015)	4.2	(4.1)	CO <sub>2</sub> emissions from fuel combustion per capita (tonnes, 2014)	13.3	(9.4)
Renewables (%)	17.4	(9.6)	Water abstractions per capita (1 000 m <sup>3</sup> , 2015)	1.2	
Exposure to air pollution (more than 10 µg/m <sup>3</sup> of PM <sub>2.5</sub> , % of population, 2015)	1.1	(75.2)	Municipal waste per capita (tonnes, 2015)	0.4	(0.5)

**SOCIETY**

Income inequality (Gini coefficient, 2014)	0.346	(0.311)	Education outcomes (PISA score, 2015)		
Relative poverty rate (% , 2014)	15.5	(11.3)	Reading	519	(493)
Median disposable household income (000 USD PPP, 2014)	15.0	(22.9)	Mathematics	520	(490)
Public and private spending (% of GDP)			Science	534	(493)
Health care	6.7	(9.0)	Share of women in parliament (%)	23.8	(28.7)
Pensions (2013)	6.5	(9.1)	Net official development assistance (% of GNI)	0.19	(0.39)
Education (primary, secondary, post sec. non tertiary, 2013)	3.1	(3.7)			

Better life index: [www.oecdbetterlifeindex.org](http://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.

## Executive summary

- *Making growth stronger and more inclusive*
- *Deepening integration in global trade*
- *Unleashing productive investment*

## Making growth stronger and more inclusive

### Income convergence has slowed down



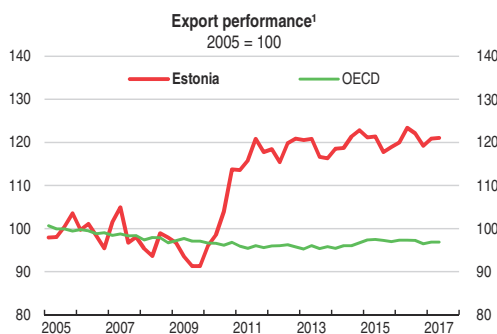
Source: OECD National Accounts Database.

StatLink <http://dx.doi.org/10.1787/888933580992>

The Estonian economy displays numerous strengths, including an excellent business environment, high educational attainment, high labour market participation, an innovative ICT sector and solid public finances. Economic growth has disappointed in recent years but is now gaining momentum. Around a quarter of the population is still at risk of poverty. Fiscal room is available for measures to increase the long-term growth potential and to make growth more inclusive. Strengthening social protection and life-long education is a priority, as it will help the most vulnerable adapt to the rapid changes induced by globalisation and technological progress.

## Deepening integration in global trade

### Export performance has been resilient



1. Export performance is measured as actual growth in exports relative to the growth of the country's export market.

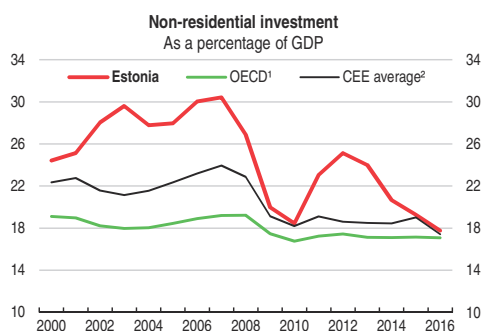
Source: OECD Economic Outlook 101 Database (updated with information available on 1 September 2017).

StatLink <http://dx.doi.org/10.1787/888933582227>

Estonia is well integrated into global trade, and export performance has been resilient. Low and medium value added products still account for a large share of total exports. To increase export potential and value-added drawn from trade, innovative capacity and transfer of knowledge from highly productive firms to the rest of the economy need to improve. Efforts should concentrate on strengthening adult education, immigration of talents, and co-operation between businesses and researchers.

## Unleashing productive investment

### Investment has weakened



1. Simple average of OECD available countries.

2. Simple average of Czech Republic, Hungary, Latvia, Lithuania, Poland, Slovak Republic and Slovenia.

Source: OECD Economic Outlook 101 Database (updated with information available on 1 September 2017).

StatLink <http://dx.doi.org/10.1787/888933582246>

Investment has weakened, particularly in projects required to increase business productivity. Skill shortages prevent business expansion in some sectors and investment in knowledge-based capital. Weak credit recovery from insolvent firms can limit funding of small innovative firms. The quality of infrastructure has improved, but bottlenecks in logistics remain. Green investment is needed to reduce pollution emitted by the oil shale industry and to achieve energy efficiency gains.

MAIN FINDINGS	KEY RECOMMENDATIONS
<b>Fostering inclusive and greener growth</b>	
The fiscal space to support growth-enhancing policies is large: the fiscal rule targets a balanced structural budget, even though gross public debt, at 13% of GDP, is the lowest in the OECD and is projected to decline in the medium term.	Increase spending on measures that boost growth potential and welfare. Consider allowing a small deficit in the government budget rule in the longer term.
Social programmes do not provide adequate protection and assistance to the jobless.	Increase subsistence benefits.
The coverage of unemployment benefit schemes is low, making the unemployed less reachable for the public employment services.	Relax eligibility conditions for unemployment benefits, not least to improve participation in active labour market measures.
Labour market participation of mothers is low and the gender pay gap the second highest in the OECD. To tackle these issues, the provision of childcare is being expanded considerably, but the long parental leave remains an important obstacle to gender equality.	Extend the share of parental leave reserved for fathers.
Many workers, especially the low-skilled, are exposed to physical health risks.	Increase sanctions for breaches of health and safety regulations. Require that employers purchase occupational accident and disease insurance.
Financial incentives to prevent or reduce environmental damage are too low.	Set tax rates on oil shale, vehicle and energy use at a level that better reflects the environmental damage they generate.
<b>Deepening integration in global trade</b>	
The business environment is good, but room for simplifying trade administrative procedures exists.	Complete a one-stop shop for administrative formalities. Improve access to information on trade regulation (e.g. agreements with third countries and appeal procedures).
Innovative capacity of Estonian firms is limited, and collaboration between academia and businesses is too low.	Give more weight to co-operation with the private sector when allocating funds to public R&D institutions.
Migration can open up new trade links and ease the adoption of foreign technologies. Policies to attract skilled migrants have had limited success.	Relax annual quotas, and simplify conditions for work permits of skilled workers.
There is no institution in charge of a regular assessment of productivity challenges and of monitoring policies in the field of competitiveness. The European Council advised to set up a national productivity board.	Establish an independent body to advise on policies to raise productivity.
<b>Unleashing productive investment</b>	
Insolvency procedures are long and costly. Possibilities of early intervention are limited.	Allow creditors to initiate restructuring. Introduce early warning mechanisms, such as one-line insolvency tests. Develop options for out-of-court settlements.
Businesses have difficulty finding suitable skilled labour, and a large share of the population does not have a professional qualification. Participation in lifelong learning is relatively high but its effectiveness questioned.	Strengthen the monitoring of training courses, by using <i>ex post</i> evaluation of training including labour market outcomes of participants. Extend the accreditation system to all publicly funded learning programmes to signal and improve their quality.
Competition in the banking sector seems low, and few financing alternatives exist.	Create a centralised credit bureau that will collect both positive and negative information on creditors.
Varying approaches to <i>ex ante</i> project evaluation pose the challenge of identifying the most productive infrastructure investments.	Carry out <i>ex ante</i> cost-benefit analyses for all large-scale infrastructure projects based on a uniform methodology.



## Assessment and recommendations

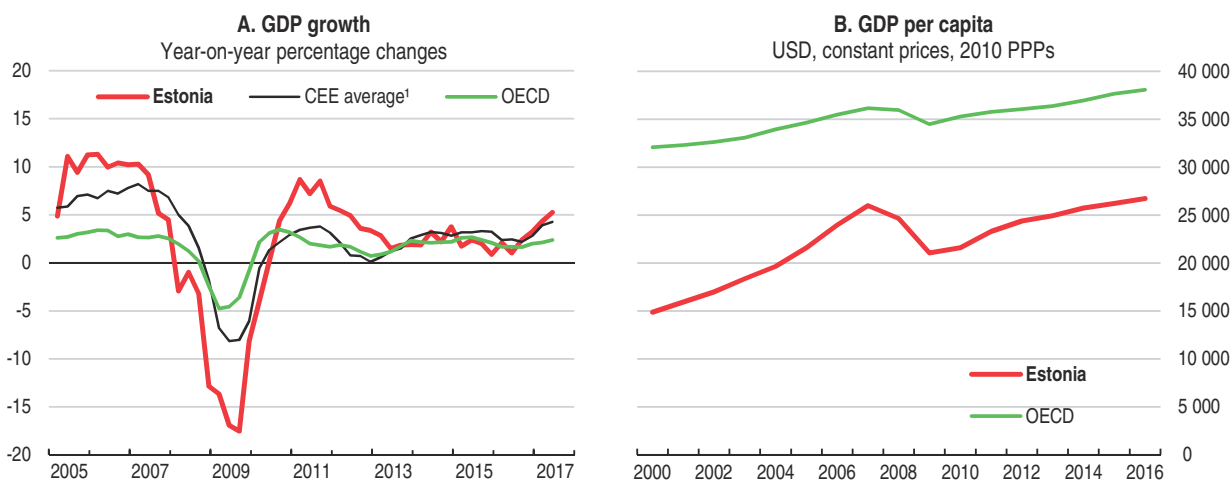
- *Growth is projected to gather pace*
- *Fiscal and social policies could better sustain inclusive growth*
- *Unleashing productive investment and export performance*
- *Transitioning to a greener economy*

## Introduction

Estonia has major structural strengths, including a well-educated and flexible labour force, a business-friendly environment, a robust financial sector, and a strong and credible fiscal policy. It stands out in terms of its educational outcomes and the ease of doing business. Its transition to digitalisation in the public sector is more advanced than in most OECD countries. Major macroeconomic imbalances which had accumulated before the crisis (a large current account deficit and excessive indebtedness) have been addressed, and macro-prudential tools are in place to mitigate the risk of repeated boom-bust cycles. Significant measures have also been taken to improve labour market performance, including tax reforms and additional spending on active labour market policies.

After two years of relatively weak activity, GDP growth has gained momentum and is expected to exceed 4% in 2017 (Figure 1, Panel A). Progress in raising incomes towards those in more prosperous OECD economies is likely to resume, after having slowed almost to a halt (Figure 1, Panel B). Nevertheless, policy action is needed to support growth engines and economic resilience – critical to the convergence process. Productivity growth has been significantly lower than in pre-crisis years, and younger firms have not posted better performance in post-crisis years, suggesting reduced economic dynamism (IMF, 2017). The country faces a more severe decline in its working-age population than in most other European countries, and skill shortages have emerged in some sectors (e.g. information and communication technology and health care). Also, as a small open economy, Estonia is vulnerable to external shocks and is highly volatile as illustrated by GDP developments over the past few decades (Figure 1, Panel A).

Figure 1. **Income convergence has slowed down**



1. Simple average of Czech Republic, Hungary, Latvia, Lithuania, Poland, Slovak Republic, and Slovenia.

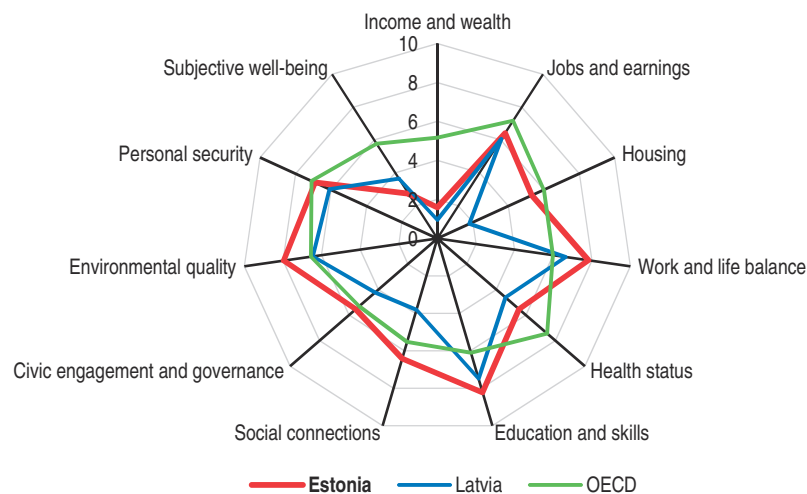
Source: OECD National Accounts Database.

StatLink  <http://dx.doi.org/10.1787/888933580992>



On many dimensions of well-being, Estonia scores as high as or higher than the typical OECD country, an impressive record for a country with a relatively low level of income (Figure 2). Nevertheless, subjective well-being in Estonia is below OECD standards, which seems to be mainly related to low income and wealth, and to poor health outcomes. Political willingness to address weaknesses is strong, and recent policy measures have already met with some success.

Figure 2. **Well-being can be improved**



Note: Each index dimension is measured by one to four indicators from the OECD Better Life Index (BLI) set. Normalised indicators are averaged with equal weights. Indicators are normalised to range between 10 (best) and 0 according to the following formula:  $(\text{indicator value} - \text{minimum value}) / (\text{maximum value} - \text{minimum value}) \times 10$ . The OECD aggregate is weighted by population.

Source: OECD Better Life Initiative 2016.

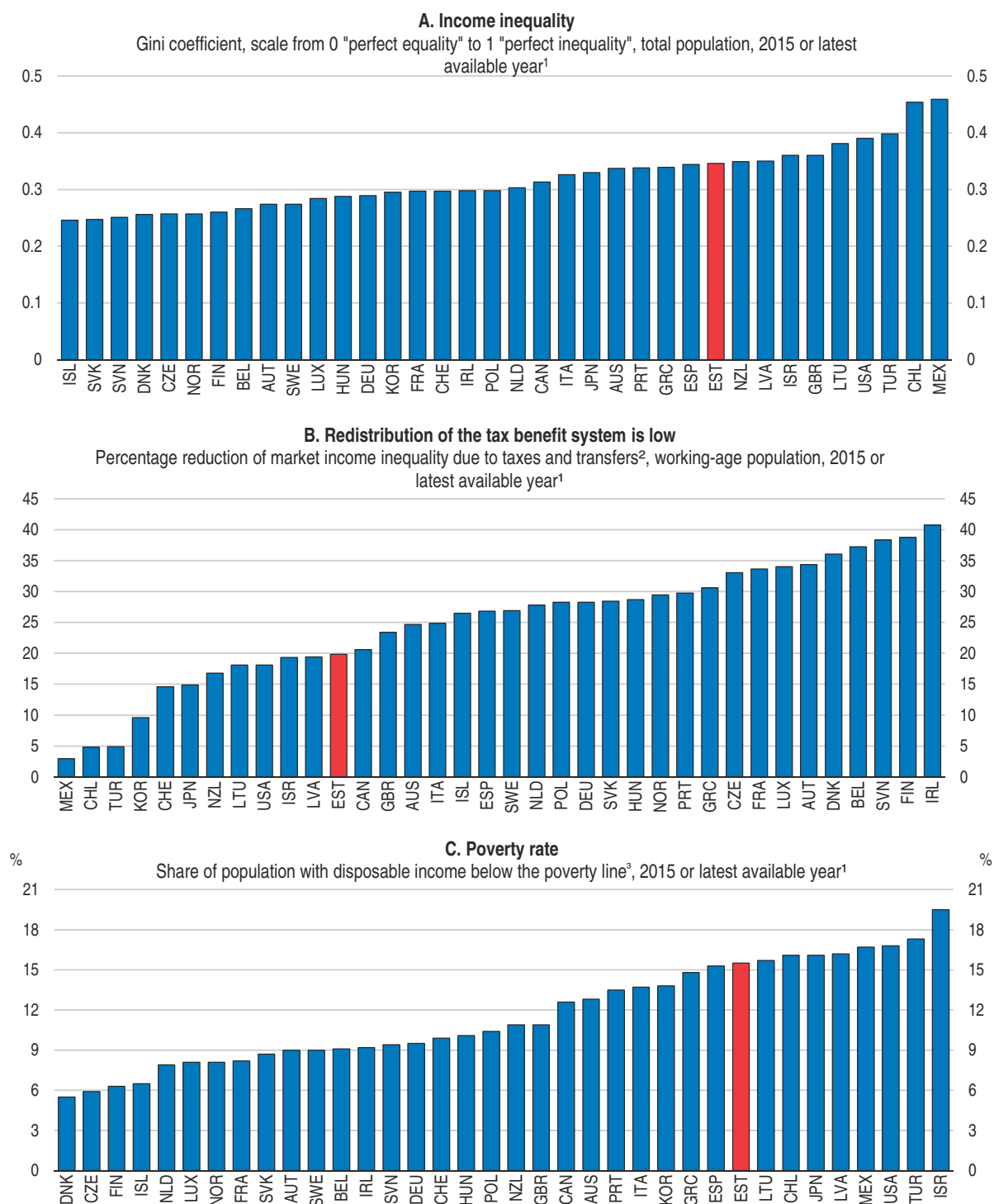
StatLink  <http://dx.doi.org/10.1787/888933581011>

However, poverty and income inequality are among the highest in the OECD (Figure 3, Panels A and C). Over recent years, incomes of the poor have risen, due in part to successive rises in the minimum wage (from EUR 278 in 2011 to EUR 470 in 2017) and from a re-evaluation of subsistence benefits in 2016 (from EUR 90 to EUR 130). Thus, absolute poverty – i.e. the share of those who live with less than around EUR 200 per month – declined to below 4% in 2015.

High income inequality stems from both inequality in market income and very low redistributive effects of the tax and benefit system (Figure 3, Panel B). It leaves a considerable proportion of the population at risk of poverty, with risks significantly higher for the unemployed, disabled and low-educated as in most OECD countries. While a large share of social spending goes to families, poverty rates remain relatively high for lone parents and families with three and more children. The old-aged are also more at risk of poverty, not least due to the relatively low level of pensions. On-going reform of the tax and benefit system aims at reducing inequality (see details below). The reform of the personal income tax planned for 2018 should bring more progressivity to the tax system.

Against this background, the main messages of the Survey are:

- Estonia has made great strides in increasing incomes and well-being, largely through sound macroeconomic policies and open, outward looking engagement with the world economy.


Figure 3. **Estonia lags behind in terms of income inequality and poverty**

1. Gini coefficient of disposable income, latest available data refer to 2015 for Chile, Finland, Israel, Korea, Mexico, the Netherlands, the United Kingdom, and the United States; to 2012 for Japan; and to 2014 for all other countries.

2. Redistribution is defined as the difference between market income and disposable income inequality (inequality measured using the Gini coefficient), expressed as a percentage of market income inequality. Market incomes are net of taxes in Hungary, Mexico and Turkey.

3. The poverty threshold is 50% of median disposable income.

Source: OECD Income Distribution Database (IDD).

StatLink  <http://dx.doi.org/10.1787/888933581030>

- Sustained economic and social progress hinges in part on policies to reduce inequality and poverty. An adequate social safety net, conducive to upskilling, should be implemented to ensure that all benefit from opportunities created by high trade intensity, while being protected against extreme external shocks.
- Raising investment, including in intangible capital, further integrating into global trade and easing labour-market bottlenecks would lay the foundations for continued and sustained increases in living standards.

## Growth is projected to gather pace

Economic growth has disappointed over the past two years, with GDP growth slowing from close to 3% in 2014 to around 2% in 2015 and 2016 (Table 1). This deceleration was driven by weak foreign demand and successive falls in capital spending (Figure 4, Panel D). As a result, GDP returned to its pre-crisis level only in 2016 (Figure 4, Panel A).

Table 1. **Macroeconomic indicators and projections**

Annual percentage change, volume (2010 prices)

	2013 Current prices (billion EUR)	2014	2015	2016	Projections	
					2017	2018
<b>Gross domestic product (GDP)</b>	<b>18.9</b>	<b>2.8</b>	<b>1.8</b>	<b>2.2</b>	<b>4.2</b>	<b>3.2</b>
Private consumption	9.7	3.5	4.6	4.2	2.2	3.7
Government consumption	3.6	2.5	3.3	2.0	1.3	1.2
Gross fixed capital formation	5.2	-8.0	-3.1	-0.9	18.0	4.1
Final domestic demand	18.5	0.2	2.4	2.5	5.8	3.3
Stockbuilding <sup>1</sup>	-0.1	3.6	-1.3	0.7	-2.2	-0.3
Total domestic demand	18.4	3.9	1.1	3.4	3.7	2.9
Exports of goods and services	16.0	2.5	-0.6	4.1	3.5	3.4
Imports of goods and services	15.4	3.5	-1.8	5.2	4.5	3.8
Net exports <sup>1</sup>	0.5	-0.8	0.9	-0.7	-0.7	-0.2
<b>Other indicators (growth rates, unless specified)</b>						
Potential GDP	..	2.2	2.2	2.3	2.6	2.9
Output gap <sup>2</sup>	..	-0.4	-0.9	-0.9	0.6	0.9
Employment	..	0.6	2.6	0.7	0.9	0.2
Unemployment rate	..	7.4	6.2	6.8	6.9	7.8
GDP deflator	..	1.6	1.2	1.5	3.6	3.1
Harmonised consumer price index	..	0.5	0.1	0.8	3.3	2.8
Harmonised core consumer price index	..	1.3	1.2	1.2	2.2	2.8
Current account balance <sup>3</sup>	..	0.9	2.2	2.0	2.3	1.8
General government financial balance <sup>3</sup>	..	0.7	0.1	0.3	-0.4	-0.7
Underlying government financial balance <sup>2</sup>	..	1.2	1.0	1.0	-0.3	-1.0
Underlying government primary financial balance <sup>2</sup>	..	1.1	0.9	0.9	-0.3	-1.0
General government gross debt <sup>3</sup>	..	14.1	12.9	13.0	13.0	13.5
General government gross debt (Maastricht) <sup>3</sup>	..	10.7	10.0	9.4	9.4	9.9

1. Contribution to changes in real GDP.

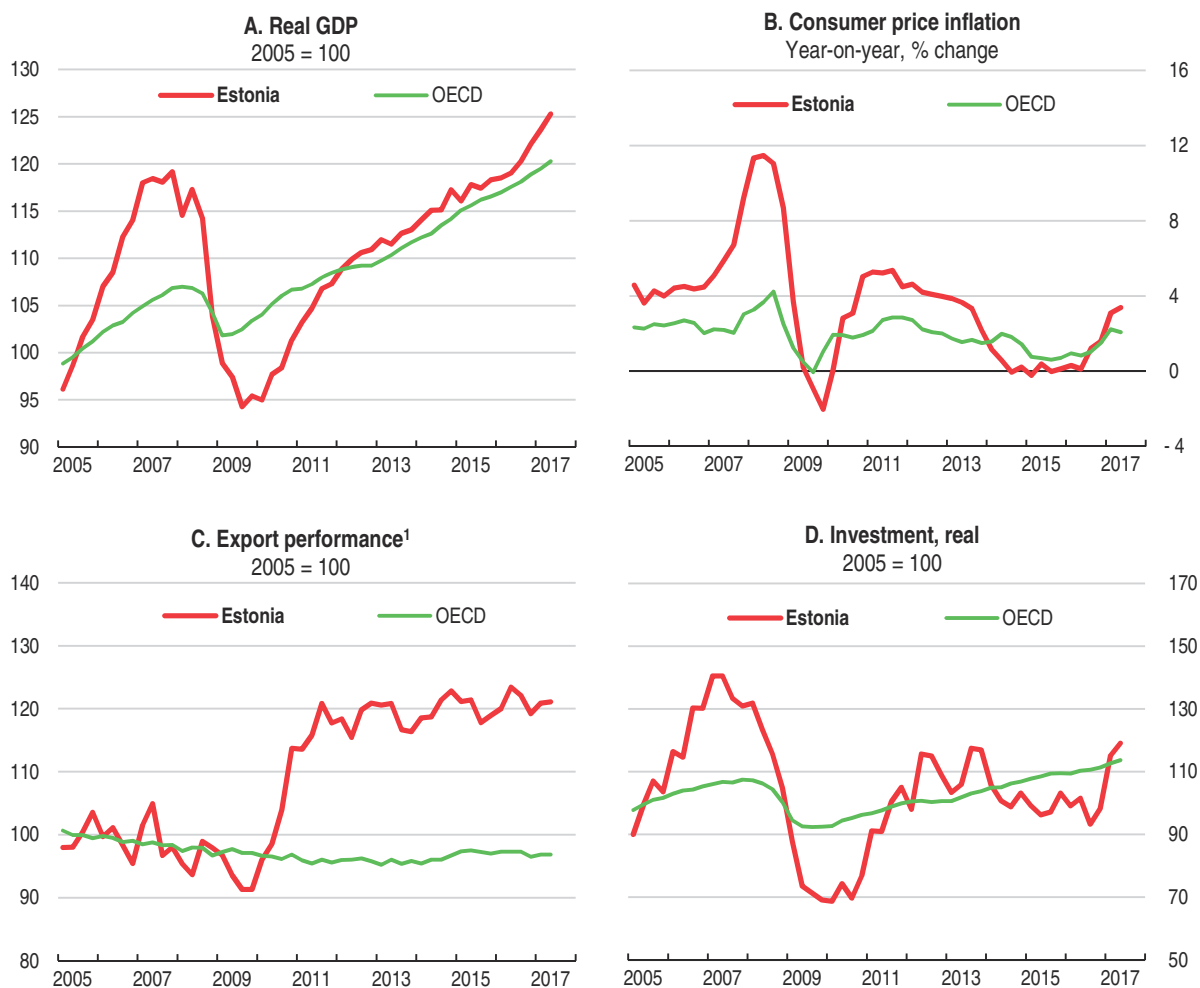
2. As a percentage of potential GDP.

3. As a percentage of GDP.

Source: OECD Economic Outlook 101 Database (updated with information available on 1 September 2017).


Estonia's export market performance has been resilient (see Figure 4, Panel C). It exports approximately 80% of GDP, and around half of domestic employment is sustained by foreign demand. The main exported goods are machinery, electronic equipment, oil shale products, wood products, miscellaneous industrial goods and foodstuffs. Services account for around

Figure 4. Economic indicators



1. Export performance is measured as actual growth in exports relative to the growth of the country's export market.

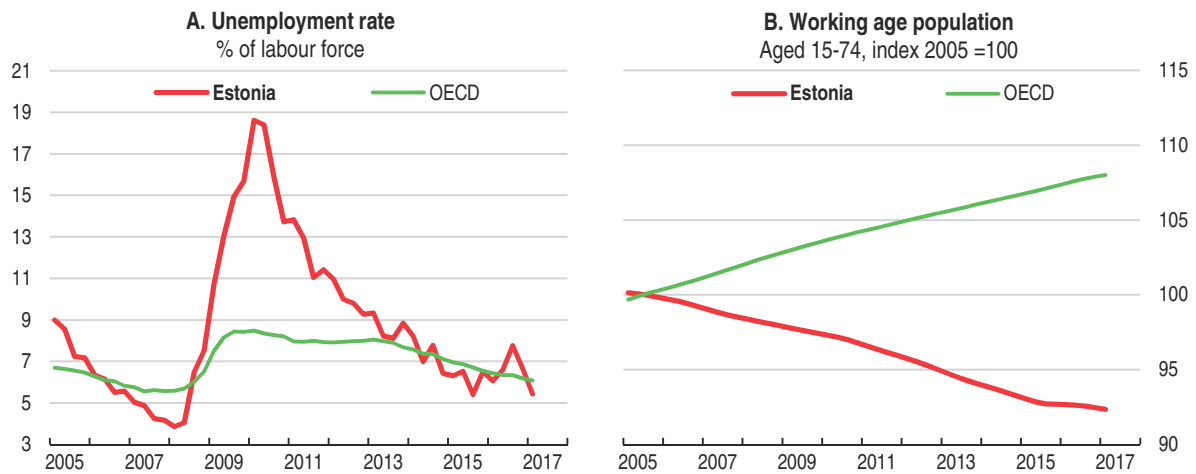
Source: OECD Economic Outlook 101 Database (updated with information available on 1 September 2017).

StatLink  <http://dx.doi.org/10.1787/888933581049>

40% of gross exports and 60% in value added terms, with maritime transport and tourism being the largest items. The main exporting destinations are Sweden and Finland, with the EU being the destination for 70% of exports. Export diversification has mitigated the impact of weak economic developments in Estonia's main trading partners, notably Finland and Russia. Nevertheless, some sectors, including food processing and tourism, have been hit by Russia's economic downturn and its ban on imports of EU food products. The profitability of the domestic oil shale industry, which accounts for around 1% of GDP, has also been affected by the decline in oil prices over recent years.

Private consumption has been the main growth engine over the past two years, supported by strong labour market performance, record low inflation and interest rates (see Figure 4, Panel B). Unemployment has declined by around 10 percentage points since 2010 (Figure 5). Since mid-2015, this trend has come to a halt partly due to the reform of the disability benefit pension scheme (the Work Ability reform), which now conditions the receipt of benefits to job-search activity. Recipients of the disability pension with work capacity have to register as unemployed and thereby have access to a range of activation and

Figure 5. Labour market conditions have tightened



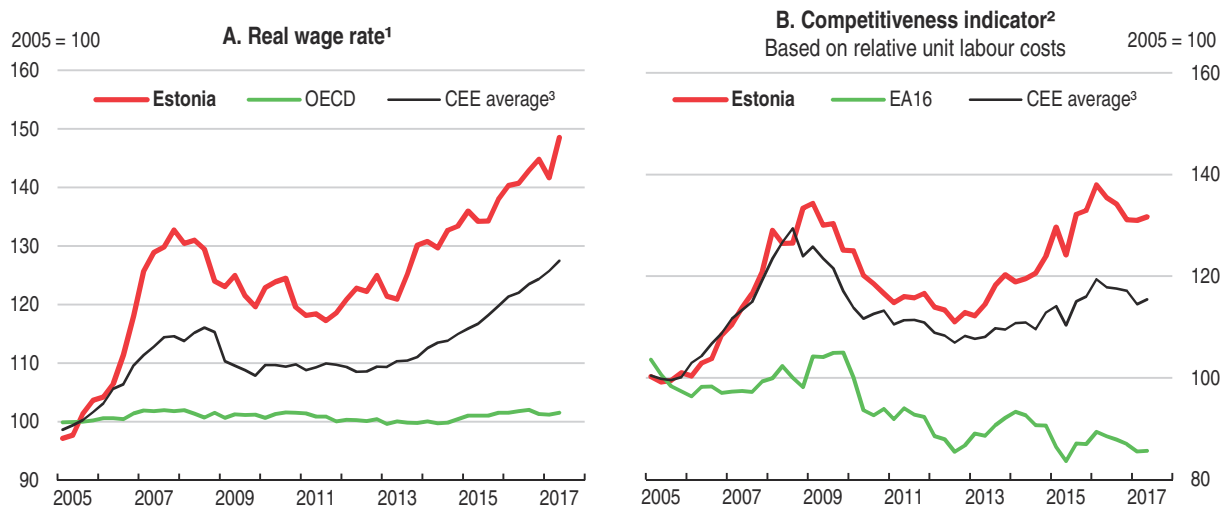
Source: OECD Economic Outlook 101 Database (updated with information available on 18 July 2017).

StatLink <http://dx.doi.org/10.1787/888933581068>

rehabilitation measures aiming at improving their employability. Because some of them did not find a job, the unemployment rate has increased. Nevertheless, participation and employment rates stand above OECD average, and labour shortages have emerged in some sectors (e.g. ICT, and health care).

Wages have increased fast (Figure 6, Panel A). While strong wage growth is to be expected in a catch-up economy, it seems out of line with its peers and disconnected from flattening productivity growth (IMF, 2017 and Figure 6). Public-sector wage increases and rises in the minimum wage have played a significant part (IMF, 2017). Also, emigration of skilled labour puts upwards pressure on wages, though Estonia has been less affected by brain drain than its Baltic peers, and the net emigration trend has reversed in recent years (IMF, 2016). The rise in

Figure 6. Unit labour costs have increased fast



1. Deflated by the consumer price index.

2. An increase in the index indicates a real appreciation and a corresponding deterioration of the competitive position.

3. Simple average of Czech Republic, Hungary, Latvia, Lithuania, Poland, Slovak Republic, and Slovenia.

Source: OECD Economic Outlook 101 Database (updated with information available on 1 September 2017).

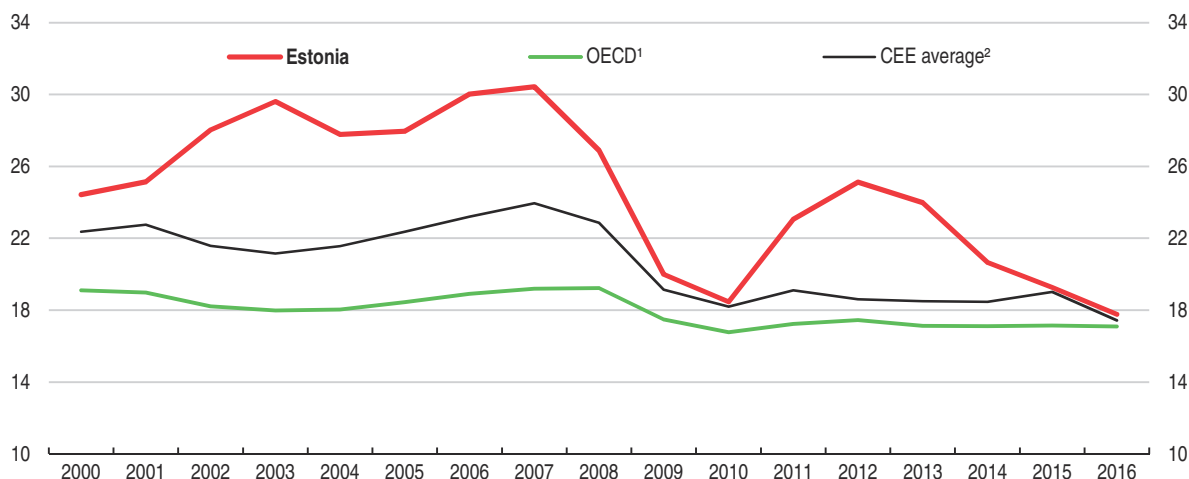
StatLink <http://dx.doi.org/10.1787/888933581448>

relative unit labour costs by over 30% since 2005 – the largest among CEE countries (Figure 6, Panel B) – has been compensated by a compression of firms' margins and gains in non-price competitiveness (Eesti Pank, 2017a). Maintaining price competitiveness could prove challenging going forward, as the decline in the working-age population and emerging shortages of skilled workers will keep wage pressures high (see Figure 5).

Since the crisis, Estonia has experienced one of the most pronounced declines in the ratio of non-residential investment to GDP (Figure 7), despite the favourable business environment and advantageous financial conditions. Poor investment performance is likely to reflect the weak outlook in main trading partners, a normalisation after the boom years, and lower EU funds disbursements at the beginning of the new programming period. It also stems from domestic factors, including the declining profitability of firms and recruitment difficulties (Figure 8). By contrast, robust growth in household disposable income has supported residential investment: prices in Tallinn now exceed pre-crisis levels but are in line with income developments (Figure 9).

**Figure 7. Investment has lost ground**

Non-residential investment in % of GDP



1. Simple average of OECD available countries.

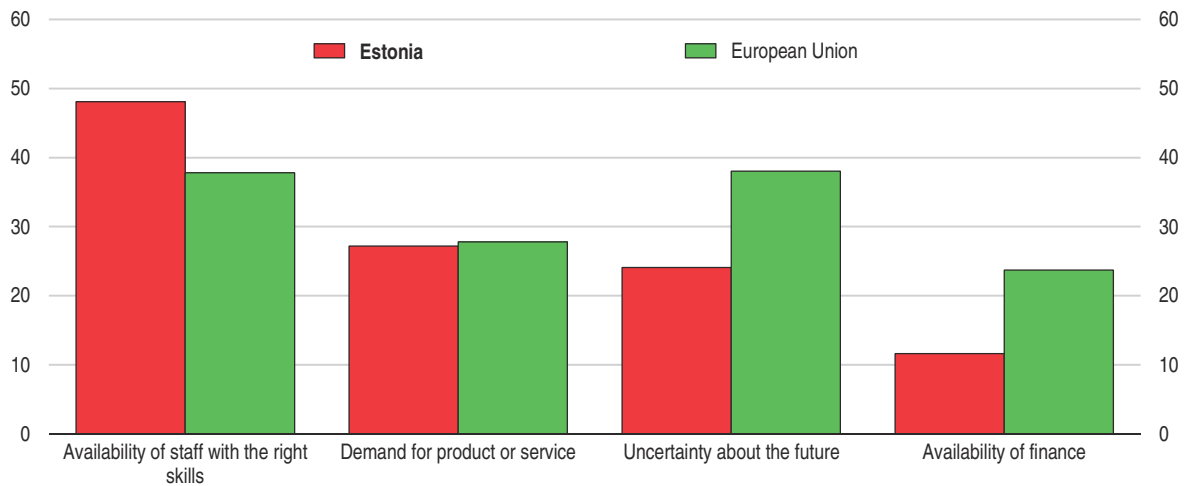
2. Simple average of Czech Republic, Hungary, Latvia, Lithuania, Poland, Slovak Republic, and Slovenia.

Source: OECD Economic Outlook 101 Database (updated with information available on 1 September 2017).

StatLink  <http://dx.doi.org/10.1787/888933581790>

At 2% of GDP, the current account remained in surplus in 2016 mainly due to large net exports of services. On the financing side, FDI inflows have declined significantly since the crisis, falling from 10% of GDP in 2007 to 0.6% in 2015 and reaching 3.8% in 2016. This mainly reflects capital flows towards foreign parent companies in the banking sector, but also modest investment in the manufacturing sector (European Commission, 2017). While it has improved since the financial crisis, the negative net international investment position remains large. The inward FDI stock reached 83% of GDP in 2016, the highest level among peer economies.

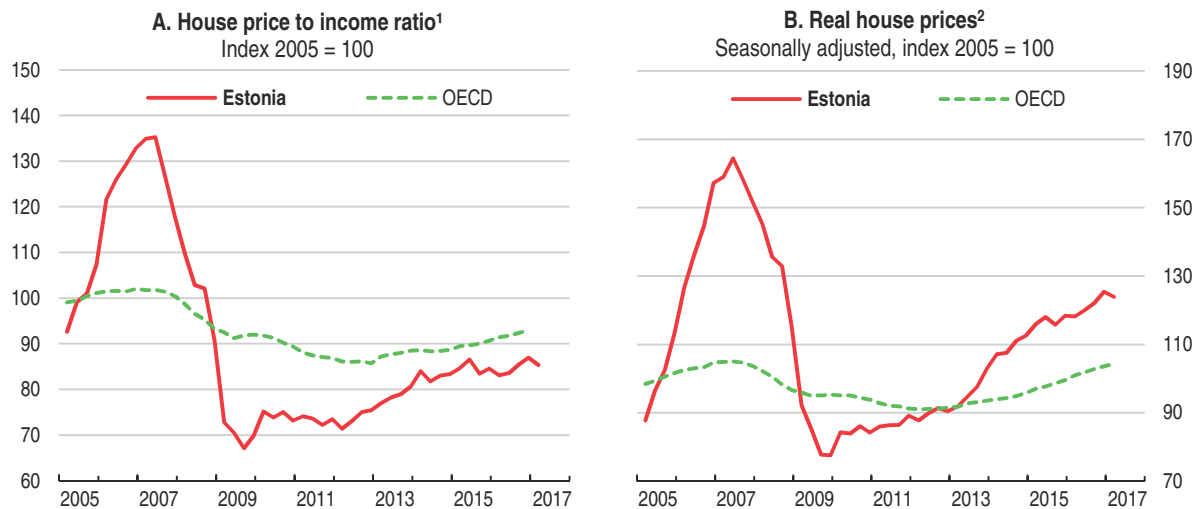
Macroeconomic policy is becoming more supportive. Fiscal policy was broadly neutral over 2015-16, but is expected to loosen significantly from 2017 (see Table 1). Financing conditions are also favourable for stronger growth, supported by the very accommodative stance of euro-area monetary policy. Meanwhile, lending conditions have loosened, borrowing costs remain at historically low levels, and access to external funds is deemed

Figure 8. **Skill shortages are a major obstacle to investment**% of all firms citing a major obstacle,<sup>1</sup> 2015

1. Firm responses to the question: "Thinking about your investment activities in your country, to what extent is each of the following an obstacle? Is a major obstacle, a minor obstacle or not an obstacle at all?"

Source: European Investment Bank – EIBIS, EIB Investment Survey

StatLink <http://dx.doi.org/10.1787/888933581087>

Figure 9. **House prices are recovering**

1. The nominal house price is divided by the nominal disposable income per head.

2. Nominal house prices deflated using the private consumption deflator from the national accounts.

Source: OECD Analytical House Price Database.

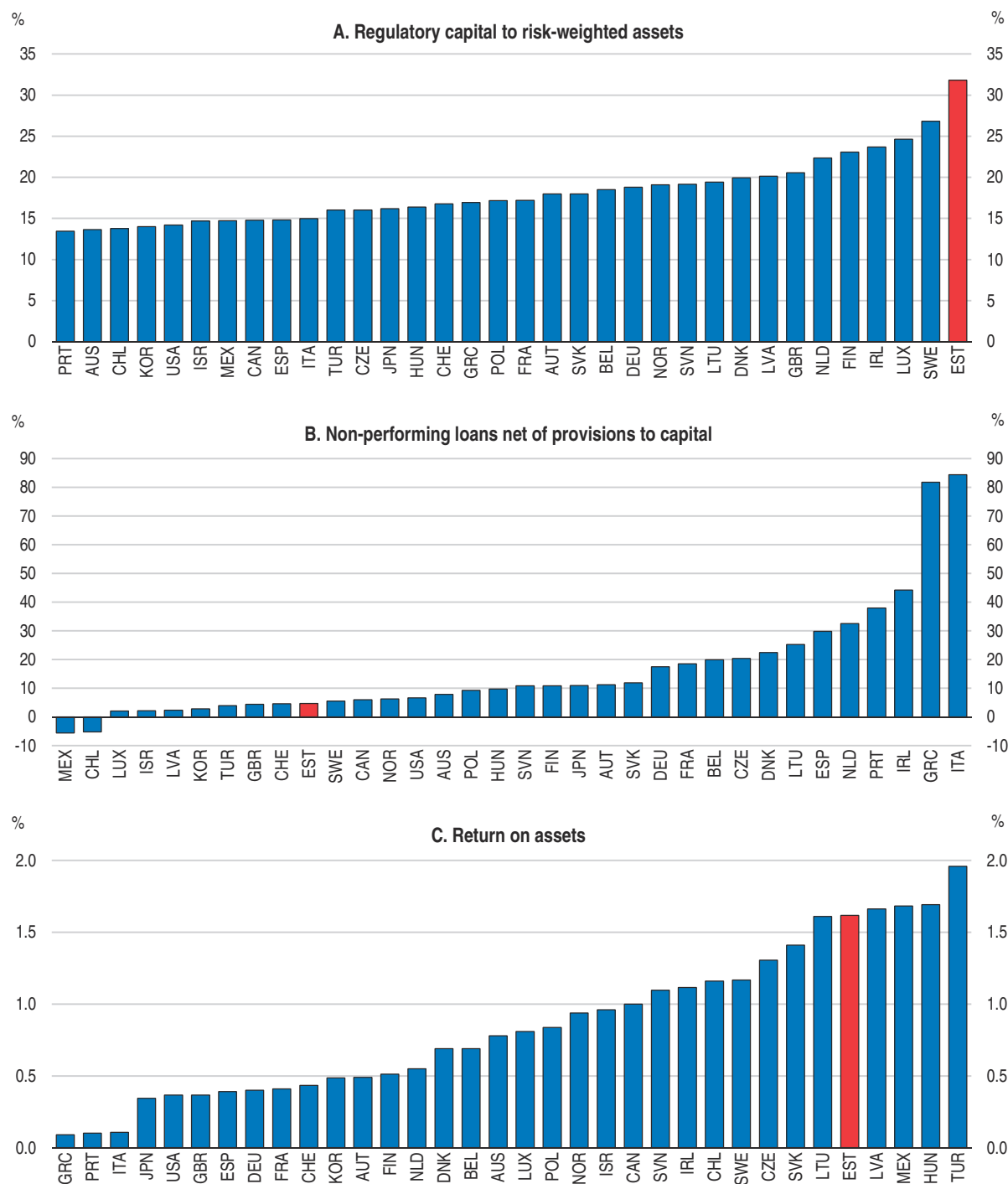
StatLink <http://dx.doi.org/10.1787/888933581106>

better than in the average EU country (Eesti Pank, 2016, 2017b). The Estonian banking sector seems well capitalised and profitable (IMF, 2017; Figure 10, Panels A and C). Non-performing loans are low (Figure 10, Panel B), but the loan-to-deposit ratio, at 108%, is relatively high.


Sustained by a more supportive macro-policy stance and recovering foreign demand, GDP growth is projected to gain strong momentum and exceed 4% in 2017 (see Table 1). The recovery will also be supported by public investment, in part because disbursement of EU structural funds will pick up. Export growth is set to recover in line with improvements in major export markets, despite continued rises in real wages and unit labour costs. Corporate

Figure 10. **The financial sector is well capitalised and profitable**

Q4 2016 or latest quarter of data available



Source: IMF Financial Soundness Indicators database.

StatLink  <http://dx.doi.org/10.1787/888933581125>

investment will recover supported by foreign demand. The labour force will expand somewhat as a result of the progressive implementation of the disability benefit reform and increases in pension age. Because the employability of some disability benefit recipients is

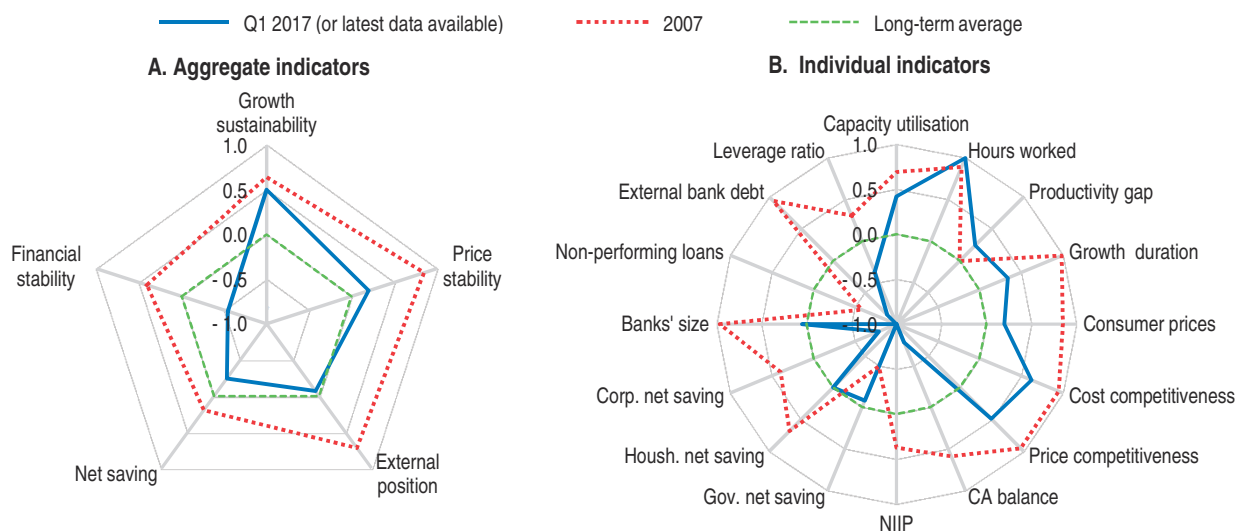


low, expected increases in labour market participation will be accompanied by an increase in the unemployment rate over the projection period. Household spending will decelerate as inflation resumes. Consumer prices will increase by more than 3% in 2017 due to rising commodities, oil and energy prices, and large rises in excise duties on alcohol, tobacco and fuels (with an estimated impact of 0.9 and 1 percentage point on inflation in 2017 and 2018, respectively). Nevertheless, private consumption will remain strong, supported by rising wages and planned cuts in the personal income tax.

Estonia's growth prospects are very sensitive to developments in its main trading partners and in the euro area, implying both downside and upside risks. Brexit may have only a small direct impact on the Estonian economy as trade links with the United Kingdom are limited, but may affect it *via* its effects on trade in the Baltic Sea region. Domestic negative risks include deeper divergence between wages and productivity growth. Conversely, a higher level of return migration or better-than-expected integration of disabled and older workers in the labour market would relax labour supply constraints and wage pressures. Risks to the projection also include extreme shocks, which might have large economic repercussions if they materialise (Table 2). Macro-financial vulnerabilities have receded since 2007, but one of the tail risks includes capital outflows from Nordic parent banks (Figure 11 and Table 2).

Figure 11. **Macroeconomic vulnerabilities have diminished since 2007**

Deviations of indicators from their real time long-term averages (0), with the highest deviations representing the greatest potential vulnerability (+1), and the lowest deviations representing the smallest potential vulnerability (-1)<sup>1</sup>



- Each aggregate macro-financial vulnerability indicator is calculated by aggregating (simple average) normalised individual indicators. Growth sustainability includes: capacity utilisation of the manufacturing sector, total hours worked as a proportion of the working-age population (hours worked), difference between GDP growth and productivity growth (productivity gap), and an indicator combining the length and strength of expansion from the previous trough (growth duration). Price stability includes headline and core inflation (consumer prices), and it is calculated by the following formula: absolute value of (core inflation minus inflation target) + (headline inflation minus core inflation). External position includes: the average of unit labour cost based real effective exchange rate (REER), and consumer price based REER (cost competitiveness), relative prices of exported goods and services (price competitiveness), current account (CA) balance as a percentage of GDP and net international investment position (NIIP) as a percentage of GDP. Net saving includes: government, household and corporate net saving, all expressed as a percentage of GDP. Financial stability includes: banks' size as a percentage of GDP, the share of non-performing loans in total loans, external bank debt as percentage of total banks' liabilities, and capital and reserves as a proportion of total liabilities (leverage ratio).

Source: OECD calculations based on OECD (2017), *OECD Economic Outlook: Statistics and Projections* (database), June; OECD (2017), *Main Economic Indicators* (database), June; Statistics Estonia, June; IMF, *Financial Soundness Indicators* database and Thomson Reuters Datastream.


StatLink  <http://dx.doi.org/10.1787/888933581144>

Table 2. **Possible shocks to the Estonian economy**

Vulnerability	Possible outcome
Increase in geopolitical tensions	This could trigger an international financial crisis with difficult-to-project consequences for confidence and activity in Estonia.
Banking crisis	Sudden withdrawal of capital by Nordic parent banks could lead to a sharp credit squeeze.

## Fiscal and social policies could better sustain inclusive growth

### Using fiscal space for a more inclusive growth

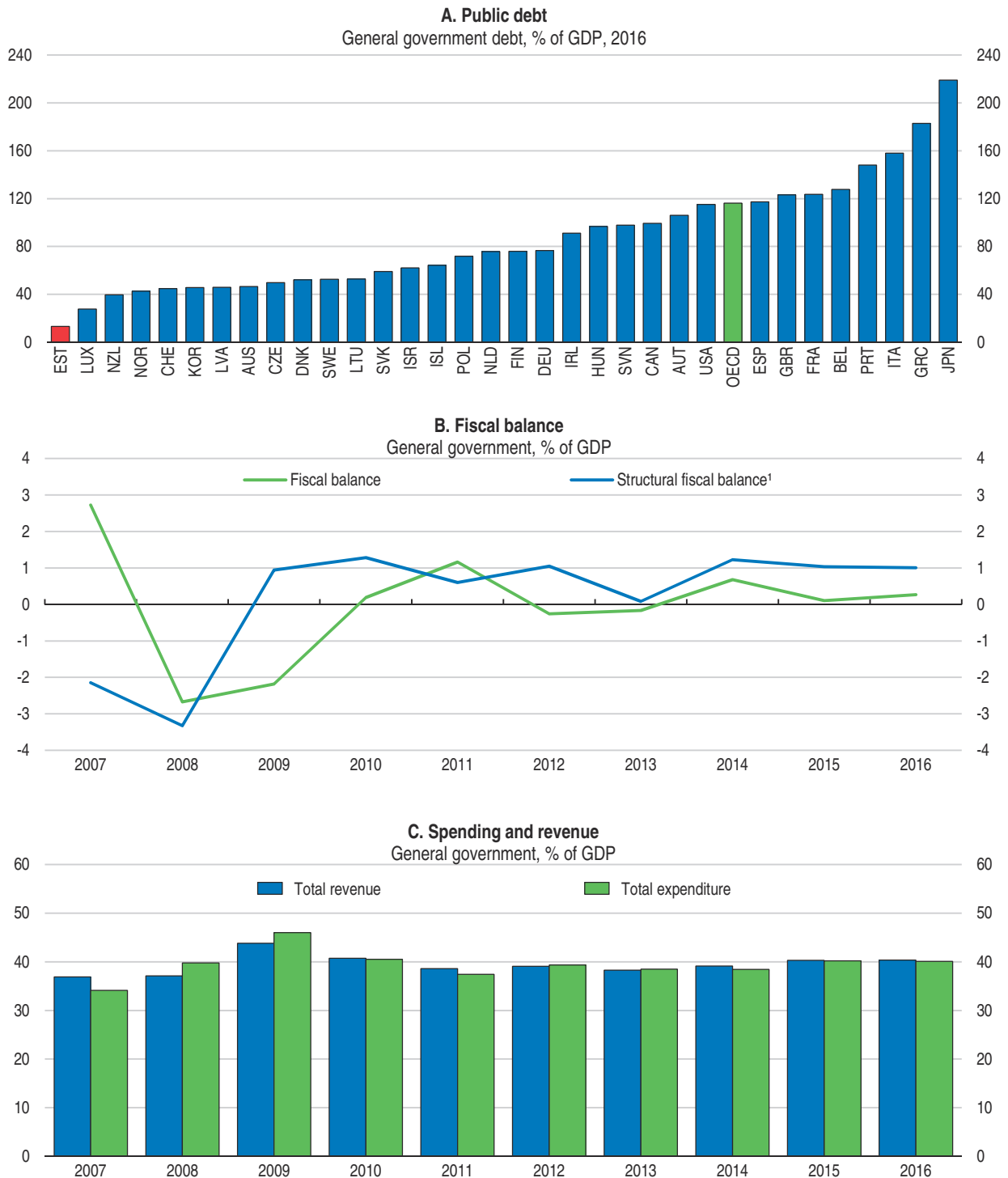
Fiscal policy has been tight over past years, despite economic slack. Estonia has the lowest gross public debt relative to GDP in the OECD (around 13%), a rough budget balance since 2010, and an estimated structural budget surplus since 2009 (Figure 12). The government plans a structural deficit of 0.5% in 2018, 2019 and 0.3% of GDP in 2020. The budgetary plans include broad changes in the tax system and increased spending on infrastructure, health care, education and family benefits (Box 1). The Fiscal Council and the Central Bank have raised concerns about a possible deviation of the deficit from current plans and questioned the expected increase in tax revenues.

Given the current favourable borrowing conditions and the need for growth-enhancing policies, the planned easing of fiscal policy over 2017-20 is appropriate. Fiscal room should be used to increase long-term growth potential, notably for measures that increase labour supply and productivity growth. As detailed below, more needs to be done to support innovative activities in domestic firms, improving access to lifelong education, and fostering labour market participation of mothers, while reducing labour taxation. In addition, public spending should be used to reinforce social protection, which does not adequately protect the most vulnerable against poverty, notably by activating all individuals with some work capacity.

Such fiscal initiatives should rely on *ex ante* evaluation (OECD, 2016a). Cost and benefit analyses have not been systematically carried out for the infrastructure projects planned for 2018-20, and, given the already considerable levels of investment in road and rail transport, it is unlikely that such additional projects will have high positive economic returns. Furthermore, they will inevitably induce extra maintenance costs in the longer run. *Ex ante* evaluation should ideally be carried out by an independent advisory body tasked with reviewing long-term economic challenges and identifying priorities and synergies, as is done in a number of OECD countries including the Netherlands and Australia.


A well-designed institution can improve the quality of the decision process and contribute to evidence-based policymaking (Banks, 2015). There is no unique institution in charge of undertaking or commissioning the necessary research and analysis to identify the most promising growth-enhancing policies for Estonia. The authorities are considering different options to comply with the recent recommendation of the EU Council to establish productivity boards. While the national context is central in determining the optimal design, mandate, mission and governance of pro-productivity institutions, a recent OECD analysis shows that such institutions should be given sufficient resources, skills, transparency and procedural accountability to fulfil their tasks. It should consider both supply-side and demand-side policies (including those proposed by the government) and have policy evaluation functions (Renda and Dougherty, 2017).

Figure 12. Fiscal policy has been prudent



1. Per cent of potential GDP. The structural balance is adjusted for the cycle and for one-offs. For more details, see Sources and Methods of the OECD Economic Outlook ([www.oecd.org/eco/sources-and-methods.htm](http://www.oecd.org/eco/sources-and-methods.htm)).

Source: OECD Economic Outlook 101 Database (updated with information available on 1 September 2017).

StatLink  <http://dx.doi.org/10.1787/888933581163>

### Box 1. Draft budget plans

The new coalition government appointed in November 2016 puts emphasis on reducing inequality and fighting the population decline. Budget plans for 2018-20 consist of additional spending in education, health, social welfare and public investment that will be partly financed by raising taxes (Table 3). The authorities expect the structural deficit to reach 0.5% of GDP in 2018 and progressively return to balance by 2021. Such projections are questioned by the Fiscal Council, in particular the level of tax revenues, as changes in the tax system are likely to take time to materialise and their impact is uncertain.

#### Spending

A sizeable investment plan of 1.3% of GDP has been announced and includes large-scale projects in transport infrastructure, development of the broadband distribution network, and investments in a conference centre in Tallinn, defence and public residential housing. A relatively large share of funds will be allocated to the road and railway networks (36% of the total amount).

Around 35% of additional spending will be allocated to the education system. Teacher's salaries are set to increase to 120% of the national median wage, and wages in kindergarten will be aligned to the minimum level in schools. These measures are welcome, as teacher wages were particularly low by international standards. They should improve the attractiveness of the teaching profession among young graduates.

#### Revenues

Changes in the taxation system are expected to increase revenues from corporate income tax and indirect taxation, while reducing labour taxes.

- The income tax allowance will be increased from EUR 170 to 500 per month in 2018 and decreased gradually with the income level for those earning more than EUR 1 200.
- Increases in excise duty rates on alcohol and gas will strengthen incentives to reduce alcohol consumption and achieve energy savings.
- The tax rate on distributed dividends will be cut from the current 20% to 14% for mature companies (companies that pay dividends for three consecutive years). While this is expected to increase revenue in the short term by encouraging the companies to distribute profits, it will decrease it in the longer term.

Table 3. Budgetary and fiscal reforms planned for 2018-20

% of GDP	2018	2019	2020
<b>Increase in spending</b>	<b>1.5</b>	<b>1.6</b>	<b>1.4</b>
Education	0.3	0.5	0.5
Public investment	0.5	0.5	0.3
<b>Increase in revenues</b>	<b>1.0</b>	<b>1.1</b>	<b>1.1</b>
Personal income tax reform	-0.6	-0.5	-0.5
Corporate income tax reform	0.6	0.4	0.2
Excise duty and VAT measures	0.5	0.1	0.2
<b>Total impact on public deficit</b>	<b>-0.5</b>	<b>-0.5</b>	<b>-0.3</b>

Source: Ministry of Finance.

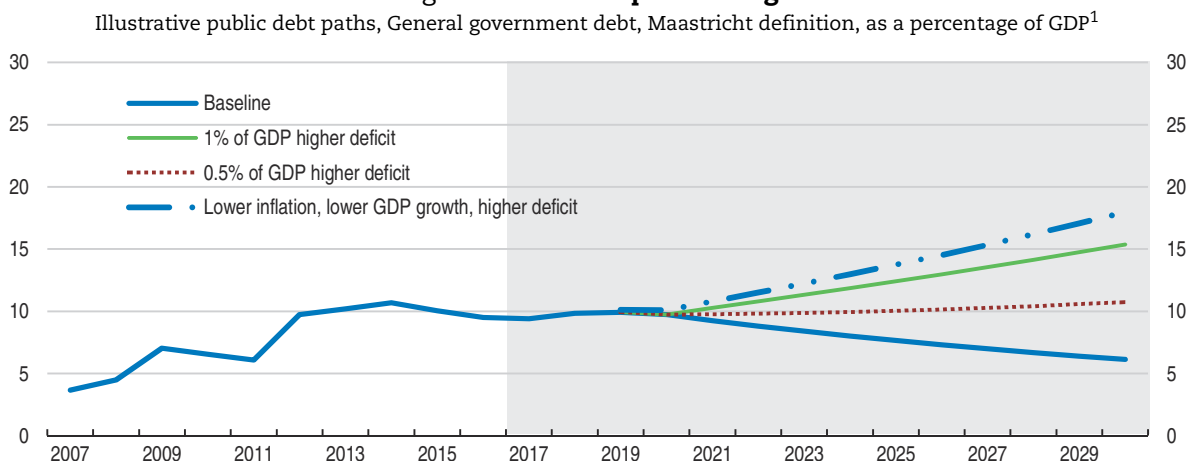
### Improving the fiscal framework

Because of its vulnerability to external shocks, it is prudent that a small open economy like Estonia keeps a relatively low level of debt and room for manoeuvre for countercyclical

fiscal policy. The current fiscal rule imposes a balanced budget in structural terms, but past surpluses can be used to allow a deficit of not more than 0.5% of GDP. Indeed, these will be used in 2018-20.


Beyond 2020, financing growth-enhancing measures could require revising the fiscal rule. Maintaining a small structural deficit for an extended period would not undermine the long-term sustainability of public finances. For instance, a persistent deficit of 0.5% of GDP would result in debt reaching less than 11% of GDP in 2030 (Figure 13). In the same vein, increasing the deficit by 1% of GDP would still maintain a prudent debt level, even if coupled with 1 percentage point lower inflation and GDP growth (Figure 13).

Figure 13. **Fiscal space is large**



1. The baseline consists of projections for the Economic Outlook No. 101 until 2018. Thereafter, assumptions are: real GDP growth progressively closing the output gap and from 2020 growing by 2.5% in line with OECD estimates for long-term potential growth; a budget balanced in structural terms from 2021 as set out in the national reform programme; inflation declining progressively to 2% by 2030 and an average effective interest rate converging to 3% by 2030. The “0.5% of GDP higher deficit” scenario assumes a structural deficit maintained at 0.5% of GDP from 2021. The “1% of GDP higher deficit” scenario assumes a structural deficit increasing to 1% of GDP from 2021. The “lower inflation, lower GDP growth and higher deficit” scenario assumes lower inflation and real GDP growth by 1 percentage point per year, both from 2019 with structural deficit increased by 1% of GDP from 2021.

Source: OECD Economic Outlook 101 Database; calculations based on OECD (2017), OECD Economic Outlook: Statistics and Projections (database), June.

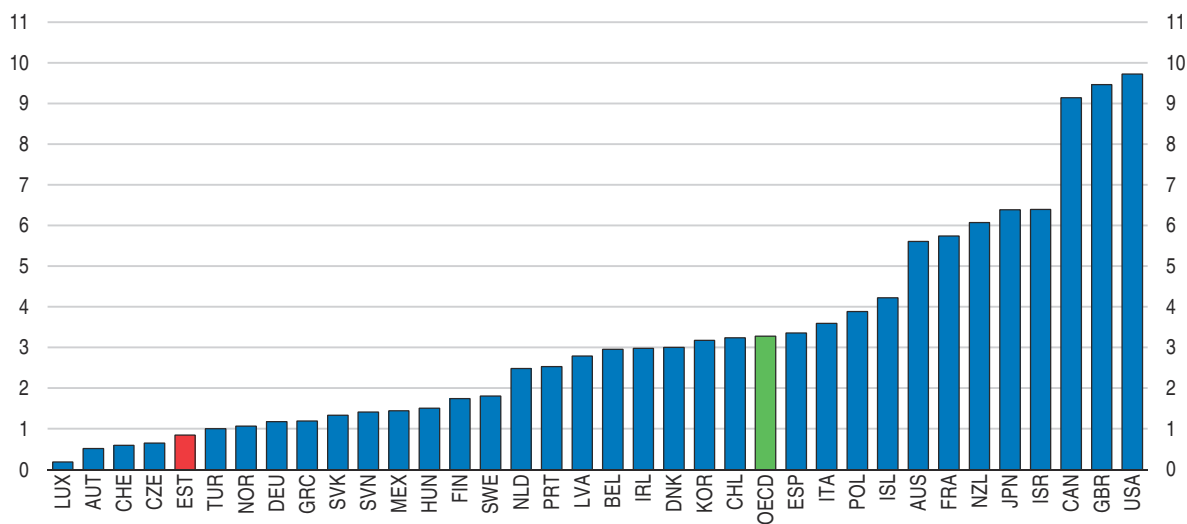
StatLink  <http://dx.doi.org/10.1787/888933581182>

According to long-term projections, and despite a rapid decline in its working-age population, Estonia does not face particular ageing-related spending pressures (European Commission, 2016b). However, this is mainly because replacement rates in the public pension system are projected to decline and remain among the lowest in the EU (25% by 2060). Poverty risks for pensioners with a short contribution history, notably to the second pillar, and/or with low remuneration are already relatively high by international standards. To address this issue, a reform of the public pension system that increases redistribution among pensioners and raises the pensions of low income earners is being prepared. Measures to reduce fees and improve competition in the second pension pillar have also been taken. These measures are welcome, but their effects will materialise only in the long run. Fiscal space could be used to speed up the increase in pension levels at the lower end of the income distribution.

The tax mix could be made more favourable to long-term growth prospects. Taxes on immovable property – estimated to be the least distortionary of taxes (Johansson et al., 2008) – are particularly low by international standards (Figure 14). Extending the tax base to

**Figure 14. Taxes on immovable property are among the lowest in the OECD**

Recurrent taxes on immovable property as a per cent of total taxation, 2015 or latest available year



Source: OECD Revenue Statistics Database.

StatLink  <http://dx.doi.org/10.1787/888933581201>

residential property and using market values for the tax base would raise revenue from this source significantly. Environmental taxes already account for a relatively large share of tax revenues, but increases in energy, pollution and transport tax rates would better price these activities' negative impacts on the environment. As stressed in previous *Economic Surveys*, energy tax rates should be increased and exemptions and reduced rates should be eliminated (OECD, 2015 and Table 4).

**Table 4. Past recommendations for improving fiscal policy**

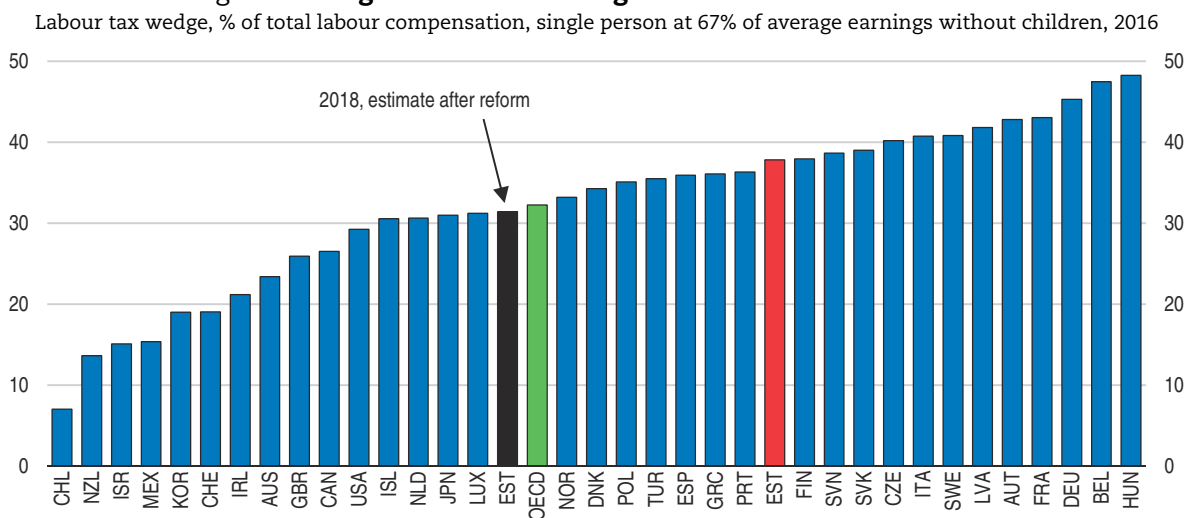
Main recommendations from previous <i>Surveys</i>	Action taken since the 2015 <i>Survey</i>
Create budgetary room to raise spending on active labour market policies, infrastructure and education, as well as to lower labour taxes. Improve spending efficiency and prioritisation and phase out tax exemptions, notably the deductibility of mortgage interest payments. In the longer term consider allowing a small deficit in the government budget rule.	The fiscal rule was changed in 2017. Past surpluses can be used to allow a deficit of up to 0.5% of GDP. The government plans to use this option in 2018-20. Labour taxes were cut. Spending on active labour market policy is set to more than double between 2015 and 2017. The tax deductibility of mortgage interest payments has been reduced.
Further reduce the taxation of labour earnings, in particular of low earnings.	The government lowered the income tax rate from 21% to 20% in 2015 and plans to increase the monthly income tax-free allowance from EUR 170 to EUR 500 in 2018. The unemployment insurance contribution rate was cut from 3.2% to 2.4% in 2015.
Raise more revenues from the taxation of real estate by removing exemptions and by evaluating property according to market values.	No action taken.
Phase out exemptions and preferential rates and further strengthen VAT administration. Apply the standard rate to all goods and services.	The Tax and Customs board has started registering all transactions exceeding EUR 1 000 and crosschecks the transfers in the IT system.

### Strengthening public support to reduce poverty

The government plans important redistributive measures. Reform of the personal income tax, to take effect as of 2018, is expected to improve its progressivity and reduce poverty by 0.7 percentage point. The income tax allowance will be raised and decrease gradually with the income level, thereby increasing the disposable income of 80% of households and reducing some disincentives to work generated by threshold effects in the previous system. After the planned reform, the tax wedge will fall below the OECD average

(Figure 15). However, as the lowest income earners (up to EUR 170 per month) do not pay income tax now, this measure will not help them. Moreover, the reform will replace a better targeted means-tested tax credit introduced in 2016, which was conditioned to work intensity, and is likely to increase marginal tax rates for medium wage earners.

Figure 15. **High taxes on low wage earners are set to decrease**



Note: The black bar shows the impact on the tax wedge of the reform of the personal income tax planned for 2018.

Source: OECD Tax Statistics and OECD Secretariat calculations.

StatLink <http://dx.doi.org/10.1787/888933581220>

The benefit for large families (which have the highest poverty risk) is set to increase to EUR 300 per month, at a cost of 0.1% of GDP. This measure would be more cost-effective if targeted on the poorest. The Work Ability reform to increase the participation of people with reduced work capacity in the job market can in principle also contribute to fighting poverty. However, its impact might be limited in the medium run, because employers' willingness to hire persons with disabilities appears to be low (National Audit Office, 2017). Active labour market policies have been stepped up to improve the employability of jobseekers and increase incentives for hiring disabled people, but their success will rely on the provision of adequate financial and human resources, which is not currently guaranteed in all municipalities (National Audit Office, 2017). Finally, if approved by parliament, proposed changes to the public pension system could also mitigate inequality among pensioners and reduce old-age poverty, but would require several years to take effect.

There is room to make social support more effective at reducing poverty. Despite the high level of relative poverty, the level of spending allocated to protection of the most vulnerable is low: around 31% of total public spending in 2014 went on social spending, some 9 percentage points less than the EU average. A relative large share of spending is directed to family benefits, while expenditure on social exclusion lags behind (Table 5). At the same time, the impact of transfers and taxes on inequality is among the lowest in the OECD (see Figure 3, Panel B). The social safety net does not provide adequate support to those who most need it. Despite a significant increase in 2016, the level of social assistance has not stepped up to a level that would minimise the risk of poverty. The subsistence benefit stood at around 20% of the median equivalised income in 2016.

The targeting of social programmes is poor, with means-tested measures accounting for a low share in total social spending. In addition, estimates of take-up rates for social

**Table 5. Breakdown of social spending**  
% of total social protection spending, 2015

	Sickness and disability	Old age	Survivors	Family and children	Unemployment	Housing	Social exclusion	Other
Estonia	16.4	54.5	0.5	17.9	8.3	0.2	1.0	1.2
CEE <sup>1</sup>	18.4	55.9	6.0	9.3	3.1	0.8	3.7	2.7
Nordics <sup>2</sup>	18.4	46.3	1.5	14.6	9.4	2.1	6.0	1.6
OECD <sup>3</sup>	15.8	51.3	6.3	11.2	7.4	2.3	3.9	1.9

1. Unweighted average of Czech Republic, Hungary, Latvia, Lithuania, Poland, Slovak Republic, and Slovenia.

2. Unweighted average of Denmark, Finland, Sweden.

3. Unweighted average of available OECD countries.

Source: OECD National Accounts Database.

assistance benefits are relatively low (Vörk et al., 2016). All this calls for streamlining the existing benefit schemes and ensuring that transfers go to those most in need. This should be done by increasing the rate of subsistence benefits further. Because increasing benefit generosity might lower job take-up rates for low-wage earners, reforms should aim at maintaining strong work incentives and maximising the prospects of re-integrating beneficiaries into employment. To do so, social benefits should be withdrawn only gradually when the recipient takes up a job, or in-work benefits should be introduced, as is the case in a number of OECD countries.

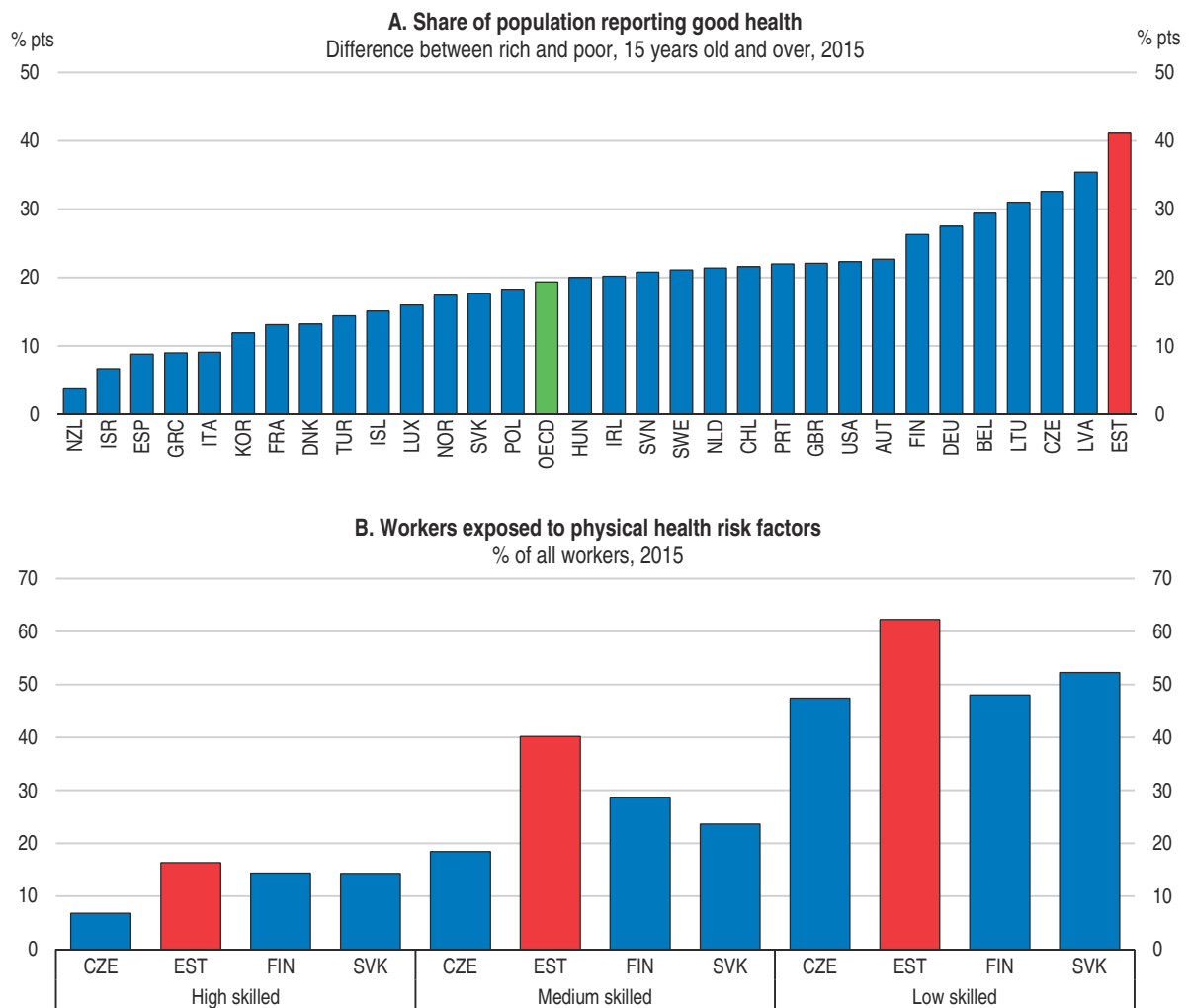
To ensure that all benefit from opportunities created by globalisation and Estonia's high trade intensity, those who can work need to have the right skills and incentives to get good jobs. International experience suggests that the best way to support jobseekers is through a combination of temporary income support, job search support and measures to improve their employability (OECD, 2016d). While all unemployed have access to the public employment service and activation programmes, in practice only a few participate. Participation in and spending on active labour market policies is modest. The coverage of the unemployment benefit system is low, with only half of the registered unemployed receiving benefits. Improving the coverage can make the unemployed more readily reachable for upskilling programmes available via the Unemployment Insurance Fund.

### **Improving health coverage**

Low health status is one of the weaknesses identified by the OECD Better Life Index (see Figure 2). Significant discrepancies in life expectancy by education level and socio-economic background suggest a high level of inequality in access to health care, although they also reflect a number of other factors (Figure 16). Regional disparities persist in exposure to environmental health risks: residents of Ida-Viru County register worse health indicators than residents of other regions (OECD, 2017a). About 6% of the population was not covered by the Estonian Health Insurance Fund in 2016. Some health services are provided in municipalities to uninsured people, and the coverage of health insurance, which now includes dental care, has recently been extended.

Out-of-pocket payments are 19% of total health care spending, above the EU average of 14%, which poses a barrier for those with low incomes. The promotion of generics and more generous reimbursement have stabilised out-of-pocket payments for pharmaceuticals. Further effort to reduce out-of-pocket payments for low-income households could be made, as recommended in the 2012 *Economic Survey*, by increasing and means testing the cap on out-of-pocket payments on prescribed pharmaceuticals (Table 6).



Figure 16. **Health outcomes vary strongly with socio-economic background**

Source: OECD Social and Welfare Statistics Database; OECD Job quality indicators Database.

StatLink  <http://dx.doi.org/10.1787/888933581239>

Prevention plans for risk factors (alcohol consumption, smoking, obesity) are being implemented, but spending in this area remains well below the OECD average and should be increased (De Maeseneer, 2016). Indeed, a relatively high proportion of the population smokes regularly, and alcohol consumption is among the highest in the OECD. As in other OECD countries, obesity rates have increased fast. Introducing taxes to limit health-damaging behaviour, as envisaged by the government with a tax on sugar-sweetened beverages, should be considered as it can improve health outcomes (Sassi et al., 2013). In addition, more needs to be done to reduce the number of occupational accidents, which increased by 68% between 2009 and 2016. A considerably higher proportion of Estonian workers, especially among the low skilled, are exposed to physical health risks than in, for instance, the Czech Republic, Slovakia or Finland (see Figure 16).

According to the Labour Inspectorate, there lack incentives for employers to meet the requirements for work environments and to improve their quality (National Audit Office, 2017). Well-developed occupational health and safety regulations have contributed to a decline in work accidents in most OECD countries (OECD, 2010a). In Estonia, enforcement of

health and security regulation should be strengthened, for instance by increasing the level of fines imposed for breaches of the regulations from current low levels (OECD, 2010b). An occupational accident and disease insurance system that would strengthen the liability of employers and thereby incentives for investment in health and work safety has been on the policy agenda of many past governments. It should be introduced and include experience rating of firms (i.e. basing insurance cost on amount and/or number of claims made in previous years) that, be it part of public or private scheme, has brought positive results for instance in the Netherlands, Finland and Belgium (OECD, 2010b; European Agency for Safety and Health at Work, 2017).

Table 6. **Past recommendations for reducing poverty**

Main recommendations from previous <i>Surveys</i>	Action taken since the 2015 <i>Survey</i>
Increase spending on active labour market policy, and better target spending, while ensuring stronger co-operation among local governments, education institutions and the Unemployment Insurance Fund.	Spending on active labour market policy is set to more than double between 2015 and 2017 due to the implementation of the Work Ability reform and the introduction of preventive measures for workers at risk of unemployment.
Refocus the social protection system on activation and return to work, underpinned by stronger inter-agency co-operation. All working-age people with some capacity to work should become clients of unemployment insurance fund offices and be encouraged to participate in job search and activation.	A reform of disability benefits, the Work Ability reform, is being implemented, strengthening the assessment of capacity to work and tying the receipt of benefits to the obligation to participate in activation programmes.
Target benefits to provide sufficient help for those in greatest need.	No action taken.
Strengthen health spending efficiency, promote healthy lifestyles and improve access for disadvantaged groups.	EHealth services (e-consultations and e-referrals, and a central e-registration system) are being developed. The building of primary healthcare centres with teams of specialists in 2016 has started to reduce pressure on hospitals. Dental care are partly reimbursed since July 2017.

### **Making education more inclusive**

Estonia outperformed the rest of Europe in the OECD's latest PISA survey. In 2015, Estonia achieved high levels of both performance and equity in education. Coverage of pre-primary education and tertiary education attainment are high. At the secondary level, performance of students in reading, mathematics and science is among the best, and students' socio-economic background has a smaller impact on performance than in other OECD countries. But there is still some room to make the education system more inclusive. A recent OECD review identifies policy priorities to improve equity in the Estonian school system, including targeting extra resources on students with special education needs and Russian-speaking students, notably by addressing shortages of Estonian language teachers in Russian schools (Santiago et al., 2016). These resources could be drawn from a further consolidation of the school network.

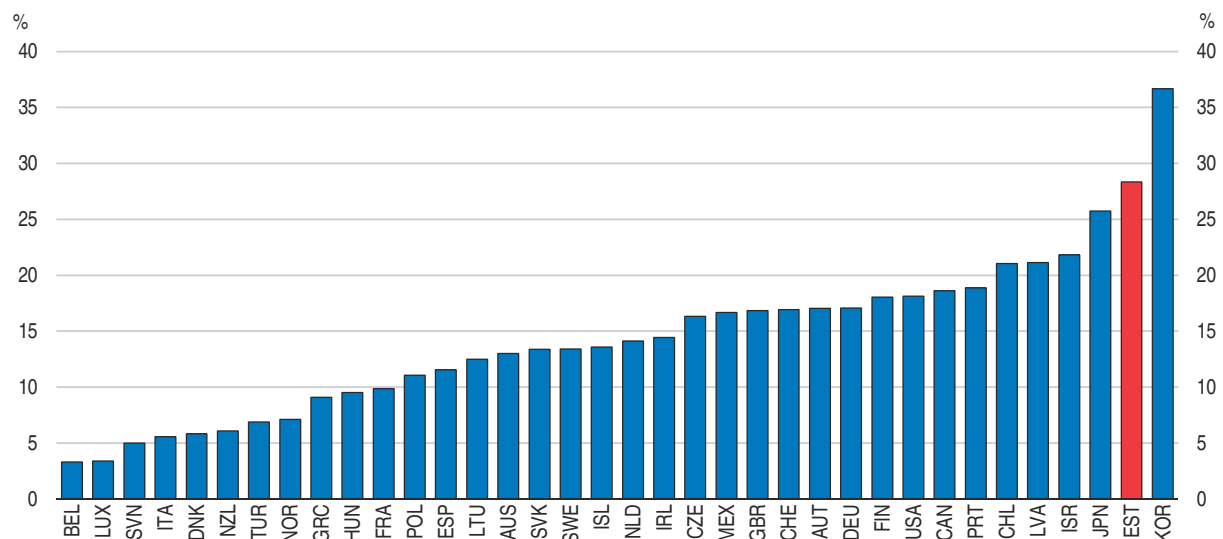
Integration of the Russian-speaking minority in the labour market remains a challenge, in particular in eastern regions of the country where redundancies in the chemical and oil shale industries further deepened the unemployment gap in 2016. The unemployment rate of the Russian-speaking minority (around 25% of total population), was 3 percentage points higher than that of other Estonians. While this is partly linked to regional economic disparities, a whole-of-government approach is needed to tackle the multidimensional obstacles encountered by this minority, including limited Estonian language skills, choices regarding education, and weaker social contacts and networks. Particular attention should be paid to Estonian and English proficiency, which are found to improve labour market outcomes but are poor among Russian speakers (Ministry of Education and Research, 2015).

The Strategy of Integration and Social Cohesion in Estonia 2020 includes a number of measures and measurable targets, but little progress has been achieved since 2011 (Ministry of Education and Research, 2016).

### Addressing gender gaps

Estonian women have high employment rates and outperform men in the education system. However, Estonia has both the second highest gender pay gap in the OECD (Figure 17) and relatively low employment among mothers with children under 3 (24% in 2014). The gender employment gap for parents is large, while it is close to zero for childless women and men (OECD, 2017b). In addition, management and supervisory positions are overwhelmingly held by men. Differences in education and occupations explain only a minor part of the pay gap (Anspal, 2015). Meanwhile, gender stereotypes are prevalent (Figure 18).


Figure 17. **The gender pay gap is high**  
Full-time employees, 2015 or latest year available<sup>1</sup>



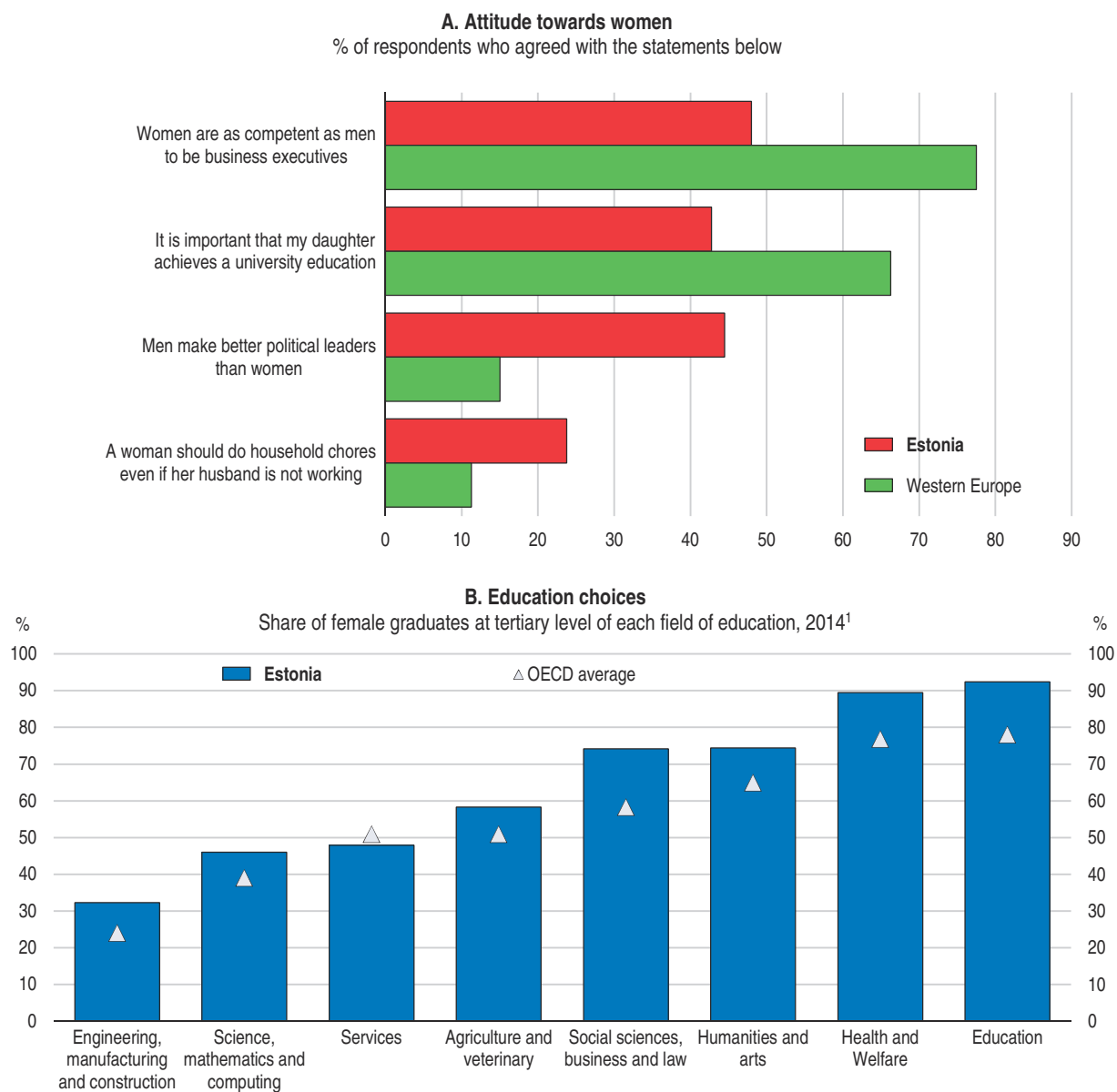
Note: The gender wage gap is defined as the difference between male and female median wages divided by the male median wage.

1. Data refer to 2016 for Czech Republic, Korea, United Kingdom and United States, 2014 for Belgium, Estonia, France, Germany, Greece, Iceland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, New Zealand, Poland, Portugal, Slovenia, Spain, Switzerland and Turkey, 2013 for Sweden, 2011 for Israel

Source: OECD Employment Database.

StatLink  <http://dx.doi.org/10.1787/888933581258>

The Welfare Development Plan for 2016-2023 sets targets to counter gender inequality, and policy measures including allowing the Labour Inspectorate to monitor the equality of pay and carry out audits on firms suspected of gender discrimination are under discussion. Measures for pay transparency, which require companies to carry out analyses of gender wage gaps and share them with employees, government auditors or the public, could be implemented as is done in several OECD countries (including Sweden, Germany, Lithuania and Austria). In Iceland, one of the OECD's top performers in terms of gender equality, companies with 25 or more employees are required to disclose the gender composition of both general and management staff and to develop a certification scheme for gender pay equality, to ensure that all jobs of equal value are paid the same. Other strategies include the introduction of pay-gap calculators, publicly available online, to help employees to estimate what salary they should receive for a given job, sector and locality, as is done in the Czech Republic.

Figure 18. **Gender stereotypes are pronounced**

1. Level of education: total tertiary education (ISCED 2011 levels 5 to 8). 2013 for OECD average.

Source: EBRD (2016), *Life in Transition: A decade of measuring transition*; OECD Education Statistics.

StatLink  <http://dx.doi.org/10.1787/888933581277>

The parental leave system is also being revised. Estonia has the longest parental leave in the OECD (146 weeks vs. 37.5 weeks on average), but father-specific leave is very short (2 weeks). Long leaves can have a detrimental impact on careers, as skills can deteriorate and the costs to firms of vacancies can induce discrimination against women of childbearing age (Rossin-Slater, 2017; Thévenon and Solaz, 2013). Increasing the length of father-specific leave, as planned by the authorities, is not the most cost-effective way to achieve a better gender balance in childcare responsibilities. Introducing a “daddy quota” as in Sweden or France (whereby the length of the parental leave is reduced if the father does not take his leave) without increasing the total length of the parental leave would accelerate the return of mothers to the labour market at a lower cost.

The capacity of childcare services for children below 2 years old is being increased, as recommended in past Surveys (OECD, 2015 and OECD, 2012). Participation of children aged 0-2 in pre-school education has increased significantly from 20% to 34% in 2016. With funding from the European Regional Fund around 2 300 childcare places will be created in larger cities and suburbs as well as in municipalities where needs are unmet (European Commission, 2017). Local governments will also be given more flexibility in organising the provision of high-quality early childhood education and care possibilities based on the needs of families.

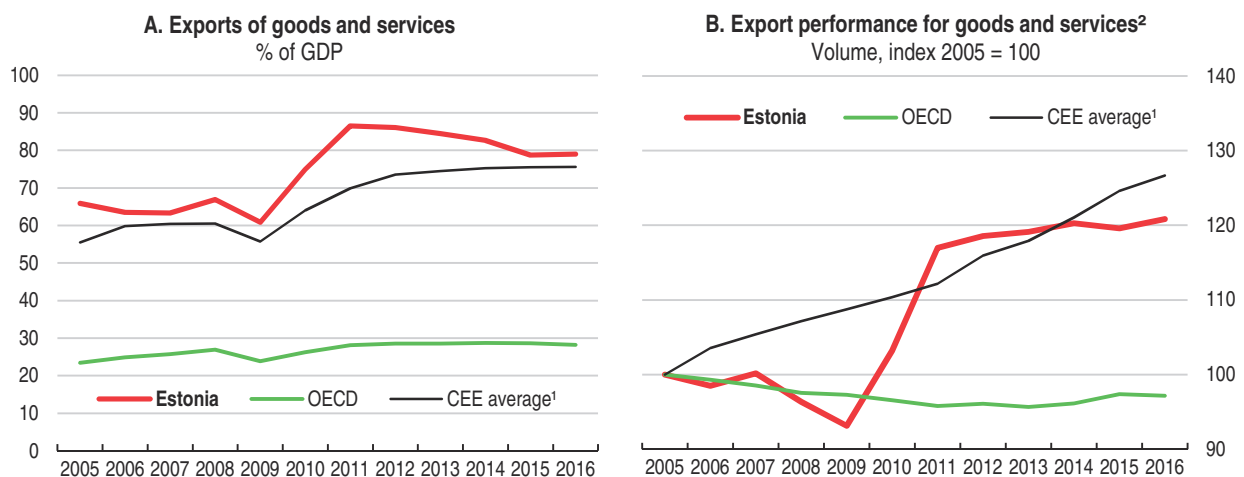
## Unleashing productive investment and export performance

### Deepening participation in global trade

Trade and foreign direct investment can channel knowledge and innovation into the economy and thereby increase productivity. The economic performance of Estonian exporting firms is higher than their non-exporting counterparts, suggesting that deepening integration in global trade would contribute to reducing the currently high productivity gap with the OECD's best performing countries. Higher productivity in exporting firms is due to both self-selection (i.e. more productive firms are the ones that tend to become exporters) and to productivity increases after the firms enter export markets (Wagner, 2012; Masso and Vahter, 2015; Benkovskis et al., 2017).

Estonia is already well integrated in global trade, and exports have been resilient (Figure 19, Panel A). On average around 12% of firms export, while in OECD countries less than 10% of firms are directly engaged in international trade (OECD, 2016b). Around a half of private-sector employment is sustained by foreign demand, twice as much as the OECD average. Nevertheless, low and medium value added goods and services dominate, and aggregate value added per worker remains modest, even if comparable to that of its peers (Figure 20). Gains in export market shares have been less than in its EU catch-up peers, to whom Estonian businesses may lose out, particularly in terms of price competitiveness (Figure 19, Panel B).

Figure 19. **Export orientation and gains in export market shares are comparable to peers**



1. Simple average of Czech Republic, Hungary, Latvia, Lithuania, Poland, Slovak Republic, and Slovenia.

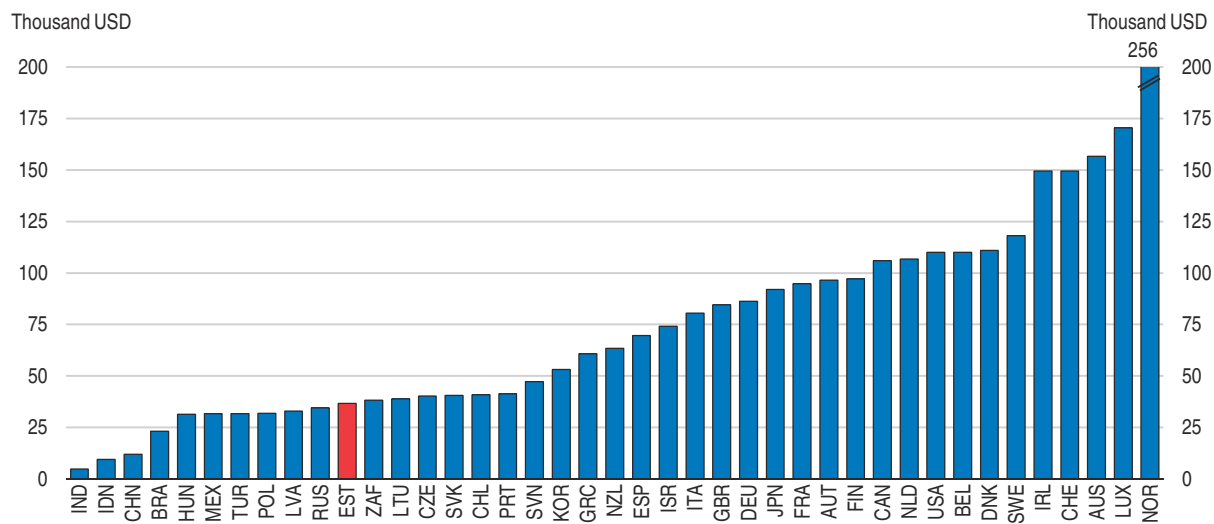
2. Export performance is measured as actual growth in exports relative to the growth of the country's export market.

Source: OECD Economic Outlook 101 Database (updated with information available on 1 September 2017).

StatLink  <http://dx.doi.org/10.1787/888933581410>


Figure 20. **Value added per worker embodied in foreign demand is low**

Value added embodied in foreign final demand per worker



Note: Value added embodied in foreign final demand per worker is computed by dividing the domestic value added captured from foreign final demand by the number of employees sustained by foreign final demand. Figure refers to 2011 data.

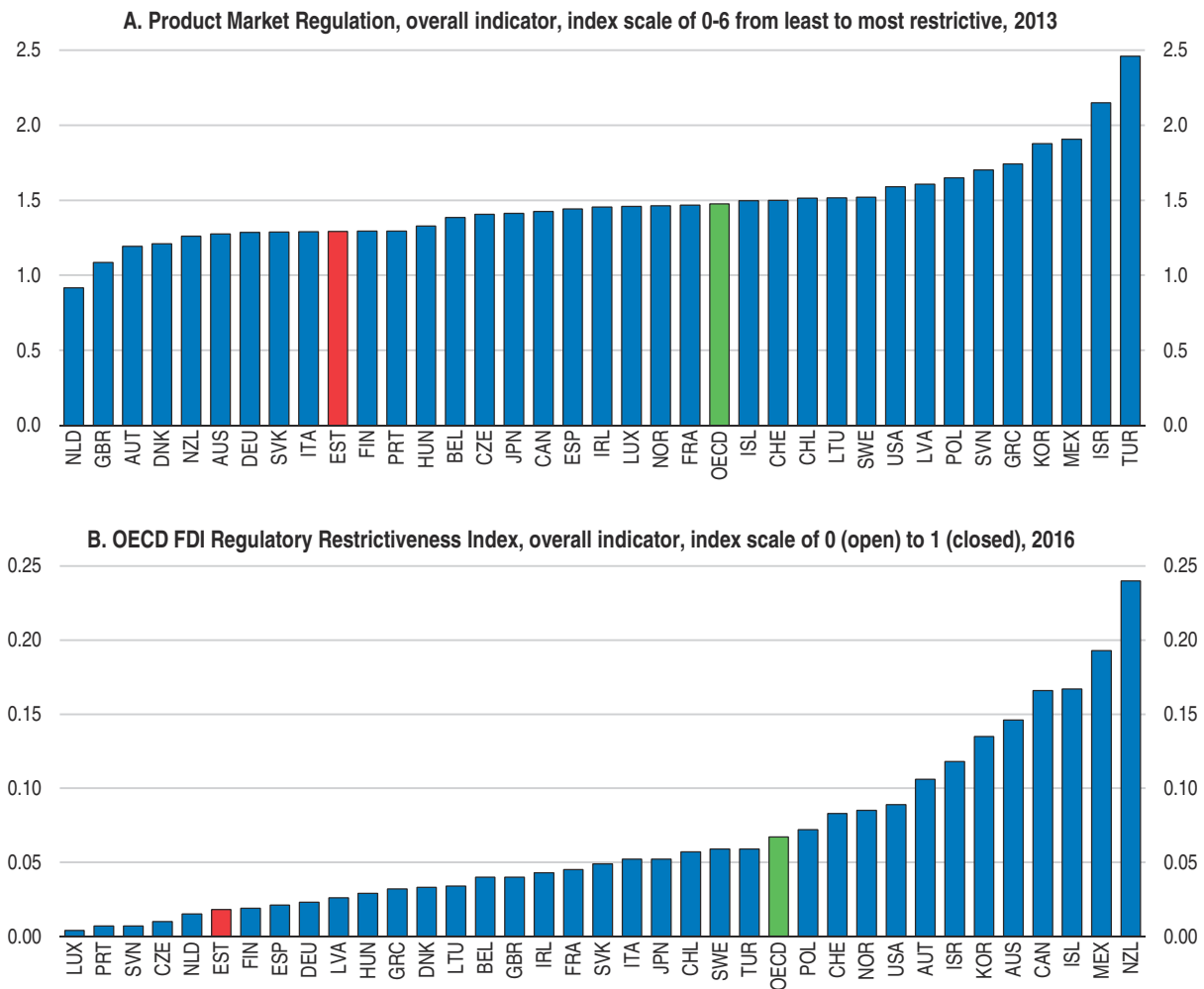
Source: OECD/WTO (2016), Statistics on Trade in Value Added (database) and OECD (2016), "Trade in Employment: Core Indicators" in OECD Structural Analysis (STAN) Databases.

StatLink  <http://dx.doi.org/10.1787/888933581296>


### **Reducing regulatory barriers to investment and trade**

Low corporate taxes combined with business and competition-friendly regulation compensate for Estonia's small size, which might otherwise be a barrier for investment and productivity. The PMR and FDI Regulatory Restrictiveness Index indicators, which respectively measure the restrictiveness of product market regulation and the statutory restrictions on foreign direct investment, are well below the OECD average (Figure 21). Political willingness to continuously improve business conditions is strong, and several initiatives target reducing red tape: a 'zero bureaucracy' programme, the introduction of a business account for micro-entrepreneurs and an e-residency programme. Measures aiming at restricting tax-free transfers of profits distributed abroad in the form of long-term loans are welcome. The planned reduction of the taxation of distributed dividends for mature companies (from 20% to 14% for companies that pay dividends for three consecutive years) is unlikely to have any positive impact on investment by domestic firms, because reinvested profits are not taxed. Furthermore, it will add complexity to the tax system and penalise young firms.

Business conditions could be improved further through easing remaining unnecessary entry barriers in services (such as exclusive rights for engineers, architects, accountants and lawyers, as recommended in the 2015 *Economic Survey*) and revising environmental regulation to reduce the administrative burden on small firms (OECD, 2017a). Alignment with best international practice for trade facilitation would reduce the administrative and information costs of trade. These include completing the one-stop shop for formalities (i.e. the Single Window) and improving co-operation between agencies involved in trade activities (e.g. customs, border control). Increasing regulatory certainty by making more use of advance rulings (i.e. binding statements by the administration on regulatory rules applied to specific goods) and making information about agreements with third countries, appeal procedures, and penalty provisions more accessible would also help.

Figure 21. **The business environment is favourable**

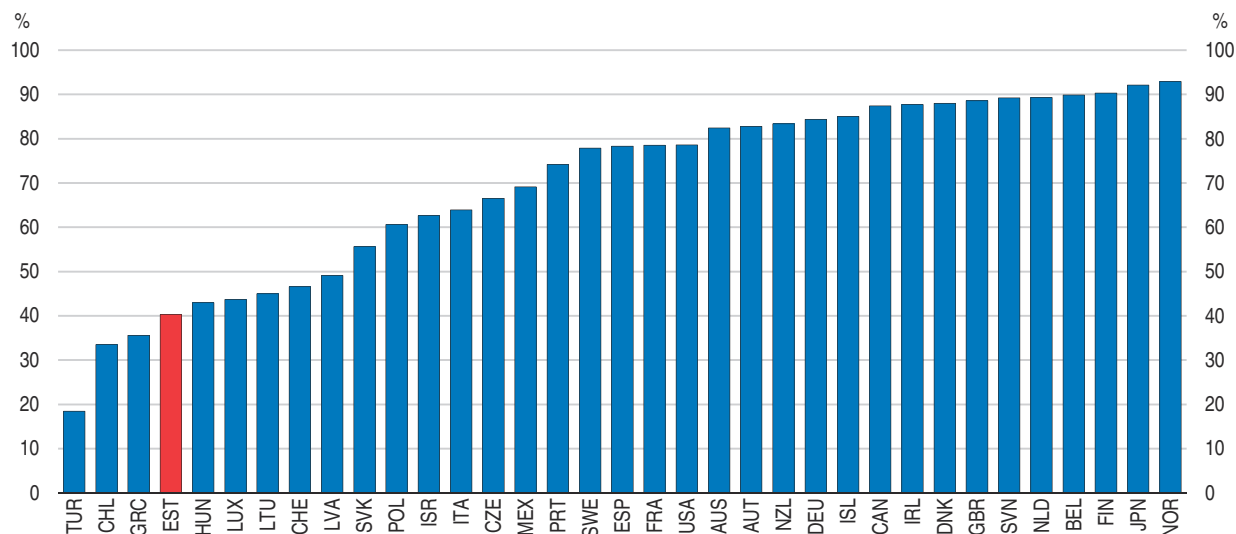
Source: OECD (2013), Product Market Regulation Database; OECD FDI Regulatory Restrictiveness Index Database.

StatLink  <http://dx.doi.org/10.1787/888933581980>

An efficient insolvency framework is key to supporting investment and avoiding capital becoming trapped in low-productivity firms. Bankruptcy laws that do not overly penalise business failure are likely to support capital spending in risky but innovative companies, though excessively low creditor protection could undermine credit supply. The high cost of closing a business in Estonia may reduce incentives to invest and raise the cost of credit. Bankruptcy procedures are long, and the recovery of creditor claims is low (Figure 22). A new OECD indicator on insolvency regimes shows that Estonia has ample room for improvement in terms of the framework and outcomes of corporate insolvency proceedings (Figure 23). The Ministry of Justice's current review of the legislative framework, whose outcomes should be available in autumn 2017, is thus very welcome.

Avenues to improve the insolvency regime include giving creditors the right to initiate restructuring (rather than liquidation alone) as it increases either recovery rates or the chances of the company's survival (Adalet McGowan and Andrews, 2016). Early-warning mechanisms, such as on-line self-assessments, and pre-insolvency regimes permitting swifter out-of-court settlement could also be introduced. Additionally, the length of the stay

Figure 22. **Credit recovery is low**  
Average recovery rate<sup>1</sup>



1. The recovery rate is calculated based on the time, cost and outcome of insolvency proceedings involving domestic legal entities and is recorded as cents on the dollar recovered by secured creditors. The calculation takes into account the outcome: whether the business emerges from the proceedings as a going concern or the assets are sold piecemeal. Then the costs of the proceedings are deducted. Finally, the value lost as a result of the time the money remains tied up in insolvency proceedings is taken into account. The recovery rate is the present value of the remaining proceeds, based on end-2015 lending rates.

Source: World Bank, Doing Business 2017.


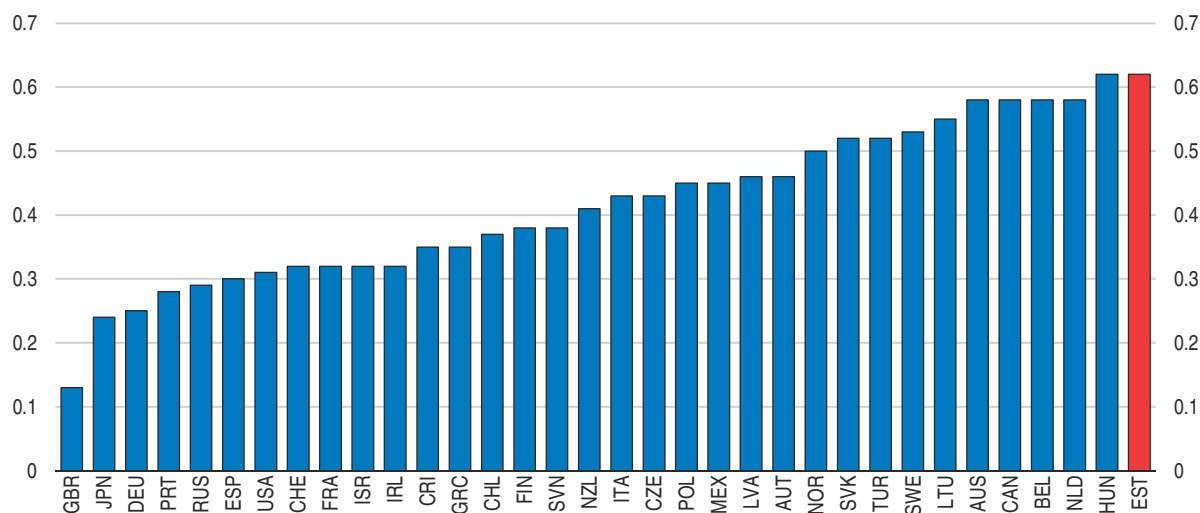

StatLink  <http://dx.doi.org/10.1787/888933581999>

Figure 23. **The insolvency regime is inefficient**  
OECD indicator of insolvency regimes,<sup>1</sup> 2016



1. A higher value corresponds to an insolvency regime that is most likely to delay the initiation of and increase the length of insolvency proceedings. Composite indicator based on 13 components: time to discharge; exemption of assets; early warning mechanisms; pre-insolvency regimes; special insolvency procedures for SMEs; creditor ability to initiate restructuring; availability and length of a stay on assets; possibility and priority of new financing; possibility to “cram-down” on dissenting creditors and dismissal of management during restructuring; degree of involvement of courts; distinction between honest and fraudulent entrepreneurs and the rights of employees. For more details, see Source

Source: Adalet McGowan, M., D. Andrews and V. Millot (2017), “Insolvency Regimes, Zombie Firms and Capital Reallocation”, OECD Economics Department Working Papers, No. 1399; and Adalet McGowan, M. and D. Andrews (2017), “The Design of Insolvency Regimes”, OECD Economics Department Working Papers, forthcoming.

StatLink  <http://dx.doi.org/10.1787/888933582018>



on assets (i.e. the period in insolvency during which creditors cannot continue debt collection, thereby allowing for restructuring of the business) tends to delay the resolution of financial distress and should be limited as in some other OECD countries, including Germany, Ireland and the United Kingdom. Finally, to encourage capital injections required to facilitate the reorganisation of firms, international best practice suggests that new financing should have priority over unsecured creditors (Adalet McGowan et al., 2017).

### **Addressing skill shortages**

Labour market tensions and recruitment difficulties can undermine capital spending and impact investment decisions, especially for international companies. With Estonia's population ageing, its working-age population is declining. Moreover, labour shortages have already materialised, in particular in managerial, specialised education, legal professional, health care and ICT (Information and Communication Technology) (EU Skills Panorama, 2014). Businesses' difficulty to recruit an adequate skilled workforce is one of the main barriers for long-term investment (see Figure 8).

### **Make the labour market more inclusive and attractive**

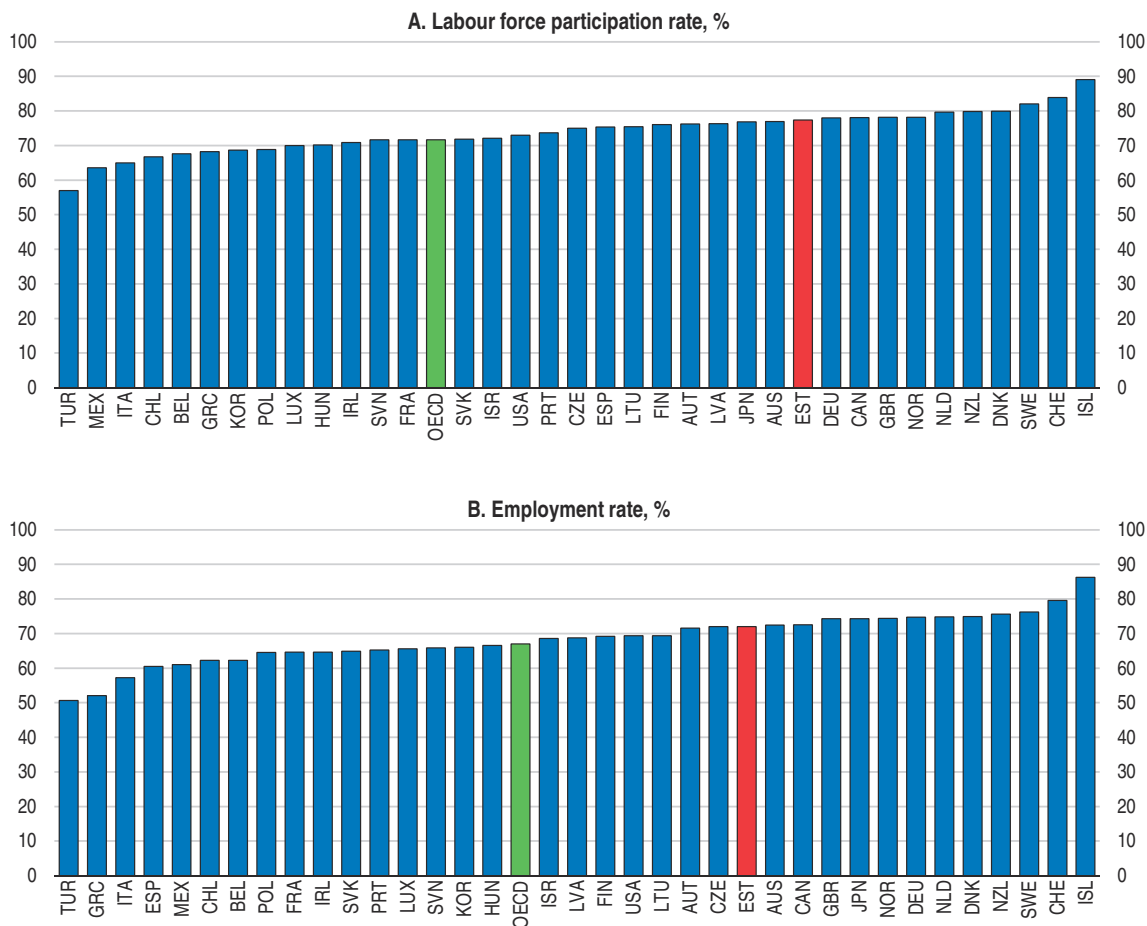
Estonia already has high participation and employment rates (Figure 24), but there are exploitable avenues to improve labour market performance, including reducing the gender participation gap. Combining reform of parental leave with better provision of childcare services would foster participation and upskilling of young mothers. Current efforts to rehabilitate individuals with partial ability to work and to reduce early retirement go in the right direction but are unlikely to have a major impact on employment or the integration of the disabled, given employer reluctance to offer jobs to those with reduced work capacity (National Audit Office, 2017).

Migration could also help to address skill shortages; it is also a means of knowledge transfer and of creating business links to foreign markets. Emigration has been significant in the past, but return migration rose in 2015/2016, reflecting at least in part deterioration of economic prospects in Finland and Russia and Estonia's strong labour market. Still, immigration from non-EU countries is low (Figure 25). Excluding returning Estonians, only 2 800 immigrants (0.23% of the population and half of total migratory flows) arrived annually during 2005-13. Under a third of these were labour migrants, and only a quarter of the adult immigrants had higher education (National Audit Office, 2015).

Estonia's selective immigration policy, oriented to attracting the high-skilled, has had only limited success so far. It is complex and failed to attract the skilled workers needed on the labour market (Praxis, 2014; National Audit Office, 2015). Conditions to obtain a work permit are strict and vary between permit types. An annual quota on migration of 0.1% of the resident population is in place and was reached in 2007 and 2016. Since 2016 the authorities have relaxed entry conditions for sectors affected by labour shortages, such as ICT. Also, the wage threshold for work permits has been reduced, which is welcome. The policy framework could be streamlined by consolidating the various immigration programmes and raising the quota. Making job search easier for international students, particularly non-EU ones, could capitalise on young foreigners already present in the country. They could be granted a longer period in which to find a job after completing their studies. Better labour market integration of family migrants could also reduce labour shortages and should be supported by reinforcing activation and training programmes for third-country nationals.

Figure 24. **Employment and participation rates are high**

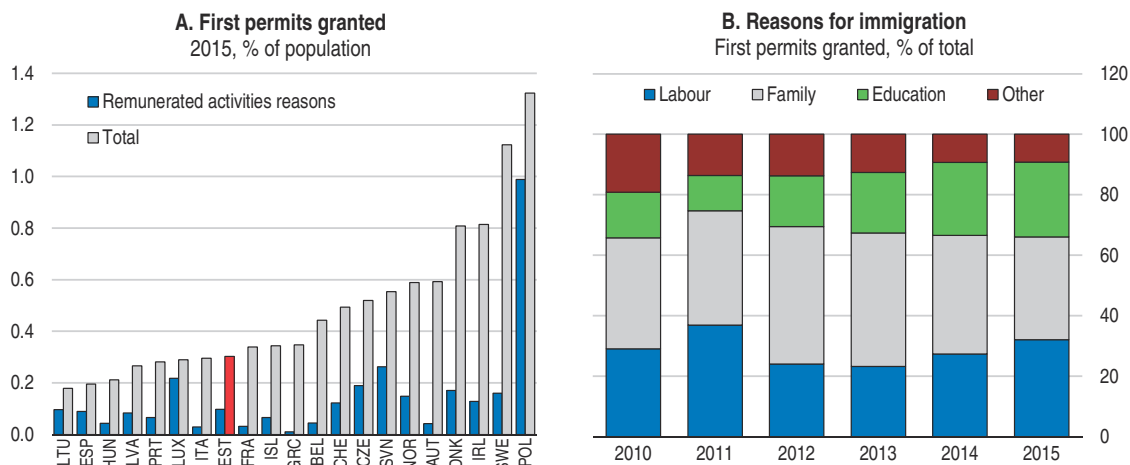
Percentage of population aged 15-64, 2016



Source: OECD Employment Outlook 2017.

StatLink <http://dx.doi.org/10.1787/888933581315>

Figure 25. **Labour migration is modest**



Source: Eurostat, Demography and migration database.

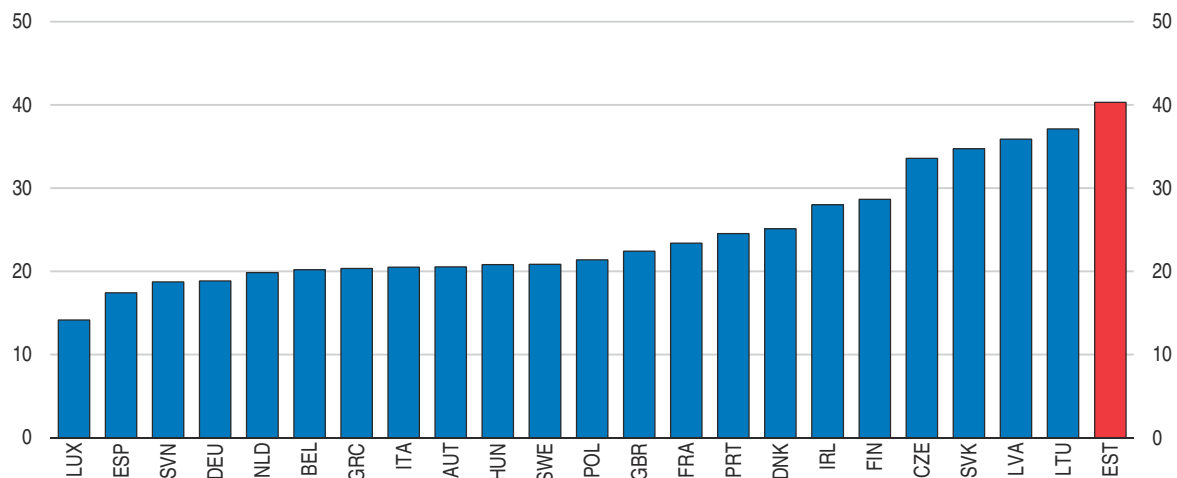
StatLink <http://dx.doi.org/10.1787/888933581638>

## Skills


The rapid transformation of skills requirements has complicated the task of aligning educational content with labour market needs. An increasing share of jobs requires high education levels and competencies to adapt to a changing environment. New OECD estimates show that differences in countries' capacity to endow the population with the right mix of skills can lead to significant differences in exports. Estonians' high educational attainment and appropriate skill mix make them well equipped to benefit from increased trade and openness (OECD, 2017c). Tertiary educational attainment in Estonia is among the highest in the OECD, and adults rank highly in information-processing skills. Nevertheless, they lag behind in the capacity to solve problems in a technology-rich environment (Ministry of Education and Research, 2015). Around 30% of adults do not have a professional qualification. Moreover, in 2014, around 40% of employees reported insufficient skills for their job at the time of hiring, one of the highest shares in the European Union (Figure 26).

Figure 26. **A large share of Estonians feels under-skilled**

The share of employees reporting lower skill level than required for their jobs at the time of hiring, 2014



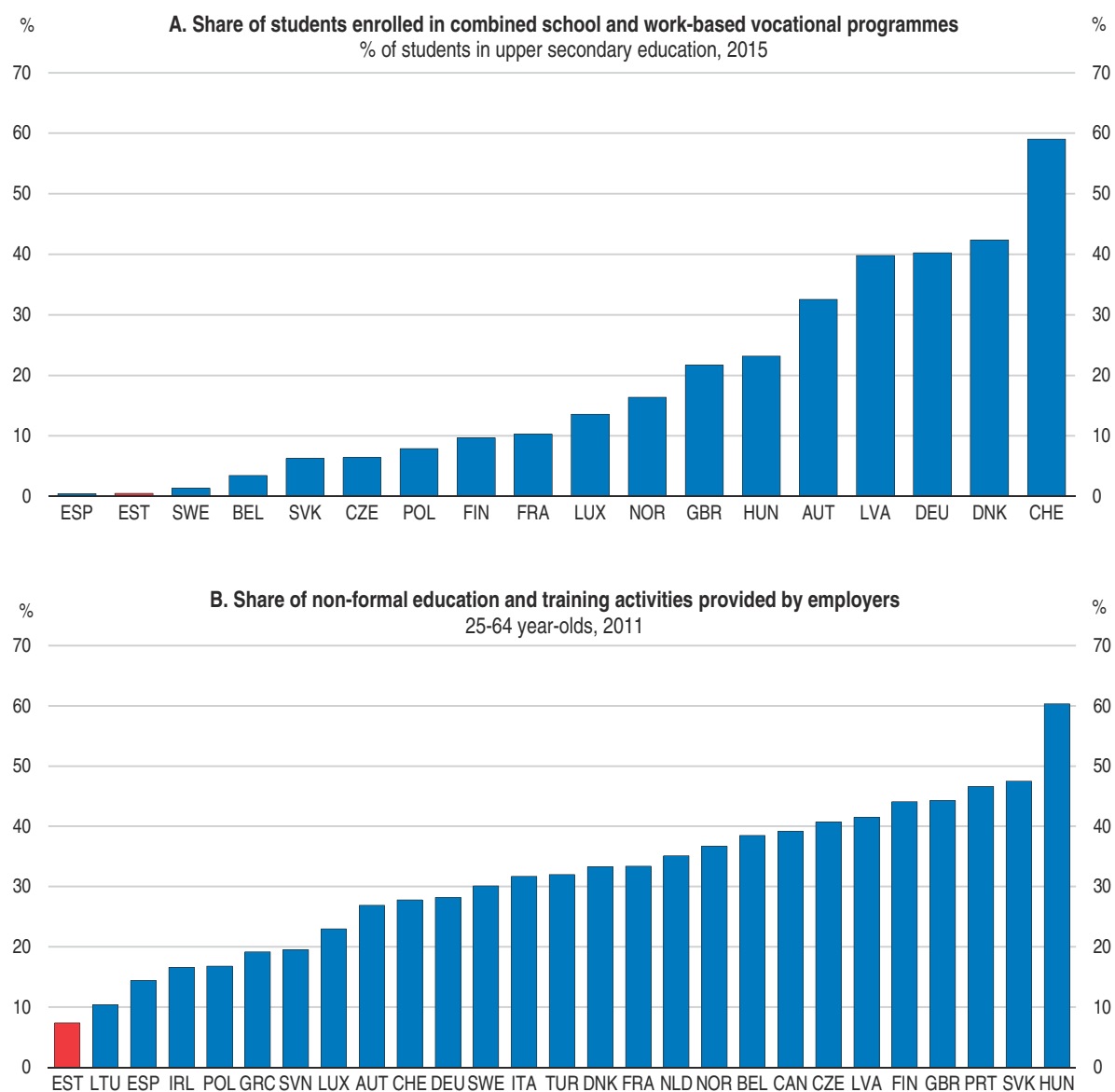
Source: CEDEFOP (2016), "Skills Panorama – The EU workforce: under-skilled at hiring", <http://skillspanorama.cedefop.europa.eu>.

StatLink  <http://dx.doi.org/10.1787/888933582094>

Providing information on labour market opportunities and better career guidance are central to helping students choose courses that will lead to good jobs. Such information and guidance can also be used to fight gender stereotypes as women tend to be under-represented in scientific areas, including computer science and engineering, where needs are large (see Figure 18, Panel B). Only 11% of Estonians have used career guidance, around half the EU average (European Union, 2014). The qualification and career counselling system has been strengthened in recent years, notably with the provision of guidance at the secondary school level, the publication of performance indicators and the establishment of guidance centres. The Unemployment Insurance Fund has also started to provide career advice to those in work, but the take-up has been relatively low. A skill forecasting system (OSKA) that analyses changes in skills requirements and labour market developments has been implemented, but it remains to be seen how it is used by educational institutions. While these are welcome steps, more needs to be done in basic education, where the quality of counselling services remains poor (Santiago et al., 2016).


On-the-job training and apprenticeships can provide valuable skills in line with labour market needs and thus improve matching quality on the labour market. Currently, students have too few opportunities to engage in apprenticeship, and businesses are little involved in the provision of adult education (Figure 27). A programme launched in 2015 aims to multiply the number of apprenticeship places by more than five by 2020 and cut the dropout rate to 25% (from 42% now). Finding companies offering training opportunities is the main obstacle to these objectives, as a large share of Estonian firms are small with limited resources. Developing a system in which several firms jointly offer apprenticeship training, as

Figure 27. **Businesses are little involved in the provision of vocational education and training**



Note: At the upper secondary level (ISCED 3) and the non-tertiary post-secondary level (ISCED 4), “vocational & prevocational programmes” are divided into “school-based programmes” and “combined school and work-based programmes” on the basis of the amount of training that is provided in school as opposed to training in the work place. Programmes are classified as combined school- and work-based if less than 75% of the curriculum is presented in the school environment..

Source: Eurostat, Education and training database; *Education at a Glance 2016: OECD Indicators*.

StatLink  <http://dx.doi.org/10.1787/888933581714>

recommended in the 2015 *Economic Survey* (OECD, 2015; Table 7), might mitigate this problem. To encourage business participation, Vocational Education Training (VET) institutions may allocate to companies up to 50% of the funds paid to the school for the study place. Consideration should also be given to reducing employers' social security contributions or to introducing a lower minimum wage for apprentices.

A rapidly changing environment and longer working lives make lifelong learning central to maintaining workers' competences and ensuring they can find and keep good jobs. The Lifelong Learning Strategy 2020 set ambitious targets for adult education, including a 20% participation rate by 2020 (vs. 16% in 2016) and a reduction in the share of adults without professional qualification to 25%. A vast range of training opportunities are provided, including continuous training and retraining measures to prevent unemployment, introduced in 2017. Measures have already started to bear fruit, with a significant increase in participation in lifelong learning in 2016 (Figure 28, Panel A). To ensure the quality of training courses and their effectiveness in upskilling participants, monitoring of lifelong learning programmes should be reinforced by using *ex post* evaluation, including of labour market outcomes of participants. Also, the accreditation system should be extended to all training suppliers subsidised by the public sector.

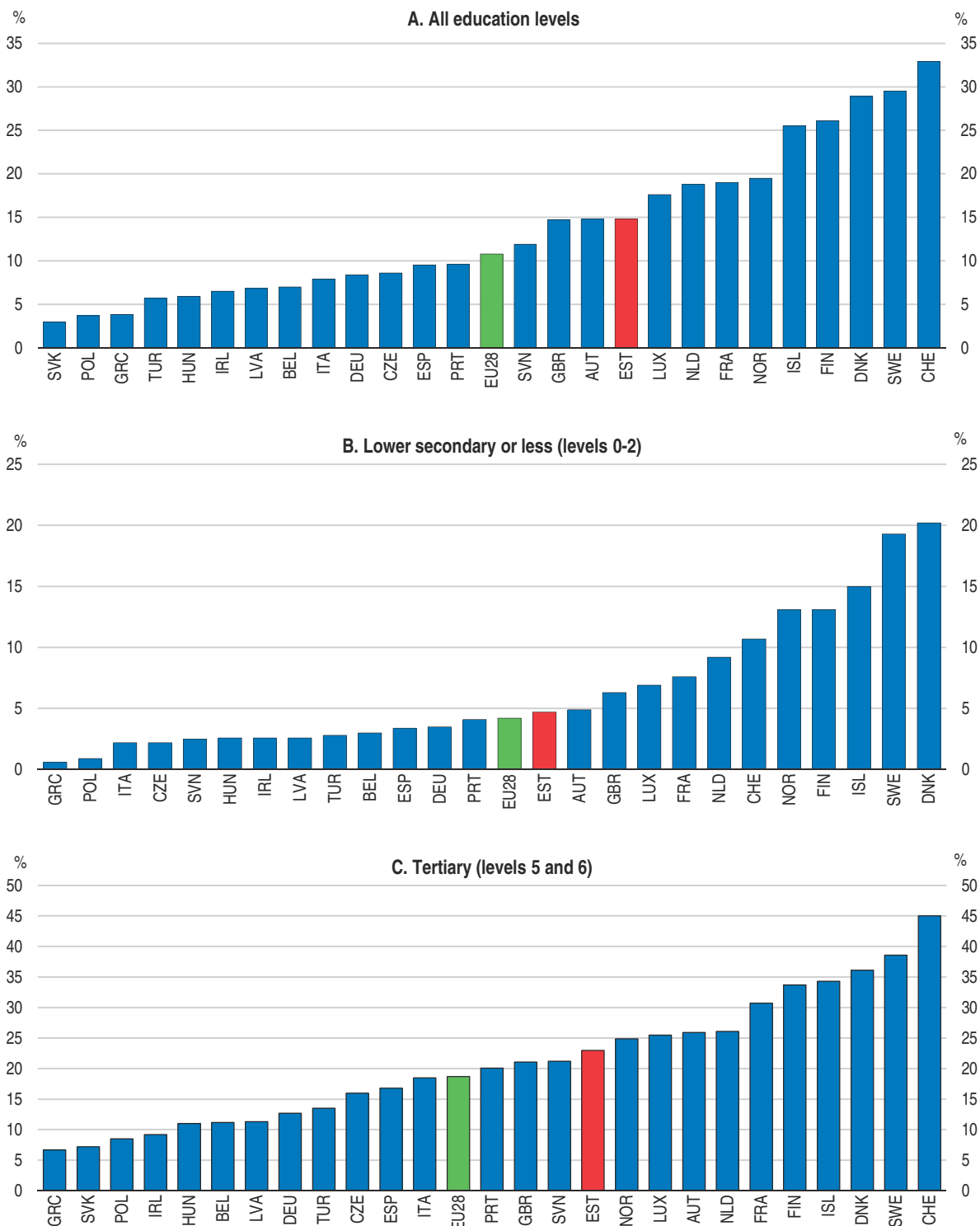
Training of low-skilled workers remains below average, and the take-up of measures targeted to this group is likely to be low (Figure 28, Panel B; Browne et al., 2017). To counter this, training vouchers should be provided to all low-educated workers; these could be directed towards training in core skills (ICT, language). In addition, programmes should be more targeted at small companies who are less likely to see the need for training of their workforce or to have a training plan (Kitching and Blackburn, 2002). An outreach mechanism targeting small-business managers should be developed to provide them with information and support in identifying appropriate training.

### **Expanding access to funding**

Access to funding has not been a major obstacle to investment in Estonia (see Figure 8). Nevertheless, economic literature shows that low competition in the financial system is likely to limit credit supply, in particular for young and/or small innovative firms. The Estonian banking sector is dominated by two systemically important, foreign-owned banks (Swedbank and SEB), and the relatively high mark-ups in the sector – measured by the difference between output prices and marginal costs, relative to prices – reflect weak competition (Cuestas et al., 2017). Market power magnifies credit constraints for SMEs (Carbo-Valverde et al., 2009; Love and Peria, 2012). In addition, foreign-owned banks and large banks with complex and hierarchical structures tend to engage less in relationship lending compared to domestic banks, thereby lending less to SMEs and start-ups (Stein, 2002; Havrylchuk, 2012; Havrylchuk et al., 2012).

Entry of new players into Estonia's financial system is difficult, given the absence of a proper credit information-sharing scheme. Negative information on borrowers (non-repayment and/or loan restructuring) is available from private credit bureaus, but the major banks do not share positive information (loan conditions and repayment), resulting in incomplete information for lenders. A well-designed credit information-sharing scheme should be established: one covering all borrowers (firms and individuals), collecting both positive and negative credit information. Such an institution would lower the cost of intermediation and improve access to credit by reducing adverse selection bias (Brown et al., 2009). Access to such data could also assist the Financial Supervision Authority in assessing the health of banks.

**Figure 28. Participation in lifelong learning is good but low educated lag behind**  
 Per cent of the population aged 25 to 64 participating in education and training (last 4 weeks), 2016



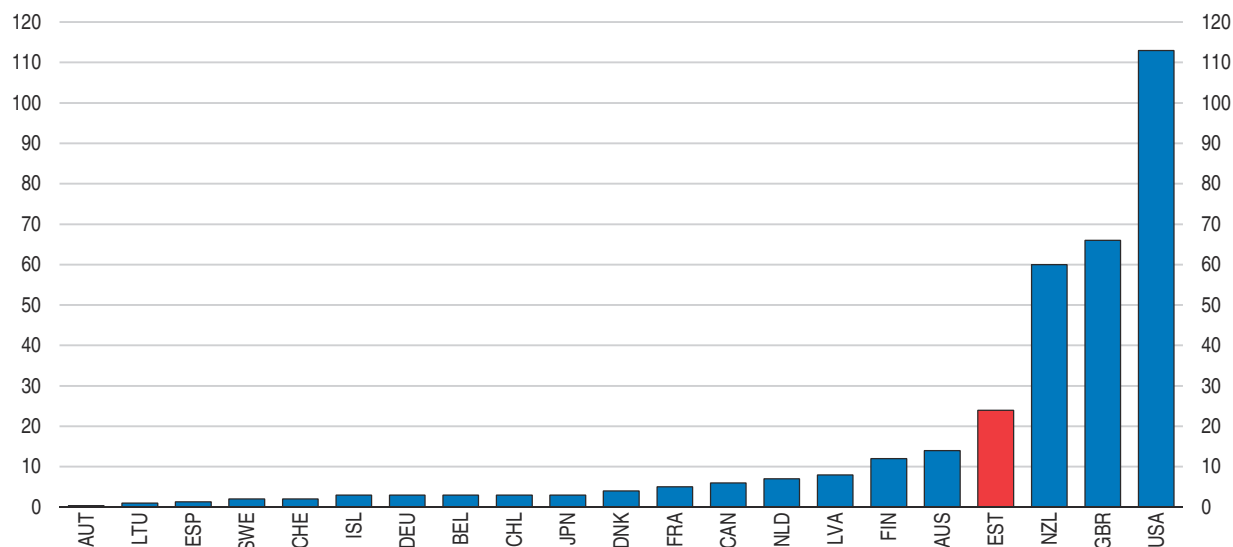
Source: Eurostat, Main indicators on lifelong learning database.

StatLink <http://dx.doi.org/10.1787/888933581334>

As proposed in the 2015 *Economic Survey*, the financial industry could be diversified by granting banking licences to savings and loans associations (Table 7). Efforts to develop venture capital, including the creation of a fund of funds are welcome. Another avenue is to remove barriers to the development of alternative funding modes, such as peer-to-peer lending and equity-based crowdfunding (i.e. Fintech). Estonia is a host to some of the most innovative Fintech start-ups and a frontrunner in alternative finance, but the scale of finance channelled remains limited (Figure 29).

Figure 29. **Estonia is a frontrunner in alternative finance but amounts are low**

Volumes, in euros per capita, 2015



Note: Alternative finance includes peer-to-peer lending, equity crowdfunding, donation and reward crowdfunding, as well as balance sheet lending.

Source: Cambridge Centre for Alternative Finance.

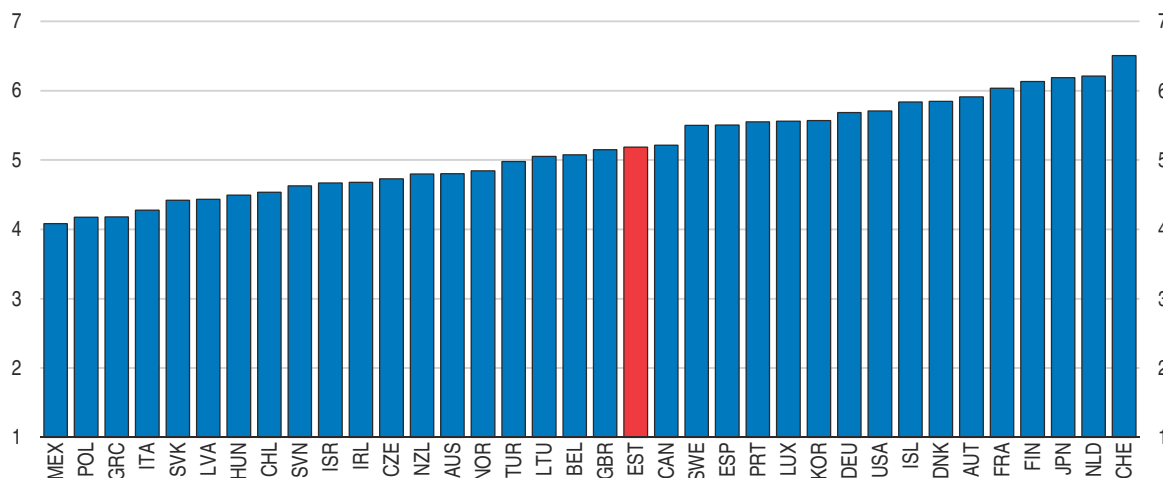
StatLink  <http://dx.doi.org/10.1787/888933582075>

Establishing conditions for the development of Fintech could increase credit supply for risky projects and offer new business opportunities to Estonian ICT companies. To do so, a level playing field should be established between traditional and alternative sources of credit in terms of access to information, regulation and taxation. Consumer protection of Fintech users is weak and should be reinforced to build confidence in these new funding alternatives. Licencing and transparency requirements for Fintech platforms should be introduced. The platforms should be required to have resolution plans in place to ensure that repayments continue to be collected in case of bankruptcy. Furthermore, the taxation of investment via Fintech platforms should be harmonised with the taxation of bond and equity securities by allowing investors to deduct their losses from their income tax base.

### **Building high-quality infrastructure**


High-quality infrastructure is a key factor underpinning the success of firms, in particular those operating in international markets. Infrastructure in Estonia has been upgraded significantly over recent years, benefiting from large amounts of public investment. The World Economic Forum Global Competitiveness Index shows that the quality of infrastructure is now perceived as higher than in other CEE countries (Figure 30).

**Figure 30. The quality of infrastructure is average**  
Quality of overall infrastructure score, from 1 (lowest score) to 7 (highest score), 2016-17



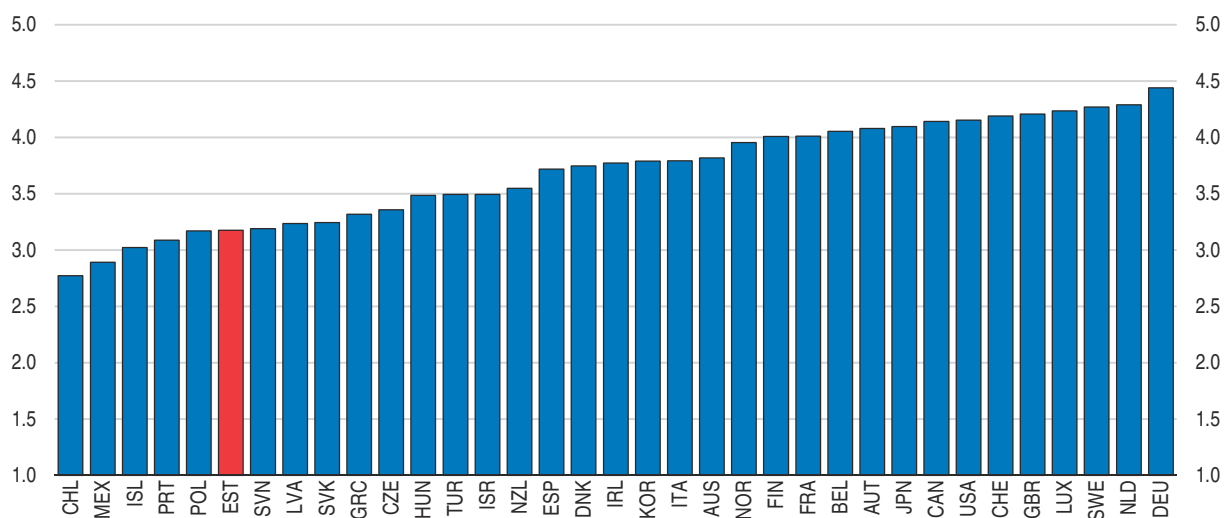
Note: The score is based on the assessment of business leaders operating in the country to the question: how do you assess the general state of infrastructure (e.g. transport, communications and energy) in your country? [1 = extremely underdeveloped – among the worst in the world; 7 = extensive and efficient – among the best in the world].

Source: World Economic Forum Global Competitiveness Index dataset.


StatLink  <http://dx.doi.org/10.1787/888933582132>

Some bottlenecks remain in logistics infrastructure, which partly reflects the lack of interoperability with European railways and of intermodal terminals for combined transport (Figure 31; Hilmola and Henttu, 2015). The construction of the Rail Baltica corridor to connect Estonia with the European Core Network by 2030 provides an opportunity to partly address this issue and enhance logistics competitiveness.

**Figure 31. The quality of logistics infrastructure is poor**  
Quality of logistics infrastructure score, from 1 (lowest score) to 5 (highest score), 2016-17



Source: World Bank, Logistics Performance Index database 2016 (LPI).

StatLink  <http://dx.doi.org/10.1787/888933582170>

Satisfaction with the quality of roads is well below the levels seen in Western European countries, and the Road Administration estimates that 30% of roads are in bad or very bad condition (EBRD, 2016). Estonia's achievements in improving its road safety record



have slowed in recent years. The lack of adequate maintenance activities partly explains these outcomes. The need for increased maintenance – predicted to grow by around 13% by 2020 – has to translate into adequate budgetary provisions to ensure high service standards.

Changing trade flows have resulted in overcapacity in the railway sector. Meanwhile, the ongoing networks expansion of recent years increases the pressure to maintain and upgrade infrastructure assets over their entire lifetime. To enhance Estonia's ability to maintain quality and safety standards and reduce the risk of underfunding over the next few years, it will be crucial to increase revenues drawn from user fees. Otherwise, additional budget funding will have to be allocated to management and maintenance.

The government announced a large investment plan for 2018-20 (a total of 1.3% of GDP, see Box 1). Returns on infrastructure investment are expected to be higher in catching-up countries like Estonia where the initial stock of capital is relatively low (Fournier, 2016). To ensure those returns materialise, the quality of project selection is of paramount importance, and a coherent framework to assess the value-for-money and socio-economic impacts of planned investment (on regional development, environment and safety) should be established.

In Estonia, different methodologies guide decision-making, and cost-benefit analyses (CBA) are not compulsory for all large-scale projects. All substantial infrastructure investment (such as the planned project to double road capacity between Tallinn and Tartu) should be subject to CBA using a uniform methodology, while the quality of CBA and the precision of forecasting – which has recently come into question (Praxis, 2017) – should be improved, preferably using a specialised body as argued above.

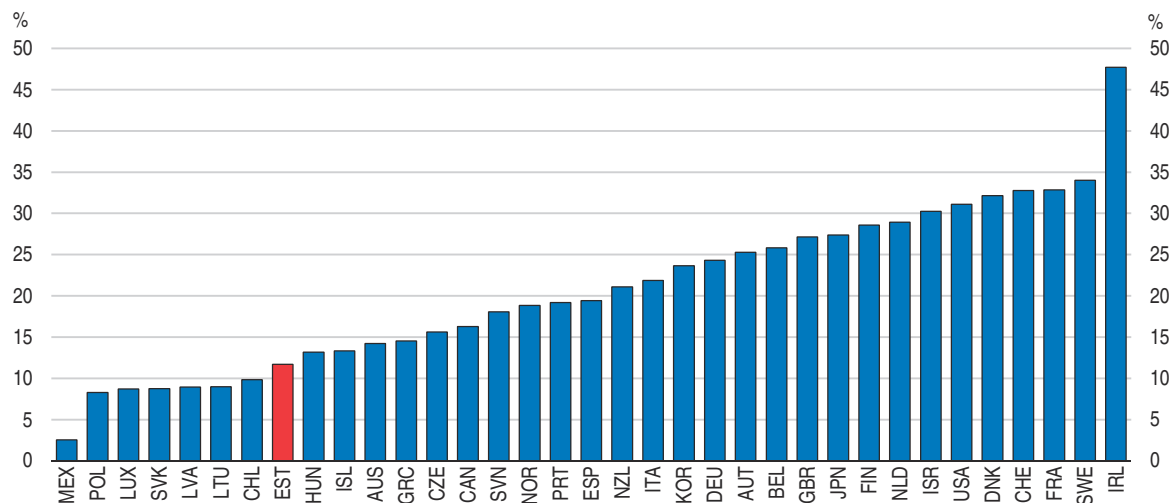
### ***Strengthening diffusion of knowledge and raising innovative capacities***

As in many other countries, a considerable productivity divide exists between Estonian export-oriented firms and those servicing the domestic economy (Masso and Vahter, 2015). Analysis of Estonian firm-level data shows that past productivity improvements can be attributed to a strong catch-up by firms with initially below-average performance, but there is still a long way to go (IMF, 2017). Estonian average productivity expressed as value added per hour worked is around 56% that of the euro-area countries and half the average of the upper half of OECD countries.

Estonia lags behind in terms of investment in knowledge-based capital, which partly explains why the share of innovative firms has been relatively low (Figures 32 and 33). Despite a fast uptake of digital technology by the public sector and high ranking in internet use, access to high speed internet and development of broad band networks is still below international standards, as is the use of ICT by Estonian firms (Figure 34). The main policy challenge is to ensure the transfer of knowledge and spill-over of high productivity from export-oriented firms to the rest of the economy, and to encourage the application of research and innovation in the business sector as a whole.

Estonia has some high-ranking academic research. In nine disciplines, such as molecular biology and genetics, plant and animal science, the University of Tartu belongs to the top 1% of the world's universities and research institutions by citations. However, in the business sector, innovation activity is limited to only a few enterprises (some of which are publicly owned), and, more importantly for knowledge diffusion, strong links with academia are rare. A number of tools have been put in place to bring about academic and business

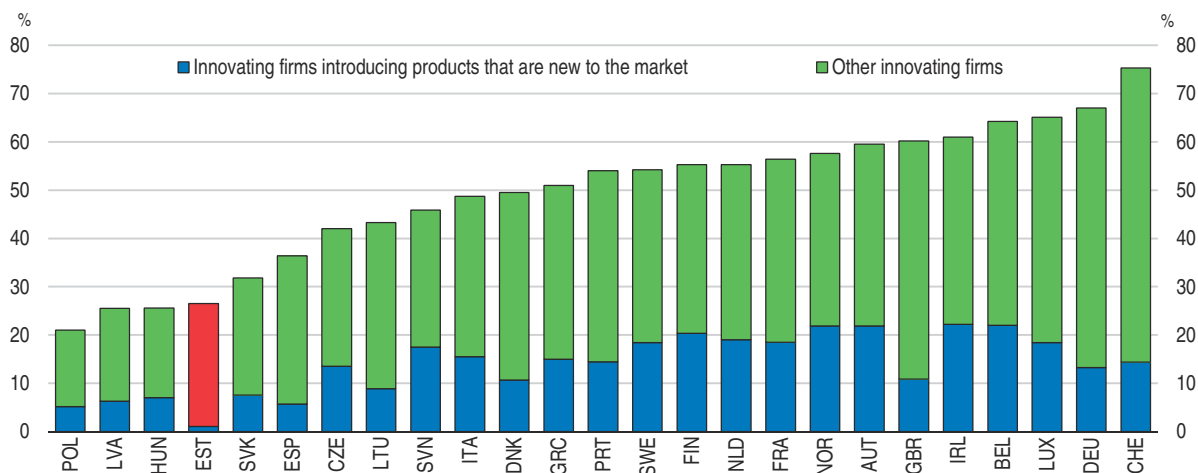
**Figure 32. Investment in intangible capital is well below OECD standards**  
Investment in intellectual property products as a percentage of nominal non-residential investment, 2015 or latest available year



Source: OECD National Accounts Database.

StatLink <http://dx.doi.org/10.1787/888933581353>

**Figure 33. Innovation capacity is low**  
Share of innovating firms in all firms surveyed, 2012-14



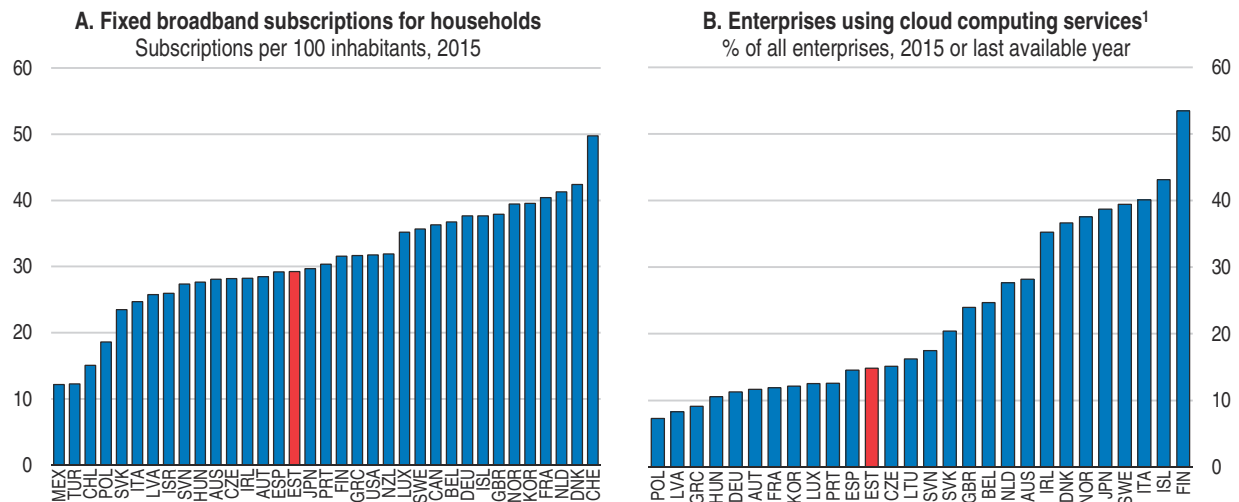
Note: International comparability may be limited due to differences in innovation survey methodologies and country-specific response patterns.

Source: Eurostat (2016), Community Innovation Survey (CIS) 2014.

StatLink <http://dx.doi.org/10.1787/888933581885>


co-operation, including innovation vouchers (a scheme for applied research and product development between research institutions and businesses) and 12 publically subsidised clusters (i.e. concentrations of firms and higher education and research institutions) in 5 industries. The impact has been limited so far, probably because of excessive dispersion of resources.

The policy framework is driven by supply-side measures, with relatively little input from, or ownership by, the business community. Business representatives are not involved enough in the design of innovation policy, in particular at early stages. Regular feedback on

Figure 34. **Fixed broadband penetration and ICT use could improve**

1. Cloud computing refers to ICT services used over the Internet as a set of computing resources to access software, computing power, storage capacity and so on.

Source: OECD Broadband Database; OECD ICT Database.

StatLink  <http://dx.doi.org/10.1787/888933581866>

policy instruments is organized via committees in which businesses are represented, but remains weak. Scope for changes once measures are approved should be made more flexible. A new industrial policy green paper that focuses on digitalisation of traditional industries has been initiated by the business community. This is welcome and it will be important to maintain the link with the business community while designing concrete policy measures to implement it.

Innovation policy places a growing emphasis on demand-side policies in OECD countries (OECD, 2011). While international best practices have not yet been identified, measures such as the US or Australian small business innovation research programmes can serve as an inspiration, not least because of the relatively small size of Estonian companies. Well-designed public procurement can also serve as a tool: it has been a key determinant in the emergence of a number of high-technology sectors in the past (e.g. internet, GPS, etc.), and the Estonian public sector is digitally advanced in a number of areas. A programme to help the public administration design more innovation-friendly public procurement is in place, but its scope has remained limited so far. The measure is quite recent; it is thus too early to evaluate its reach.

Local stakeholders point to a gap between business and academic research areas: public R&D spending is concentrated on different areas to those of the major private-sector innovators (Karo et al., 2014). Public financing for R&D in electronics, forestry, food, mechatronics, automation and many other similar fields that would correspond to the leading export sectors has consistently lagged behind. The highest overlap between public and business R&D focus is currently in ICT-related domains (e.g. programming), stimulated by academic-business R&D co-operation but undermined by a lack of university graduates. Moreover, the existing evaluation system for academic staff is seen as too restrictive to allow for meaningful participation in the private sector. When allocating public funds to R&D institutions, giving more weight to co-operation with the private sector could help. It is welcome that the weight of business contracts in the funding formula for public research institutions will be increased as of September 2017.

Table 7. **Past recommendations for improving business conditions**

Main recommendations from previous <i>Surveys</i>	Action taken since the 2015 <i>Survey</i>
To strengthen knowledge transfers to domestic firms, promote applied research, and improve collaboration with domestic and foreign institutions conducting applied research.	The government has established an ADAPTER platform for universities' joint business co-operation and doctoral studies in co-ordination with businesses. Development vouchers incentivising co-operation between research institutions and businesses have been introduced in 2015. The criteria for basic financing of Estonian research institutes were modified to stimulate business co-operation. A pilot programme for innovative public procurement is being implemented.
Implement plans to expand access to European transport networks and energy supply facilities. Improve inter-modal transport connections.	The third Estonian-Latvian power connection needed for the full integration in the Continental European Market and the Rail Baltica project have progressed.
Shorten corporate insolvency procedures and improve their efficiency, for example by increasing the use of experts.	No action taken.
To remove barriers to SME lending, consider making it easier for savings and loan associations to apply for a banking licence.	No action taken.
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.	No action taken.
Increase the financial incentives of employers to invest in lifelong learning. Target public co-financing towards low educated and older workers, as well as towards employees in SMEs.	Since 2017, training opportunities are extended to employees at risk of displacement. The main target group are workers with no professional education or whose skills are outdated, whose knowledge of Estonian is poor and who are older than 50.

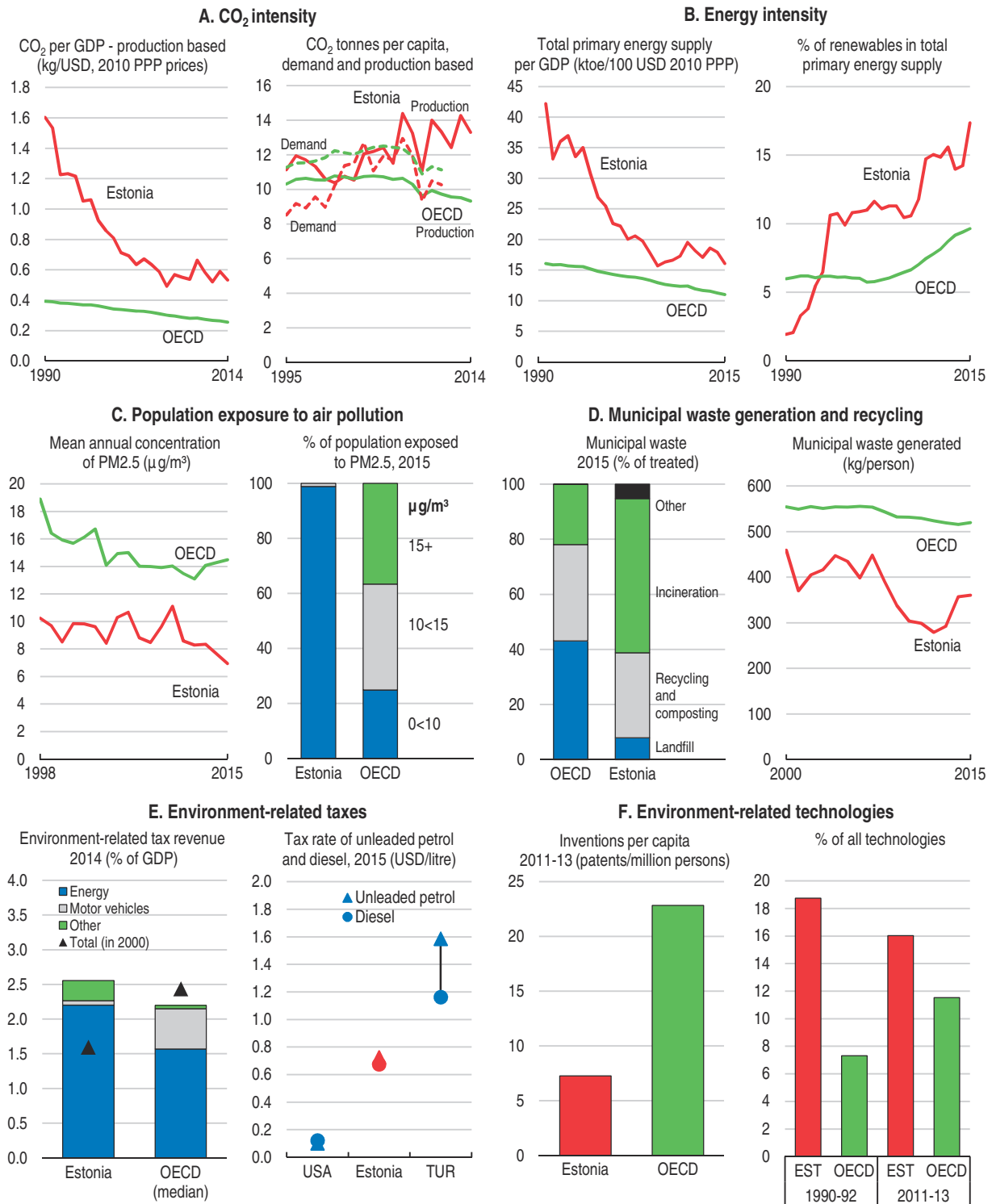
## Transitioning to a greener economy

OECD well-being indicators point to a relatively high quality of the environment (i.e. for air and water, see Figure 2). Nevertheless, Estonia is the most carbon-intensive economy and the third most energy-intensive in the OECD, with pockets of very high pollution (Figure 35). These environmental challenges are dominated by the consequences of exploitation of oil shale, whose combustion emits a lot of CO<sub>2</sub> as well as other pollutants. Some 75% of total primary energy supply in Estonia is produced from this source, mainly for electricity and shale oil. The process generates nearly 98% of total hazardous waste, of which Estonia has 35 times more per capita than the EU average. Worryingly, waste disposal creates air and water pollution, with measurable consequences for the health of the local population (OECD, 2017a).


Although large investments have been made to decrease direct emissions from oil shale-based energy production, the transition to a greener energy mix, planned in the National Development Plan of the Energy Sector until 2030, is at risk. Too few initiatives have been taken to reduce or price negative externalities generated by the oil shale industry and to support alternative energy sources over the past five years. Indeed, recent reform of the extraction tax to take account of the actual value of the resource extracted has even reduced the impact of taxation. The recently published *OECD Environmental Performance Review* contains a large number of important recommendations to accelerate the transition to a greener economy (OECD, 2017a). Because price incentives may not be sufficient in the case of oil shale, taxes should be supplemented with direct targets to substantially reduce air and water pollution. In addition, incentives for land restoration are weak, calling for stricter requirements on operating companies.

The transition to a greener economy is likely to have large socio-economic impacts. Oil shale mining is a key employer in the north-east of the country, where unemployment and poverty rates are well above the national average. It is also an important source of revenue for the government, both from taxation and from 100% public ownership of the dominant

Figure 35. Green growth indicators



Source: OECD (2017), Green Growth Indicators (database).

StatLink  <http://dx.doi.org/10.1787/888933581372>

energy company. A number of measures have already been introduced to anticipate structural changes in this industry, including study allowances and wage subsidies for redundant workers. Efforts to expand learning opportunities, including language training targeted on the Russian-speaking minority living in the region and to encourage labour mobility are very welcome. The social safety net should also be reinforced to ensure those who cannot find a job stay out of poverty.

Expanding the use of energy from renewable sources is part of Estonia's strategy for green energy supply. The share of renewables is close to the OECD average for total energy supply, primarily through the use of biomass for heating. A recent innovation has been the opening of a combined district heat and power station which uses domestic waste as a fuel, helping to keep the amount of waste sent to landfill very low (see Figure 35). By contrast, the use of renewable energy sources in the electricity sector is among the lowest in the OECD, as 80% of electricity is produced from oil shale. An auctioning system is being set up to kick-start investment in renewable energy sources. Developing electricity production from renewables, as planned in the National Development Plan of the Energy Sector until 2030, will also require adapting to intermittent energy supply and subsequent investment to ensure reliability of electricity provision at a reasonable cost.

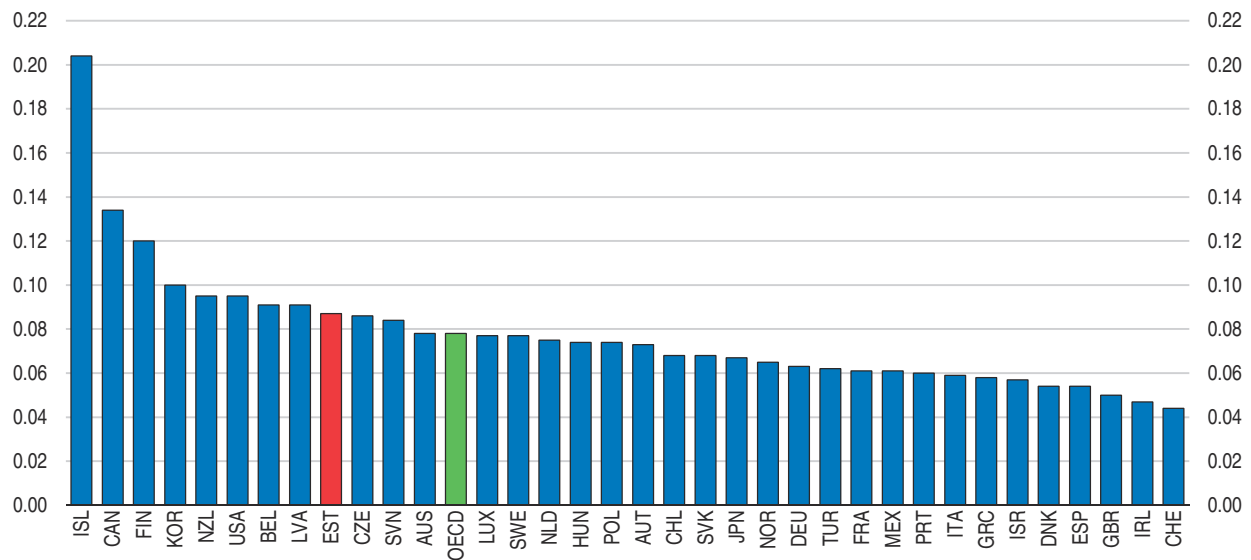
Estonia ranks ninth in the OECD in terms of domestic energy consumption per unit of GDP (Figure 36), partly due to relatively inefficient use of energy in some parts of the economy, such as in the housing sector and some district heating systems. As stressed in previous *Surveys*, ensuring that energy is used efficiently would have large positive economic and environmental impacts (OECD, 2015 and Table 8). Measures accelerating renovation of buildings and supporting resource-efficient investment in the corporate sector are welcome but would be more cost efficient if better targeted and if existing market instruments (such as Energy Performance Contracting) were used. Renovating and improving the efficiency of older parts of the district heating network is another priority; broadening the use of heat-use metering could also improve incentives for greater efficiency, given that unit heat costs in some systems are twice as high as in others.

Over the past decade, the strategy to reduce environmental externalities has included increasing use of environment-related taxation. Total revenue from environmental taxation was around 2.6% of GDP in 2014, somewhat above the median OECD country, but below its peak in 2009-10. Despite considerable increases in the tax rates on some pollutants since 2000, many taxes or charges remain below the environmental costs they generate, with a limited effect on pollution levels. For some water pollutants, however, there are strong marginal incentives: polluters pay a reduced rate if their discharges remain below permitted limits but may be liable to non-compliance fees of up to 100 times the basic rate if they exceed those limits.

Some rationalisation of these varying incentives, including by ensuring that where taxes are applied the related pollution is measured effectively, could help to improve cost-effectiveness and increase incentives to reduce pollution. To increase the efficacy of action on climate change, the effective cost of CO<sub>2</sub> emissions needs to be increased almost across the board as it is low in most sectors of the economy, including the oil shale industry (OECD, 2016c). Sectors where CO<sub>2</sub> emissions are not priced at all should also be included in carbon pricing. A methodology to assess the external costs of all main forms of pollution is being developed by the Ministry of Environment with the welcome intent to align environmental taxes to the damages they generate. Changes to the tax system should be made in 2019.

**Figure 36. Energy consumption is high by international standards**

Total final consumption per unit of GDP, 2014, toe per thousand 2010 USD PPP



Source: IEA World Energy Statistics and Balances.

StatLink <http://dx.doi.org/10.1787/888933581391>

Road transport is the only sector facing any substantial tax on CO<sub>2</sub> emissions (an excise tax on energy use). Estonia had a generous electric car-purchase subsidy scheme (around EUR 15 000 per car) which ended in 2015, and the government has encouraged the development of a charging network for electric cars. This has not prevented transport emissions from growing. Estonia is unusual among OECD countries in that it has no specific tax on car purchases, while the tax system subsidises provision of company cars. A road-charging system for heavy duty vehicles will be introduced in 2018. Estonia could go further to address the environmental damage from road transport by introducing a road-pricing system for all motor vehicles, phasing out subsidies for company cars and introducing a vehicle tax reflecting the environmental characteristics of each vehicle (fuel efficiency, carbon emission, air pollution). The latter could bring around 0.1% of GDP additional tax revenues (Ministry of Finance estimates).

**Table 8. Past recommendations for reducing CO<sub>2</sub> emissions and energy consumption**

Main recommendations from previous Surveys	Action taken since the 2015 Survey
Gradually align and raise tax rates on energy sources according to their CO <sub>2</sub> emission content.	Fuel excise rates have been increased by at least 10% both in 2016 and 2017.
Strengthen incentives for operators of heating networks to improve efficiency. Strengthen incentives to invest in energy efficiency of buildings.	The government plans to expand public subsidy schemes, including for the renovation of district heating systems.
Consider introducing a tax on the use and the registration of motor vehicles differentiated by air pollution and energy consumption characteristics.	The government plans to introduce time-based road charges for heavy duty vehicles whose rate would depend on the sum of the maximum mass of the truck and the trailer, the number of axles, as well as the vehicle's emissions class.

## Bibliography

- Adalet McGowan, M. and D. Andrews (2017), "The Design of Insolvency Regimes", *OECD Economics Department Working Papers*, forthcoming.
- Adalet McGowan, M., D. Andrews and V. Millot (2017), "Insolvency Regimes, Zombie Firms and Capital Reallocation", *OECD Economics Department Working Papers*, No. 1399, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5a16beda-en>.
- Adalet McGowan, M. and D. Andrews (2016), "Insolvency Regimes and Productivity Growth: A Framework for Analysis", *OECD Economics Department Working Papers*, No. 1309, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5jlv2jqhxgq6-en>.
- Anspal, S. (2015), "Gender wage gap in Estonia: A non-parametric decomposition", *Baltic Journal of Economics*, 2015, Vol. 15, No. 1, pp. 1-16, <http://dx.doi.org/10.1080/1406099X.2015.1022436>.
- Banks, G. (2015), "Institutions to promote pro-productivity policies: Logic and lessons", *OECD Productivity Working Papers*, No. 1, <http://oe.cd/GFP>.
- Benkovskis K. et al. (2017), "Export and productivity in global value chains: Evidence from Latvian and Estonian firms", *OECD Economics Department Working Paper*, forthcoming.
- Brown, M., T. Jappelli and M. Pagano (2009), "Information sharing and credit: Firm-level evidence from transition countries", *Journal of Financial Intermediation*, 18(2), pp. 151-172.
- Browne et al. (2017), "Co-operation with the OECD on Assessing Activating and Enabling Benefits and Services in the EU", *Country Policy Paper for Estonia*, OECD Publishing, Paris, forthcoming.
- Carbo-Valverde, S. et al. (2009), "Bank Market Power and SME Financing Constraints", *Review of Finance*, Vol. 13, No. 2, pp. 309-40.
- Cuestas, J.C., Y. Lucotte and N. Reigl (2017), "Banking Sector Concentration, Competition and Financial Stability: The Case of Baltic countries", mimeo, [https://sisu.ut.ee/sites/default/files/nem2017/files/lucotte\\_cuestas\\_reigl.pdf](https://sisu.ut.ee/sites/default/files/nem2017/files/lucotte_cuestas_reigl.pdf).
- De Maeseneer, J. (2016), "Strengthening the Model of Primary Health Care in Estonia", *Assessment report*, World Health Organisation.
- EBRD, (2016), "Life in Transition: A decade of measuring transition, European Bank for Reconstruction and Development report", London, <http://litsonline-ebd.com/>.
- Eesti Pank (2017a), *Estonian Competitiveness Report*, Estonian Central Bank, Tallinn, February.
- Eesti Pank (2017b), *Financing the Economy*, Estonian Central Bank, Tallinn, February.
- Eesti Pank (2016), *Financial Stability Review 2/2016*, Estonian Central Bank, Tallinn.
- European Agency for Safety and Health at Work (2017), "Worker management and participation of occupational safety and health – qualitative evidence from ESENER-2", *Country Report Estonia*, European Risk Observatory, European Agency for Safety and Health at Work.
- European Central Bank (2016), *Survey on the access to finance of enterprises (SAFE)*.
- European Commission (2017), "Country Report Estonia 2017", *Commission staff working document*, European Commission, Brussels.
- European Commission (2016a), "Country Report Estonia 2016", *Commission staff working document*, European Commission, Brussels.
- European Commission, (2016b), "The 2015 Ageing Report: Economic and budgetary projections for the EU28 Member States (2013-60)", European Commission, Brussels.
- European Union (2014), "European Area of Skills and Qualifications", *Special Eurobarometer*, No. 417, European Union, [http://ec.europa.eu/public\\_opinion/archives/ebs/ebs\\_417\\_en.pdf](http://ec.europa.eu/public_opinion/archives/ebs/ebs_417_en.pdf).
- EU Skills Panorama (2014), "Estonia Analytical Highlight", prepared by ICF and Cedefop for the European Commission, [http://skillspanorama.cedefop.europa.eu/en/analytical\\_highlights/estonia-mismatch-priority-occupations#\\_ednref17](http://skillspanorama.cedefop.europa.eu/en/analytical_highlights/estonia-mismatch-priority-occupations#_ednref17).
- Fournier, J.M. (2016), "The Positive Effect of Public Investment on Potential Growth", *OECD Economics Department Working Papers*, No. 1347, <http://dx.doi.org/10.1787/15e400d4-en>.
- Havrylchyk, O. (2012), "The effect of foreign bank presence on firm entry and exit in transition economies", *Journal of Banking and Finance*, Vol. 36/6, pp. 1710-1721.



- Havrylchuk, O. et al. (2012), "Foreign bank entry and credit allocation in emerging markets", *Journal of Banking and Finance*, Vol. 36/11, pp. 2949-2959.
- Hilmola O.P. and V. Henttu (2015), "Border-crossing constraints, railways and transit transports in Estonia", *Research in Transportation Business & Management*, 31 March, 2015; Vol. 14, pp. 72-9.
- IMF (2017), "Republic of Estonia – Selected issues", *IMF Country report*, No 17/10, International Monetary Fund, Publications Services, Washington D.C.
- IMF (2016), "Emigration and Its Economic Impact on Eastern Europe", *IMF Staff Discussion Note SDN/16/7*, International Monetary Fund, Publications Services, Washington D.C.
- Johansson, A. et al. (2008), "Tax and Economic Growth", *Economics Department Working Papers*, No. 620, OECD Publishing, <http://dx.doi.org/10.1787/18151973>.
- Karo, E. et al. (2014), "Nutikas spetsialiseerumine: kas Eesti teadus-, arendus- ja innovatsioonipoliitika kuldvõtmeke aastail, 2014-2020", *Riigikogu Toimetised*, Vol. 29, pp. 116-136. <https://goo.gl/cAkY1B>.
- Kitching, J. and R. Blackburn (2002), "The Nature of Training and Motivation to Train in Small Firms", DfES, HMSO, London.
- Love, I. and M.S.M. Peria (2012), "How bank competition affects firms' access to finance", *The World Bank Economic Review*, Vol. 29/3.
- Masso, J. and P. Vahter (2015), "Exporting and Productivity: The Effects of Multi-product and Multi-Market Export Entry", *Scottish Journal of Political Economy*, Vol. 62, No. 4, September 2015, <http://onlinelibrary.wiley.com/doi/10.1111/sjpe.12077/full>.
- Ministry of Education and Research (2016), *Annual analysis summary 2016*.
- Ministry of Education and Research (2015), "Adult skills: Their use and usefulness in Estonia", *Summaries of thematic reports on the PIAAC study*.
- National Audit Office (2017), "State's activity upon preparing for the work ability reform, Is the state ready to launch and maintain the new work ability support system", *Report of the National Audit Office of Estonia to Riigikogu Tallinn*, 9 February 2017.
- National Audit Office (2015), "Overview of the state's migration policy choices, What is the role of migration in alleviating labour shortage?", *Overview by the National Audit Office to the Riigikogu*, Tallinn, 16 June 2015, [www.rigikontroll.ee/tabid/206/Audit/2372/language/en-US/Default.aspx](http://www.rigikontroll.ee/tabid/206/Audit/2372/language/en-US/Default.aspx).
- Nickell, S. and D. Nicolitsas (2000), "Human Capital, Investment and Innovation: What Are the Connections?" in Barrell, R., G. Mason and M. O'Mahoney (eds.) *Productivity, Innovation and Economic Performance*, Cambridge University Press, Cambridge, pp. 268-280.
- OECD (2017a), *OECD Environmental Performance Reviews: Estonia 2017*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264268241-en>.
- OECD (2017b), *The Pursuit of Gender Equality: An Uphill Battle*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264281318-en>.
- OECD (2017c), *OECD Skills Outlook 2017: Skills and Global Value Chains*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264273351-en>.
- OECD (2016a), "Using the fiscal levers to escape the low-growth trap", in *OECD Economic Outlook*, Vol. 2016/2, OECD Publishing, Paris, [http://dx.doi.org/10.1787/eco\\_outlook-v2016-2-3-en](http://dx.doi.org/10.1787/eco_outlook-v2016-2-3-en).
- OECD (2016b), *Trade by enterprise characteristics database*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/global-data-en>.
- OECD (2016c), *Effective Carbon Rates: Pricing CO<sub>2</sub> through Taxes and Emissions Trading Systems*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264260115-en>.
- OECD (2016d), *OECD Employment Outlook 2016*, OECD Publishing, Paris, [http://dx.doi.org/10.1787/empl\\_outlook-2016-en](http://dx.doi.org/10.1787/empl_outlook-2016-en).
- OECD (2015), *OECD Economic Surveys: Estonia 2015*, OECD Publishing, Paris, [http://dx.doi.org/10.1787/eco\\_surveys-est-2015-en](http://dx.doi.org/10.1787/eco_surveys-est-2015-en).
- OECD (2012), *OECD Economic Surveys: Estonia 2012*, OECD Publishing, Paris, [http://dx.doi.org/10.1787/eco\\_surveys-est-2012-en](http://dx.doi.org/10.1787/eco_surveys-est-2012-en).
- OECD (2011), *Demand-side innovation policies*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264098886-en>.
- OECD (2010a), *Sickness, Disability and Work*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264088856-en>.

- OECD (2010b), *OECD review of Labour Market and Social Policies – Estonia*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264082120-en>.
- Praxis (2017), “Impact assessment of EU-funded transport investments, Executive Summary”, in *Euroopa Liidu struktuurivahenditest teostatud transpordiinvesteeringute mõjude hindamine*.
- Praxis (2014), *Talent attraction and retention in Estonia*, Praxis, Tallinn.
- Renda, A. and S. Dougherty (2017), “Pro-Productivity Institutions: Learning From National Experience”, *OECD Productivity Working Papers*, 2017-07, OECD Publishing, Paris, <http://dx.doi.org/10.1787/d1615666-en>.
- Rossin-Slater, M. (2017), “Maternity and Family Leave Policy”, *IZA Discussion Paper 10500*, <http://ftp.iza.org/dp10500.pdf>.
- Santiago, P. et al. (2016), *OECD Reviews of School Resources: Estonia 2016*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264251731-en>.
- Sassi, F., A. Belloni and C. Capobianco (2013), “The Role of Fiscal Policies in Health Promotion”, *OECD Health Working Papers*, No. 66, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5k3twr94kvzx-en>.
- Smarzynska Javorcik, B. (2004), “Does Foreign Direct Investment Increase the Productivity of Domestic Firms? In Search of Spillovers Through Backward Linkages”, *American Economic Review*, 94/3, pp. 605-627.
- Stein, J. (2002), “Information Production and Capital Allocation: Decentralized Versus Hierarchical Firms”, *Journal of Finance*, Vol. 57, pp. 1891-1921.
- Thévenon, O. and A. Solaz (2013), “Labour Market Effects of Parental Leave Policies in OECD countries”, *OECD Social, Employment and Migration Working Papers*, No. 141, OECD Publishing, <http://dx.doi.org/10.1787/5k8xb6hw1wjf-en>.
- Võrk, A., A. Paulus and C. Leppik (2016), *EUROMOD Country Report: Estonia 2011-2016*, Colchester: University of Essex.
- Wagner, J. (2012), “International trade and firm performance: A survey of empirical studies since 2006”, *Review of World Economics/Weltwirtschaftliches Archiv*, 148/2, pp. 235-267.
- WEF (2016), *Global Competitiveness Report 2016-2017*, <http://dx.doi.org/10.1787/tour-2016-en>.
- Yeaple, S.R. and S.S. Golub (2007), “International Productivity Differences, Infrastructure, and Comparative Advantage”, *Review of International Economics*, Vol. 15/2, pp. 223-242.

## ANNEX

# Progress in structural reform

*This Annex reviews actions taken on recommendations from previous Surveys that are not covered in tables within the main body of the Assessment and Recommendations. Recommendations that are new in this Survey are listed at the end of the relevant chapter.*

## Improving the fiscal framework

Recommendations from previous <i>Surveys</i>	Action taken since the 2015 <i>Survey</i>
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.
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.	The cap on deductible interest paid on housing loan was cut to EUR 300.

## Strengthening social protection

Recommendations from previous <i>Surveys</i>	Action taken since the 2015 <i>Survey</i>
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 revised Preschool Child Care Institutions Act introduces more flexibility for the provision of childcare services. Waiting lists for childcare services are being reduced, and new childcare places are being financed by EU funds.
Reform disability pensions as planned, in particular, increase access to activation measures and strengthen the assessment of the capacity to work.	A reform of disability benefits, the Work Ability reform, is being implemented, strengthening the assessment of the capacity to work and tying the receipt of benefits to the obligation to participate in activation programmes.
Introduce accident and occupation illness insurance with experience-rated employer contribution rates.	No action taken.

## Improving the pension system

Recommendations from previous <i>Surveys</i>	Action taken since the 2015 <i>Survey</i>
In the compulsory private pension system, reduce costs borne by workers, in particular marketing expenses. In the public pension system, phase out special occupational and sectoral pension regimes.	Management fees have been reduced to 1.1% following the introduction of a new regressive scale in 2015. From 2017 the limit of the unit redemption fee was lowered to 0.1% (from 1%).
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.	A pension reform, still under discussion, will tie retirement age to changes in life expectancy starting from 2028.
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.	No action taken.
Improve disclosure of information on costs of the private pension system to the public in a standardised manner.	No action taken.
Remove limits on switching between pension funds. Abolish redemption fees.	The cut in the ceiling for unit redemption fee is likely to stimulate competition between pension funds by eliminating most of the switching costs. Also, from 2017, capital requirements of pension fund management companies were reduced to ease entry of newcomers.
Improve representation of contributors' interests in pension fund governance.	No action taken.

## Improving labour market performance

Recommendations from previous <i>Surveys</i>	Action taken since the 2015 <i>Survey</i>
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 targeting hiring subsidies to firms committed to net hiring.	No action taken.
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.	Spending on labour market policy, including for risk groups, has increased substantially.
Abolish the lump-sum minimum social tax.	No action taken.
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.	No action taken.
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.	An on-going reform of the parental leave system will increase the father-specific leave by one month. The Welfare Development Plan for 2016-23 sets targets to counter gender inequality, and policy measures including allowing the labour inspectorate to monitor the equality of pay and carry out audits on firms suspected of gender discrimination are under discussion.

## Making the education and training system more efficient

Recommendations from previous <i>Surveys</i>	Action taken since the 2015 <i>Survey</i>
Increase the permeability between different educational levels.	The School Network Programme includes the creation of state upper secondary schools, separated from basic schools, to offer equal opportunity for students to prepare for higher education.
Develop quality assurance for apprenticeship places and ensure that the time for instruction is sufficient relative to productive work.	At the end of 2015 a new ESF programme was initiated to improve the quality of apprenticeship studies and work-based learning.
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.	The providers of continuing education and training have an obligation to provide updated information on their activities (e.g. curricula, learning conditions and training providers) and to publish performance indicators.
Provide independent and professional career guidance at the end of lower secondary education, including short internships towards the end of compulsory school.	Youth guidance centres (called Pathfinder centres) were set up in all counties in 2014. For adults, the Estonian Unemployment Insurance Fund has expanded its career counselling services to all people of working or retirement age since 2015.

## Making health care more efficient

Recommendations from previous <i>Surveys</i>	Action taken since the 2015 <i>Survey</i>
Ensure quality of care, and consider developing a wider system of quality indicators, also through international collaboration on establishing benchmarks and specialised care.	36 quality indicators set up in collaboration with medical specialities are in place to analyse the overall situation and to compare health care providers.
Increase the role and importance of primary care by boosting the responsibilities of family doctors.	A network of primary health care centres is being developed in all Estonian regions, financed by EU funds.

## Enhancing public sector efficiency

Recommendations from previous <i>Surveys</i>	Action taken since the 2015 <i>Survey</i>
Reform local governments either by merging or requiring greater co-operation, also over a broad territorial area. Consider imposing minimum population requirements.	The on-going reform of local government is reducing the number of municipalities.
Strengthen the revenue-raising possibilities of local municipalities by giving them more autonomy over setting the land tax.	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 avoid overlaps.	No action taken.

## Raising productivity

Recommendations from previous <i>Surveys</i>	Action taken since the 2015 <i>Survey</i>
Contain the threats to competition emanating from public monopolies and local authority sectors.	No action taken.
Consider introducing tax incentives for R&D.	No action taken.
Raise efforts to monitor the effectiveness and efficiency of infrastructure spending.	No action taken.
Review the need for a specialised bankruptcy court.	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 deciding whether a debt restructuring plan for individuals should be approved or not.	No action taken.
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.	No action taken.
Enhance effectiveness of evaluation of innovation policies by incorporating monitoring and evaluation already at the design stage. Test individual instruments through pilot projects.	Evaluations have been taken into account in the design of measures to support innovation, and regular monitoring of recent policy initiatives (clusters, innovative procurement) is in place.
Promote international and applied management skills and enhance the teaching of skills to run a business at school.	The Entrepreneurship Programme (2016-2018) aims at developing entrepreneurial skills in general, vocational and higher education.
Extend the impact assessment of regulations to systematically capture implications for trade and investment.	The creation of an institution in charge of a regular assessment of productivity challenges and of monitoring policies in the field of competitiveness is being discussed.

## Green growth

Recommendations from previous <i>Surveys</i>	Action taken since the 2015 <i>Survey</i>
Strengthen policies to reduce energy and resource intensiveness through appropriate pricing and setting better incentives for energy-saving programmes.	A new resource efficiency measure focusing primarily on manufacturing industry has been introduced.
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.	The “General Principles of Climate Policy until 2050” approved by the Parliament on 5th April, 2017 set the long-term target to reduce the emission of greenhouse gas emissions by 80% in comparison with the emission levels of 1990 by 2050.
Consider engaging more in local policy trials and experiments to promote energy efficiency through behaviourally informed policies.	No action taken.

# Thematic chapters





## Chapter 1

# Getting the most out of trade

*Estonia is highly integrated into the global trade system: it exports approximately 80% of GDP and around half of domestic employment is sustained by foreign demand. Given that international trade and foreign direct investment are considered as major channels of technology diffusion and productivity growth, this bodes well for reviving income convergence. To capitalize on the country's high trade intensity, policymakers need to remove remaining trade barriers and improve policies fostering knowledge diffusion as well as talent retention and attraction. At the same time, to ensure that benefits of more trade are shared across the population, the social safety net should be bolstered, and participation in upskilling programmes and their labour-market relevance increased.*

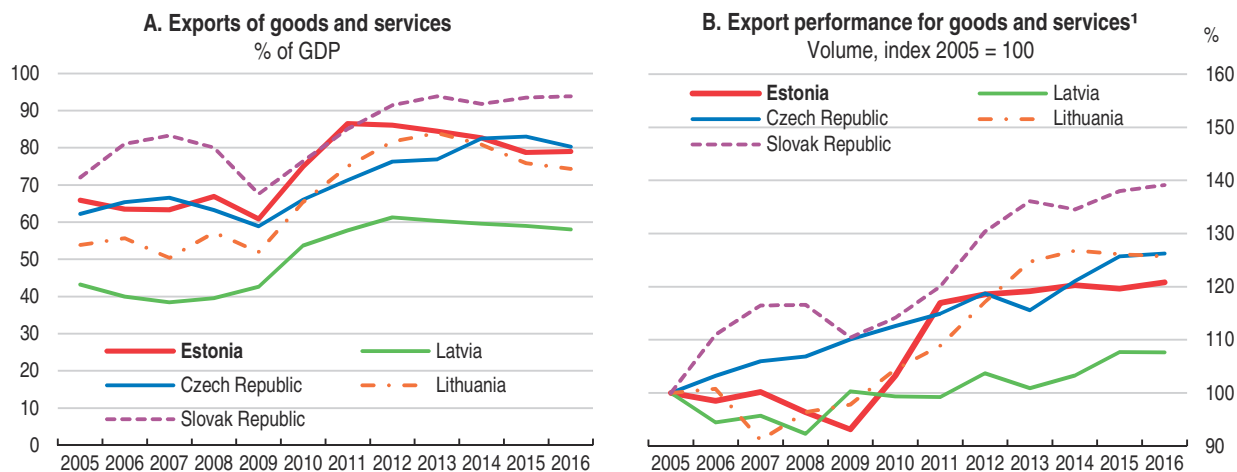
International trade and foreign direct investment are major channels of technology diffusion and productivity growth, as is participation in global value chains (Keller and Yeaple, 2009, Baldwin, 2012, Rusticelli et al., 2017). Exporters display higher productivity and innovation, and Estonian firms are no exception (Masso and Vahter, 2015, Benkovskis et al., 2017 *forthcoming*). These features will support the country's catch up in productivity, and its sustainable convergence. At the same time, high trade intensity means fast transmission of global trends and shocks, which can result in job losses, requiring robust social safety net and adjustment policies.

This chapter looks at how Estonia can better capitalize on its current trade involvement while ensuring that the benefits are shared across the whole population. The chapter starts by examining the participation of Estonian firms in trade and global value chains (GVCs), before turning into a more detailed discussion of trade barriers, policies for knowledge diffusion and retaining and attracting talent. It then looks into policies for ensuring that the benefits of increased trade intensity are shared widely across the population.

### Estonia is well integrated in global trade


With exports at around 80% of GDP, Estonia's integration into global trade is high and on a par with comparable European catching-up economies (Figure 1.1). Given the small size of the domestic market, exporting is a natural business development step for Estonian companies. Around 12% of firms export, while in OECD countries less than 10% of firms are directly engaged in international trade (OECD, 2016a). Additionally, around a half of private sector employment is sustained by foreign demand, twice as much as the OECD average (OECD, 2016b).

Figure 1.1. **Export orientation and gains in export market shares are comparable to peers**



1. Export performance is measured as actual growth in exports relative to the growth of the country's export market.

Source: OECD Economic Outlook 101 Database (updated with information available on 1 September 2017).

StatLink  <http://dx.doi.org/10.1787/888933581410>

Export market shares of Estonian exporters doubled since 1995, with roughly equal shares of intermediate and final goods. Primary-sector exports steadily declined while the role of services steadily increased. Services account for 40% of export volumes and over 60% of value-added, with maritime transport and tourism the largest items. Electronic equipment, wood and wood products and agriculture products are the main exported goods and amount to 41% of total exports of goods (Figure 1.2, Panel D). The EU was the destination for 74% of Estonian exports in 2016, with neighbouring Sweden, Finland, Latvia and Lithuania being the main destinations (Figure 1.2, Panel C). Russia also remains among Estonia's main trading partners despite a significant trend decline in trade between the two countries over past decades.

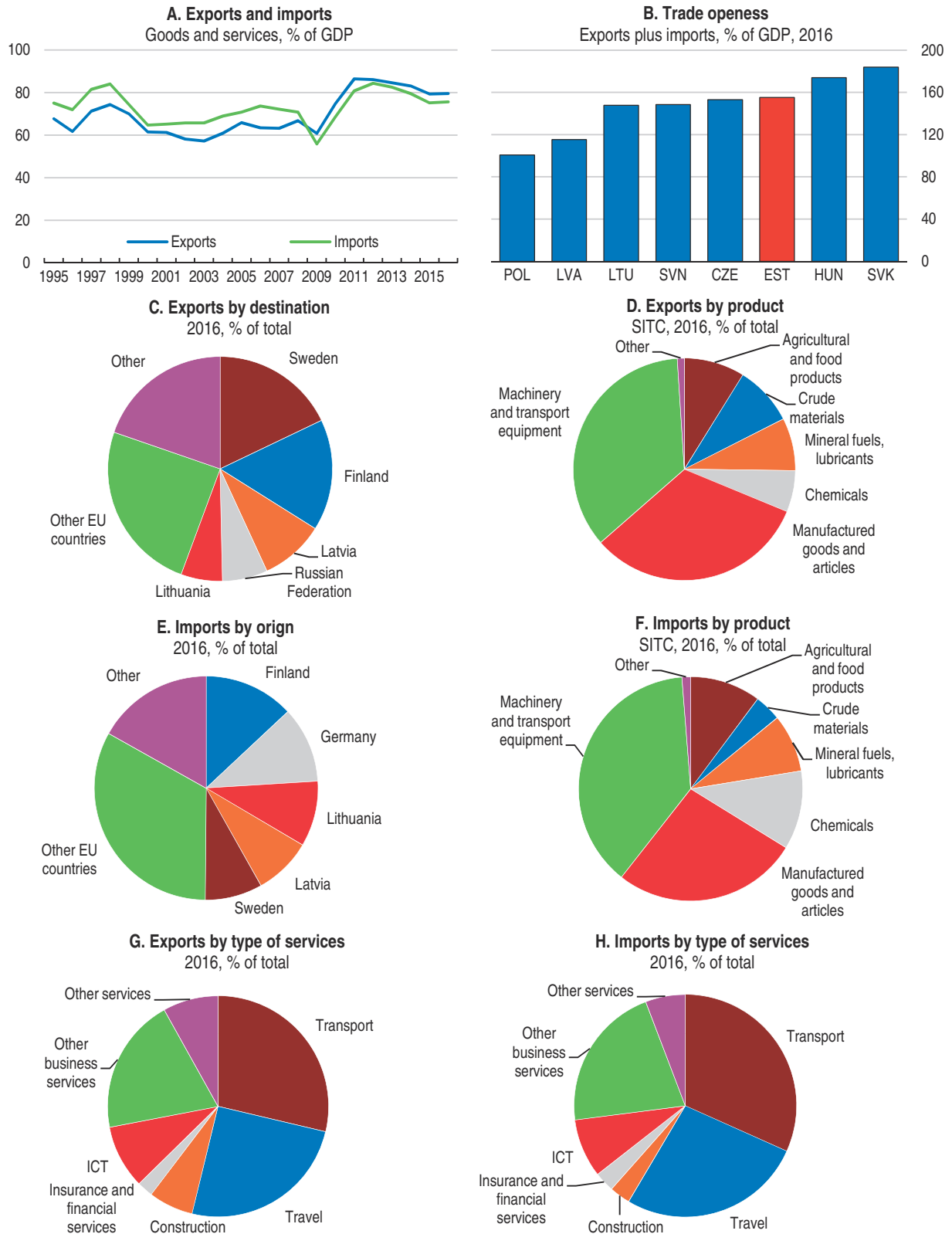
A significant upward shift in export performance followed the financial crisis, underpinned by a substantial wage adjustment, labour shedding and diversification of exports destinations, but growth in volumes and gains of market shares have since been more moderate (Figure 1.1). The slowdown in the growth of export market shares of recent years may reflect the difficult economic conditions of Finland and Russia, two important trading partners, falling exports of oil-shale (Eesti Pank, 2016), and a deterioration of price and non-price competitiveness.

Wages have increased considerably in recent years, meaning that workers are benefitting from the recovery, and while this is to be expected in a catching-up economy it has put pressure on profit margins of firms. The wage growth of recent years has become disconnected from stagnating productivity growth raising some concern for price competitiveness (IMF, 2017; EC, 2016). Such developments in unit labour costs cannot be fully attributed to structural shifts in the economy and the catching-up process. Relative unit labour costs grew by over 30% since 2005, the biggest increase among the Central European and Baltic peers (Figure 1.3). Wage increases in the government sector and of the minimum wage also played a considerable role (IMF, 2017). Over the past five years, the minimum wage increased consecutively five times by 10%, while public sector wages grew on average by 8% annually. While emigration of skilled labour puts upwards pressure on wages, Estonia has been less affected by brain drain than its Baltic peers and the net emigration to neighbouring Nordic countries with higher income levels has reversed since 2015 (IMF, 2016). Maintaining price competitiveness can prove challenging going forward as the decline in the working age population and emerging shortages of skilled workers will keep wage pressures high.

Since Estonian exporters are by and large price-takers in world markets, increases in labour costs reduce their profit margins. Enterprise data confirm pressure on profits in the tradable sector. In manufacturing, profitability is close to a half of its historical average, while in the non-tradable sector it is close to its long-term average; this is consistent with diminishing competitiveness (IMF, 2017). When reductions in profit margins are no longer possible, labour is substituted by capital, which would be in line with increasing productivity of the economy and the general catching-up process. However, this has not been happening. Moreover, reduction in margins can also impede capital spending by reducing available internal funds (see Chapter 2).

Quality improvements matter too. A number of emerging economies have been able to grow exports despite catching up in terms of prices (e.g. China), while other countries that have improved cost competitiveness have not seen an increase in their global market shares in recent years (Benkovskis and Woertz, 2016). Based on an index accounting for these

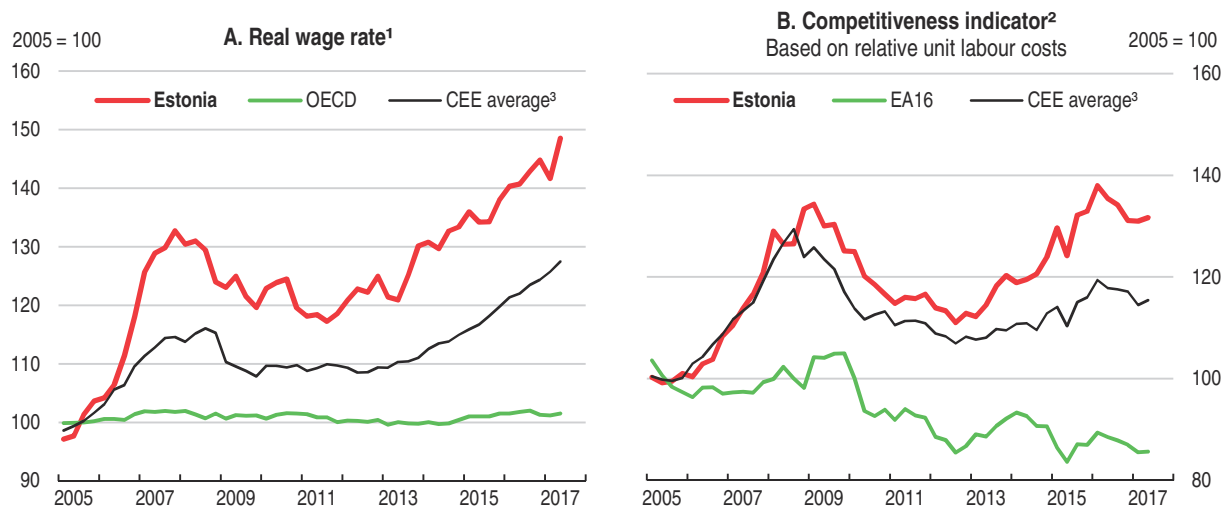
Figure 1.2. **A snapshot of Estonian foreign trade**



Source: OECD Economic Outlook 101 Database, Bank of Estonia and Statistical Office of Estonia.

StatLink <http://dx.doi.org/10.1787/888933581429>

Figure 1.3. Unit labour costs have increased fast




1. Deflated by the consumer price index.

2. An increase in the index indicates a real appreciation and a corresponding deterioration of the competitive position.

3. Simple average of Czech Republic, Hungary, Latvia, Lithuania, Poland, Slovak Republic, and Slovenia.

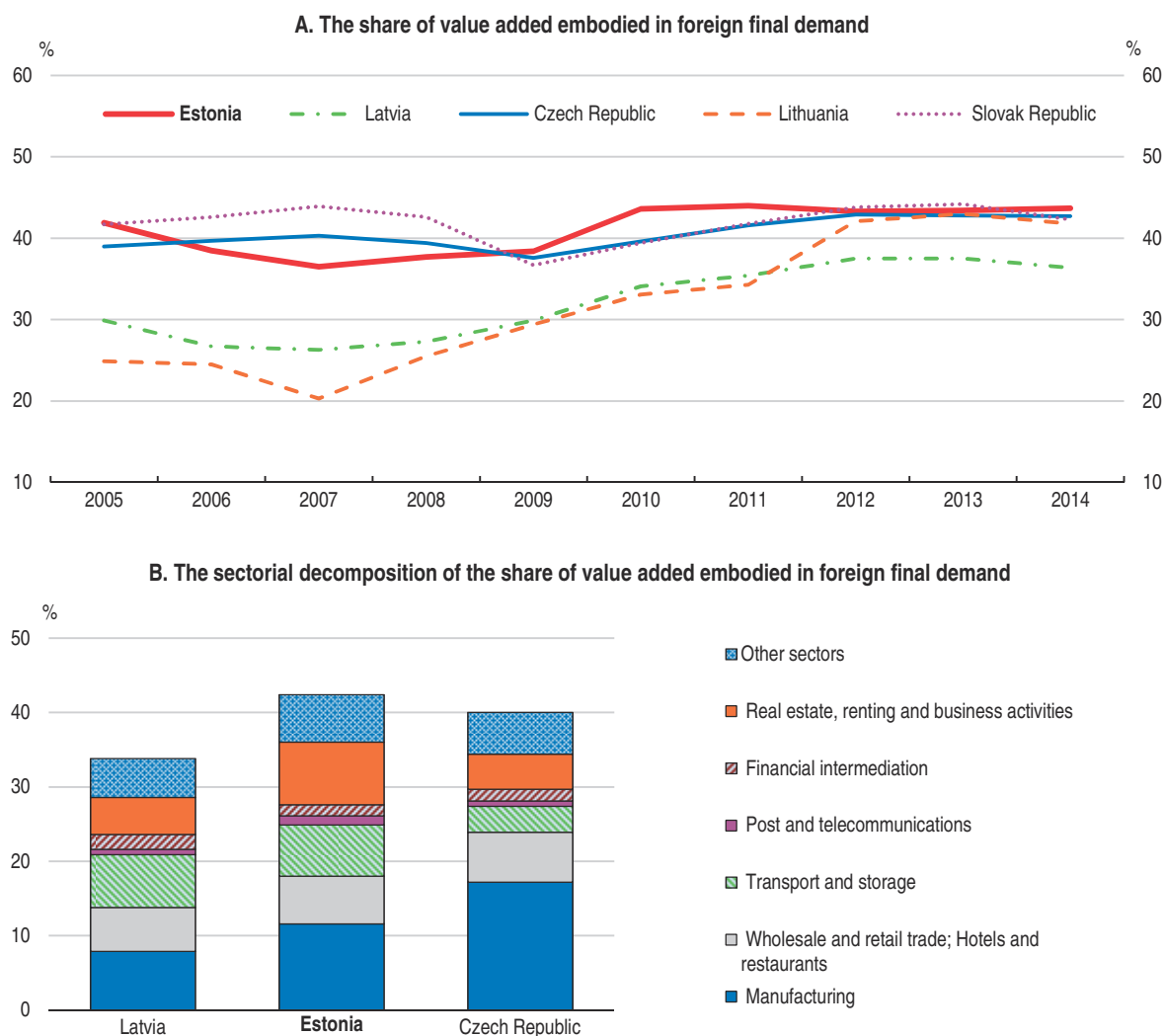
Source: OECD Economic Outlook 101 Database (updated with information available on 1 September 2017).

StatLink  <http://dx.doi.org/10.1787/888933581448>

non-price competitiveness aspects (such as product quality and consumer tastes), Benkovskis and Woertz (2016) show that over 2000-12 the non-price competitiveness of Estonian exports has not changed much, while it has improved considerably for several European peers. Another analysis of non-price competitiveness development paints a less bleak picture (Eesti Pank, 2017). To date, despite these developments Estonia has continued to increase its share of world exports (see Figure 1.1, Panel B), suggesting that a one-off squeezing of profit margins and other factors such as quality not captured by available data have sustained Estonia's export performance and increased the share of labour's returns to international trade. However, now that the potential for further reducing margins seems more limited, vigilance to ensure wages are in line with productivity is required.

Global value chains (GVCs) have become a dominant feature of world trade and investment, and participation in GVCs appears to be associated with productivity gains (OECD, 2013; IMF, 2013). Estonia seems well integrated in the global value chains, on a par with its European peers (e.g. Latvia, Slovakia and the Czech Republic) (Figures 1.4 and 1.5). Over 40% of its value added is embodied in foreign demand (so-called forward participation) and that is largely created in the service sector, notably logistics and business services (Figure 1.4). Within manufacturing, Estonia's value added is mostly created by traditional industries such as wood processing and chemicals and basic metal products, but also electronics.

In terms of so-called backward participation, or the country's participation in GVCs as a "user", there seems to be a scope for upgrading of domestic production by importing more (Figure 1.5). Using more technologically advanced foreign intermediate goods can boost domestic productivity by upgrading product quality and absorbing the knowledge embodied in intermediate goods (Amiti and Konings, 2007). Also, export competitiveness is linked to ability to access competitively priced intermediates (Kowalski et al., 2015).

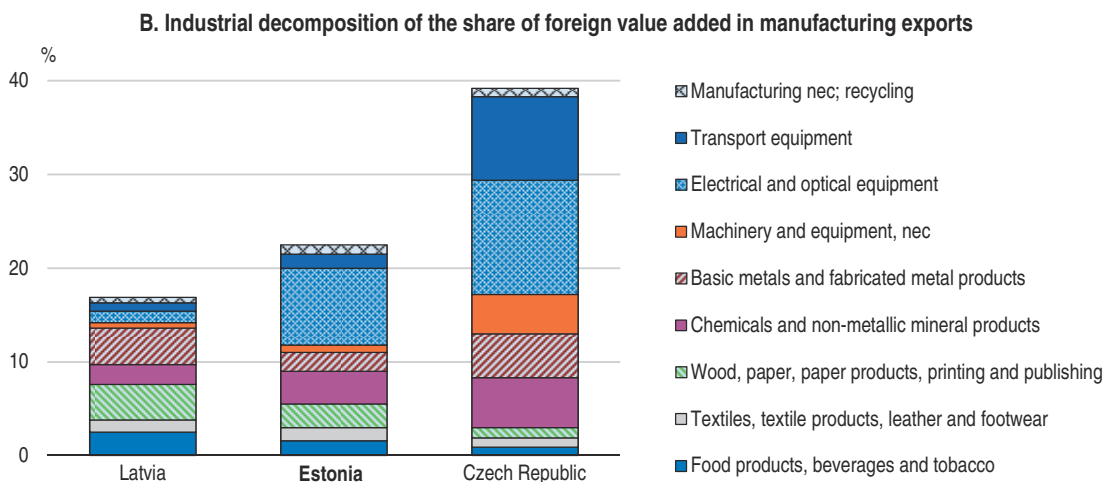
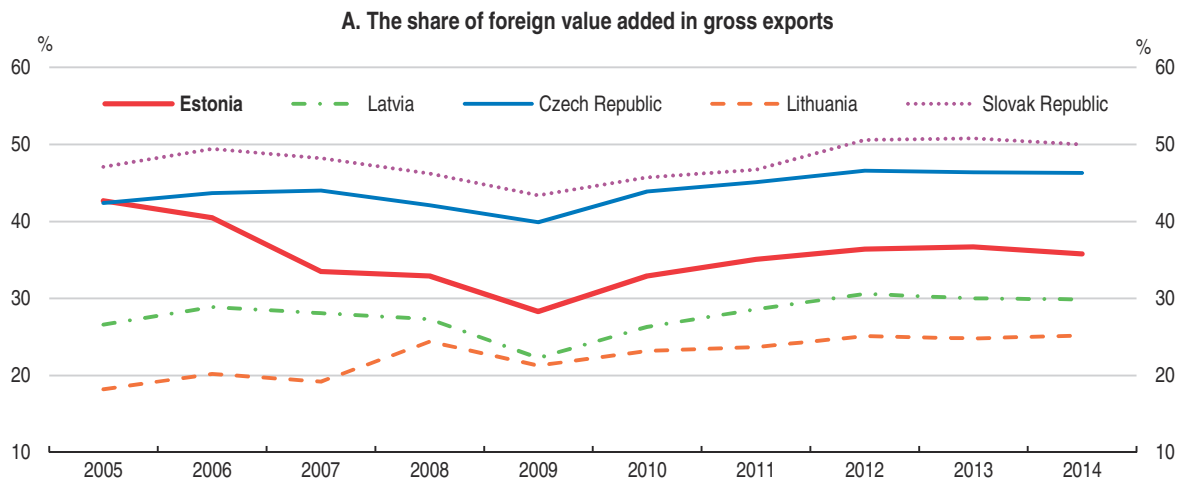
Figure 1.4. **Estonia is well integrated into global value chains and mostly as a service provider**

Note: Panel A displays the share of domestic value added that are embodied in the foreign final demand in total domestic value added. The data after 2011 are estimates based on the 2011 Inter-Country Input-Output (ICIO) table and the OECD Bilateral Trade Database by Industry and End-Use (BTDIxE). Panel B is a sectoral break-down of the share shown in panel A. It refers to the 2011 data.

Source: OECD/WTO (2016), Statistics on Trade in Value Added (database), and OECD calculations based on OECD/WTO (2016), Statistics on Trade in Value Added (database) and OECD (2016), OECD National Accounts Statistics (database).


StatLink  <http://dx.doi.org/10.1787/888933581467>

Countries supplying knowledge-intensive inputs such as R&D, core parts and components or marketing services are remunerated disproportionately more than those providing standardised labour intensive inputs such as assembly services (OECD, 2013). Examining changes in employment shares of different business functions can offer an estimation of whether a country is “moving up the value chain” (Miroudot, 2016). This is illustrated by so-called “smiley curves”, whereby a “smile” occurs when the occupations embodied in exports have moved from operation (in the middle of the curve and the value-added chain) to R&D, engineering and related technical services (located upstream and on the left of the chart) and/or to transport, logistics, distribution, marketing and sales (located downstream and on the right of the chart), both of which are more knowledge intensive and have higher value added. By this measure, there has been a modest increase in employment

Figure 1.5. **Exporters could import more value added from abroad**

Note: Panel A displays the share of foreign value added that are embodied in the country's exports. The data after 2011 are estimates based on the 2011 Inter-Country Input-Output (ICIO) table and the OECD Bilateral Trade Database by Industry and End-Use (BTDiXE). Panel B is the breakdown of such share focusing only on the exports in manufacturing sector. It refers to the 2011 data.

Source: OECD/WTO (2016), Statistics on Trade in Value Added (database), and OECD calculations based on OECD/WTO (2016), Statistics on Trade in Value Added (database) and OECD (2016), OECD National Accounts Statistics (database).

StatLink  <http://dx.doi.org/10.1787/888933581486>

of high-skilled workers and a small decrease in the share of low and medium-skilled employment over 2000-11 in Estonia (Figure 1.7). This is comparable to the Czech Republic and Latvia, though less pronounced than in Slovak Republic.

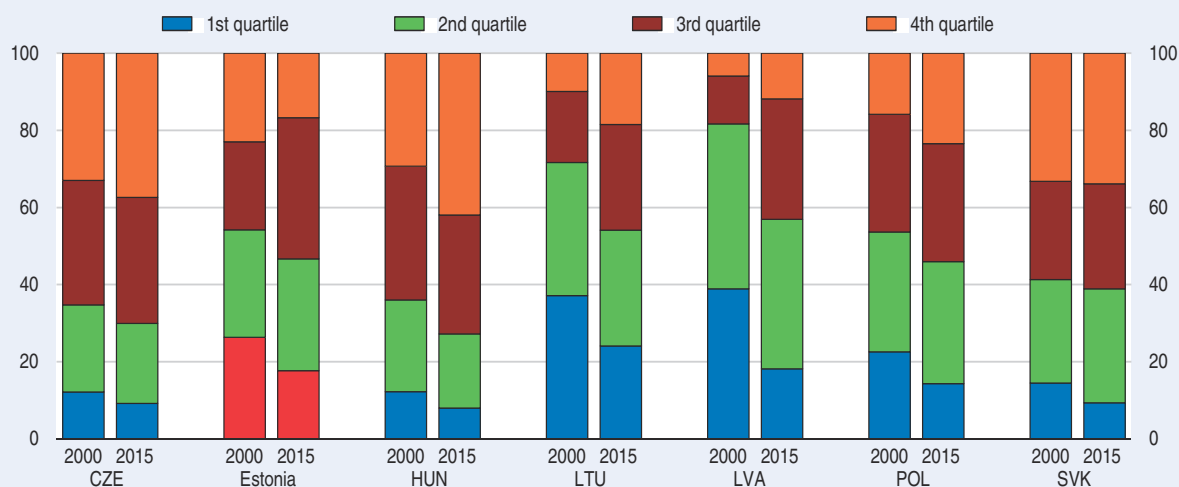
Around a half of exported goods are products with lower complexity and while this is comparable to the Baltic peers, the Czech Republic and Slovakia export more sophisticated products (Box 1.1). Also, though comparable to the peer countries, Estonia is drawing a limited value added per worker from the trade participation compared to many OECD countries, suggesting that indeed, it specialises in low-value added activities (Figure 1.8, Panel A). There is a large potential for catching up in terms of overall economic productivity too (Figure 1.8, Panel B).

### Box 1.1. Estonia's specialisation

Estonian exporters of goods show revealed comparative advantage, a measure of international trade specialisation, in agricultural and food products and manufacturing (in particular machinery and transport equipment) and still mainly in low and medium – technology industries. When estimating complexity of exports by so-called implied productivity, calculated by taking a weighted average of per capita GDPs of the countries that export the product and ranking products according to this implied productivity, Estonia's exports of goods is comparable to its Baltic neighbors but lagging behind the Czech Republic and Slovakia (Figure 1.6) (Hausmann et al., 2007). This kind of analysis is not available for services that represent an important share of Estonia's exports (see main text).

Figure 1.6. **Complexity of exported goods**

Share of exports by complexity quartile,<sup>1</sup> value



1. Complexity is defined by the implied productivity of the product using the methodology of Hausmann, R., J. Hwang and D. Rodrik (2007), "What you export matters", *Journal of Economic Growth*, Springer, Vol. 12. It is calculated by taking a weighted average of per capita GDPs of the countries that export the product. The weights are the revealed comparative advantage of each country in that product. The products are then ranked according to their PRODY level. An example of product in the 4th (highest) quartile is magnetic imaging resonance (MRI) machines used in scans in hospitals which ranked 18th in 2015, out of 4 989 products listed in the Harmonized System 6 classification. A product in the 1st (lowest) quartile is crayons ranked 4 218th in 2015. The analysis is carried out using a high level of product disaggregation to try to capture specialisation at different stages of the production chain. Nevertheless the data are measured in terms of gross value and not value added as would be used in measures of global value chains (GVCs).

Source: UN Comtrade database; and OECD calculations.


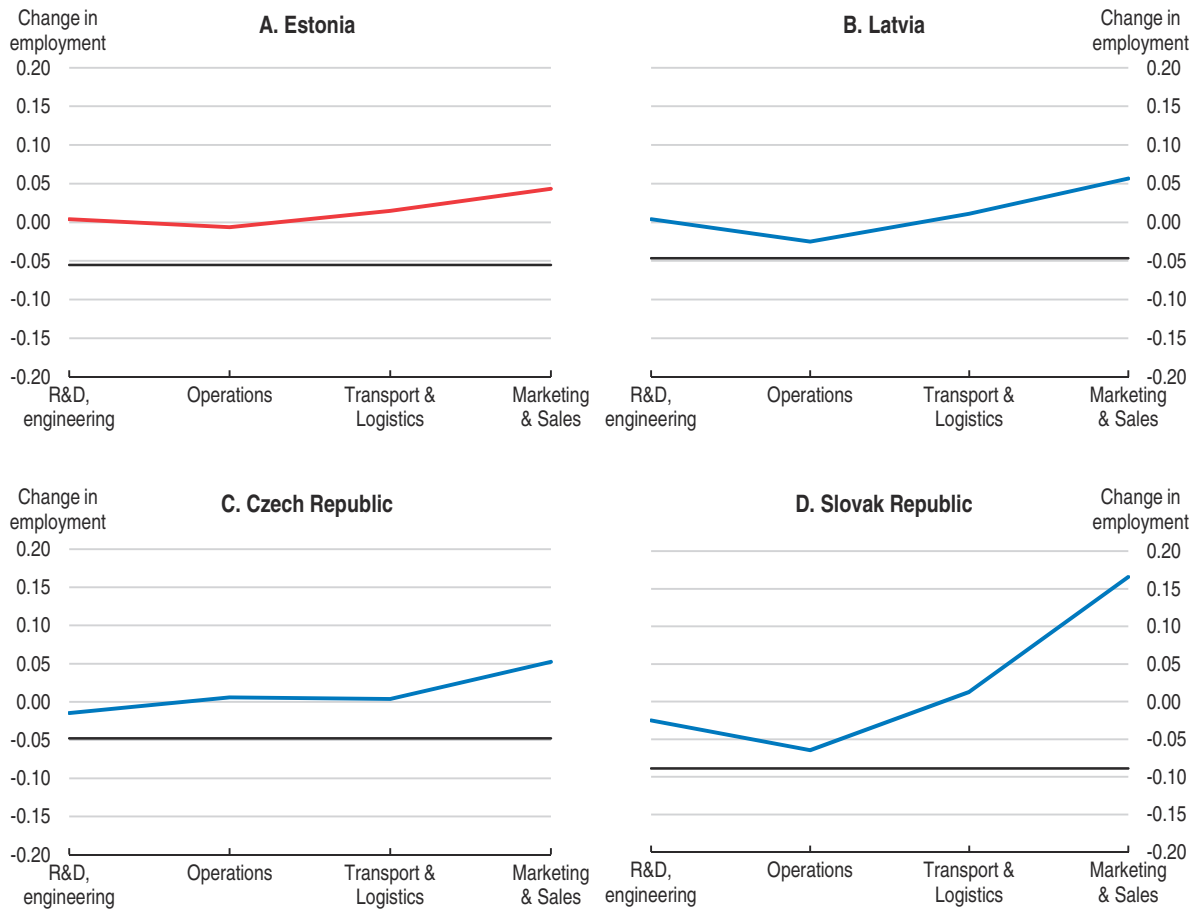
StatLink  <http://dx.doi.org/10.1787/888933581505>



Figure 1.7. **Employment in exports of higher value added activities increased modestly**  
2000-11

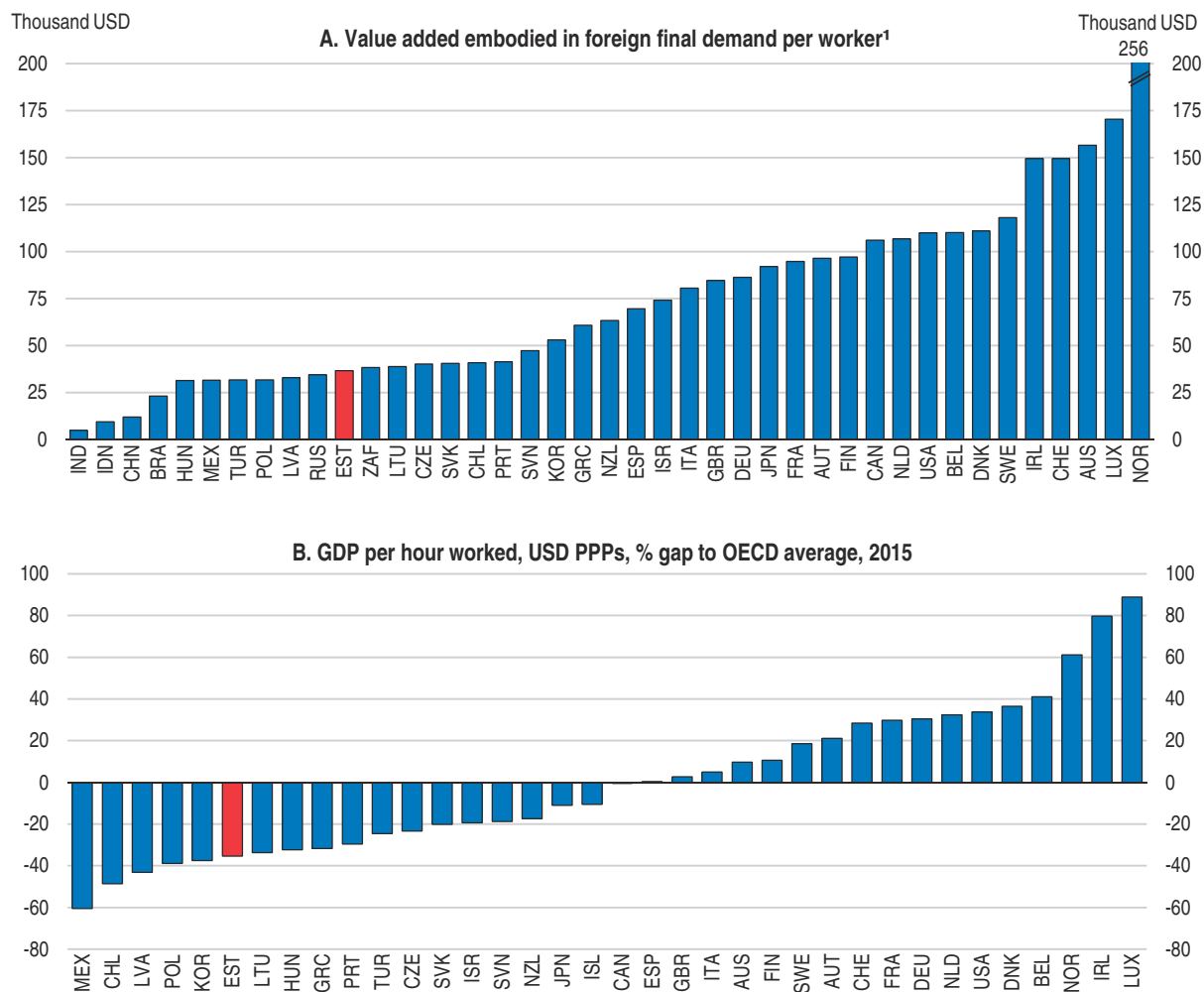


Note: The straight line refers to the change in employment in horizontal support activities (i.e. support IT services, management, administration and back office etc.) The jobs lost in operations are replaced by jobs either in upstream (pre-production) or downstream (post-production) in the value chain.

Source: OECD calculations, update of Miroudot (2016).


StatLink  <http://dx.doi.org/10.1787/888933581524>

Figure 1.8. **Domestic value added of exports remains limited though on a par with peer countries**



1. Value added embodied in foreign final demand per worker is computed by dividing the domestic value added captured from foreign final demand by the number of employees sustained by foreign final demand. Figure refers to 2011 data.

Source: OECD/WTO (2016), Statistics on Trade in Value Added (database) and OECD (2016), "Trade in Employment: Core Indicators" in OECD Structural Analysis (STAN) Databases; OECD Productivity Database.

StatLink  <http://dx.doi.org/10.1787/888933581543>

## Policies can further deepen integration in global trade and boost productivity

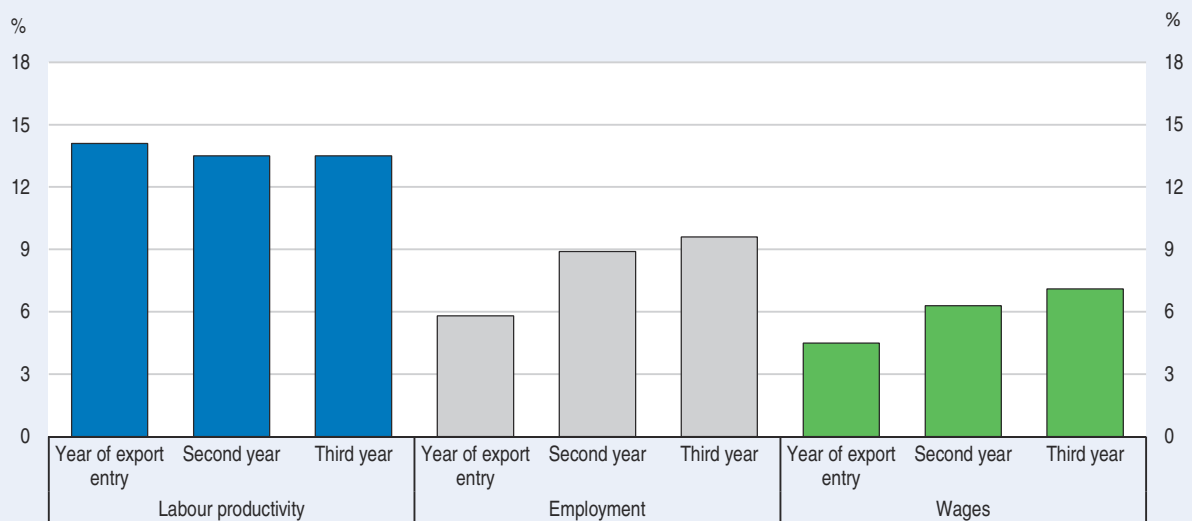
Deepening integration in global trade can contribute to reducing the currently high productivity gap with OECD's best performing countries, since exporters tend to have higher productivity, be it a result of "self-selection" or "learning-by-exporting" (Bernard and Jensen, 1999, Masso and Vahter, 2015, Benkovskis et al., 2017, *forthcoming*). Estonian exporters display higher productivity, as well as higher tendency to innovate (Box 1.2). Climbing up the value chain and finding new export markets is a complex task, underpinned by both policy and non-policy factors such as geographical location and structure of the economy for instance that can be difficult to influence and to overcome. Policies need to focus on trade facilitation, and increasing productivity across the board by fostering better knowledge diffusion in the economy and retaining and attracting talent.

### Box 1.2. Higher productivity of exporters – Estonian firm-level data analysis

Exporting firms are found to have a considerably higher productivity level than non-exporting ones, but a large range of studies show that this premium primarily reflects a selection bias: only the most productive firms can enter export markets as there are sunk costs associated with exporting that have to be met (Wagner 2007, 2011; Greenaway and Kneller, 2007; Foster-McGregor et al., 2014). Other studies, however, find that export entry itself has positive impact on productivity even after controlling for this selection bias (Blalock and Gertler 2004; van Biesebroeck 2005; Aw et al. 2007), suggesting that exporting involves knowledge transfer from foreign buyers that improves productivity, or “learning-by-exporting”. The positive impact of export entry is also found to be larger for exports to more advanced countries (de Loecker, 2007) or to multiple markets of multiple products (Masso and Vahter, 2015).


Masso and Vahter (2015) have shown that export entry indeed boosts the productivity of Estonian firms. Based on an analysis of firm-level dataset of 1995-2014 of Latvian and Estonian firms Benkovskis et al. (2017) confirmed such effect on productivity even when controlling for the self-selection. Figure 1.9 depicts the difference in gains in labour productivity between Estonian firms that started exporting and of non-exporters that initially shared similar productivity level as well as other characteristics such as size in terms of employees and age. The productivity of export entrants increases by 14% in the year of export entry and the higher productivity level against non-exporters persists for several years. Employment also increases by up to 10% and wages by up to 7% within three years of export entry.

Figure 1.9. Performance of export entrants



Note: This figure describes the transition of average labour productivity, employment and wages of export entrants (the treated) and matched non-exporters (controls) before and after the export entry. The horizontal axis indicates the time after export entry. 0 corresponds to the year of entry.

Source: Benkovskis et al. (2017), “Export and productivity in global value chains: evidence from Latvian and Estonian firms”, OECD Economics department working paper, forthcoming.

StatLink  <http://dx.doi.org/10.1787/888933581562>

The analysis also shows that exports that are closely related to GVC participation such as exports of intermediate goods, re-exporting and service exports are associated with significant productivity growth (Benkovskis et al., 2017, forthcoming). Masso et al. (2015) and Masso and Vahter (2016) illustrate that the probability that a company will start exporting is higher when it hires managers and top specialists with prior export experience and when it increases the share of employees or managers with experience from multinational firms. Furthermore, exporting firms have higher tendency to innovate (Benkovskis et al., 2017).

### **Facilitating trade by removing unnecessary non-tariff barriers**

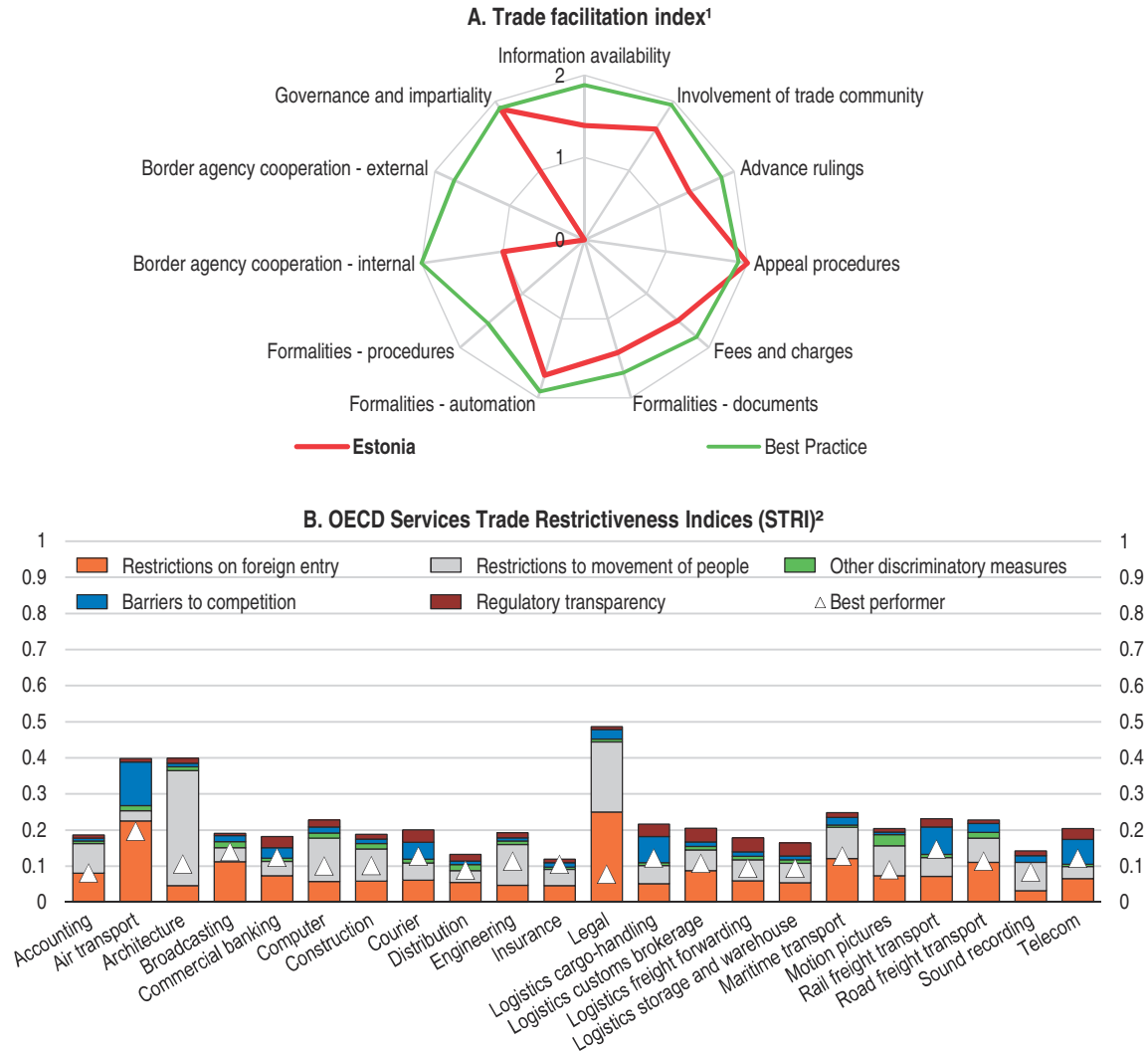
With goods crossing borders multiple times, tariffs, transportation costs and costs associated with border procedures become magnified. Firms involved in GVCs are affected not only by costs incurred at their own borders but also by those between third countries situated upstream or downstream (Moisé and Sorescu, 2015). As a member of the EU single market, there are no tariffs on intra-EU trade, and tariffs on third countries are low and managed at the EU level. Estonia scores consistently well in various country rankings for ease of doing business; this favourable performance extends to the costs and time of international trade, which are well below the OECD average. Nevertheless, reforming further trade facilitation in alignment with best international practice could help the country's integration into GVCs and to overcome the small size and remoteness of the economy (Figure 1.10, Panel A).

- Trade facilitation measures such as co-operation between external and internal border agencies have the potential to encourage forward-type linkages (Moisé and Sorescu, 2015). Such co-operation can be improved further in Estonia. Currently, there are no staff exchange programmes with partner countries, and co-ordination with neighbouring countries is low. There seems to be no co-operation between various border agencies and no control delegation to customs authorities in terms of documentation and physical controls.
- The Single Window, grouping documentary requirements of various border agencies, currently under implementation, an equivalent to a one-stop-shop, should be completed. Also, publication of average release and clearance times for goods can help to facilitate trade, as well as expansion of the use of Authorised Operator Programmes, which reduce physical and documentary controls and shorten goods release times.
- Operation of the customs hotline can be strengthened. Information about agreements with third countries, appeal procedures, advance rulings and penalty provisions should be made more accessible. Advance rulings, which increase regulatory certainty, could be used more, especially since they are found to encourage backward-type GVC linkages (Moisé and Sorescu, 2015).

A similar picture emerges in the context of the services trade restrictiveness index (Figure 1.10, Panel B). In most sectors, the score is below the OECD average, but not at the minimum. Examining best practices in other countries industry by industry can be inspiring, though a large part of the restrictiveness measured by the index comes down to quotas on foreign workers (this restriction applies after 9 months, i.e. once a temporary work permit expires):

- Estonia's strong ambition for the computer and telecommunications sectors should be reflected in the removal of barriers for them. In computer services, the barriers are mostly due to restrictions on free movement of labour. Since 2017, foreign workers in the ICT sector are exempted from the quota, which is welcome. Nevertheless, there is a requirement that at least half of the board of directors are Estonian residents (that applies to all firms incorporated in the country). Competition-related barriers seem to also exist in telecommunications (e.g. regulation of wholesale access rates).
- In legal and architectural services, there are restrictions on foreign entry and neighbouring Finland (for instance) has lower barriers. Recognition of foreign qualifications in regulated professions is only available for EU countries and to those countries with which Estonia signed a special agreement (OECD, 2015a).

- In maritime and air transport, a considerable number of restrictions apply: foreign equity restrictions, restrictions in the number of non-Estonian board members, and nationality and residency conditions on registering ships and aircraft (OECD, 2015a).

Figure 1.10. **Scope to improve regulation affecting trade**

1. Trade facilitation indicator takes values from 0 to 2, where 2 stands for the best performance that can be achieved.
2. The STRI indices take values between zero and one, one being the most restrictive. They are calculated on the basis of the STRI regulatory database which contains information on regulation for the 35 OECD Members, Brazil, China, Colombia, Costa Rica India, Indonesia, Lithuania, Russia and South Africa. The STRI database records measures on a Most Favoured Nations basis. Preferential trade agreements are not taken into account. Air transport and road freight cover only commercial establishment (with accompanying movement of people).

Source: OECD (2017), *Trade Facilitation Indicators (database)*; OECD (2017) *Services Trade Restrictiveness Index*.

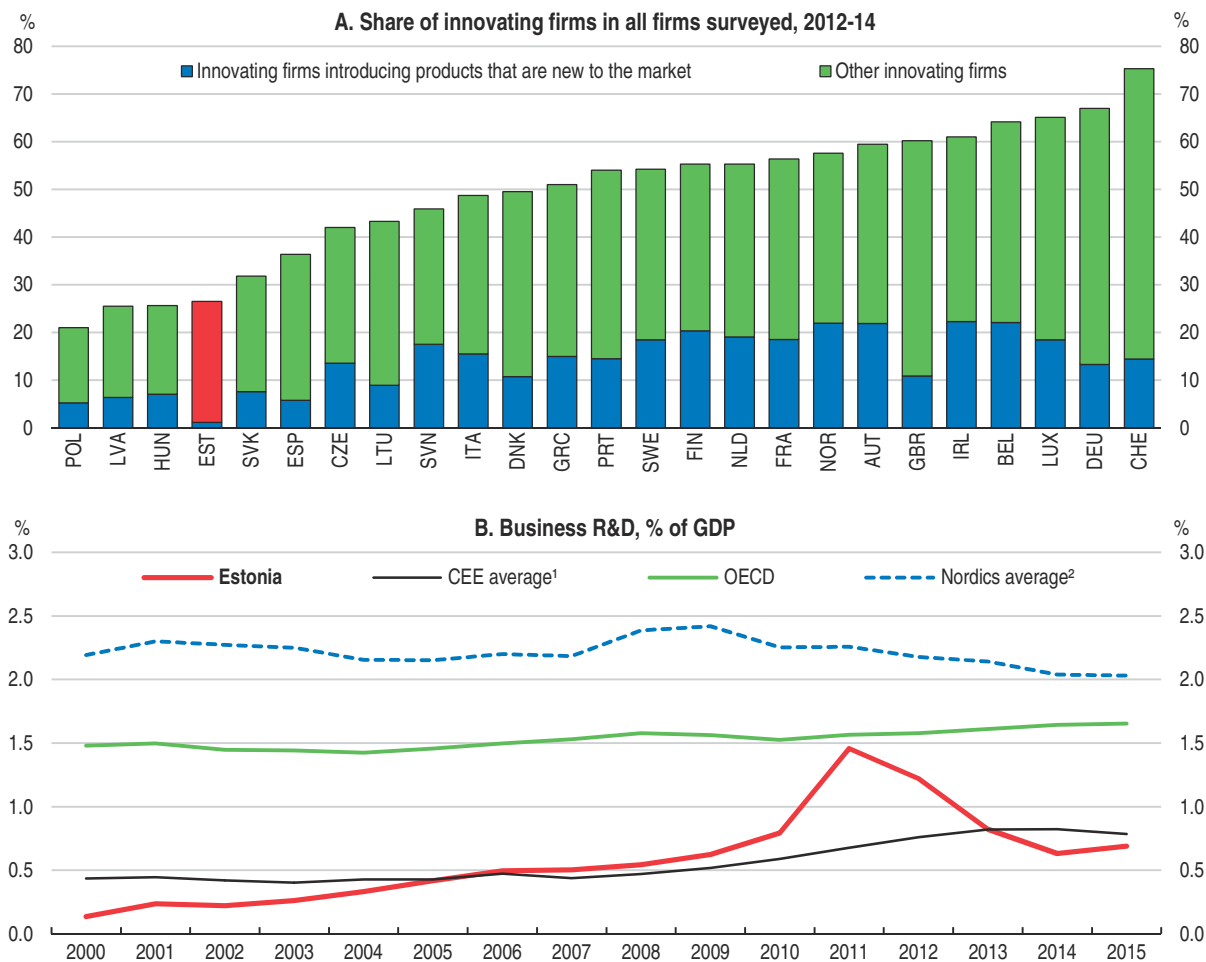
StatLink <http://dx.doi.org/10.1787/888933581581>

### Fostering knowledge diffusion

To increase the exporting potential as well as to continue climbing up the value chain, Estonian firms need to upgrade their production, i.e. adopt frontier technologies. Ensuring that knowledge transfer and thereby higher productivity continues to spill over from high-productivity firms (often exporters) to the rest of the economy is a policy challenge faced by many economies. This is also true for Estonia, as only a small share of companies seems to

engage in innovation (Figure 1.11). A recent industrial policy paper focuses on digitalisation of the manufacturing sector with a number of tools in the pipeline: developing co-operation platforms between the industry, start-ups and R&D institutions (so-called hackathons), digitalisation audits, long-term loans to encourage R&D investment, and training for basic digital skills for instance. These are welcome and should be complemented by additional tools to create more fertile ground for the application of research and innovation in the business sector. Also, policies need to reflect that most of the Estonian companies are small and medium-sized which makes economies of scale harder to reach.

Figure 1.11. **Business-driven innovation and spending on R&D are low**




Note: For Panel A: International comparability may be limited due to differences in innovation survey methodologies and country-specific response patterns.

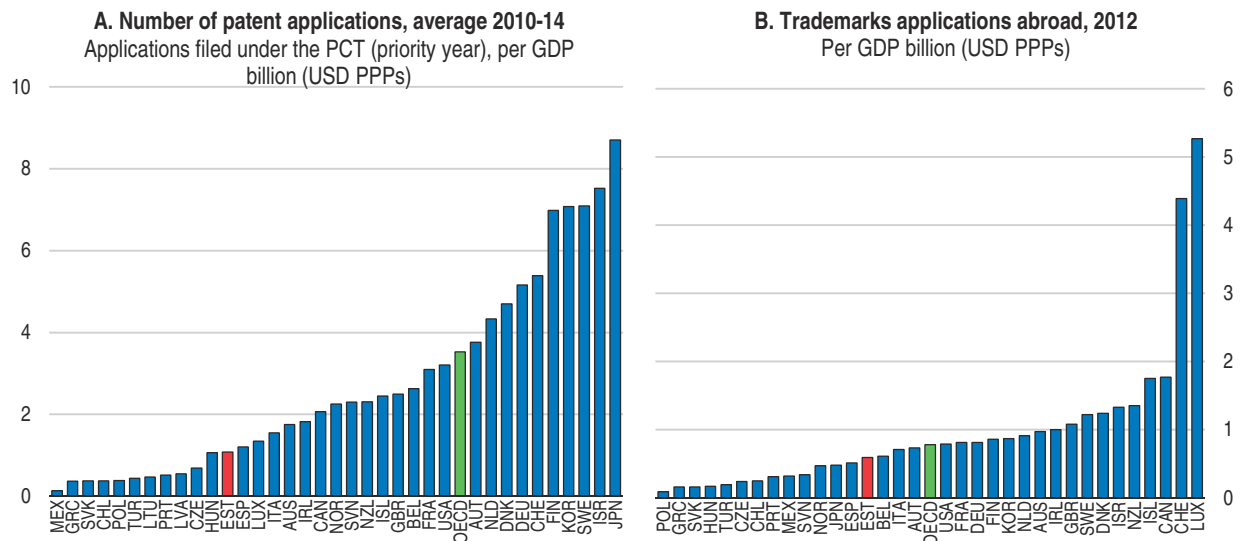
1. Simple average of Czech Republic, Hungary, Latvia, Poland, Slovak Republic and Slovenia.

2. Simple average of Denmark, Finland and Sweden.

Source: Eurostat (2016), Community Innovation Survey (CIS) 2014; OECD Main Science and Technology Indicators Database.

StatLink  <http://dx.doi.org/10.1787/888933581600>

Estonia is a 'moderate innovator', according to the European Innovation Scoreboard. Innovation output is modest, as evidenced by the number of patent and trademark applications (Figure 1.12). With total spending of 1.5% of GDP on R&D in 2015, it was the third biggest spender on R&D policies among the CEE countries. However, this was below both the OECD average and Estonia's own national target of 3% GDP by 2020, of which 1% of GDP

Figure 1.12. **Innovation activity is limited**

with specialization strategies. Estonia has currently 22 clusters, 12 of which receive public support in the following fields: ICT, health, wood industry, defence and security, real estate, energy, wind technologies.

This seems a high number for such a small country; for instance, Ireland has four main industry clusters. Moreover, it often takes time to reap results, so maintaining public sector commitment in the long-run is important. Experience across OECD countries shows that key factors for success of cluster policies are strong-co-operation, critical human capital mass, research commercialisation, skills enhancement to new areas of demand, strong commitment of the public sector, strong partnership, leadership and social capital (co-operative environment and quality of life) (OECD, 2009). Given the limited human resources in Estonia, achieving critical human capital mass could be challenging (see Chapter 2).

The current innovation policy is strongly shaped by the EU's smart specialisation strategy. It provides significant resources, but has several restrictions that limit its flexibility (in terms of choice of activities, planning and implementation freedom). As a result, an "absorption capacity" approach (i.e. ability to spend the funds) prevails over risk-taking and experimentation in government policy-making (National Audit Office, 2014; Ukrainski et al., 2015; Karo et al., 2017).

The disconnect of academia from the business community manifests itself in a reduced relevance of research for the economy and society (Ruttas-Küttim, 2015). The majority of public R&D spending is concentrated on areas which differ from those chosen by the major private sector innovators. Indeed, there are good reasons to fund basic research, as it has significantly larger knowledge spillovers compared to applied research (OECD, 2015b). Public funding of applied research in areas such as electronics, forestry, food, mechatronics, automation and other similar fields which would correspond to the leading export sectors has consistently lagged behind. The largest overlap between public and business R&D focus exists in ICT-related domains (e.g. programming), where the co-operation between academia and the business sector has worked well. Nevertheless, this field is currently suffering from a lack of university graduates, which undermines further prospects for co-operation between business and academia (Karo et al., 2014).

Inclusion of private stakeholders in policy making is rather formal, and horizontal policy-making dominates over sectoral approaches (Karo et al., 2017; Ukrainski et al., 2015). The business sector is represented at the Research and Development Council, a body that has an advisory role. This is welcome as presence of the business sector in high-level advisory bodies helps to create a market perspective in the design and implementation of public research policy (OECD, 2014a). Industry representatives and associations currently play a limited role in design, implementation and feedback and there seems to be limited scope and flexibility for experimentation and changes once public programmes and measures are approved (Ukrainski et al., 2015). The recent industrial policy green paper is hopefully a break from this trend: it has been initiated by the business community, which is welcome. It will be important to maintain the link with the business community while designing concrete policy measures to implement it.

In the academic sector, little emphasis has been put on applied research and capacity for collaboration with the business sector seems low. The evaluation system of R&D institutions and researchers gives a high weight to publications, resulting in low motivation for co-operation with firms, applied research and innovation (Ruttas-Küttim, 2015). For instance, a sabbatical semester that could be used for gaining experience in the private



sector is available every five years for professors and associate professors, but not for senior researchers. As of September 2017, collaboration with industry will receive greater weight in evaluation criteria for distribution of base-line financing, which is welcome. Such incentives are in place for instance in Sweden and Norway (OECD, 2010). Finally, the universities themselves could encourage their staff to co-operate more with the business sector.

### ***Demand side policies can incentivize innovation***

Recent trends in innovation policy place growing emphasis on demand-side policies and instruments (OECD, 2011). Public procurement and demand-side policies were a key determinant in the emergence of several high-technology sectors (e.g. internet, GPS, etc.). Innovation in delivery of public services has the potential to boost both aggregate productivity and well-being by quality improvements; it can also deliver fiscal savings. Currently, around 35% of Estonia's total government expenditure happens via public procurement. A demand-side public procurement programme is in place, and although it may be too early to evaluate its reach the take-up so far has been low. Recent projects included procurement for charging stations for electric cars, pre-commercial procurement for devices to disrupt radio waves, and new traffic-flow management for ports. The policy lessons drawn from these projects suggest more co-ordination across ministries and agencies, more focus on long-term goals and greater overall risk-taking in public procurement could increase the chance of success of such programmes (OECD, 2017a).

Demand-side measures require active engagement by the public sector for long periods. Throughout the policy cycle, from policy design and implementation stages to evaluation, these measures include numerous actors and assume the existence of high-quality feedback mechanisms. These instruments may operate at different levels of government, which adds complexity (Lember et al., 2015). While there does not yet seem to be a clear international best-practice to follow, examples such as U.S. or Australian small business innovation research programmes can serve as an inspiration. In the U.S., the program requires public authorities with a certain level of external R&D budgets to set aside 2.5% of their funds, that are then pooled to offer competition-based awards to small innovative firms in various R&D stages (a feasibility study, full R&D effort and commercialisation stage). Awards are linked to public-sector customer requirements. In the Australian state of Victoria, a market validation programme, aims at yielding R&D proposals that deliver solutions to public-sector technology requirements (OECD, 2011).

### ***On-going consolidation of public research is welcome***

A number of smaller and independent research organisations are being merged with larger universities. Currently, there are six public universities, eight public institutions of professional higher education and several research institutes (e.g. National Institute of Chemical Physics and Biophysics, IT College, etc.). The on-going merger of research institutions is welcome, but fragmentation of policy focus remains, particularly in terms of its design and co-ordination. The Ministry of Higher Education and Research liaises with academia. It is the main stakeholder partner, responsible for roughly 80% of public financing for innovation policy. The Ministry of Economic Affairs and Communication is responsible for most of the remaining public financing, and focuses on innovation, with the business sector as the main interlocutor. Other ministries are responsible for organising and financing about 6% of R&D activities (Ruttas-Küttim, 2015). The Research and Development Council under the Prime Minister's Office brings the two ministries together, though there are two

subcommittees reflecting the two ministries' division of labour. This is true for funding too: while Enterprise Estonia administers funding for innovation, the Estonian Research Council dispenses funds for academic research. Although a similar split exists in a number of OECD countries, it is important to ensure efficient policy dialogue and avoid policy silos.

### ***Putting the productivity debate at the centre of policy making***

A well-designed institution can help to focus policy making on productivity enhancing reforms, as well as improve the quality of the decision process and contribute to evidence-based policymaking (Banks, 2015). A number of OECD countries are addressing the issue of subpar productivity growth by appointing specialised bodies to carry out detailed analysis and highlight areas that necessitate policy attention in order to kick-start productivity growth. For instance, Australia and the Netherlands have a long tradition of such bodies that are permanent and at arms' length from the executive (The Productivity Commission and the CPB), while in a temporary, one year commission appointed by the government investigated the issue recently in Denmark. In Estonia, there is no such unique institution. The authorities are currently considering different options to comply with a recent recommendation of the EU Council to establish productivity boards. While the national context is central in determining the optimal design, mandate, mission and governance of pro-productivity institutions, a recent OECD analysis shows that such institutions should also be given sufficient resources, skills, transparency and procedural accountability to fulfil their tasks. Such body should consider both supply-side and demand-side policies (including those proposed by the government) and have policy evaluation functions (Renda and Dougherty, 2017).

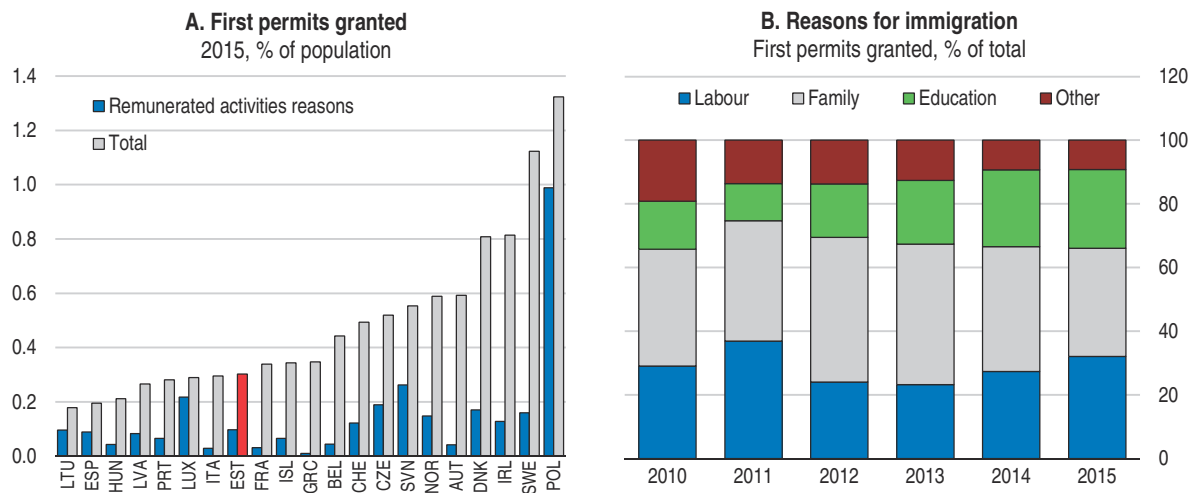
### ***Attracting and retaining talent***

Migration can have a positive impact on opening up new trade links and on the adoption of foreign technologies and know-how. Garliardi (2015) finds that skilled immigrants contributed substantially to the innovative performance of recipient areas in Britain. Returning migrants can bring new knowledge and often have higher wages, i.e. higher productivity, than those who stayed. Kauhanen and Kangasniemi (2013) show that return migrants from Finland earn on average 14% more than comparable earners who did not migrate.

### ***Strong emigration has receded and return migration has risen***

As highlighted in the 2015 *Economic Survey*, Estonia has been affected by considerable outmigration flows, amounting to 0.2% of population per year at its peak in 2012. The most popular destinations have been the Nordic countries and the UK which are close and where the wage differential is considerable (OECD, 2015a). As mentioned earlier, emigration of skilled labour has put a pressure on wages in the Central European and Baltic economies, though Estonia has been less affected by brain-drain than its neighbouring Baltic peers (IMF, 2016). The situation has improved since, and in the past two years return migration resulted in positive net migration, with around half of those migrating to the country in 2013-16 being Estonian nationals. Nevertheless, labour migration flows from non-EU countries have remained modest (Figure 1.13). A selective immigration policy towards attracting the high-skilled is in place, but has not been reflected in the composition of migrants (Praxis, 2014). Furthermore, it has not corresponded to actual labour market needs (National Audit Office, 2015).

Figure 1.13. Labour migration is modest



Source: Eurostat, Demography and migration database.

StatLink <http://dx.doi.org/10.1787/888933581638>

### Migration policy framework targets high skilled but so far with only limited success

The immigration policy framework has undergone a number of changes and simplifications recently, but remains complex. Labour migration is employer-led and selective, with a number of conditions attached. While there are no restrictions on mobility of EU citizens, a number of routes are available for non-EU nationals, notably two different ones for high-skilled workers (Table 1.1). Remaining barriers and various exemptions make it difficult to navigate. It is thus welcome that an English-speaking helpline provides information about how to obtain a residence permit. Also dedicated advisors in the police and border guards have been appointed as of March 2017 to provide counselling to employers, entrepreneurs, educational institutions and others intending to employ foreigners in Estonia to facilitate settlement of foreigners in the country.

Table 1.1. Conditions of various labour immigration routes

	Residence permit for employment	High-skilled scheme ("top specialist")	EU Blue Card	Start-up visa
Job offer	Yes	Yes	Yes	Yes, but also possible as an entrepreneur
Skills threshold	No	Yes	Yes	Varies
Labour market test	Yes	No	Yes, but with some exemptions	No
Shortage occupation list	Yes (but not used)	No	No	No
Numerical limit	Yes (annual quota)	Yes (annual quota)	Yes (annual quota)	No
Legal right to an assessment of formal foreign qualifications	Yes	Yes	Yes	Yes
Salary threshold	Average wage	Double the average wage	1.5 x average wage with some exceptions (1.25 x average wage)	No
Family reunification	Yes	Yes	Yes	Yes

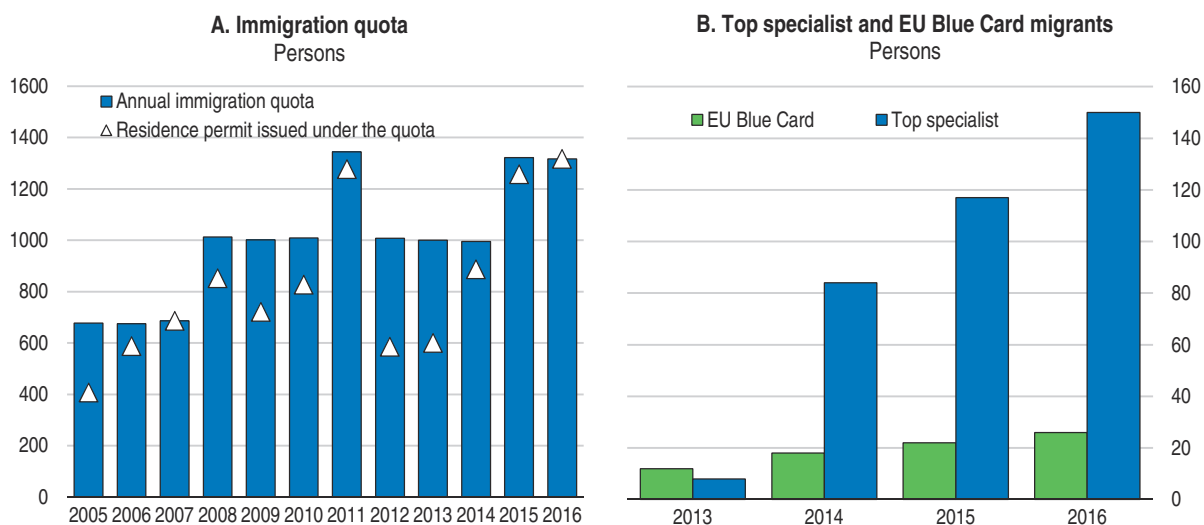
Source: National Audit Office, Ministry of Interior.

Salary thresholds are in place, and these vary according to a scheme and profession, with the levels of the thresholds having been rather restrictive (OECD, 2016c). Estimates show that only about 20% of tertiary educated workers earned incomes above the EU Blue Card threshold

(1.25 the average wage) in 2010 and wage statistics of labour migrants during 2005-13 show that in fact less than 16% earned double the average wage, i.e. the threshold for the high-skilled scheme (National Audit Office, 2015). Recently, the salary thresholds for residence permit for employment has been lowered to the average wage, and in addition start-up employers are no longer required to meet the salary threshold requirement, which is welcome.

An annual immigration quota on the number of foreigners (both employees and entrepreneurs) is in place, corresponding to 0.1% of resident population, i.e. 1 317 persons in 2017 (Figure 1.14). Certain groups are excluded, such as researchers, students, selected specialists, family members as well as for instance Japanese and US citizens. As of 2017 such exemption has been extended to start-up employers as well as workers in the ICT sector. The quota has been reached only twice so far (in 2007 and 2016). The recent exemptions add some degree of flexibility. Nevertheless, the quota has a signalling role to potential migrants and employers. Rather than *ad hoc* adjustments, the necessity to use quotas, in particular when it comes to skilled migrants, should be reviewed or the quotas themselves increased considerably to avoid the risk of being excessively restrictive. It is therefore welcome that a working group on the policy of quota has been set up and it is expected to propose changes to the government by the end of 2017.

Figure 1.14. **Annual quota were reached recently, while the number of highly skilled migrants is modest**



Source: National Audit Office (2017).

StatLink  <http://dx.doi.org/10.1787/888933581657>

Permanent residency can be gained only once a language test at B1 level is passed, though as of January 2017 a new type of residency permit for permanent settlement in the country is available under which no Estonian language proficiency is required. As in a number of other OECD countries, a labour market test (in the form of an obligation for the employer to notify the Unemployment Insurance Fund of the vacancy and a seven-day waiting period) is in place. The test does not apply to the highly skilled, experts, researchers, graduates of local education institutions and senior management of the most recent start-up scheme but does to the EU Blue Card holders.

Estonia could position itself as a gateway to the EU for skilled third-country foreign nationals, this would be in line with recent start-up visa scheme and more general efforts for international branding of the country (Box 1.3). Given the low application rate for the Blue Card so far, such migrants stand a better chance of being granted the card in Estonia than in other EU countries where the demand is high or the program doesn't work well. The Estonian labour market would benefit even if such Blue Card holders stay only a couple of years, before moving on to other EU countries. Furthermore, better labour market integration of family migrants could also reduce labour shortages and should be supported by reinforcing activation and training programmes for third country nationals (National Audit Office, 2015).

### Box 1.3. **Building Estonia's brand name**

Efforts to increase awareness of Estonia globally have intensified over the past decade. An internet platform "Study in Estonia" serves as the main starting point for potential international students ([studyinestonia.ee](http://studyinestonia.ee)); a similar web-portal is available for job vacancies ([workinestonia.ee](http://workinestonia.ee)). A start-up visa programme has been launched recently ([startupestonia.ee](http://startupestonia.ee)).

Estonia is also making its name for a so-called e-residency scheme ([e-resident.gov.ee](http://e-resident.gov.ee)). Under this scheme, individuals can purchase a government-issued digital identity that includes digital signature and use it for establishing a business in the country. It does not give a right to citizenship, tax residency, a residency permit or entry to Estonia, but is advertised as a tool to reduce intermediary costs when establishing a business location in the country, and to decrease the operational costs of communicating with the authorities (because of the considerable number of e-government services).

### ***Attracting and retaining more international students***

Similarly to other Central European countries, Estonia has seen a remarkable rise in the number of international students over the past decade, though starting from a low base (OECD, 2016c). In the academic year of 2016/17, 3 900 non-resident students studied at the Estonian higher education institutions, i.e. 8% of all tertiary educational enrolment, comparable to the OECD average. The majority of the students come from Finland, Russia and Nigeria. While there are no tuition fees for full-time degree programmes in Estonian, universities generally charge for those in English. Tertiary education could become another exporting article and a source of private funding to the universities.

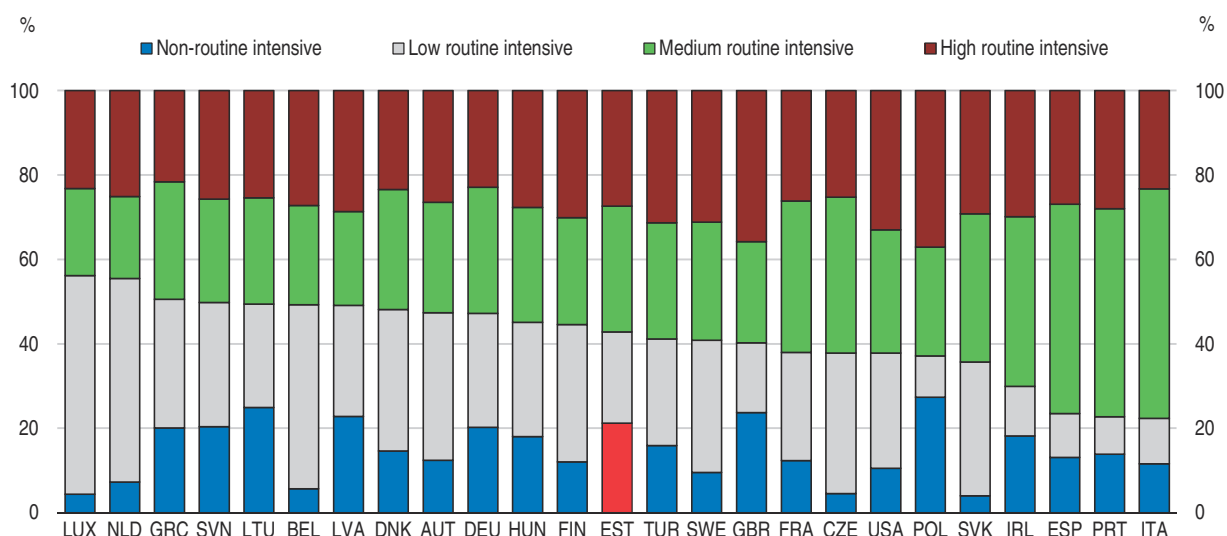
A fifth of the international students were employed in Estonia following their graduation (within 18 months of degree completion), which is on a par with several OECD countries (OECD, 2016c). Labour market outcomes of EU international students have been better than the non-EU citizens (National Audit Office, 2015). One of the contributing factors has been the difference in the time allocated for job search. While there are no conditions of the stay and thus job search of EU citizens, third-country nationals have 6 months following graduation to find employment. The authorities are considering granting graduates of third-country origin a longer period to find a job after completing their studies (9 months). This would be welcome as for instance students of third country origin have 12 months in Norway and Finland. Other tools to increase the stay rates of foreign students can include more Estonian language training, traineeship positions in companies, and increasing employer awareness of the benefits of employing foreigners (Praxis, 2014).

## Making trade work for all


International trade has been a powerful engine of global economic growth and convergence in living standards. By giving access to a wider variety of goods and services at cheaper prices, it raises well-being and consumers' purchasing power (OECD, 2017b). At the same time, increased specialisation and enhanced international competition leads to offshoring of production, with impact on domestic employment. Openness to trade brings technological change that increases the risk of displacement for low- as well as medium-skilled workers, in particular those with a considerable share of repetitive tasks that can be automatised and substituted with new technologies (Ekholm and Hakkala, 2006). In this context, just over a half of jobs in Estonia have medium- or high- routine intensity (Figure 1.15).

Figure 1.15. **Routine intensive jobs are at risk of automatisation**

Percentage of employment by routine intensity, average over 2000, 2005, 2008-11



Source: Marcolin et al. (2016).

StatLink  <http://dx.doi.org/10.1787/888933581676>

Workers displaced as a result of offshoring tend to suffer greater earnings losses than others, and such impact is more profound on the low skilled (Hummels et al., 2011). So far, and similarly to other Central European peers, Estonia has been mainly on the receiving end of that offshoring because of its initial labour-cost advantage; however, the cost advantage depletes with income convergence. To ensure that all Estonians benefit from opportunities created by globalisation and high trade intensity, the authorities should focus on two policy areas. Firstly, those who can work need to have the right skills and incentives to participate in the labour market. Secondly, those who are out of the labour market should be supported by an effective and adequate social safety net, conducive to upskilling and maintaining work incentives.

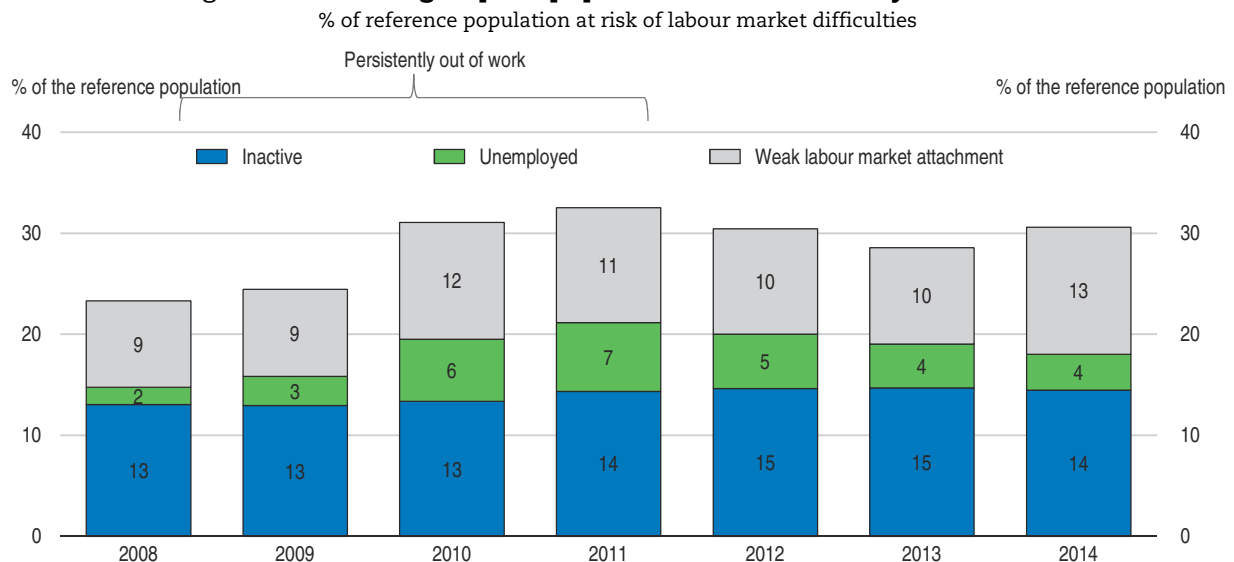
### Groups of population left behind

Estonia was hit hard by the global financial crisis, in particular by the slump in global trade. As detailed in the 2012 *Economic Survey*, extreme income fluctuations compounded by low social benefits exposed fragile groups of the population to considerable poverty. Groups that were hit particularly hard during the recent downturn were the working-age poor, youth

and low-skilled males, because they often have non-standard work contracts, therefore facing the highest risk of job loss, weak attachment to the social security system and few resources for self-insurance (OECD, 2012). Although this was the case in a number of OECD countries, it could be argued that Estonia's low level of social protection contributed to the need for finding income elsewhere, resulting in high emigration following the global downturn.


Even during an economic upswing such as the current one, certain groups of the population are being left behind (Figure 1.16). 30% of the working age population is either persistently out of work or has only a weak labour market attachment, and poverty rates are especially high among the jobless and those working part-time (Browne and Pacifico, 2016). Low skills are the common denominator to all those with no or weak labour market attachment. The largest groups have been identified as i) older inactive adults with health limitations, low skills and limited work experience, estimated at around 6% of population, and ii) those at work but earning very little ("the working poor"), estimated at around 5% of the population.

Figure 1.16. **Some groups of population are consistently left behind**



Note: Groups at risk of labour market difficulties are defined as those persistently out of work as well as those with weak labour-market attachment. Out of work means no employment activity throughout reference period, weak labour market attachment refers to individuals reporting employment activity but working only a limited number of months, working most or all the reference period working 20 hours or a less a week and individuals reporting some activity but negative, zero or near-zero monthly earnings.

Source: Browne and Pacifico (2016), calculations based on EU-SILC 2008-2014.

StatLink  <http://dx.doi.org/10.1787/888933581695>

### **Providing upskilling opportunities to all**

Lifelong learning is central to maintaining skills and competences relevant to rapidly changing labour market needs, notably in the context of globalisation. Around 30% of Estonians adults do not have a professional qualification and may not be well equipped to adapt to a fast changing environment. Overall participation in lifelong learning improved significantly in 2016. However, the average number of hours of training per participant is among the lowest in the OECD and training of low-skilled workers remains below the average. Access to upskilling opportunities should be improved further so those currently left behind can find and keep quality jobs.

### ***Enhancing participation of the low-skilled in lifelong learning***

Estonia's lifelong learning strategy sets ambitious targets, including a 20% participation rate by 2020 (vs. 16% in 2016) and a reduction in the share of adults without professional qualification to 25%. A number of measures are in place to reach this target (Box 1.4). However, the take-up of measures targeted to low-skilled workers is likely to be low (Browne, 2017, *forthcoming*). To enrol in the publicly funded programs, one has to go through a career counselling service at the public employment service (Unemployment Insurance Fund). By definition, those that loose job should contact the fund and can have access to this service, but reaching out to those currently in employment is more challenging. Moreover, due to the patchy coverage of the unemployment benefit (see below), it is unclear that all unemployed actually do register.

#### **Box 1.4. Active labour market policies in Estonia**

Resources allocated to active labour market policies have increased in recent years, but remain one of the lowest among OECD countries. Estonia spent 5.2% of GDP per capita per unemployed person in 2014 (vs. 14% on average in the OECD). Around a half of that spending goes on the public employment service itself, which is double that of the EU average. The staff of the Unemployment Insurance Fund is being increased, which is welcome as their workload is increasing with a roll-out of a new work-ability scheme. Currently, active labour market policies include :

- Public and community work.
- Wage subsidy for employing a long-term unemployed person, young (without a job for more than 6 months or at least 4 months if they have only general secondary education or lower, or no work-experience), a former convict or a person with reduced work ability (if unemployed for at least 6 months). The wage subsidy is a half of the gross salary and usually lasts a maximum of 12 months.
- Work placement – a subsidy for the training for filling a vacant position.
- Training grant for employers for upskilling existing staff (as of May 2017).
- Training of an unemployed person for a specific position that is difficult to fill.
- Job creation subsidy (a part of the salary cost) in Ida-Viru county (north-east region).
- A study allowance for an employed or unemployed person who is pursuing vocational or professional higher education or a bachelor's degree (as of May 2017).
- A business start-up subsidy.
- Reduction of social security contributions for employing people with reduced working abilities.

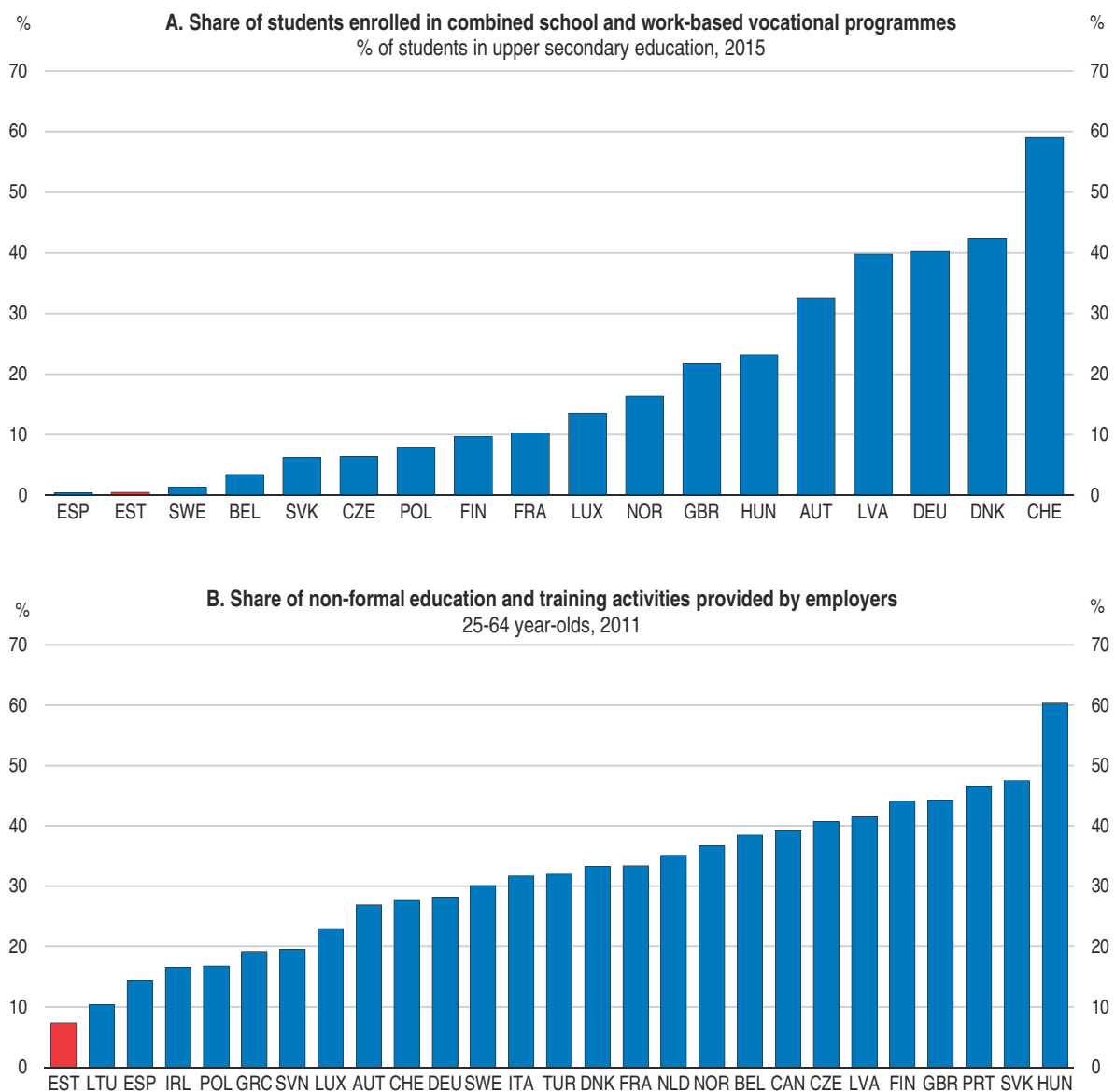
To improve the reach and enrolment in life-long learning, training vouchers could be provided to all low-educated workers and directed towards training in core skills (ICT, language) with a view to prepare them for a more specialized training, that empirical work shows improved the probability of finding a job. Programmes should also be more targeted at small companies, which are less likely to see the need for training their workforce or to have a training plan (Kitching and Blackburn, 2002). An outreach mechanism targeting small-business managers should be developed to provide them with information and support in identifying appropriate training.



### Increasing on-the-job training


On-the-job training and apprenticeships can provide valuable skills in line with labour market needs. Currently, students have too few opportunities to engage in apprenticeship, and businesses are little involved in the provision of adult education (Figure 1.17). Despite considerable improvements over the past five years and participation of businesses in the development of occupational profiles in the Vocational Education Training (VET) institutions, only around half of VET provide combined school and work-based learning.

Figure 1.17. **Businesses are little involved in the provision of vocational education and training**



Note: At the upper secondary level (ISCED 3) and the non-tertiary post-secondary level (ISCED 4), “vocational & prevocational programmes” are divided into “school-based programmes” and “combined school and work-based programmes” on the basis of the amount of training that is provided in school as opposed to training in the work place. Programmes are classified as combined school- and work-based if less than 75% of the curriculum is presented in the school environment.

Source: Eurostat, Education and training database; *Education at a Glance 2016*: OECD Indicators.

StatLink  <http://dx.doi.org/10.1787/888933581714>

A new programme (PROM) launched in 2015 aims to multiply the number of apprenticeship places by more than five by 2020 and cut the dropout rate to 25% (from 42% now). It includes measures to improve the visibility of the system for enterprises and students, provide training for supervisors in schools and in companies, and introduce co-ordinators in VET schools and working groups to share best practices. Increasing the funding stability of VET institutions and providing better incentives to improve completion rates could also help (Santiago et al., 2016). Additionally, involving the private sector more in provision of educational content could improve the labour market relevance of vocational education and training.

The main obstacle to developing apprenticeship is to find companies offering training opportunities, as a large share of Estonian firms are small with limited resources. Developing a system in which several firms jointly offer apprenticeship training, as recommended in the 2015 *Economic Survey* (OECD, 2015a), can help to mitigate this problem. To encourage business participation, VET institutions may allocate to companies up to 50% of the fund paid to the school for the study place. Consideration should also be given to reducing employers' social security contributions or to introducing a lower minimum wage for apprentices.

The Estonian VET schools are successful in enrolling the young and well as adults with various skills levels, which bodes well for life-long learning. However, only about a third of upper secondary education students are enrolled in the VET schools compared to almost a half in other OECD countries. The VET qualifications have a low status compared to general secondary education programmes. This could be partly because the VET schools offer few chances for further progression. Currently, only 10% of VET graduates go on further to university. Those who wish to do so can follow an additional year at the upper secondary-schools (gymnasiums) to prepare for the university entrance exam. In the Netherlands, Switzerland or Austria, the shares of VET graduates admitted to university are larger, which is helped by post-secondary vocational programmes or dual programmes that provide students with a better preparation for admission to tertiary education (OECD, 2014b).

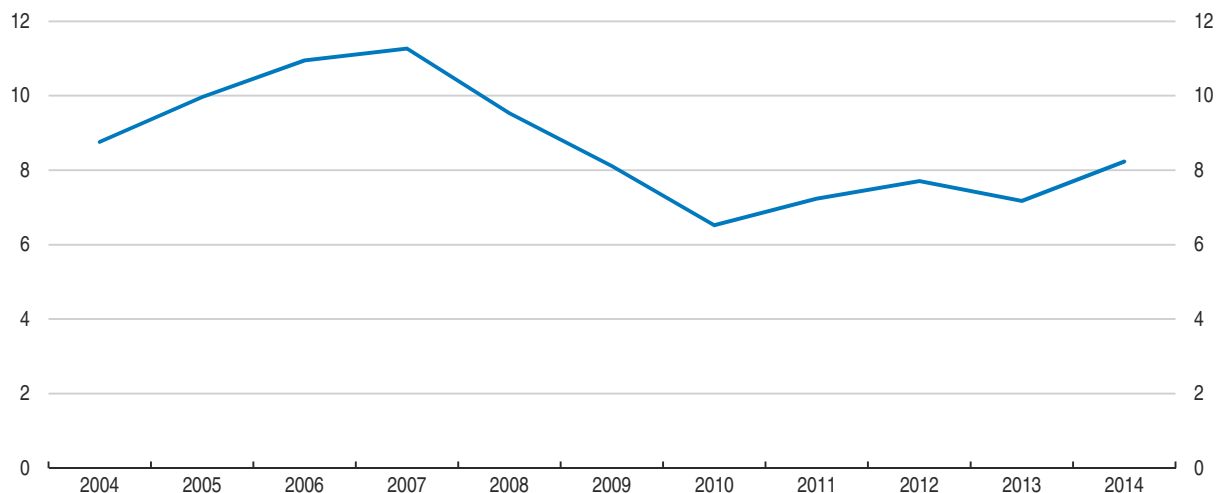
### ***Income replacement during unemployment is patchy***

International experience suggests that the best way to support displaced workers is through a combination of temporary income support, job search support and measures to improve employability of job seekers (OECD, 2016a). Around a half of the registered unemployed receive some financial support in Estonia: 34% of the unemployed receive unemployment insurance benefits – this is because eligibility conditions are stricter than in most OECD countries (OECD, 2012) – and some 23% received unemployment assistance (a lower-tier income replacement benefit) in 2016 that is, unlike in most OECD countries, subject to a minimum employment requirement and means-tested.

All unemployed people are entitled to retraining and job placement services. However, due to the stricter eligibility for unemployment benefits, many unemployed do not actually register, and are not reachable by the public employment service to access activation programmes. As a result, the number of people participating in active labour market policies (ALMP) is low and spending on such programmes is modest (Figure 1.18). Less than 1% of the labour force participated in ALMPs in 2014, which is less than one quarter of the EU average. The spending on ALMPs is expected to increase significantly in coming years as ALMPs are extended to disability benefits recipients (through the Work Ability Reform), jobseekers above normal retirement age and low-skilled workers (Browne, 2017, *forthcoming*).



Figure 1.19. **The share of social benefits received by the poor is low and has declined**  
Share of transfers<sup>1</sup> received by the lowest decile, working-age population (18-65), %



1. Current transfers received from public social security.

Source: Calculations based on OECD Income Distribution Database.


StatLink  <http://dx.doi.org/10.1787/888933581752>

Table 1.2. **Breakdown of social spending**  
% of total social protection spending, 2015

	Sickness and disability	Old age	Survivors	Family and children	Unemployment	Housing	Social exclusion	Other
Estonia	16.4	54.5	0.5	17.9	8.3	0.2	1.0	1.2
CEE <sup>1</sup>	18.4	55.9	6.0	9.3	3.1	0.8	3.7	2.7
Nordics <sup>2</sup>	18.4	46.3	1.5	14.6	9.4	2.1	6.0	1.6
OECD <sup>3</sup>	15.8	51.3	6.3	11.2	7.4	2.3	3.9	1.9

1. Unweighted average of Czech Republic, Hungary, Latvia, Lithuania, Poland, Slovak Republic, and Slovenia.

2. Unweighted average of Denmark, Finland, Sweden.

3. Unweighted average of available OECD countries.

Source: OECD National Accounts Database.

needs-based family benefit are not receiving it (Vörk and Paulus, 2014; Vörk et al., 2016). This is partly due to the complexity of the social benefit system and underlines the need to streamline the existing benefit schemes.

While indexation rules apply for the calculation of some benefits (e.g. public pensions, the minimum and maximum rate of unemployment insurance benefit), others, such as subsistence and family benefits, are not automatically adjusted to price or wage developments. As a result, their values have eroded substantially in real terms. Automatic indexation would avoid erosion of the benefits over time and strengthen effectiveness of the social protection system. It should at least partly reflect income growth in the economy to ensure a fairer sharing of the catch-up in living standards between those employed and those not or no longer active.

## **Recommendations for capitalising on trade**

### **Removing unnecessary non-tariff barriers**

#### **Key recommendations**

- Complete a one-stop shop for administrative formalities.
- Improve access to information on trade regulation (e.g. agreements with third countries and appeal procedures).

#### **Other recommendations for removing unnecessary non-tariff barriers**

- Review remaining barriers to entry in services, such as telecommunications, legal and architecture.
- Expand the Authorised Operator programme that allows certified trade operators to move goods faster.

### **Attracting and retaining talent**

#### **Key recommendation**

- Relax annual quotas, and simplify conditions for work permits of skilled workers.

#### **Other recommendations for attracting and retaining talent**

- Exclude high-skilled migrant workers from the annual quota.
- Extend job search period for non-EU international students.
- Reinforce activation and training programmes for third-country nationals that arrived via family reunification.

### **Fostering knowledge diffusion**

#### **Key recommendations**

- Give more weight to co-operation with the private sector when allocating funds to public R&D institutions.
- Establish an independent body to advise on policies to raise productivity.

#### **Other recommendations for improving knowledge transfer**

- Maintain the link with the business community when designing concrete policy measures to digitalize the manufacturing sector.
- Encourage academics to participate in private sector innovation and research activities as part of their curricula.
- Make a greater use of public procurement of innovation, for instance to address pressing societal issues.

### **Making trade work for all**

#### **Key recommendations**

- Increase subsistence benefits, while maintaining strong work incentives.
- Relax eligibility conditions for unemployment benefits, not least to improve participation in active labour market measures.

#### **Other recommendations for making trade work for all**

- Vary the unemployment benefit rates over the business cycle.
- Introduce automatic indexation of social benefits that will in part reflect wage growth in the economy.
- Reduce the cost for firms that take on apprentices by cutting employers' social security contributions or introducing a specific lower minimum wage.

## Bibliography

- Amiti M. and J. Konings (2007), "Trade Liberalisation, Intermediate Inputs, and Productivity: Evidence from Indonesia", *American Economic Review*, Vol. 97/5, pp. 1611-1638.
- Appelt, S. et al. (2016), "R&D Tax incentives: Evidence on Design, Incidents and Impact, OECD Science", *Technology and Industry Policy Papers*, No. 32, OECD Publishing, Paris, <http://dx.doi.org/10.1787/23074957>.
- Aw, B.Y., M.J. Robert and T. Winston (2007), "Export Market Participation, Investments in R&D and Worker Training, and the Evolution of Firm Productivity", *The World Economy*, Vol. 30/1, pp. 83-104.
- Baldwin, R. (2012), "Trade and Industrialisation after Globalisation's Second Unbundling: How Building and Joining a Supply Chains are different and why it matters, Globalisation in an age of Crisis: Multilateral Economic Co-operation in the twenty-first century" in Feenstra, R. and R. Taylor (eds.), University of Chicago Press.
- Banks, G. (2015), "Institutions to promote pro-productivity policies: Logic and lessons", OECD Productivity Working Papers, No. 1, <http://oe.cd/GFP>.
- Benkovskis, K. et al. (2017), "Export and Productivity in Global Value Chains: Evidence from Latvian and Estonian firms", *OECD Economics department working paper*, forthcoming.
- Benkovskis, K. and J. Woertz (2016), "Cost competitiveness: A dangerous obsession, CEPR's policy portal", [www.voxeu.org](http://www.voxeu.org), <http://voxeu.org/article/cost-competitiveness-obsession>.
- Bernard, A.B. and J.B. Jensen (1999), "Exceptional exporter performance: Cause, effect, or both?", *Journal of International Economics*, Vol. 47/1, pp. 1-25.
- Blalock, G. and P.J. Gertler (2004), "Learning from Exporting Revisited in a less developed setting", *Journal of Development Economics*, Vol. 75, pp. 397-416.
- Browne, J. and Pacifico (2016), *Faces of Joblessness in Estonia: Anatomy of Employment Barriers*, OECD Publishing, Paris, [www.oecd.org/els/soc/Faces-of-Joblessness-in-Estonia.pdf](http://www.oecd.org/els/soc/Faces-of-Joblessness-in-Estonia.pdf).
- Browne, J. (2017), *Assessing Activating and Enabling benefits and Services in the EU – Country Policy Paper for Estonia*, OECD Publishing, Paris, forthcoming.
- Coe, D.T., E. Helpman and A.W. Hoffmaister (2008), "International R&D Spillovers and Institutions", *IMF Working paper*, International Monetary Fund, Publications Services, Washington.
- De Backer, K. and S. Miroudot (2013), "Mapping Global Value Chains", *OECD Trade Policy Papers*, No. 159, OECD Publishing, Paris, <http://dx.doi.org/10.1787/18166873>.
- De Loecker, J. (2007), "Do Exports Generate Higher Productivity? Evidence from Slovenia", *Journal of International Economics*, Vol. 73, pp. 69-98.
- Eesti Pank (2016), "Estonian Competitiveness Report 2016", Estonian Central Bank, Tallinn.
- Eesti Pank (2017), "Estonian Competitiveness Report 2017", Estonian Central Bank, Tallinn.
- Estonian Research Council (2017), *Estonian Research 2016*, Estonian Research Council, Tallinn.
- Ekholm, K. and K. Hakkala, (2006), "The Effect of Offshoring on Labour Demand: Evidence from Sweden", *CEPR Discussion Paper*, No. 5648, [www.cepr.org](http://www.cepr.org).
- European Commission (2015), "Stairway to Excellence – Country Report Estonia", *JRS Science and policy report*, Luxembourg publication office of the European Union.
- European Commission (2016), "Country Report Estonia 2016", *Commission staff working document*, European Commission, Brussels.
- Foster-McGregor, N., A. Isaksson and F. Kaulich (2014), "Importing, Exporting and Performance in Sub-Saharan African Manufacturing Firms", *Review of World Economics/Weltwirtschaftliches Archiv*, Vol. 150/2, pp. 309-336.
- Gagliardi, L. (2015), "Does Skilled Migration foster Innovative Performance? Evidence from British local areas", *Papers in Regional Science*, Vol. 94, pp. 773-794, <http://dx.doi.org/10.1111/pirs.12095>.
- Greenaway, D. and R. Kneller (2007), Firm heterogeneity, exporting and foreign direct investment. *The Economic Journal*, 117: F134-F161, <http://10.1111/j.1468-0297.2007.02018.x>.
- Hijzen, A. and P. Swaim (2007), "Does offshoring reduce industry employment?", *National Institute Economic Review*, Vol. 201/1, pp. 86-96.
- Hummels, D. et al. (2011), "The Wage Effects of Offshoring: Evidence from Danish Matched Worker-firm data", *NBER Working paper*, No. 17496.

- IMF (2013), "Trade Interconnectedness – The World with Global Value Chains", *IMF Policy Paper*, in Lipsey, R.E. and F. Sjöholm (2004), "Foreign Direct Investment, Education, and Wages in Indonesian Manufacturing", *Journal of Development Economics*, Vol. 73, pp. 415-422.
- IMF (2017), "Republic of Estonia – Selected issues", *IMF Country report* No. 17/10, International Monetary Fund, Publications Services, Washington D.C.
- IMF (2016), "Emigration and Its Economic Impact on Eastern Europe", *IMF Staff Discussion Note* SDN/16/17, International Monetary Fund, Publications Services, Washington D.C.
- Karo, E. et al. (2014), Nutikas spetsialiseerumine: kas Eesti teadus-, arendus- ja innovatsioonipoliitika kuldvõtmeke aastail 2014-2020. Riigikogu Toimetised, Vol. 29, pp. 116-136, available at: <https://goo.gl/cAkY1B>.
- Karo, E., R. Kattel and A. Cepilovs (2017), "Can smart specialization and entrepreneurial discovery be organized by government? Lessons from the less-developed regions" in Radosevic, S., A. Curaj, L. Andreescu, R. Gheorgiou and I. Wade (Ed.). *Smart Specialization Theory and Practice: Regional Planning and Development*, Elsevier Science BV, in press.
- Kattel, R. and U. Varblane (2017), Eesti ettevõtte tootmis- ja innovatsioonivõrgustikud in *Estonian Development Report 2017*, forthcoming.
- Kauhanen, M. and M. Kangasniemi (2013), *Returns to return migration: Wage premium of Estonian return migrants from Finland*, Labour Institute for Economic Research, Helsinki.
- Keller, W. and S.R. Yeaple (2009), "Multinational Enterprises, International Trade, and Productivity Growth : Firm-level Evidence from the United States", *The Review of Economics and Statistics*, Vol. 91/4, pp. 821-831.
- Kitching, J. and R. Blackburn (2002), *The nature of training and motivation to train in small firms*, Small business research centre, Kingston University.
- Kowalski, P. et al. (2015), "Participation of Developing Countries in Global Value Chains: Implications for Trade and Trade-Related Policies", *OECD Trade Policy Papers*, No. 179, OECD Publishing, Paris, <http://dx.doi.org/10.1787/18166873>.
- Lember, V. et al. (2015), "Relevance of Research and Development and Innovation Policy for the real economy. Research and Innovation", *Policy Monitoring Programme (TIPS) Report* No. 5.2. <http://tips.ut.ee/index.php?module=32&op=1&id=3701>.
- Lopez-Gonzalez, J., P. Kowalski and P. Achard (2015), "Trade, Global Value Chains and Wage-income Inequality", *OECD Trade Policy Papers*, No. 182, OECD Publishing, Paris, <http://dx.doi.org/10.1787/18166873>.
- Mare, D.C., R. Fabling and S. Stillman (2011), "Immigration and Innovation", *IZA Discussion Paper* No. 5686, April 2011, Institute for the study of Labour, Bonn.
- Marcolin, L., S. Miroudot and M. Squicciarini (2016), "GVCs, Jobs And Routine Content Of Occupations", *OECD Trade Policy Papers*, No. 187, OECD Publishing, Paris, <http://dx.doi.org/10.1787/18166873>.
- Masso, J., J. Jarve and M. Kaska (2015), *Low and top performers of information processing skills in Estonia*, 3rd thematic report, Ministry of Education, Tallinn.
- Masso, J. and P. Vahter (2015), "Exporting and Productivity: the Effects of Multi-product and Multi-Market Export Entry" *Scottish Journal of Political Economy*, Vol. 62, No. 4, September 2015, <http://onlinelibrary.wiley.com/doi/10.1111/sjpe.12077/full>.
- Masso, J. and P. Vahter (2016), "Knowledge Transfer from Multinationals through Labour Mobility: Learning from Export Experience", University of Tartu, *Faculty of Economics and Business Administration Working Paper* No. 99.
- Masso, J., T. Roolaht and U. Varblane (2010), "Foreign Direct Investment and Innovation in Central and Eastern Europe: Evidence from Estonia", *The University of Tartu Faculty of Economics and Business Administration Working Paper*, No. 67-2010, <http://dx.doi.org/10.2139/ssrn.1557036>.
- Ministry of Economic Affairs and Communications (2015a), Sulling: "Estonian dairy producers have signed their first contracts with a Japanese corporation", [www.mkm.ee/en/news/sulling-estonian-dairy-producers-have-signed-their-first-contracts-japanese-corporation](http://www.mkm.ee/en/news/sulling-estonian-dairy-producers-have-signed-their-first-contracts-japanese-corporation).
- Ministry of Economic Affairs and Communications (2015b), "Eesti ettevõtete uuendusmeelsus ja innovatsiooni toetamise võimalused", *Innovation Studies*, No. 24, [www.mkm.ee/sites/default/files/inno\\_24.pdf](http://www.mkm.ee/sites/default/files/inno_24.pdf).
- Miroudot, S. (2016), "GVC and trade in value added: An initial assessment on the impact on jobs and productivity", *OECD Trade Policy Papers*, No. 190, OECD Publishing, Paris, <http://dx.doi.org/10.1787/18166873>.

- Moisé, E. and S. Sorescu (2015), "Contribution of Trade Facilitation Measures to the Operation of Supply Chains", OECD Trade Policy Papers, No. 181, OECD Publishing, Paris, <http://dx.doi.org/10.1787/18166873>.
- National Audit Office (2015), *Overview of the state's migration policy choices*, National Audit Office, Tallinn.
- National Audit Office (2014), *Impact of innovation support measures on the competitiveness of companies*. National Audit Office, Tallinn, [www.riigikontroll.ee/Riigikontrollipublikatsioonid/Auditiaruanded/tabid/206/Audit/2340/language/et-EE/Default.aspx](http://www.riigikontroll.ee/Riigikontrollipublikatsioonid/Auditiaruanded/tabid/206/Audit/2340/language/et-EE/Default.aspx).
- OECD (2009), *Clusters, Innovation and Entrepreneurship*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264044326-en>.
- OECD (2010), *Performance-based Funding for Public Research in Tertiary Education Institutions: Workshop Proceedings*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264094611-en>.
- OECD (2011), *Demand-side Innovation Policies*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264098886-en>.
- OECD (2012), *Economic Surveys: Estonia*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/22212302>.
- OECD (2013), *Interconnected Economies: Benefiting from Global Value Chains*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264189560-en>.
- OECD (2014a), *OECD Science, technology and Industry Outlook 2014*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/19991428>.
- OECD (2014b), *Skills Beyond School: Synthesis Report*, OECD Reviews of Vocational Education and Training, OECD Publishing, <http://dx.doi.org/10.1787/9789264214682-en>.
- OECD (2015a), *Economic Surveys: Estonia*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/22212302>.
- OECD (2015b), *OECD Innovation Imperative*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264239814-en>.
- OECD (2016a), *Trade by enterprise characteristics database*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/glob-enterp-data-en>.
- OECD (2016b), *Trade in Employment Database*, STAN Databases, OECD Publishing, Paris, <http://dx.doi.org/10.1787/stan-data-en>.
- OECD (2016c), *Migration outlook*, OECD Publishing, Paris, [http://dx.doi.org/10.1787/migr\\_outlook-2016-en](http://dx.doi.org/10.1787/migr_outlook-2016-en).
- OECD (2016d), *Education at a Glance 2016*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/eag-2016-en>.
- OECD (2016e), *Getting skills right: Assessing and anticipating changing skills needs*, OECD Publishing, <http://dx.doi.org/10.1787/9789264252073-en>.
- OECD (2017a), *Public procurement for Innovation: Good Practices and Strategies*, OECD Publishing, Paris, forthcoming.
- OECD (2017b), *Economic Outlook*, OECD Publishing, Paris, [http://dx.doi.org/10.1787/eco\\_outlook-v2017-1-en](http://dx.doi.org/10.1787/eco_outlook-v2017-1-en).
- Praxis (2014), *Talent attraction and retention in Estonia*, Praxis, Tallinn.
- Renda, A. and S. Dougherty (2017), "Pro-Productivity Institutions: Learning From National Experience", *OECD Productivity Working Papers*, 2017-07, OECD Publishing, Paris, <http://dx.doi.org/10.1787/d1615666-en>.
- Rusticelli, E. et al. (2017), "Going Local: A Regional Perspective on International Trade, Labour Markets and Inequality", *OECD Economics Department Working Papers*, OECD Publishing, Paris (forthcoming).
- Ruttas-Küttim, R. (2015), *Stairway to excellence – Country report Estonia*, JRS Science and Policy report, European Commission, Brussels.
- Santiago, P. et al. (2016), *OECD Reviews of School Resources: Estonia 2016*, OECD Reviews of School Resources, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264251731-en>.
- Ukrainski, K. et al. (2015), *Eesti teadus- ja arendustegevuse ning innovatsiooni strateegia 2007-2013 täitmise analüüs*, available at: <https://goo.gl/FMm65F>.
- van Biesebroeck, J. (2005), "Exporting raises productivity in sub-Saharan African manufacturing firms", *Journal of International Economics*, Vol. 67, pp. 373-91.
- Varblane, U. (Ed.) (2011), *Otsesed välisinvesteeringud Eesti majanduses*, Tartu: Tartu Ülikooli Kirjastus.
- Vörk, A. and A. Paulus (2014), *EUROMOD Country Report: Estonia*, Colchester: University of Essex.
- Vörk, A., A. Paulus and C. Leppik (2016), *EUROMOD Country Report: Estonia 2011-2016*. Colchester: University of Essex.
- Wagner, J. (2007), "Exports and Productivity: A Survey of the Evidence from Firm-level Data," *The World Economy*, Wiley Blackwell, Vol. 30(1), pp. 60-82, 01.



## Chapter 2

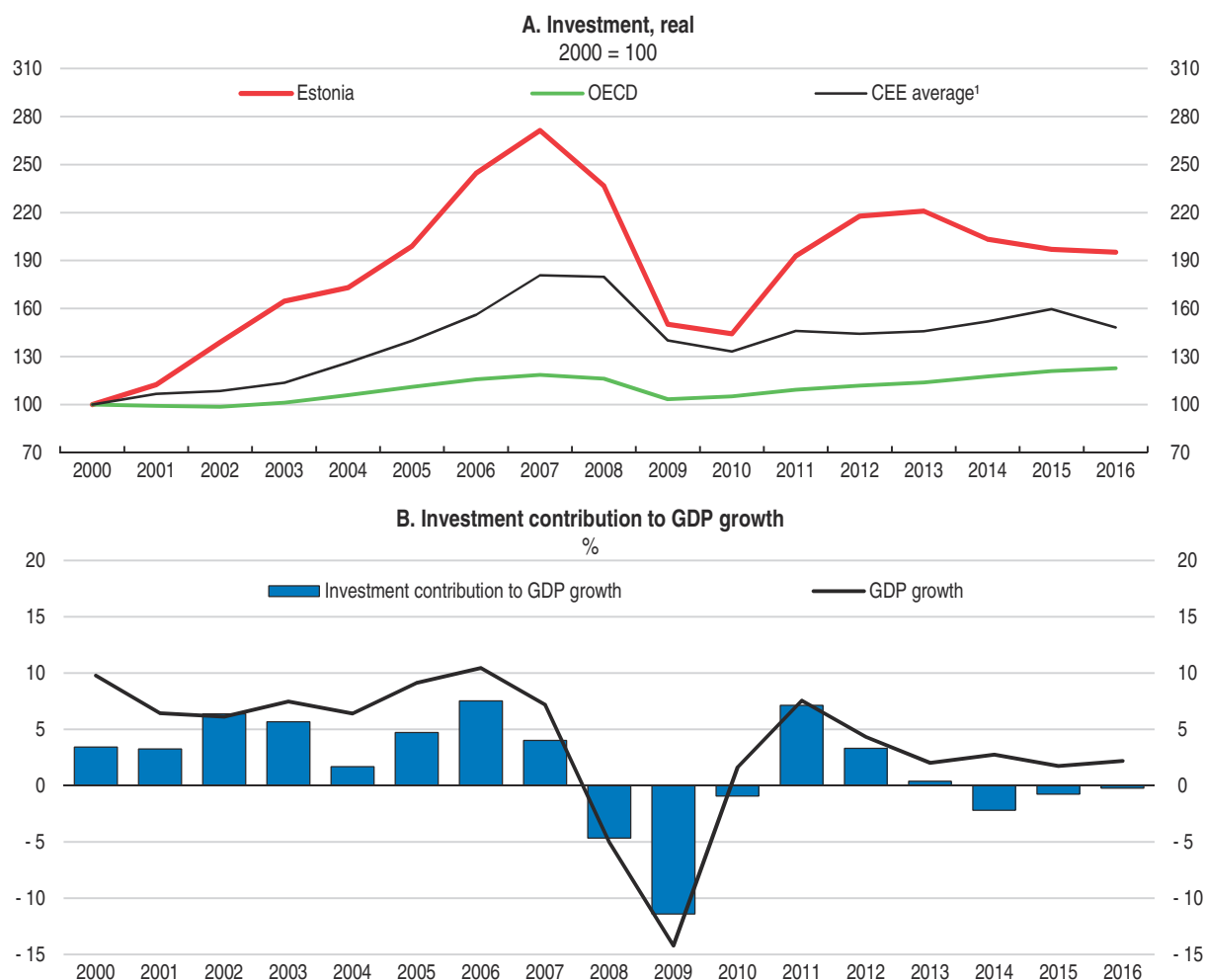
# Reviving productive investment

*Since the crisis, Estonia has experienced one of the most pronounced declines in the ratio of non-residential investment to GDP in the OECD. In addition, investment in intangible capital has remained well below OECD standards, partly explaining the low innovative capacities of typical Estonian firms. Uncertainty created by regional geopolitical tensions has played a role but poor investment performance stems from domestic factors too, such as a normalisation after the boom years, the lack of adequate skills and insufficient incentives for risk-taking. Improving lifelong learning and maintaining skilled workers in employment can contribute to reducing shortages in skills needed by investors. Restructuring of insolvent firms should be eased to increase credit recovery and redirect capital to the most productive ones. Developing alternatives to bank funding can support investment in small and innovative firms. While there is room to improve the quality of infrastructure further, selection and prioritisation of projects should improve. Incentives for green investment, in particular to reduce pollution emitted by the oil shale industry and to achieve energy efficiency gains, could be strengthened.*

## Introduction


Growth, stimulated by technological progress and innovation, requires productive investment, particularly in intangible capital. In Estonia, poor investment performance between 2013 and 2016 has weighed on growth (Figure 2.1, Panel A and B). The pace of capital accumulation and its contribution to labour productivity growth have halved between pre- and post-crisis years. Investment in intangible capital has remained well below OECD standards. Understanding the main drivers of investment deceleration over recent years and the barriers to intangible investment is central to identifying avenues for Estonia to seize future investment opportunities.

Figure 2.1. **Low investment has curbed growth**



1. Simple average of Czech Republic, Hungary, Latvia, Lithuania, Poland, Slovak Republic, and Slovenia.

Source: OECD Economic Outlook 101 Database (updated with information available on 1 September 2017).

StatLink  <http://dx.doi.org/10.1787/888933581771>

This chapter will analyse the drivers of investment developments in Estonia, including investment in intangible capital and FDI. It will then discuss how to improve framework conditions to support capital spending, with particular attention to access to finance and efficiency of the insolvency regime. Because investment in intangible capital relies on the availability of a skilled labour force, policy options to improve allocation and upskilling of labour resources will also be examined. Finally, the chapter will discuss investment required for improving the quality of infrastructure and greening the economy.

## Moving towards more productive investment

### **Investment has weakened**

Growth has consistently disappointed over the past four years on the back of weaker-than-expected investment. Investment has declined in real terms between 2013 and 2016 (see Figure 2.1, Panel A), and investment intensity, measured by the investment to GDP ratio, has declined by 14 percentage points since the crisis. Although housing investment has recovered somewhat since 2010, supported by increasing household purchasing power, the non-residential investment to GDP ratio has reached a record low level in 2016. This weakness contrasts significantly with pre-crisis years and performance in the euro area, but less with those of peer countries (Figure 2.2, Panel A and B).

Weakening has been more pronounced in the private sector, with public investment remaining relatively stable at around 5% of GDP, despite slower EU structural funds disbursement at the beginning of the new funding period (Figure 2.2, Panel A). In the private sector, while part of the decline relates to one-off investments in the energy sector between 2011 and 2013, investment has also been sluggish in manufacturing and transport, declining over recent years to stand well below pre-crisis levels (Figure 2.3).

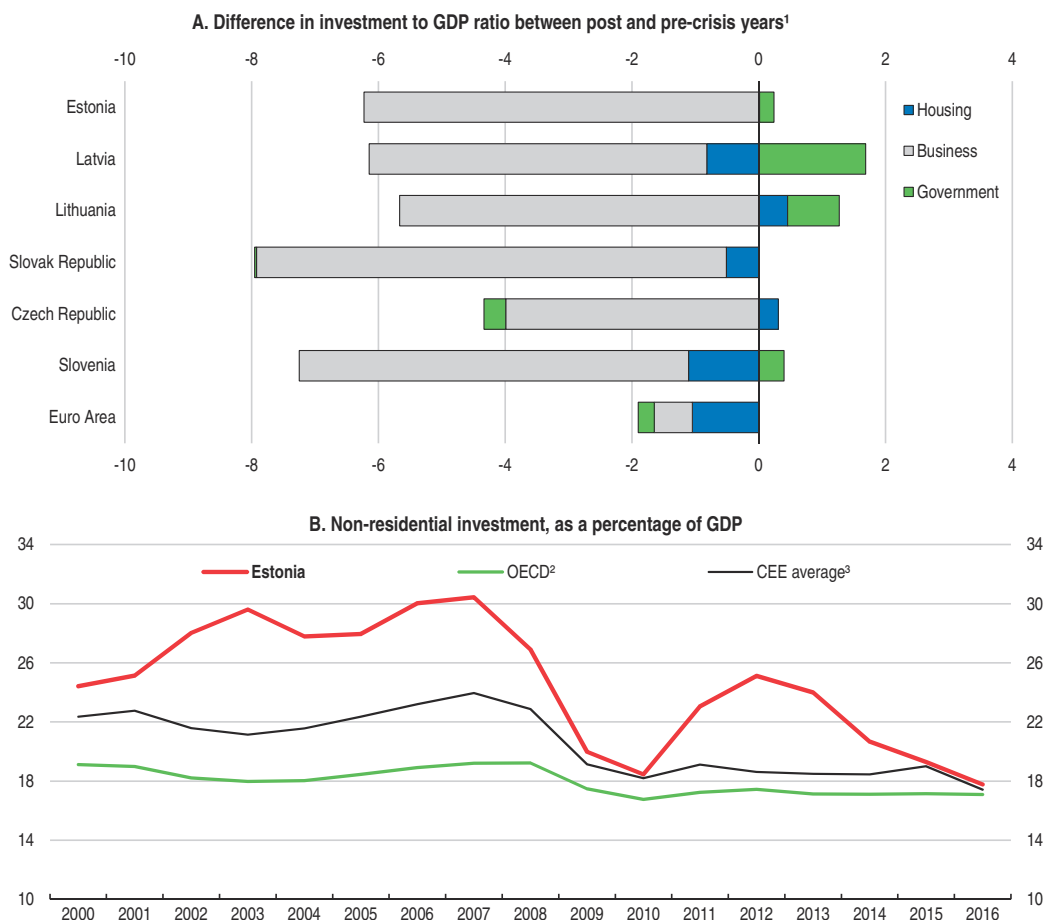
Foreign direct investment (FDI) has declined as in most other CEE countries and remains modest in manufacturing industries. While inward FDI stock reached 83% of GDP in 2016, the highest level among peer economies, FDI inflows have decreased dramatically: from 10% to around 4% of GDP since 2007 (Figure 2.4, Panel A). Reinvestment of earnings accounted for the majority of inward FDI flows in recent years, while equity flows have dropped, reflecting the depletion of new investment projects (Figure 2.4, Panel B). This is worrisome, as FDI plays an important role in integration in global value chains and in international knowledge diffusion (Coe et al., 2008; Alfaro, 2016).

The decline in FDI has not affected all economic sectors. Inward FDI diminished in the financial sector, in some network industries, and in construction. By contrast, positive developments are observed in real estate and information and telecommunication. FDI in business R&D remains low, reaching only 0.06% of GDP in 2015 (European Commission, 2017).

### **Investment in intangible capital and R&D is relatively low**

Scope for increasing investment in knowledge-based capital is large, particularly in traditional sectors of the economy. Investment in intellectual property products is low by international standards, accounting for only 9% of total investment in 2015; around half of the OECD average (Figure 2.5). A large share of such investment can be imputed to the information and communication sector and public administration, while only 9% comes from the manufacturing sector. The share of intangible in total investment has increased in services but has remained weak in manufacturing over the past three years compared with

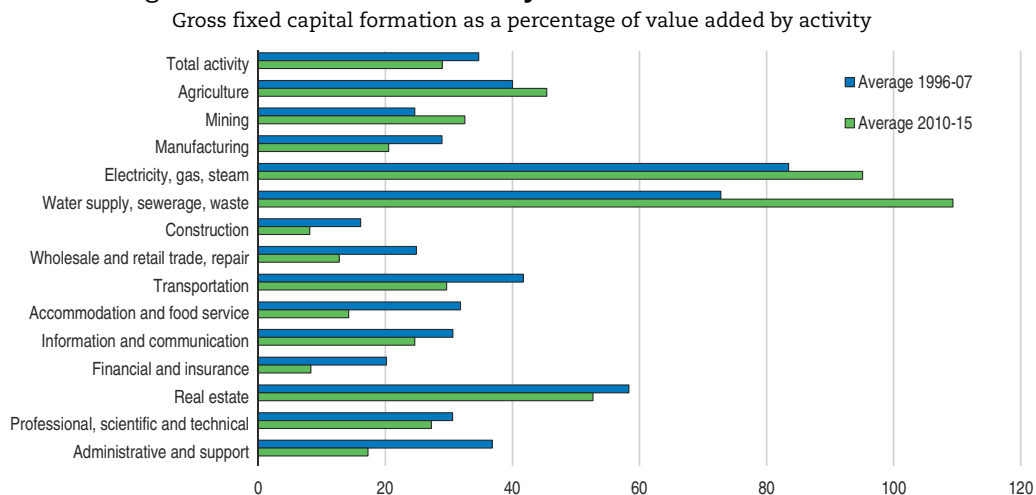
Figure 2.2. Investment has lost ground



1. Average of investment share in GDP from 1996 to 2007 and from 2010 to 2016.
  2. Unweighted average of OECD available countries.
  3. Unweighted average of Czech Republic, Hungary, Latvia, Lithuania, Poland, Slovak Republic, and Slovenia.
- Source: OECD Economic Outlook 101 Database (updated with information available on 1 September 2017).

StatLink <http://dx.doi.org/10.1787/888933581790>

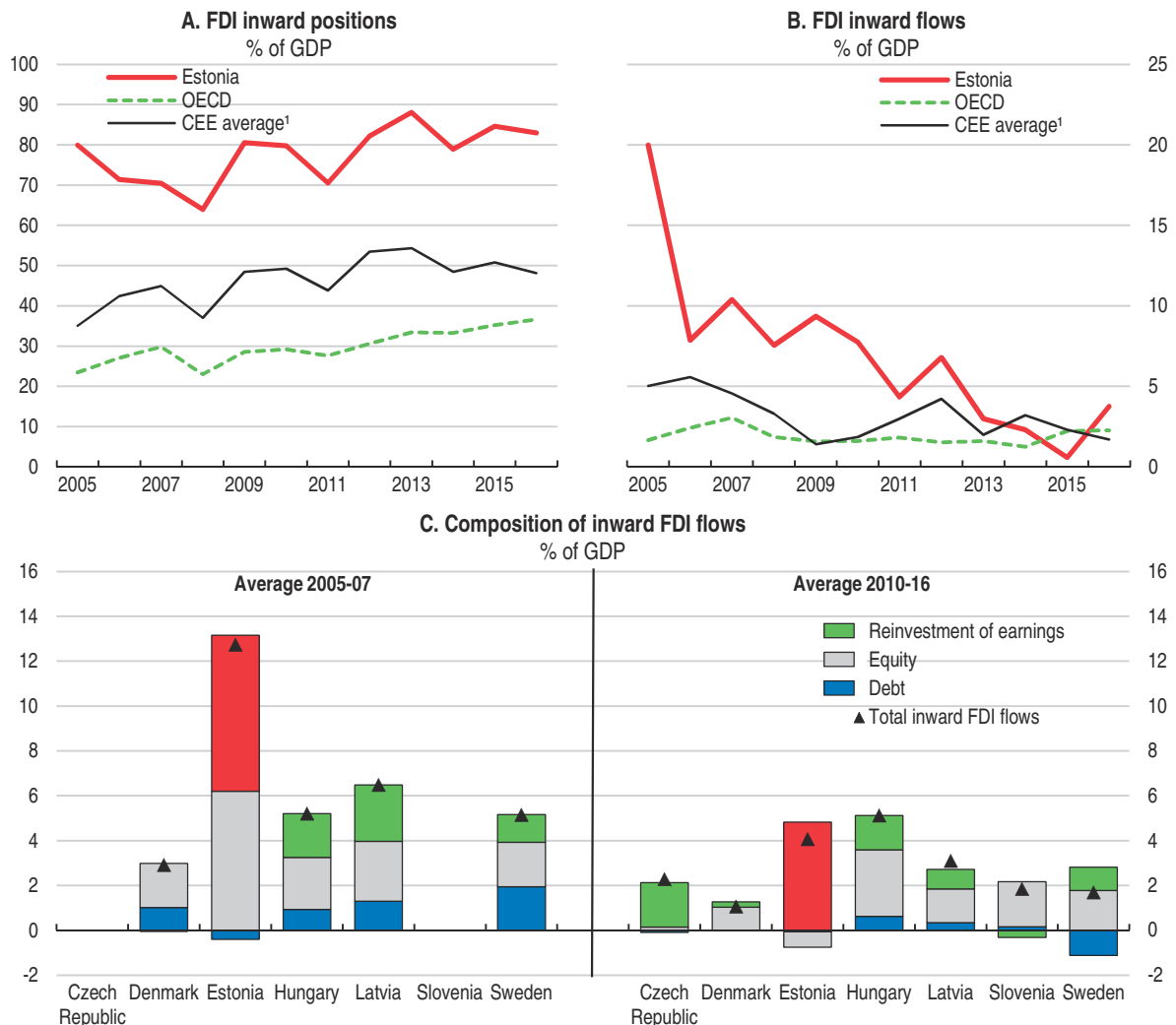
Figure 2.3. Investment intensity has declined in most sectors



Source: OECD National Accounts Statistics.

StatLink <http://dx.doi.org/10.1787/888933581809>


Figure 2.4. FDI inflows have dropped and are mostly reinvested earnings



Note: FDI data are measured on a directional basis and are excluding resident SPEs (special purpose entities) when available.

1. Simple average of Czech Republic, Hungary, Latvia, Poland, Slovak Republic, and Slovenia.

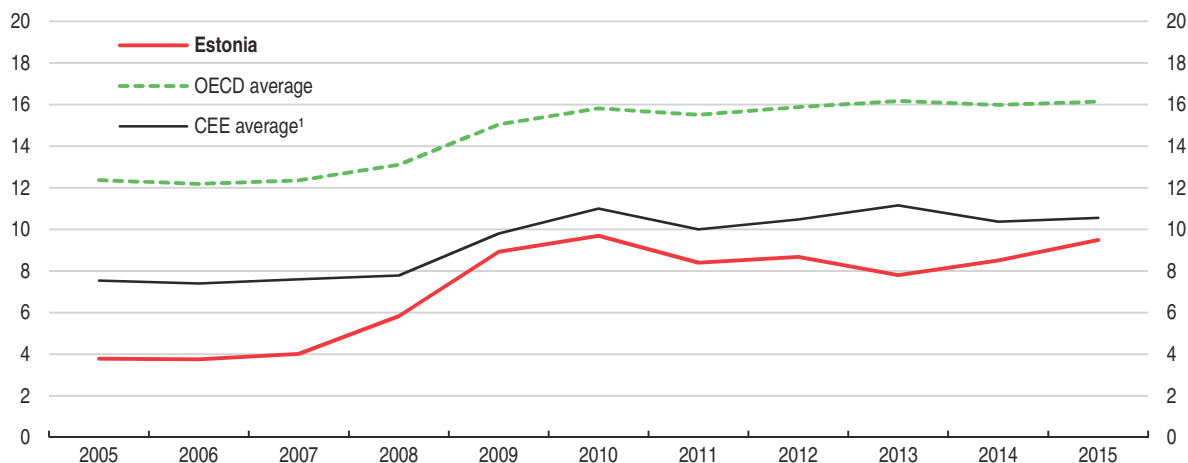
Source: OECD International Direct Investment Statistics Database.

StatLink  <http://dx.doi.org/10.1787/888933581828>

pre-crisis levels. Total R&D spending as a percentage of GDP is 40% below the OECD average, and a lower proportion of total spending is undertaken by businesses than in CEE peers.

While Estonia is well advanced in the digitalisation of the economy, investment in software and databases and in ICT equipment does not account for a particularly large share of total investment by international standards. Estonia is one of the first countries to have implemented e-government and a relatively high share of its population has basic digital skills. Meanwhile, Estonian non-financial companies lag behind when it comes to ICT use, notably the share of enterprises whose business processes are automatically linked to those of their suppliers and/or customers, the share of enterprises' turnover on e-commerce, and the percentage of enterprises with broadband access (Figure 2.6). Estonia was ranked only 20th for the digitisation of its business sector in the EU's Digital Economy and Society Index 2017.

**Figure 2.5. Intellectual property products account for a small share of total investment**  
Investment in intellectual property products, % of total gross fixed capital formation

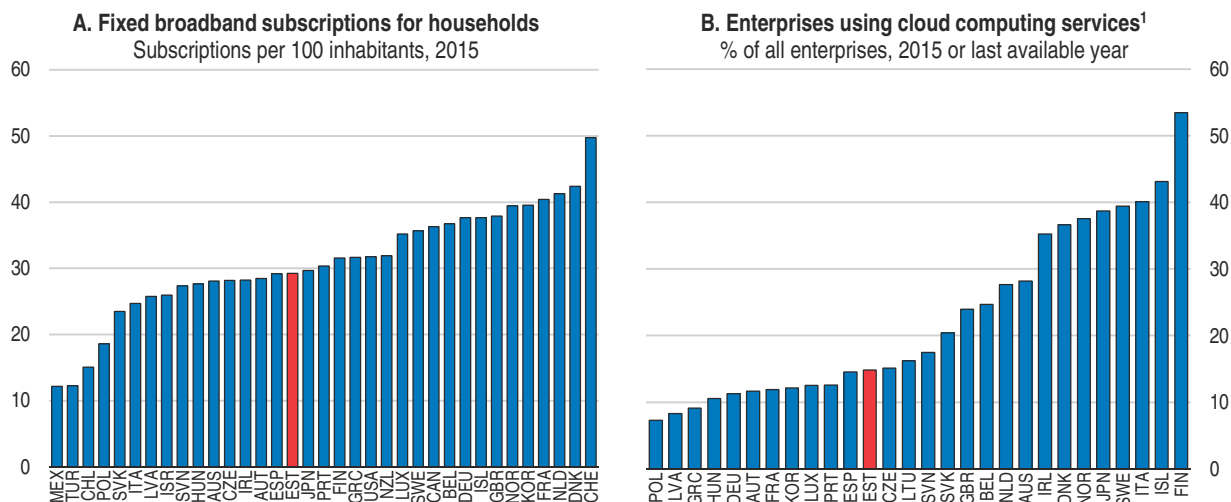


1. Simple average of Czech Republic, Hungary, Latvia, Lithuania, Poland, Slovak Republic, and Slovenia.

Source: OECD National Accounts Database.

StatLink <http://dx.doi.org/10.1787/888933581847>

**Figure 2.6. Fixed broadband penetration and ICT use could improve**



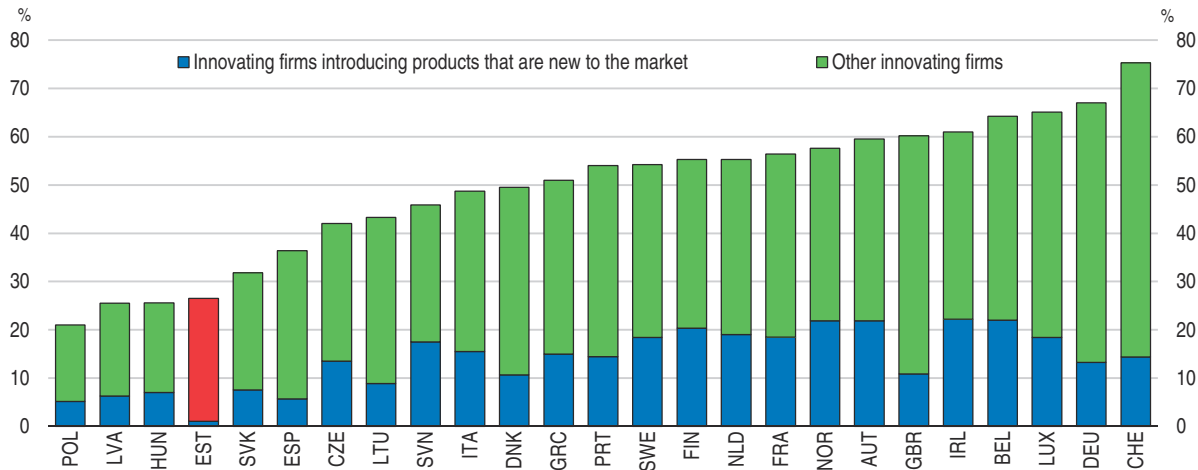
1. Cloud computing refers to ICT services used over the Internet as a set of computing resources to access software, computing power, storage capacity and so on.

Source: OECD Broadband Database; OECD ICT Database.

StatLink <http://dx.doi.org/10.1787/888933581866>


Low intangible capital spending may partly explain Estonia's relatively low share of innovative firms (Figure 2.7). Recent empirical analyses highlight that investment in knowledge-based capital is an important driver of long-term productivity gains, and crucial for technological upgrading (Andrews and Criscuolo, 2013). The prevalence of SMEs in traditional sectors in the economy is a factor behind Estonia's low investment in intangible, as barriers to innovative investment are larger for small firms. Supporting the SME's capacity to adopt technologies should thus be a priority. As highlighted in Chapter 1, current public support to innovative activities has not met business needs, especially in traditional sectors, calling for strengthening involvement of businesses in the design of innovation policies and co-operation between research institutions and firms.

Figure 2.7. **Innovation capacity is low**  
Share of innovating firms in all firms surveyed, 2012-14



Note: International comparability may be limited due to differences in innovation survey methodologies and country-specific response patterns.

Source: Eurostat (2016), Community Innovation Survey (CIS) 2014.

StatLink  <http://dx.doi.org/10.1787/888933581885>

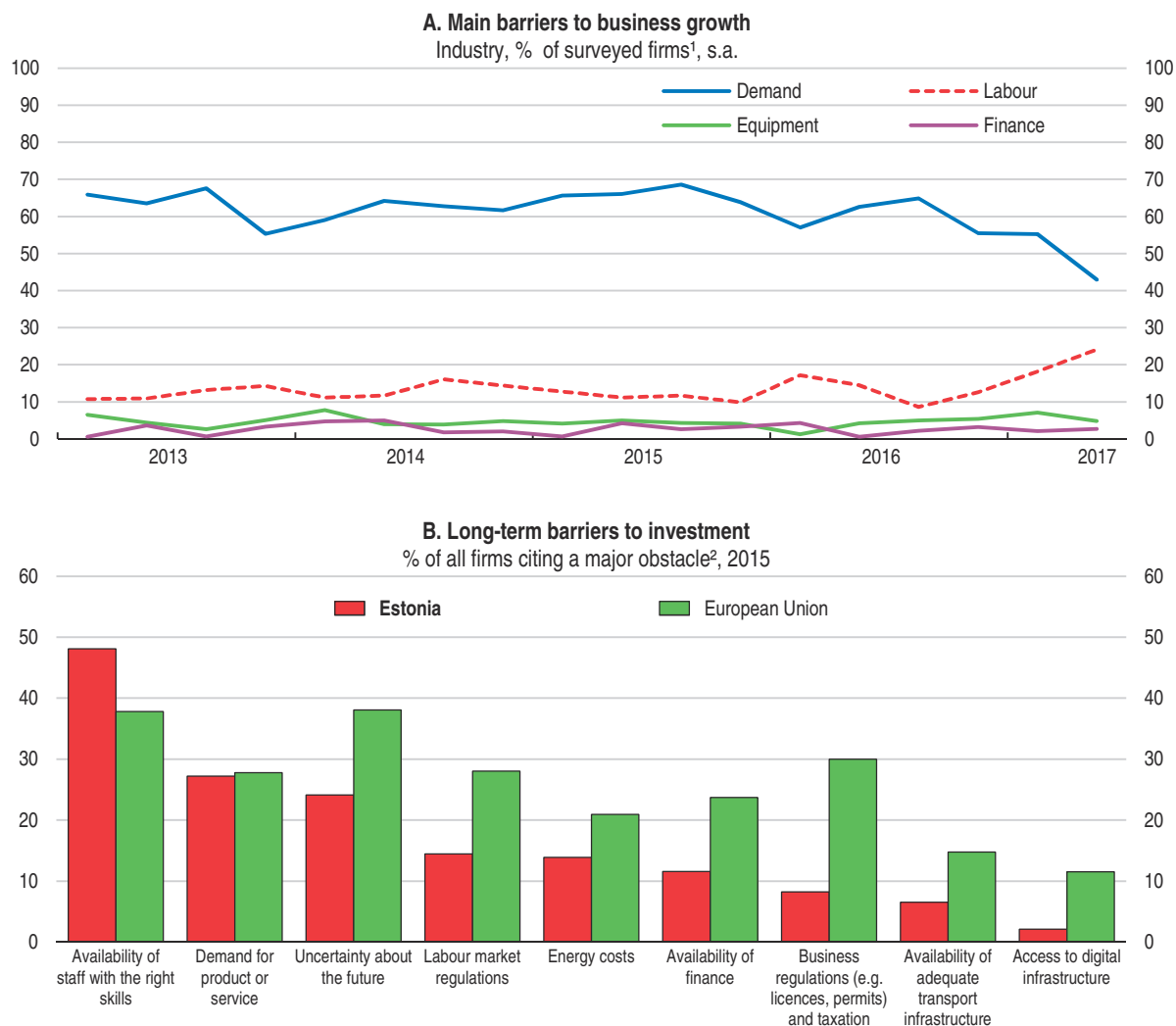
## Low demand only partly explains investment weakness

### Demand

Low demand has been identified as the main barrier to business growth by Estonian entrepreneurs (Figure 2.8, Panel A). As in most other OECD countries, a subdued output performance and weak growth outlook have been the main factors constraining investment (Barkbu et al., 2015; Lewis et al., 2014). GDP growth decelerated sharply from 7.5% in 2011 to around 2% in 2015-16, and capacity utilisation has remained below the historical average over the past decade. Exports have been hit by poor economic performance in Russia and Finland, two important trading partners. Cuts in exports to these two countries are likely to have had a relatively strong impact on investment because their value-added content is higher than the national average (European Commission, 2016a). This could partly explain why the level of business investment is well below what its past relationship with GDP suggests (Figure 2.9). Lower EU funds disbursements at the beginning of the new programming period (2014-20) also played a role.


### Uncertainty

Elevated uncertainty due to heightened geopolitical tensions has held back business investment. Fixed costs make investment decisions costly to reverse and give an incentive to postpone or cancel decisions when uncertainty is high (Bernanke, 1983). Despite some improvement since mid-2015 and until 2017, business confidence in Estonia has remained below historical levels. Rising protectionism and on-going economic sanctions against Russia has hung over external demand. Uncertainty might also stem from the acceleration of export diversification: exporters are trying new markets, but it remains to be seen if these markets can be retained. Finally, reduced predictability about changes in the tax system and business legislation due to the recent changes of government might have been temporarily deterring capital accumulation.

Figure 2.8. **Low demand and labour shortages are viewed as main obstacles to business growth**

1. Firm responses to the question: “What main factors are currently limiting your production?” Respondents are requested to select one or several factors (none, insufficient demand, shortage of labour force, shortage of material and/or equipment, financial constraints, and other factors).
2. Firm responses to the question: “Thinking about your investment activities in your country, to what extent is each of the following an obstacle? Is a major obstacle, a minor obstacle or not an obstacle at all?”.

Source: European Commission, Business and consumer surveys database; European Investment Bank – EIBIS, EIB Investment Survey.

StatLink  <http://dx.doi.org/10.1787/888933581904>

### Finance

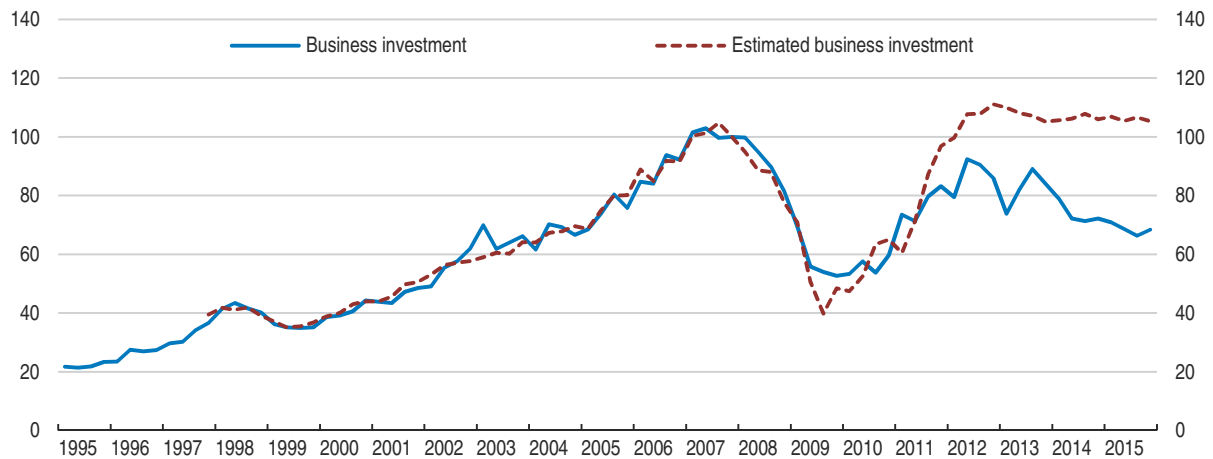
Access to funding has not been a major obstacle to capital spending (see Figure 2.8). Only 6% of Estonian businesses claim that access to finance is the most important barrier to growth, one of the lowest shares in the EU and 6 percentage points below the level seen during the crisis. Credit growth has remained subdued and skewed toward short-term financing, but this mainly reflects a low level of demand for credit rather than supply constraints (Eesti Pank, 2017).

Savings and liquidity levels have reached historical highs in the corporate sector, despite a decline in firms’ profitability (Figure 2.10). Corporate indebtedness has declined and non-performing loans are among the lowest in the EU, suggesting that profits have



Figure 2.9. **The GDP slowdown does not fully explain the recent drop in investment**

Simple accelerator model of non-residential investment, value of actual investment in 2007 Q4 = 100



Note: In real terms. Actual GDP and capital stock series used to calculate the forecast based on 1997 Q4-2007 Q4 estimation. In the estimations, the level of investment is explained by current and lagged changes in real GDP and replacement investment. For more information on the methodology: OECD (2015), *OECD Economic Outlook*, Vol. 2015, No. 1, June, Annex 3.1.

Source: OECD (2015), OECD calculations based on OECD Economic Outlook: Statistics and Projections Database.


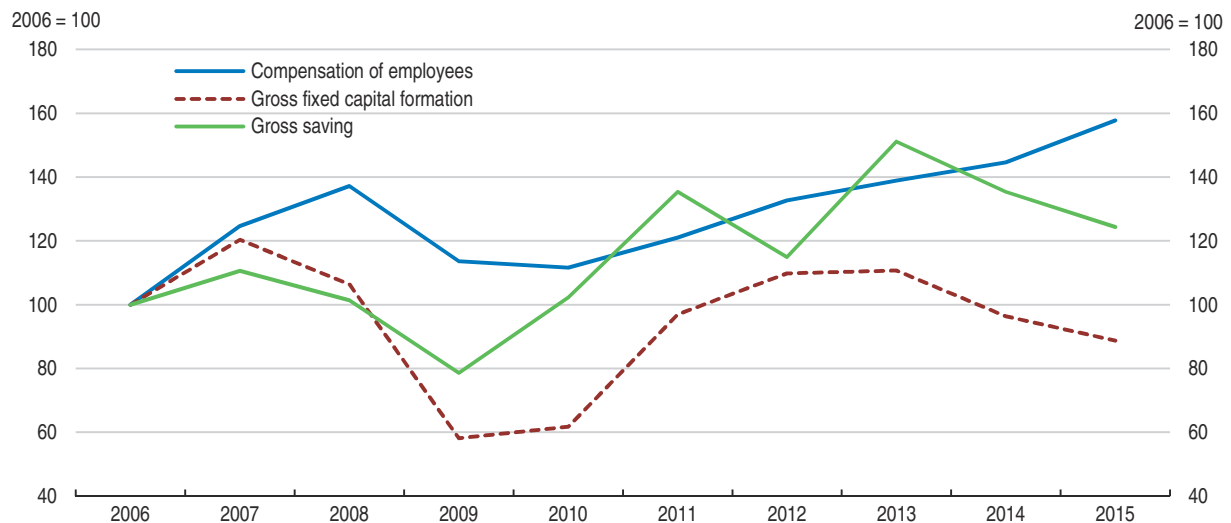

StatLink  <http://dx.doi.org/10.1787/888933581923>

Figure 2.10. **Increasing savings have not been used to invest**

Non-financial corporations, value



Source: OECD National Accounts Statistics.

StatLink  <http://dx.doi.org/10.1787/888933581942>

been directed either to debt repayments or deposits in banks rather than being used for capital spending. This is symptomatic of a wait-and-see attitude, reflecting the currently high level of uncertainty on investment returns.

### Skill shortages

The lack of an adequately educated workforce is increasingly cited as a barrier for doing business, particularly in the service sector (see Figure 2.8; World Economic Forum, 2016). Estonia is an ageing country with a fast-declining working age population, and tensions on the labour market have materialised in some sectors. Current and expected

labour shortages are particularly prevalent in several occupations that are central for intangible investment and the adoption of digital technologies (experienced managers, teachers, ICT specialists, engineers) (EU Skills Panorama, 2014).

The impact on capital spending of tensions on the labour market is uncertain. Labour shortages are likely to foster capital intensity in sectors where workers can be replaced by machines. Capital deepening should also be facilitated by lower relative prices of investment goods (Karabarbounis and Neiman, 2013). Nevertheless, while changes to production technology can be freely chosen before starting a business, large fixed costs might impede the substitutability between labour and capital afterwards (Baddeley, 2003).

Skill shortages can partly explain Estonia's relatively low intangible investment. Empirical evidence points to complementarity between the availability of highly skilled workers and investment in knowledge-based and technology-intensive capital. As a result, skill shortages have sizeable adverse impacts on technological adoption and investment (Forth and Mason, 2006; Nickell and Nicolitsas, 2000; OECD, 2013).

Growing tensions on the labour market can undermine Estonia's attractiveness for foreign investors. International companies, especially those investing in knowledge intensive services, tend to move to markets which offer skilled workforce (Carstensen and Toubal, 2003; Doh et al., 2009). In addition, in labour intensive sectors, labour shortages can pose some risks to price competitiveness for exporting firms (see Chapter 1).

### **Investment is likely to remain below pre-crisis levels**

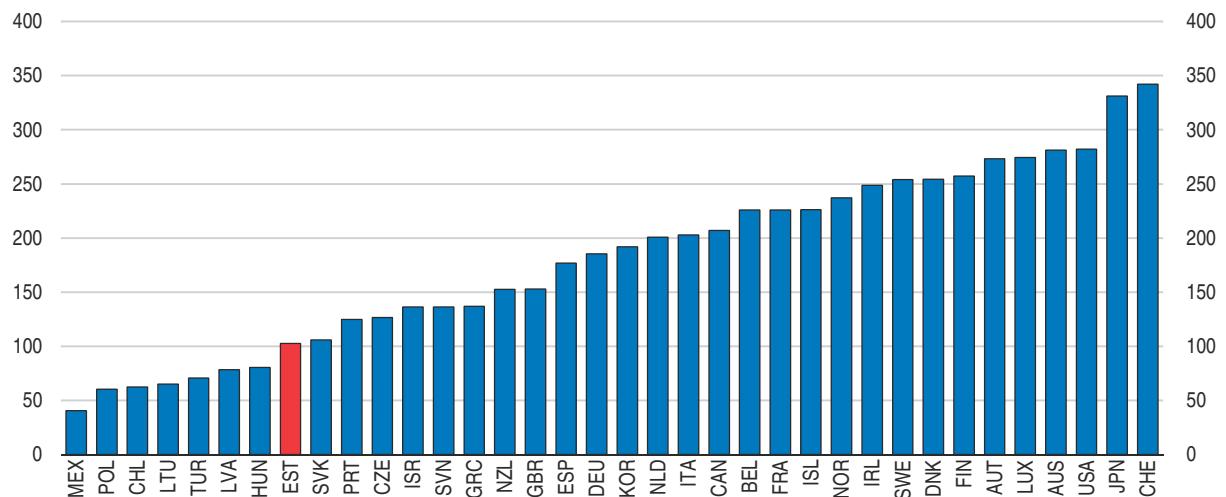
Despite the recovery of the economy, prospects for investment are likely to be weaker than before the crisis. First, part of the investment decline is likely to be due to a correction. Excessive credit growth led to a build-up of unsustainable debt before the crisis. Pre-crisis investment rates were too high in light of growth potential, exceeding steady-state investment ratios (IMF, 2016; Lewis et al., 2014). In particular, the real estate sector went through a boom-bust cycle and investment in construction has normalised after the bust in 2008-09.

Second, a persistent weak growth prospect can lower investment rates compared to past decades. Since 2012, forecasters have revised GDP growth for the next six to ten years by around 1 percentage point (from 3.6% to 2.8%). The main growth engines have lost steam. On the demand side, global trade growth is unlikely to recover its pre-crisis level and risks of protectionism are building up. Domestic markets are saturated and household income growth is expected to flatten. On the supply side, multifactor productivity growth has sharply declined and population ageing will continue to weigh on the labour force.


Estonia's capital intensity is well below the OECD average, suggesting there is considerable room for further capital deepening (Figure 2.11). Nevertheless, uncertainty exists over whether the country has already seized the majority of investment opportunities related to the transition, and if its position in the convergence process is such that capital accumulation should now decelerate (the investment-to-output ratio tends to decline in the later stages of the convergence process; IMF, 2016).

Figure 2.11. **Capital intensity remains well below the OECD average**

Non-residential capital stock per worker, USD thousand, 2016



Source: OECD Economic Outlook 101 Database.

StatLink  <http://dx.doi.org/10.1787/888933581961>

## Improving investment conditions

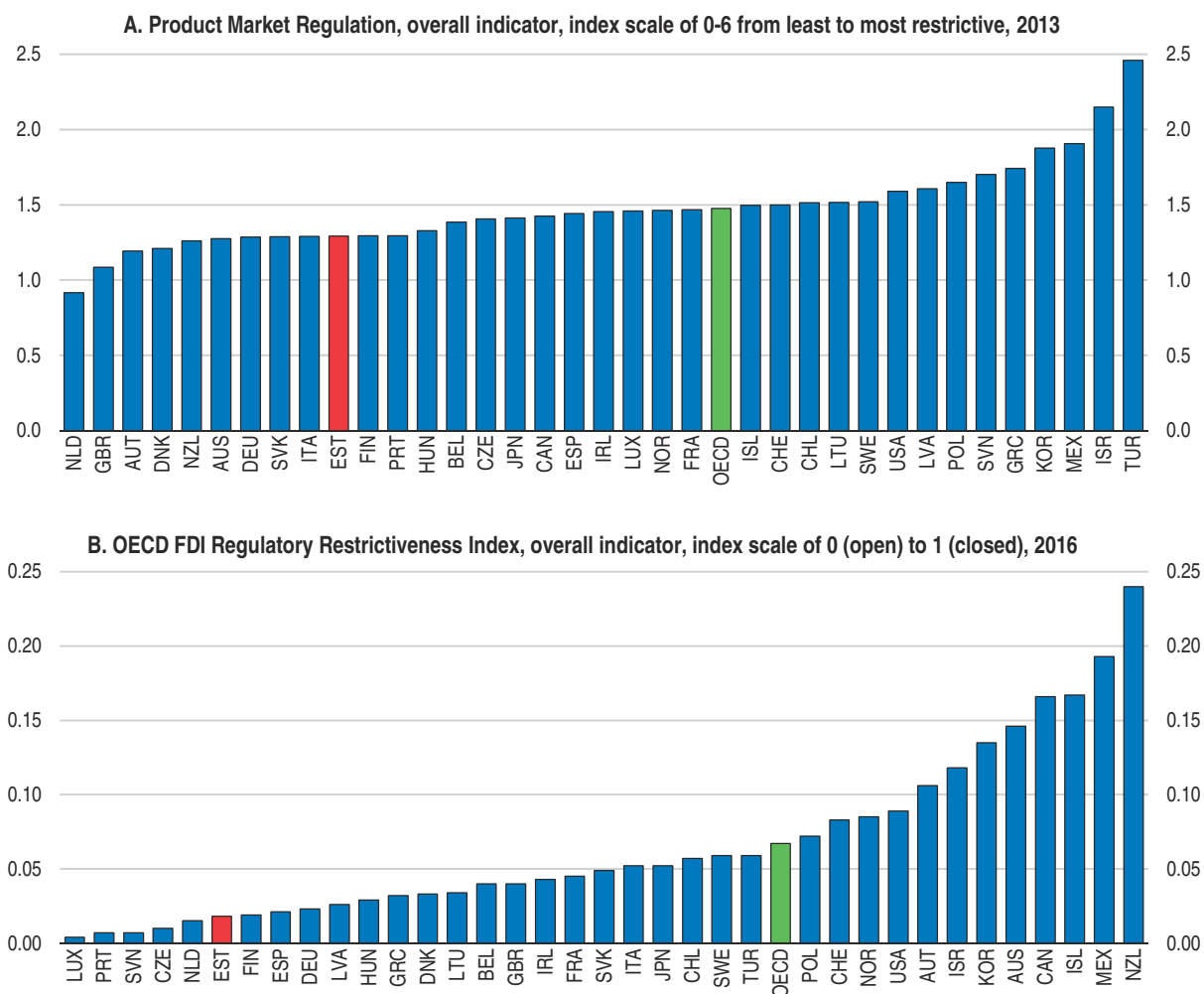
Eliminating obstacles to business is of paramount importance to maintaining attractiveness for both domestic and foreign investors. Estonia's small size is a natural barrier for large-scale projects but its business environment is among the most investment-friendly in the OECD, supported by a political willingness to continuously improve business conditions. Nonetheless, investment conditions could be improved further. Inefficiencies in insolvency procedures could increase the risks for creditors and undermine efficient capital allocation. Also, low competition in the banking sector and absence of alternative funding modes could limit access to finance for small and innovative investors.

### Business environment is supportive and competitive

Estonia's business environment is favourable, offering competition-friendly regulation and low corporate taxation, resulting in a high ranking in the World Bank's Doing Business and the World Economic Forum's Competitiveness reports. The PMR indicators and the FDI Regulatory Restrictiveness Index, which respectively measure the restrictiveness of product market regulation and the statutory restrictions on foreign direct investment, are below the OECD average (Figure 2.12).

Red tape has been reduced significantly with the digitalisation of public administration. Enterprise Estonia – a public agency in charge of business promotion – offers targeted services to foreign investors, including support in complying with administrative procedures. The taxation system is simple and highly competitive, with no taxation on reinvested profits. The planned reduction of the tax rate on distributed profits for mature companies (from 20% to 14% for companies that pay dividends for three consecutive years) is unlikely to have any positive impact on investment by domestic firms. Furthermore, it will add complexity to the tax system and penalise young firms whose distributed dividends will be taxed at a 20% rate.

Recent initiatives aim at reducing red tape further. The “zero bureaucracy” programme launched in 2016 aims at identifying and addressing remaining business hurdles and reducing the administrative burden. A business account has also been created to abolish

Figure 2.12. **The business environment is favourable**

Source: OECD, Product Market Regulation Database, OECD FDI Regulatory Restrictiveness Index Database.

StatLink  <http://dx.doi.org/10.1787/888933581980>

reporting and accounting obligations for micro-entrepreneurs under a number of conditions, including a EUR 25 000 threshold for annual turnover. This initiative is welcome, but policy makers should make sure the threshold does not create a disincentive for small businesses to grow or to declare revenues.

The e-residency programme launched in 2015 provides a digital identity to foreign citizens, giving them access to a range of digital services, including creating a company, conducting e-banking and declaring taxes online. The initiative, which reduces transaction costs for foreign investors, has shown some positive results: the 14 000 Estonian e-residents are estimated to have created around 1 000 enterprises and generated around EUR 3 million in revenues in 2016. The authorities should ensure that adequate controls are in place to prevent, detect, and report money laundering. Other initiatives include a new programme that allows non-EU nationals to come and work for Estonian start-ups, relocate their existing start-ups or establish new ones in Estonia on preferential terms (see Chapter 1).

Notwithstanding the very good business conditions, some unjustified regulatory barriers to entrepreneurship remain and should be removed, as detailed in the 2015

*Economic Survey* (OECD, 2015a). In particular, entry barriers in services, such as exclusive rights for engineers, architects, accountants and lawyers are likely to increase the costs of intermediate inputs. Also, as pointed in the 2017 *OECD Environmental Performance Review*, environmental regulation for the issuance of issue-specific permits, in force since 2014, imposes a significant administrative burden, particularly on SMEs. The regulatory regime for installations with low environmental impact should thus be simplified (OECD, 2017a).

The administrative and information costs of trade can be reduced by aligning with best international practice for trade facilitation (see Chapter 1). This includes completing the one-stop shop for formalities and making more use of advance rulings (i.e. binding statements by the administration on regulatory rules applied to specific goods) to increase regulatory certainty.

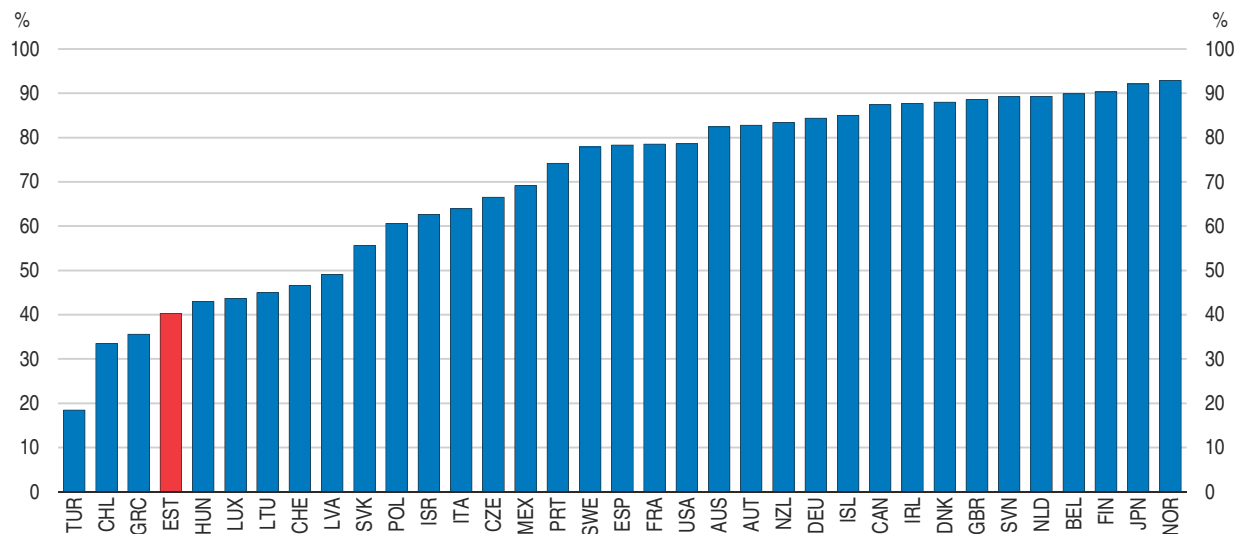
The existing regulatory framework can also be improved to ensure that regulation is fit for purpose and achieves its goals. Estonia introduced the obligation to conduct *ex post* evaluation for all new major primary laws in 2012 but no evaluation has taken place since then (OECD, 2015c).

### Addressing deficiencies in insolvency proceedings

The cost of closing down a business in Estonia remains high, with potential negative spill-overs to incentives to invest and cost of credit. Bankruptcy procedures are long and the recovery of creditor claims is weak (Figure 2.13). A considerable stigma of a business failure exists in Estonia: some 40% of 18-64 year olds cited the fear of failure as an obstacle to setting up a business in 2014 (OECD, 2015a).


Figure 2.13. **Credit recovery is low**

Average recovery rate<sup>1</sup>



1. The recovery rate is calculated based on the time, cost and outcome of insolvency proceedings involving domestic legal entities and is recorded as cents on the dollar recovered by secured creditors. The calculation takes into account the outcome: whether the business emerges from the proceedings as a going concern or the assets are sold piecemeal. Then the costs of the proceedings are deducted. Finally, the value lost as a result of the time the money remains tied up in insolvency proceedings is taken into account. The recovery rate is the present value of the remaining proceeds, based on end-2015 lending rates.

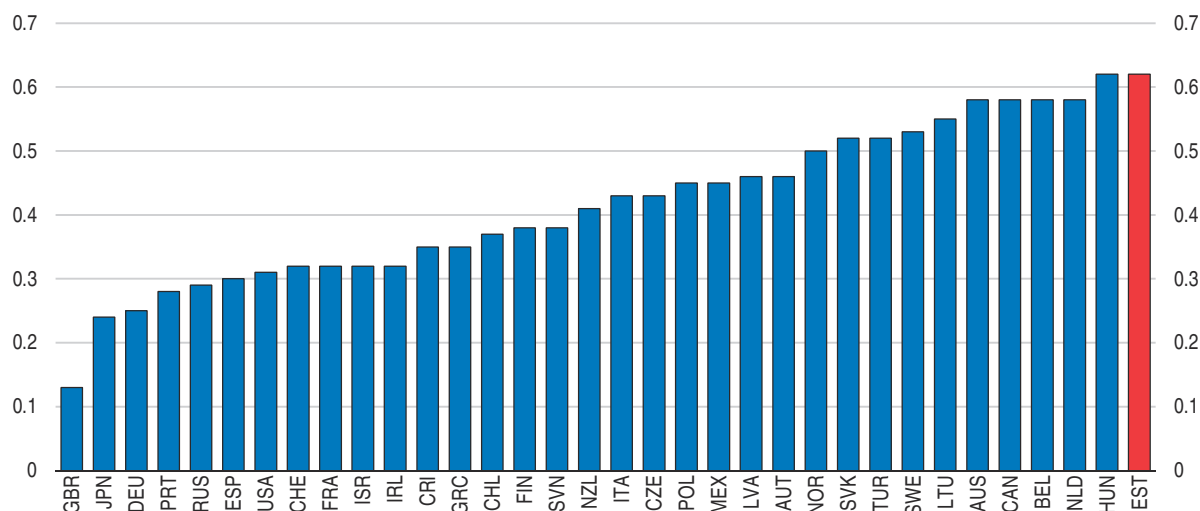
Source: World Bank, Doing Business 2017.

StatLink  <http://dx.doi.org/10.1787/888933581999>

The ultimate objective of any insolvency framework is to strike a balance between leniency for entrepreneurial failure and protection of creditors. Bankruptcy laws that do not overly penalise business failure are likely to support capital spending. At the same time, creditors' protection is important to support credit supply. Estonia seems to have ample room for improvement vis-à-vis best practice both in terms of the framework and outcomes of corporate insolvency proceedings. In particular, features of the insolvency regimes tend to restrict capital re-allocation between profitable and insolvent firms, with slow initiation and completion of insolvency procedures, as highlighted by a new OECD indicator (Figure 2.14). This is thus welcome that the Ministry of Justice has tasked a group of specialists and stakeholders to review the legislative framework and propose amendments by end-2017.


Figure 2.14. **The insolvency regime is inefficient**

OECD indicator of insolvency regimes<sup>1</sup>, 2016



1. A higher value corresponds to an insolvency regime that is most likely to delay the initiation of and increase the length of insolvency proceedings. Composite indicator based on 13 components: time to discharge; exemption of assets; early warning mechanisms; pre-insolvency regimes; special insolvency procedures for SMEs; creditor ability to initiate restructuring; availability and length of a stay on assets; possibility and priority of new financing; possibility to "cram-down" on dissenting creditors and dismissal of management during restructuring; degree of involvement of courts; distinction between honest and fraudulent entrepreneurs and the rights of employees. For more details, see Source.

Source: Adalet McGowan, M., D. Andrews and V. Millot (2017), "Insolvency Regimes, Zombie Firms and Capital Reallocation", OECD Economics Department Working Papers, No. 1399; and Adalet McGowan, M. and D. Andrews (2017), "The Design of Insolvency Regimes", OECD Economics Department Working Papers, forthcoming.

StatLink  <http://dx.doi.org/10.1787/888933582018>

The possibility of an early intervention is key for improving the efficiency of insolvency proceedings. Delays can increase costs and make it less likely that viable firms are successfully restructured (Adalet McGowan and Andrews, 2016). A well-functioning restructuring procedure can improve asset recovery rates and not necessarily take longer than liquidation (Bris et al., 2006). Giving creditors a right to initiate restructuring (as opposed to liquidation only) can increase recovery rates or the chances of the company's survival. A number of countries have early-warning mechanisms in place, such as an on-line self-assessment or training for entrepreneurs (e.g. Denmark, Finland, Sweden), and/or pre-insolvency regimes that allow a speedy out-of-court option. Currently, such mechanisms do not exist in Estonia, where only a small fraction of companies are successfully restructured.

Governance, oversight and procedural aspects of insolvency could also be enhanced. Accountability of and incentives for company managers, board members and owners to file

for bankruptcy early, while there are still reasonable chances of restructuring and/or asset recovery, are low in Estonia. The authorities are considering the creation of the office of bankruptcy ombudsman, which would have powers to investigate reasons for insolvency. If neglect by managers or owners were found to be the cause, the ombudsman could initiate criminal proceedings, as done in Finland. The proper functioning of the courts and expertise of the judges is key for ensuring quality of procedures and equal treatment before the law. As recommended in previous *Economic Surveys*, the establishment of specialised bankruptcy courts should be considered (OECD, 2015a, OECD, 2011).

Continuation of business operations under restructuring increases the chances of a successful outcome and is usually achieved by a stay on assets, a period during which creditors cannot continue debt-collection. However, because this mechanism limits the ability of creditors to recover their loan, it can increase the cost of credit; thus some countries limit the length of the stay (for instance between 2 and 4 months in Germany, Ireland and the United Kingdom). The absence of a limit on the length of the stay in the Estonian legislation can delay resolution and should be reconsidered.

International best practice also suggests that, in the event of liquidation, new financing should have priority over unsecured creditors unless agreed by them, since this can otherwise negatively affect the availability of credit (Adalet McGowan and Andrews, 2016). Such an arrangement encourages the capital injections required to facilitate the reorganisation of firms and should be introduced in Estonia.

### **Improving access to finance**

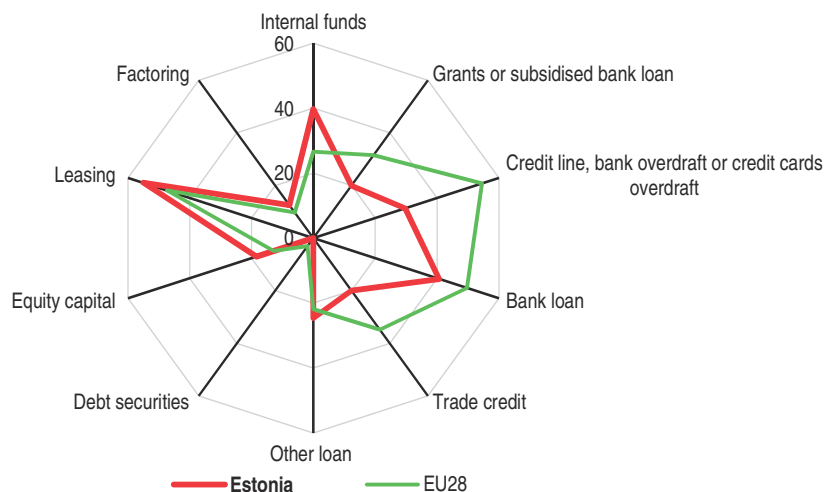
Access to funding has not been a major obstacle to capital spending over the past few years (see Figure 2.8). Financial constraints have been overshadowed by other obstacles, notably weak trade prospects, a high level of uncertainty and issues with the availability of skilled staff. One question mark, however, is whether businesses, in particular small innovative firms, will face financial constraints when demand for credit will recover.

The high profitability and capitalisation of the financial sector and the low level of non-performing loans indicate that the banking sector is well equipped to finance investment projects. At the same time, Estonian businesses are much more likely to rely on internal funds and use less bank financing than in the EU or in neighbouring countries (Figure 2.15). Only 41% of Estonian businesses have borrowed from a bank or plan to do so in the future, and only 30% have had a credit line, overdraft or credit card. These are some of the lowest ratios in the EU; they reflect the zero taxation on reinvested profits but also a certain level of apprehension towards using banking services. A relatively low share of businesses are comfortable talking to their bankers, and 12% of Estonian businesses did not apply for a bank loan because of fear of rejection – one of the highest percentages in the EU (Figure 2.16).

Only 7% of Estonian SMEs consider that access to finance constrains long-term investment decisions (vs. 6% on average in the EU, EIB Investment Survey, 2017). At the same time, SMEs continue to face relatively higher lending rates and are more likely to perceive their financial situation as constrained (EIB, 2016). The difference between small and large firms in that respect is much pronounced in Estonia than in the European Union (EIB Investment Survey, 2017). In particular, around 16% of micro enterprises, which account for around 90% of all firms, consider they are financed-constrained (i.e. are dissatisfied with the amount of finance obtained, have sought external finance but did not receive it and or did not seek external finance because of its expected cost or the fear of rejection), twice the EU average.

Figure 2.15. **Firms mainly use internal funds to finance investment**

In % of firms stating that they used these sources of financing in the past or considered using them in the future

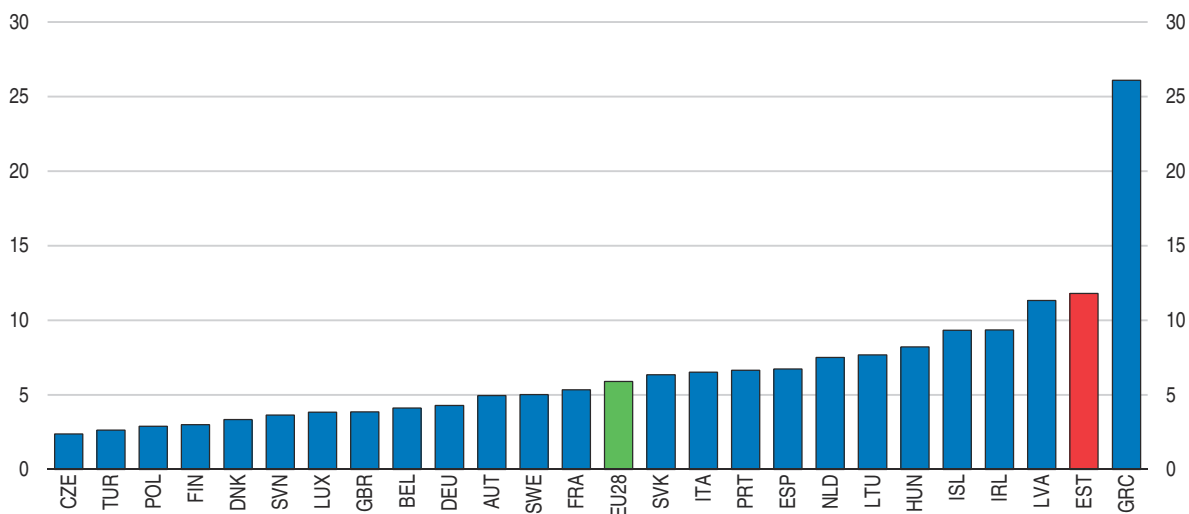


Source: 2016 SAFE Survey on the access to finance of enterprises.

StatLink <http://dx.doi.org/10.1787/888933582037>

Figure 2.16. **A large share of firms does not apply for bank financing because of possible rejection**

Per cent of firms that did not apply for bank financing because of possible rejection



Source: 2016 SAFE Survey on the access to finance of enterprises.

StatLink <http://dx.doi.org/10.1787/888933582056>

### ***The low level of competition is likely to induce credit rationing***

Economic literature shows that low competition in the banking sector could induce credit rationing, in particular for small and innovative firms. The Estonian banking market is one of the most concentrated among OECD countries, with two large foreign-owned banks controlling 84% of the market. Also, relatively high mark-ups in the Estonian banking sector – i.e. the difference between output prices and marginal costs, relative to prices – indicate a low level of competition (Cuestas et al., 2017; Clerides et al., 2015). By creating the third-largest bank in Estonia, the recent merger between Nordea and DNB further increases



market concentration. The impact on competition and financial stability is uncertain, as the merger creates another dominant player in the financial sector.

Market power magnifies credit constraints for SMEs (Carbo-Valverde et al., 2009; Love and Peria, 2012). The negative impact of the market power on access to finance appears to be particularly strong in countries with bank-dependent financial systems like Estonia (Ryan et al., 2014). In addition, foreign banks with complex and hierarchical structures tend to lend less to SMEs and start-ups (Stein, 2002; Havrylchuk, 2012; Havrylchuk et al., 2012). Strategic decisions on liquidity and capital provision are taken by the parent bank abroad. Foreign subsidiaries rely less on soft information and engage less in relationship lending compared to domestic banks.

No recent analysis of competition in the banking market has been performed to assess the impact of high concentration on credit supply, intermediation costs, client satisfaction and barriers to switch supplier. The Estonian Competition Authority should carry out such an in-depth analysis as done for instance by UK regulators (CMA and FCA, 2014). A post-merger analysis should also be conducted given its potential negative impact on credit and financial stability.

### ***Reducing informational barriers***

Entry of new players to Estonia's financial system can be difficult, given the absence of a proper credit information-sharing scheme. By providing information to credit providers, such a scheme reduces adverse selection problems for banks and hold-up problems for borrowers in switching supplier. A well-designed credit registry lowers the cost of intermediation and improves access to credit in Central and Eastern European countries (Brown et al., 2009). Also, information sharing provides valuable data that can be used to design and evaluate micro-, macro-prudential and monetary policies.

In Estonia, negative information on borrowers (non-repayment and/or loan restructuring) is available from private credit bureaus, but the major banks do not share positive information (loan conditions and repayment). A credit information-sharing scheme should be established to collect both positive and negative information. This could be done by private credit bureaus, as done in the UK and the US, or by establishing a central credit registry by the central bank, as done in France, Spain, and Italy. The scheme should cover all individuals and firms, including the small ones.

### ***Developing alternative sources of funding***

Domestic firms are highly reliant on banking finance for external financing as other funding modes, such as corporate bonds and equity funding remain undeveloped (European Commission, 2017). Immature and fragmented private equity and venture capital industries impede funding of small innovative firms (EBRD, 2016a). In particular, venture capital investments have been relatively low (accounting for around 0.02% of GDP, half the OECD average in 2015). Access to risk-oriented funding is improving though, with the establishment of state-owned funds of funds, i.e. funds that invest in existing private equity and venture capital funds (e.g. Estfund and the Baltic Innovation Fund), but it is too early to evaluate their effectiveness.

The development of alternative funding modes can enhance access to finance in Estonia. As proposed in the 2015 *Economic Survey*, the financial industry could be diversified by granting banking licences to savings and loans associations (OECD, 2015a). Another avenue is to remove barriers for sustainable development of Fintech platforms, which provide peer-to-peer lending and equity-based crowdfunding (Box 2.1).

### Box 2.1. Fintech in Estonia

Fintech refers to the use of technology and of technology-facilitated new business models in the provision of financial services (World Economic Forum, 2015). It covers peer-to-peer lending, equity crowdfunding, electronic payment solutions, blockchain technology, digital currencies, digital advisory and trading systems, as well as artificial intelligence and machine-learning.

Some of the most innovative Fintech start-ups have been created in Estonia. The most successful is TransferWise, an international payment platform that allows individuals and small businesses to transfer money between international accounts. Now headquartered in London and supervised by the Financial Conduct Authority, TransferWise uses peer-to-peer technology to match users across different countries and currencies, which is cheaper and faster than relying on the centralized payment infrastructure used by banks.

Estonia is also home to a number of platforms that provide debt and equity financing for individuals and SMEs (Table 2.1). One, Bondora, has been ranked as one of the largest European peer-to-peer lending platforms for unsecured consumer loans. With over 300 000 customers, it has funded over 30 000 loans in Estonia, Finland and Spain. Equity crowdfunding platforms recently established in Estonia include Funderbeam, the first worldwide secondary market for venture capital.

Table 2.1. Fintech providers of debt and equity funding in Estonia

	Amount of financing raised in EUR mln (since establishment until June 2017)	Number of projects funded	Rejection rate	Security	Business model	Launch year
Investly (in Estonia)	8.2	409	-	Invoice	P2P invoice financing	2014
Bondora	94.2	37 917	85%	No	P2P consumer lending	2008
EstateGuru	24.7	154	90%	Property and personal guarantee	P2P property lending	2014
CrowdEstate	20	43	90%	Depends on the project	P2P property funding	2014
Fundwise	0.8	11	-	No	Equity crowdfunding	2015
Funderbeam	3.9	15	97%	No	Equity & bond crowdfunding	2016

Source: OECD Secretariat.

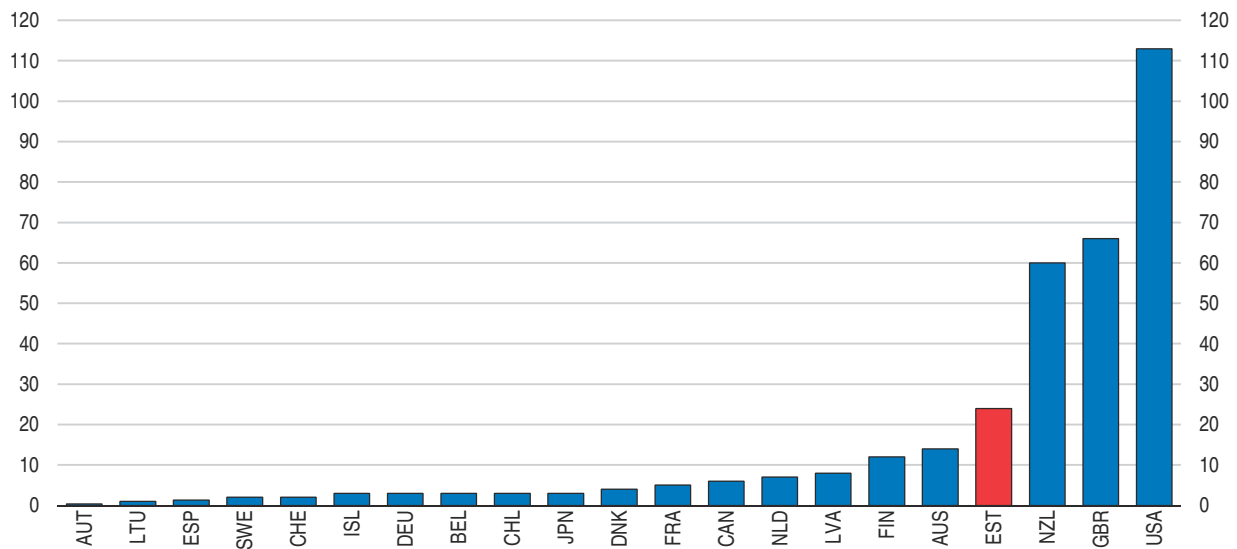
Fintech platforms can provide financial services to SMEs and start-ups, whose needs are unmet by banks, as they require lower levels of guarantees. Retail investors choose whom they would like to finance on digital platforms and bear all investment risks. The platforms themselves do not invest in contracts and securities, but generate profits from the origination and servicing fees that they charge funders and fundraisers. Equity crowdfunding platforms can complement angel- and venture-capital, by allowing individuals to invest in start-ups and buy shares which are not listed on the regulated stock market. Also, this sector can offer new business opportunities to Estonian ICT companies.

Some of the most innovative Fintech start-ups have been created in Estonia, which is now one of the largest markets for alternative finance (Figure 2.17). Nevertheless, the scale of finance through this channel remains limited, and peer-to-peer lending to SMEs lags far behind consumer lending (see Box 2.1). The sustainable development of alternative finance requires the creation of a level playing field between traditional and alternative sources of credit in terms of access to information, regulation, and taxation. The supply of funds in Fintech platforms also requires strengthening the protection of creditors.

Regulatory oversight of Fintech platforms should be developed to reinforce the protection of creditors and support credit supply. Platforms should be subject to simplified


Figure 2.17. **Estonia is a frontrunner in alternative finance but amounts are low**

Volumes, in euros per capita, 2015



Note: Alternative finance includes peer-to-peer lending, equity crowdfunding, donation and reward crowdfunding, as well as balance sheet lending.

Source: Cambridge Centre for Alternative Finance.

StatLink  <http://dx.doi.org/10.1787/888933582075>

licencing requirements allowing the financial supervisor to verify that they have a suitable business plan and risk management in place, and that their management board has adequate knowledge in both ICT and finance, as done for instance in the UK. Platforms should also be required to have resolution plans to ensure that collection of repayments continues in the case of bankruptcy. Given the high level of risk, new consumer protection rules should be established, such as requiring that individuals cannot invest more than 10% of their assets in equity crowdfunding platforms as done in the UK.

Information about Fintech platforms should also be improved. The Estonian Consumer Protection Board responsible for the financial consumer protection does not inform consumers about Fintech developments, such as peer-to-peer lending, equity crowdfunding, and online payments. Platforms should also be required to publish clear information so that funders can make informed decisions. Transparency is one of the defining features of the lending platforms, which publish a large amount of data. However, reported returns and default rates are not always clearly defined and are not comparable across platforms. Finding information about the average default rates for loans issued on a platform is far from straightforward. Lenders should also be made aware that, even though some platforms offer property loans, these are often not secured by a mortgage.

The lack of credit information sharing in Estonia constitutes an important barrier for the successful development of Fintech platforms, which do not have access to the credit history of their potential borrowers. Their scoring models are likely to provide inaccurate risk scores as they use information provided by borrowers that cannot be properly verified. In addition, the lack of a comprehensive credit registry prevents the platforms from assessing the total indebtedness of individual borrowers. Since the risk is born by investors, this creates important agency problems. Fintech platforms have a competitive advantage for the use of big data and algorithms to screen and monitor borrowers as they can change and test their

internal risks models without having them approved by regulators. This competitive advantage cannot be fully seized because of the lack of credit information sharing.

Finally, the taxation of capital income should be harmonized. Currently, investors cannot deduct their losses on Fintech platforms from their income tax base. This distorts the playing field between Fintech funding and other types of funding (i.e. bonds or equity), making Fintech platforms less competitive. Also, investment via peer-to-peer lending platforms cannot be included in investment accounts which allow individuals postponing the taxation of investment income.

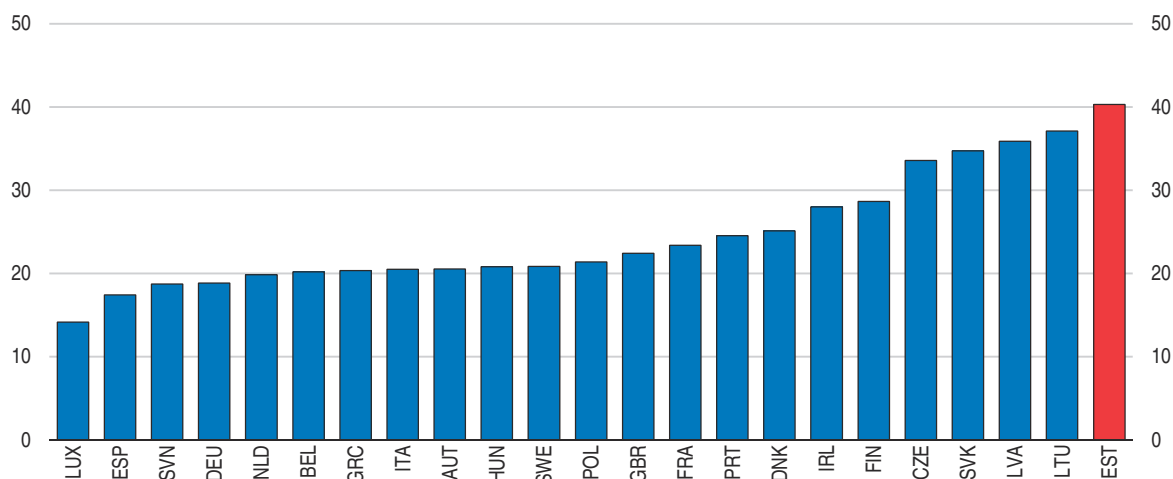
## Addressing skill shortages

The lack of a skilled workforce is one of the main barriers to long-term investment in Estonia (see Figure 2.8). The low level of investment in intangible capital could also relate to a lack of competencies to adapt to changing technologies. Tertiary education attainment in Estonia is among the highest in the OECD and adults perform very well as regards information-processing skills. Improvement in PISA scores since 2006, which exceed the OECD average, suggests that future workforce will be better equipped than older cohorts. However, Estonia lags behind when it comes to the capacity to solve problems in a technology-rich environment (Ministry of Education and Research, 2015). The need for workers able to recognize the possible application of ICT solutions in their field has been accelerating and demand for ICT professionals is projected to increase by a half over the next decade (Sihtasutus Kutsekoda, 2016).


Around 30% of adults do not have professional qualifications, and in 2014 around 40% of employees reported that their skills were lower than the level required for their job at the time of hiring, the highest share in European Union countries (Figure 2.18). Some dissatisfaction with the level of general skills is present among employers too, notably for problem-solving and soft skills, including communication or collaboration skills (EU Skills Panorama, 2014).

Figure 2.18. **A large share of Estonians feels under-skilled**

The share of employees reporting lower skill level than required for their jobs at the time of hiring, 2014



Source: CEDEFOP (2016), "Skills Panorama – The EU workforce: under-skilled at hiring" (<http://skillspanorama.cedefop.europa.eu>).

StatLink  <http://dx.doi.org/10.1787/888933582094>

The organisational capabilities of firms (i.e. the ability of managers to co-ordinate and manage production, the skills of workers and the functions they accomplish) is crucial for adoption and implementation of new technology and practices, as well as for reducing skills mismatch amongst workers (Bloom et al., 2012; Adalet McGowan et al., 2015). While Estonia does rather well in terms of management quality and practices vis-à-vis CEE peers, it lags behind higher income countries (World Economic Forum, 2015). As stressed in the 2015 *Economic Survey* (OECD, 2015a), early exposure to managerial and entrepreneurial skills is key for the development of management competencies. Curricula in secondary education have been amended in this direction, but the initiative is too recent to show some impact.

### ***Identifying skill needs and providing adequate career guidance***

A large set of measures have been implemented to adapt education to current and future labour market needs. For instance, more emphasis has been put on soft and entrepreneurial skills in curricula at all levels and all types of education. The funding of higher education institutions is increasingly based on performance, including on the labour market outcomes of students. The 2020 Lifelong Learning Strategy and the Estonian Development Plan of Information Society 2020 include measures to develop digital competencies beyond the ICT sector, such as e-assessment instruments for ITC skills, training courses for teachers, requirements in terms of digital skills in qualification standards (European Commission, 2016b). As discussed in Chapter 1, greater emphasis is also put on the acquisition of practical learning and should be supported further by developing apprenticeship in particular.

A skills forecasting system (OSKA) analyses changes in skills requirements and labour market developments. It provides inputs used for career counselling, the design of curricula and the financing of educational institutions. A regular co-operation platform between business representatives and relevant ministries has also been created to discuss the content of educational programmes and the strategic planning at all levels of education. While this improves the information level on how to adapt the education offer to structural changes, it remains to be seen how it is used by educational institutions.

Providing information on labour market opportunities and adequate career guidance is central to ensuring educational choices match labour market needs. Only 11% of Estonians have used career guidance, around half the EU average (European Union, 2014). The qualification and career counselling system has been strengthened over recent years: indicators for labour market outcomes of graduates are published, career guidance is systematically provided at the end of lower secondary education, and youth guidance centres (called Pathfinder centres) were set up in all counties. For adults, the Estonian Unemployment Insurance Fund has expanded its career counselling services to all people of working or retirement age since 2015.

Efforts should continue in this direction, as the quality of services remains poor in basic education (Santiago et al., 2016). Existing activities focus mainly on career education, given by teachers with little involvement of businesses. Large differences in quality exist between schools. The career counselling system should also be amended to tackle gender stereotypes in the education system: women in tertiary education are still underrepresented in scientific fields, where labour shortages are the strongest. Finally, to encourage students to opt for studies that are the most needed on the labour market, financial incentives could be provided, as done for instance in Slovenia.

### **Raising the quality of lifelong learning**

In the face of a rapidly changing labour environment, lifelong learning is central to maintaining alignment between skills needed on the labour market and workers' competences. Providing learning opportunities throughout the individuals' lifespans also reduces the risk of skills depletion with age. Thanks to a range of measures to promote adult education in Estonia, participation in lifelong learning improved significantly in 2016 and is now higher than in the average OECD country. However, the average number of hours of training remains relatively low and the efficacy of training courses in upskilling participants and meeting employers' needs has come into question. For instance, lifelong education of teachers has raised concerns, notably on the insufficient relevance of programmes (Santiago et al., 2016).

The lifelong learning strategy sets ambitious target for adult education, including a 20% participation rate by 2020 (vs. 16% in 2016) and a reduction in the share of adults without professional qualification to 25%. To achieve these goals, a vast range of training opportunities are provided (e.g. free formal education courses, training programmes for unemployed) and a number of additional continuous training measures targeted to those at risk of unemployment have been introduced in 2017.

Measures to improve information on the availability of formal and informal education opportunities and about the effectiveness of different programmes have also been established to enable prospective learners and entities commissioning training to make the best-informed choice. The providers of continuing education and training have an obligation to provide constantly updated information on their activities (e.g. curricula, learning conditions and training providers) and to publish performance indicators. The tax system also provides economic incentives with income tax deductions for training expenditure. Nevertheless, despite these measures, participation of low educated in adult education remains relatively low (see Chapter 1).

Nevertheless, adult education is not sufficiently monitored (Ministry of Education and Research, 2016). Flexible forms of provision are offered (evening courses, distance learning, open education resources) but it remains to be seen if they effectively meet adults' needs and offer enough flexibility in the sharing of time between work and training. To ensure the quality of training courses and their effectiveness in upskilling participants, monitoring of lifelong learning programmes should be reinforced by using *ex post* evaluation, including of labour market outcomes of participants.

Suppliers of training programmes need to better align with professional development needs. For instance, the absence of an accreditation process for such programmes is an obstacle to professional development of teachers (Santiago et al., 2016). All training suppliers subsidised by the public sector should go through an accreditation process which should take into account the impact of individual programmes and the level of satisfaction of trainees.

### **Removing barriers to female employment**

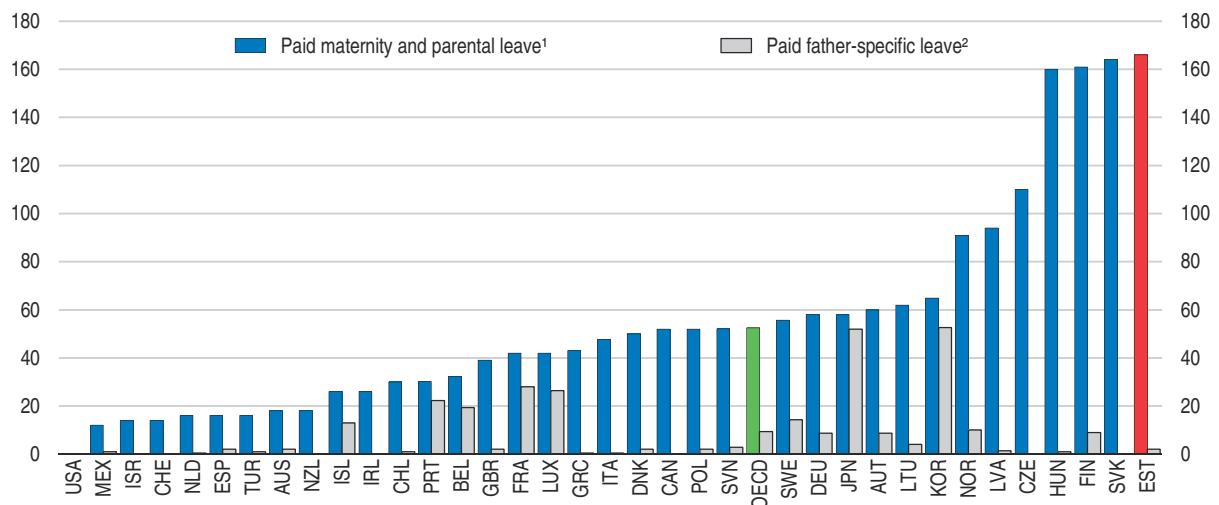
Raising the participation of mothers in the labour market and in adult education could significantly increase Estonia's skilled labour supply. While the labour market participation of women is high by international standards, relatively few mothers with a child under 3 are employed (24% in 2014). The gender employment gap for parents is large, while it is close to zero for childless women and men (OECD, 2017b). In addition, participation of

mothers in adult education is relatively low (Ministry of Education and Research, 2015). Halving the gender gap in participation would increase the labour force by 3%; simulations based on OECD long-term growth scenarios indicate it would also raise the level of Estonian GDP by 5% by 2030 (OECD, 2012a). Impact on growth is likely to be stronger than estimated, given that women outperform men in terms of qualification level.

Estonia has the longest parental leave in the OECD but father-specific leave is very short (Figure 2.19). The parental leave is mostly taken up by women. Long leaves have a detrimental impact on careers as skills can deteriorate and the costs to firms of vacancies can induce discrimination against women of childbearing age (Rossin-Slater, 2017; Thévenon and Solaz, 2013). Increasing the length of father-specific leave, as planned by the authorities, is not the most cost-effective way to achieve a better gender balance in childcare responsibilities. Introducing a “daddy quota” as in Sweden or France (whereby the length of the parental leave is reduced if the father does not take his leave) without increasing the total length of the parental leave would accelerate the return of mothers to the labour market at a lower cost.


Figure 2.19. **Parental leave is the lengthiest in the OECD**

Number of weeks, 2016



1. Total duration of paid maternity and parental leave refers to the total number of weeks which a woman can be on paid leave after the birth of a child combining both maternity and parental leave.
2. Paid father-specific leave refers to the number of paid weeks reserved for the exclusive use of fathers, including entitlements to paid paternity leave, “father quotas” or periods of paid parental leave that can be used only by the father and cannot be transferred to the mother, and any weeks of paid sharable leave that must be taken by the father in order for the family to qualify for “bonus” weeks of parental leave.

Source: OECD Family Database.

StatLink  <http://dx.doi.org/10.1787/888933582113>

As stressed in previous *Economic Surveys* and in the recent *OECD Review of School Resources*, expanding childcare and early childhood education facilities is crucial to improving the labour market participation of young mothers (OECD, 2012b; OECD, 2015a; Santiago et al., 2016). Limited childcare options before children turn 18 months make it difficult to flexibly combine family life with professional development. In addition, municipalities which experience population growth appear to face difficulties providing childcare services: shortages have emerged in rapidly growing areas, and the enforcement of quality requirement is not ensured (National Audit Office, 2015a). Unmet needs have

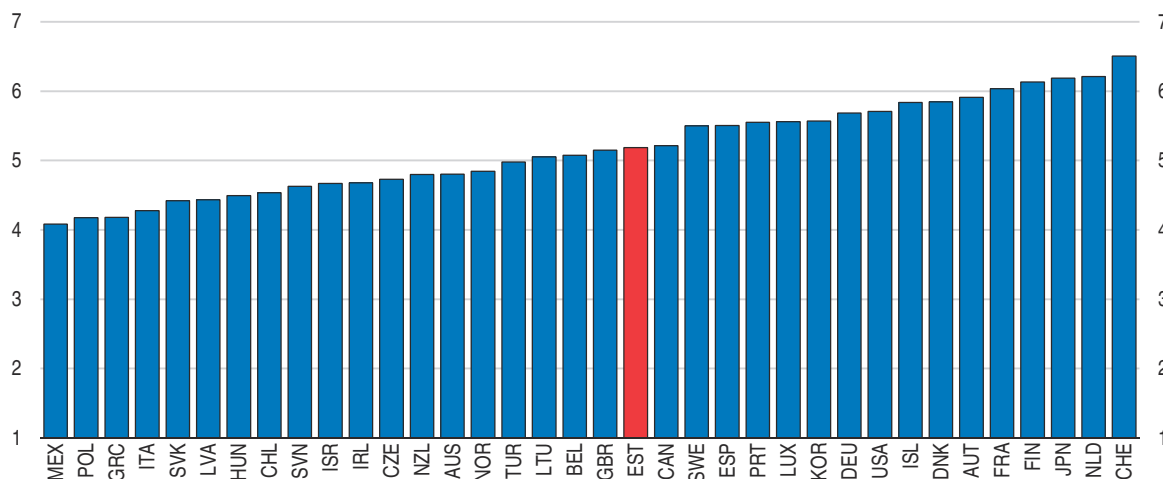
been estimated to around 2 300 places (3% of children aged between 1 and 6; European Commission, 2016b)

Recent government plans should address this issue as the capacity of childcare services is being increased significantly. Participation of children aged 0-2 in pre-school education rose significantly from 20% to 34% in 2016. With funding from the European Regional Fund, around 2 300 childcare places will be created in larger cities and suburbs (European Commission, 2017). Local governments will also be given more flexibility in organising the provision of high-quality early childhood education and care possibilities based on the needs of families.

## Improving infrastructure investment

The quality of energy, transport and communication infrastructure underpins both the success of firms operating in international markets and a country's attractiveness for foreign investors (Yeaple and Golub, 2007). Estonia's infrastructure has been significantly upgraded over recent years, but its quality is still perceived as average, suggesting further investment is needed to facilitate trade and business opportunities (Figure 2.20).

Figure 2.20. **The quality of infrastructure is average**  
Quality of overall infrastructure score, from 1 (lowest score) to 7 (highest score), 2016-17



Note: The score is based on the assessment of business leaders operating in the country in response to the question: how do you assess the general state of infrastructure (e.g. transport, communications and energy) in your country? [1 = extremely underdeveloped – among the worst in the world; 7 = extensive and efficient – among the best in the world]

Source: World Economic Forum Global Competitiveness Index dataset.

StatLink  <http://dx.doi.org/10.1787/888933582132>

The government plans to allocate 1.3% of GDP to infrastructure investment over the period 2018-20. Projects include the extension and modernisation of the road and railway, the development of the broadband distribution network, investments in public residential housing. Cost and benefit analyses have not been systematically carried out for the selection of these projects and given the already considerable levels of investment in road and rail, it is unlikely that they will have high positive economic returns. Indeed, positive impact of infrastructure investment on growth is lower when the physical stock is larger (Egert et al., 2009). Selecting projects with high economic and social returns requires improving the selection and evaluation process of public investments.



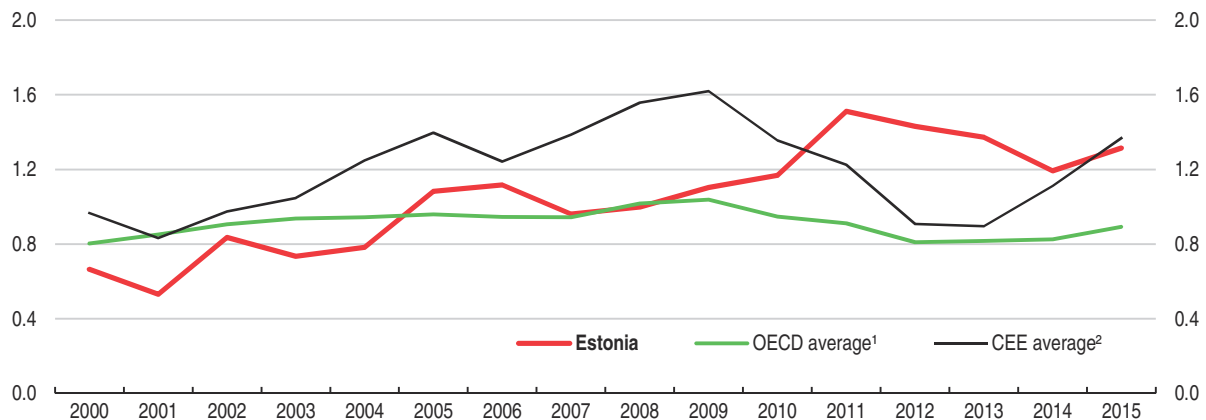
### Addressing remaining bottlenecks in the transport sector

Transport networks are key for internationalisation, and given the relatively high share of transport services in GDP and exports (see Chapter 1), high-quality transport systems are also central for Estonia's economic performance. Estonia has made considerable progress in upgrading its transport infrastructure and services using both national and EU funds. The main bottlenecks have been addressed and the capacity of transport networks appears to be sufficient, especially for freight by land and sea.

Road and rail investment has ranged between 1% and 1.5% of GDP per year since 2009, against an OECD average of around 0.7% of GDP (Figure 2.21). 20% of funds allocated to Estonia over 2007-13 have been dedicated to transport infrastructure, and EUR 447 million (2% of GDP) has been allocated to transport projects for the next programming period (2014-20). Finally, 40% of the abovementioned plan for public investment over 2018-20 will be directed to the transport sector. Most of the investment has been directed at projects improving the quality and the capacity of main roads as well as modernising the rail infrastructure.

Figure 2.21. **Investments in road and rail have been high**

Investment in road and rail infrastructure, as a percentage of GDP




Note: Estimates of investment data have been made for some countries and some years based on other available data.

1. Unweighted average of available OECD countries.

2. Unweighted average of Czech Republic, Hungary, Latvia, Lithuania, Poland, Slovak Republic, and Slovenia.

Source: ITF Transport statistics.

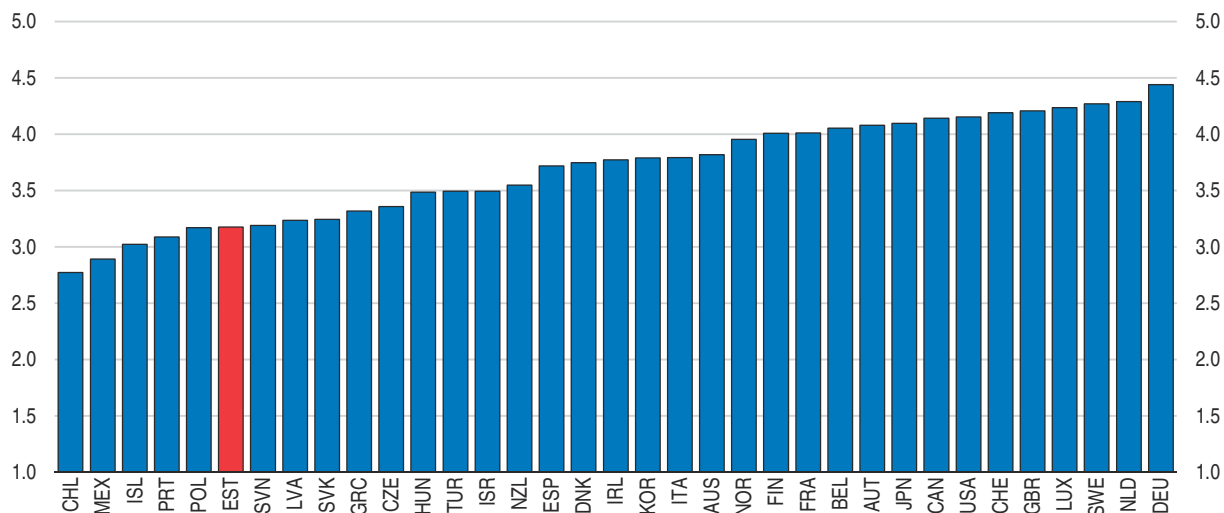
StatLink  <http://dx.doi.org/10.1787/888933582151>

Nevertheless, weaknesses persist in some areas. Estonia fares worse than other CEE countries with respect to the quality of logistics infrastructure (Figure 2.22). This partly reflects the operational constraints at border crossings for rail transport to Central Europe and the lack of intermodal terminals for combined transport (Hilmola and Henttu, 2015). By connecting Estonia with the European Core Network, the construction of the Rail Baltica corridor – to be completed by 2030 – will partly resolve these issues.

Indicators capturing the satisfaction of business users and shippers – the Global Competitiveness Index and the Logistics Performance Index – highlight remaining gaps in infrastructure quality compared with the best-performing countries. In the air-cargo sector, Estonia ranks poorly both generally in terms of legal and customs-related capacity to handle international shipments and to undertake electronic transactions. This is unfortunate, as smooth international shipments and air freight competitiveness both play a critical role in facilitating export trade.

Figure 2.22. **The quality of logistics infrastructure is poor**

Quality of logistics infrastructure score, from 1 (lowest score) to 5 (highest score), 2016-17



Source: World Bank, Logistics Performance Index database 2016 (LPI).

StatLink <http://dx.doi.org/10.1787/888933582170>

Finally, satisfaction with the quality of roads is well below that in Western European countries, and the national Road Administration estimates that 30% of roads are in bad or very bad condition (EBRD, 2016b). Estonia's achievements in improving its road safety record have slowed in recent years. The lack of adequate maintenance activities partly explains these outcomes, in particular for secondary roads in remote areas. The need for increased maintenance has to translate into adequate budgetary provisions to ensure high standards of service.

### **Improving management of infrastructure projects**

#### **Financing infrastructure could be an issue in the long run**

High utilisation with sufficient revenue generation is a premise of sustainable network funding. In the transport sector, changing trade flows and lower economic growth have resulted in overcapacity and a fall in revenues from the exploitation of the freight infrastructure (Box 2.2). For instance, the state-owned railway infrastructure company, Estonian Railways, saw losses deepen from EUR 6.3 million in 2015 to EUR 10.8 million in 2016.

Railways and ports need to attract new traffic flows and new markets such as container transport. Rail links between Muuga (the largest port) and Rail Baltica lines from 2020, as well as government support to attract exporting companies to locate at industrial areas around ports, should help in this regard. Co-ordinated plans for port modernisation and for the development of logistics terminals would be a natural complement to these developments.

Increasing revenues drawn from user fees can enhance Estonia's ability to maintain quality and safety standards and reduce the risk of underfunding over the next few years. Consideration should be given to setting up new funding arrangements: for instance, the fee for kilometres covered could be applied to both passenger and freight trains and road users could be charged for the use of motorways.

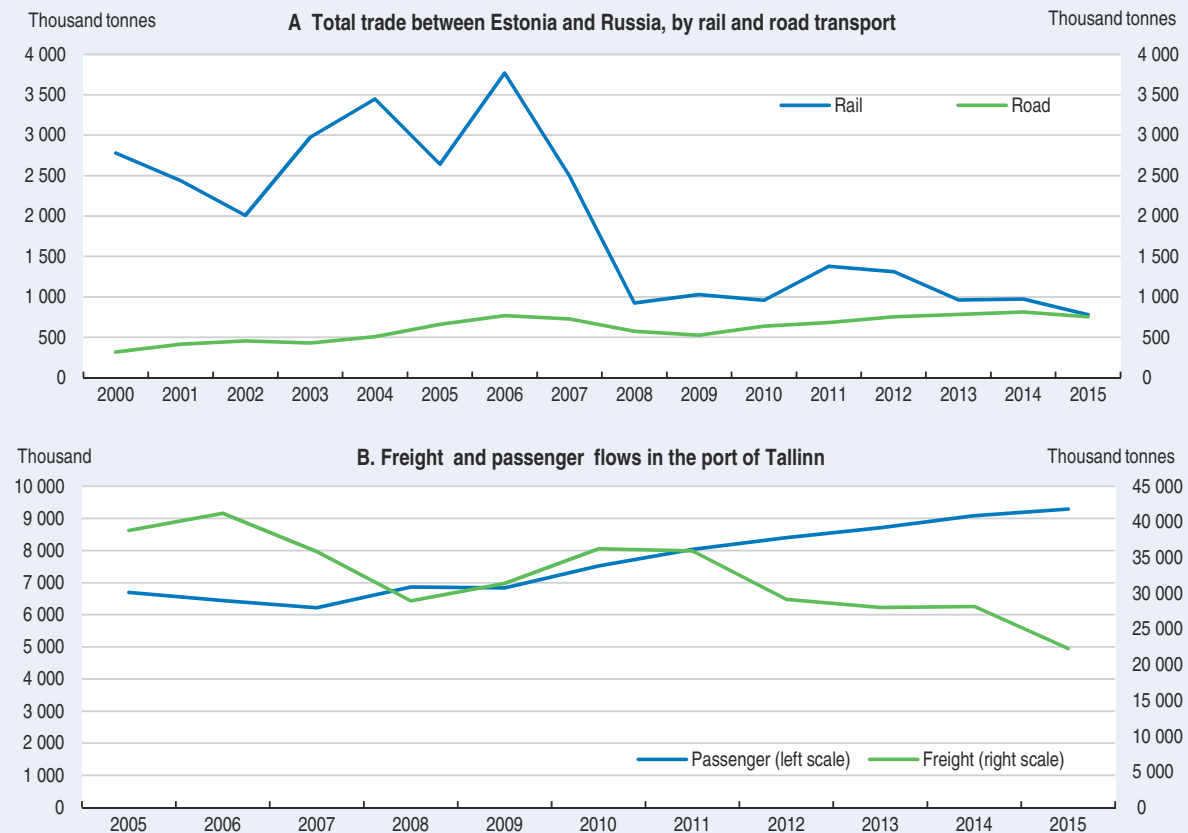
Operational costs could also be reduced by involving the private sector more in the management and maintenance of infrastructure. The Road Administration has introduced

### Box 2.2. Capacity utilisation in rail and ports

Russia has traditionally been one of Estonia's main trading partners. Estonia's rail and road networks carry a large share of cargo in transit from Russia to the rest of Europe, mostly liquid bulk, often feeding into Estonian ports. Over the past decade, Russia has reduced cargo flows via the Baltic States in an effort to develop its national ports. Lower growth rates and the depreciation of the rouble have also contributed to a decline in economic activity in the Estonian transport sector. The corresponding decline in goods carried by Estonian railways since 2006 has been sharp (Figure 2.23, Panel A); transit freight, which constituted a large share of cross-border traffic, has declined by 70% over this period.

The change in trade flows requires a reassessment of infrastructure needs in ports. Terminals at Estonian ports have been developed to carry predominantly liquid bulk. Container traffic has already grown by 70% between 2006 and 2015, partly compensating the decline in liquid bulk, and passenger numbers have increased (Figure 2.23, Panel B); these trends should continue in the coming years.

Figure 2.23. Freight flows have declined



Source: Eurostat.

StatLink  <http://dx.doi.org/10.1787/888933582189>

performance-based contracts for road maintenance, leading to an average cost saving of 10% between 2015 and 2016. Consideration should be given to extending long-term contracts for infrastructure management and services based on tenders in other segments of the transport sector.

Contractual relationships should be carefully designed to allow efficient risk-sharing between the public and private sector. This has not been systematically done in Estonia.

For instance, conditions for the management and the maintenance of the basic broadband network have not been properly defined and are binding for five to seven years only, creating uncertainty about the costs of maintaining ICT infrastructure. As a result, the National Audit Office recommended redefining both requirements and obligations in the management of the basic broadband network throughout its lifetime, in consultation with the network's developers and managers (National Audit Office, 2015b).

### *Identifying priority areas*

The efficiency and productivity of public investment could be significantly enhanced by improvements in its management. A recent IMF paper shows that countries whose institutions have stronger public investment management have more predictable, credible, and efficient investments, and that strengthening these institutions could close up to two-thirds of the public investment efficiency gap (IMF, 2015). In particular, good co-ordination in investment planning and a clear system for the selection and prioritisation of projects is indispensable to identifying strategic priorities and exploiting synergies across investment programmes. Establishing a national supervisory authority in charge of evaluating investment projects such as the Dutch CPB could help in this regard. In addition, to maximise the social return of investment, the impact on regional development, the environment and safety should systematically be taken into account, and a reliable *ex ante* assessment of rates of return be carried out.

The absence of a coherent framework to assess the value-for-money and socio-economic impacts of planned investment makes it challenging to correctly identify and prioritise the most productive infrastructure projects in Estonia. As regards transport infrastructure, the National Transport Development Plan 2014-2020 identifies the main issues affecting transport competitiveness and proposes solutions to each of them, but it fails to establish clear priority. For instance, two policy initiatives for road maintenance compete for the same budget: on one hand, the Plan highlights the need to raise maintenance standards through more and better-targeted expenditures, but on the other hand, the Plan introduces a “Dust-free Estonian roads by 2030” programme which consists in lower-cost pavements across all gravel roads. The expected costs and benefits of each policy measure are neither detailed nor compared.

A sound and coherent methodology needs to be developed to assess the socio-economic impacts of infrastructure development projects and guide decision-making. In Estonia, cost benefit analyses are not compulsory for all large-scale projects. Apart from those co-funded by the EU, most projects are compiled and reviewed periodically by a steering committee composed of public sector officials. Cost-benefit analysis (CBA) should be used for all substantial investment in infrastructure. Underpinned by good data, such analysis is particularly useful in preventing cost overruns and over-estimation of future demand. It has been effective at heightening the level of scrutiny around infrastructure projects in countries including the UK, France, Korea, and Denmark (ITF/OECD, 2017).

The quality of CBA in Estonia, notably the precision of forecasting, has recently come into question. In the road sector, traffic frequency growth and time saving induced by investment have been over-estimated, calling for improving *ex-ante* project evaluation (Praxis, 2017). The selection criteria of future projects should include the maintenance cost and the environmental impact of developing the transport network further. A uniform methodology and strict guidelines for CBA should be established, as done for instance in Denmark.

Finally, while the need for more co-ordination among different stakeholders is identified in strategic documents (for instance in the National Transport Development Plan 2014-2020), concrete measures to achieve this goal are not implemented. In the transport sector, there is potential to enhance co-ordination at the level of strategic planning by merging different administrations under a national transport agency, as done in Sweden or Finland. A national transport model can be used to simulate the impact of proposed transport projects across all modes, as done in most other European countries (Lundqvist and Mattsson, 2002). Participation in international benchmarking studies (e.g. the International Traffic Safety Data and Analysis Group, a forum for knowledge transfer on road safety) can also be useful for exchange on best practices.

## Supporting green investment

Estonia has the most carbon-intensive and the third most energy-intensive economy in the OECD, with pockets of very high pollution. Transitioning to a low-carbon and resource-efficient economy will require significant investment; consequently, as in other OECD countries, public and private sources of capital will need to be mobilised on a much larger scale than before (OECD, 2017c). Expensive remediation of old contaminated sites inherited from the Soviet period is also a priority (OECD, 2017a).

### Greening the electricity sector

The electricity sector, dominated by the oil shale industry, is a large emitter of carbon and other pollution. Exploitation of oil shale generates nearly 98% of total hazardous waste, of which Estonia has 35 times more per capita than the EU average. Worryingly, waste disposal creates air and water pollution, with measurable consequences for the health of the local population (OECD, 2017a).

While large investments have been made to decrease direct emissions from oil shale-based energy production, competitiveness of the oil shale industry is likely to erode in the medium term as the costs of oil shale processing are set to grow with the price of CO<sub>2</sub> emissions and the cost of extraction. Open quarries get depleted and extraction shifts to more expensive and less efficient underground mining. Also, continued reliance on oil shale risks leading to a greenhouse gas emissions trajectory inconsistent with the long-term aims of the Paris Agreement (OECD, 2017a).

The *National Development Plan of the Energy Sector until 2030* defines policy objectives of diversifying the energy mix and more specifically of moving to a more environment-friendly electricity production. However, details on how to reach these objectives have not yet been elaborated and too few initiatives have been taken to encourage pollution mitigation and resource efficiency in the oil shale industry over the past few years (OECD, 2017a). Recent reform of the extraction tax to take account of the actual value of the resource extracted has even reduced the impact of taxation, by cutting its rate more than five-fold until the end of 2017. Setting up effective incentives for green investment in the oil shale industry is urgent, as three quarters of production facilities are set to be replaced in the coming years.

Deeper integration in the European energy markets is a central element of a transition to a low-carbon electricity supply, as it fosters competition on the energy market and improves access to cleaner resources. Estonia's integration into the Nord Pool electricity market was achieved in 2014 and the third Estonian-Latvian power connection needed for full integration in the Continental European Market is progressing well. Though Russia was

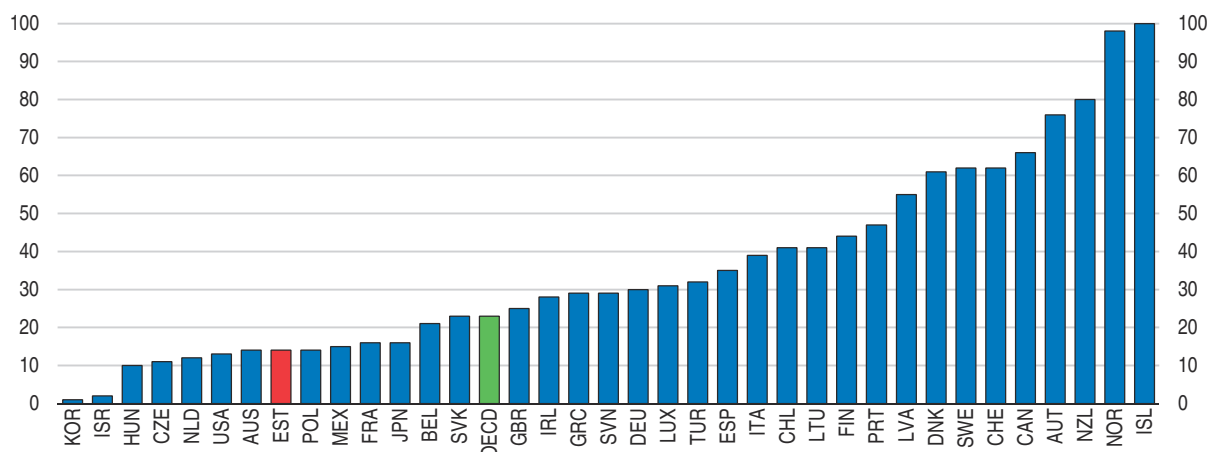
the sole gas supplier in Estonia until recently, gas is now also imported from the Klaipeda liquefied natural gas terminal in Lithuania. Two infrastructure projects will contribute to diversifying the source of gas supply further: a gas connection between Poland and Lithuania, and a gas pipeline between Estonia and Finland.

### Developing renewable energy sources

Expanding the use of energy from renewable sources is also part of Estonia's strategy for greening electricity supply. The *National Development Plan of the Energy Sector until 2030* set the targets of 50% of renewables in total energy consumption and 50% in electricity consumption for 2030. The share of renewables is close to the OECD average for total energy supply, primarily through the use of biomass for heating. By contrast, the use of renewable energy sources in the electricity sector is among the lowest in the OECD, as 80% of electricity is produced from oil shale (Figure 2.24).

Figure 2.24. **The share of renewables in electricity is low**

Share of renewable sources in electricity generation, 2015, %



Source: IEA World Energy Statistics and Balances.

StatLink  <http://dx.doi.org/10.1787/888933582208>

To reach the 2030 target, the government is considering introducing an auction mechanism, i.e. issuing a call for the installation of a certain amount of renewable capacity. Such a system, also used in Germany or the UK, would allow for control to be kept over renewable energy capacity and its costs, while choosing the lowest-cost options. This should also create a stable and predictable policy environment for investment in clean electricity generation. This is critical as long-term investment in green electricity is undermined by uncertainty regarding the level of energy and carbon prices, but also by the lack of predictability of public support (OECD, 2015b).

Developing electricity production from renewables will also require investment to ensure reliability of electricity provision at a reasonable cost (IRENA, 2017). The electricity transmission and distribution network will have to be expanded to transport electricity from decentralised sources which are not located close to demand (e.g. off-shore wind). In addition, to adapt the network to intermittent energy supply, policy makers will have to incentivise investment in technologies that enable the smoothing of energy demand (smart meters, storage capacity), more efficient allocation of power around the network (smart grids) or the generation of power at a relatively low cost when renewables falter. This will be

challenging, as expansion of power generation capacity should push electricity prices down and reduce revenues earned by utilities on wholesale power markets, thereby deterring private investment. A review of the electricity market should be carried out to identify if support for investment in conventional power will be needed to maintain reliability, and to identify what market structure would best support this transition at a reasonable cost.

### ***Fostering the decarbonisation of transport***

#### ***Increasing car taxation***

Road transport accounts for a large and rising source of air pollution and carbon emissions in Estonia. Passenger cars have the highest carbon emission rate in the EU and a low energy efficiency profile (European Commission, 2016a). Estonia is unusual among OECD countries in that it has no specific tax on car purchases. Taxation of motor vehicles is low, accounting for only 2.5% of environmentally related tax revenues, well below the OECD average. Low vehicle taxes tend to encourage the use of cars and reduce incentives for using alternative transportation modes (e.g. rail, public transportation).

The government plans to introduce a road charging system for heavy duty vehicles, a system that already exists in most EU countries. Estonia could go further by introducing a road pricing system for all motor vehicles and by phasing out subsidies for company cars. In addition, introducing motor vehicle taxes reflecting the environmental characteristics of each vehicle (fuel efficiency, carbon emission, and air pollution) can provide incentives to switch to less polluting vehicles and transportation modes.

#### ***Improve consistency of national policies for the decarbonisation of transport***

Contradictory policy choices have slowed the decarbonisation of transport. Support of the electrification of the car fleet has been suspended since 2015. The Electro-Mobility Programme, including the development of a fast-charging network and a generous electric car-purchase subsidy scheme (around EUR 15 000 per car), has not delivered the expected outcomes: the uptake of clean passenger vehicles was lower than planned and only around 1 000 cars were put into circulation. Better allocation of available and limited resources would have allowed maintaining financial support over a longer period and ensuring positive returns on past investments.

However, policy objectives changed with plans for shifting vehicles from fossil fuels to bio-methane. The government foresees building an Estonia-wide network of filling stations by 2018 and increasing production of bio-methane nationally. Vehicles are expected to switch to bio-methane over time, starting from buses, with operators being subsidised to renew their fleets. More coherence, stability and predictability in the policy framework are needed to foster private investment and lower the cost of achieving objectives for the decarbonisation of transport.

#### ***Increasing financial incentives for green investment***

Green investment has gained momentum in Estonia over the past decade. Production companies more than doubled pollution abatement expenditure between 2010 and 2013, of which 70% was investment (OECD, 2017a). According to the EU-28 Eco-innovation scoreboard, a relatively high proportion of companies have implemented measures to increase material productivity (Eco-Innovation Observatory, 2016). At the same time, proportionately fewer companies have implemented innovative activities to reduce energy

input than in the EU on average. Also, firms tend to invest more to reduce pollution already generated (end-of-pipe technologies) than to reduce pollution generated in the production process (process-integrated technologies) (OECD, 2017a). Compliance with EU environmental standards has been the main driving force of these investments.

Investment needed to reduce environmental damage generated by economic activity is lacking partly because financial incentives, in particular environmentally-related taxation, remain too low to deter environmentally harmful behaviour. Despite considerable increases in the tax rates on some pollutants since 2000, taxes or charges on a large number of pollutants remain below their abatement costs. For some water pollutants, however, strong marginal incentives exist: polluters pay a reduced rate if their discharges remain below permitted limits but may be liable to non-compliance fees of up to 100 times the basic rate if they exceed those limits.

Some rationalisation of financial incentives could help to increase incentives to reduce pollution, including by applying tax rates reflecting the actual level of the negative environmental cost. For the action on climate change to be more effective, the effective cost of CO<sub>2</sub> emissions needs to be increased almost across the board as it is low in most sectors of the economy, including the oil shale industry. Sectors where CO<sub>2</sub> emissions are not priced at all should also be included in carbon pricing (OECD, 2016). If higher environmental taxes were to hit competitiveness, this negative impact could be moderated by supporting the threatened industries, while maintaining the incentive for pollution abatement. Such measures should be transitional and supported by sufficient empirical evidence of competitiveness losses.

Policies should ensure that, where taxes are applied, the related pollution is measured effectively. Environmental impact is estimated based on self-reporting data, and compliance monitoring appears insufficient (National Audit Office, 2015c). As recommended in the recent *Estonia Environmental Performance Review*, standard monitoring and reporting procedures and more diligent verification of companies' self-reporting data by the Environmental Inspectorate should be established (OECD, 2017a). Also, in cases of violation of environmental regulation, the level of monetary penalties does not depend on the gravity of the offense and the economic benefit of non-compliance (OECD, 2017a). Increasing sanctions should lead to investment decisions that internalise the cost of pollution.

### ***Improving effectiveness of public programmes***

Green investment has been supported by public programmes conducted by the Environmental Investment Centre. Financial resources allocated to these programmes are rather precarious as they stem from EU funds, the sale of excess carbon credits, and environmental pollution and resource taxes. The budget of the Environmental Investment Centre declined from EUR 35.8 million to EUR 25.6 million between 2012 and 2017 as revenues from extraction charges paid by the oil shale industry and EU environment-dedicated funds decreased.

The effectiveness of subsidised investments is uncertain as evaluation of projects is not systematically carried out. Questions remain about whether the projects would have been made without support, and about the resulting windfall gains. Carrying out evaluation of support measures in a thorough, independent and transparent manner would help to make current instruments more efficient and identify where further efforts are needed.



Also, private financing of green investment could be better supported to reduce the need for public programmes. For instance, Energy Performance Contracting used in other OECD countries to finance energy efficiency investment, are underdeveloped in Estonia. Energy Performance Contracting allows the provision and maintenance of energy-efficient equipment to be financed by subsequent energy savings. Under some contracts, Energy Service Companies can also finance or arrange financing for the operation. This market did not take off in Estonia because of generous public support, including public grants and soft loans for energy efficiency. Also, relevant regulation and information about energy services are missing (Bertoldi et al., 2014). Areas where public programmes supporting energy efficiency investments can be replaced by market instruments should be identified and barriers to the development of such instruments removed.

### **Recommendations to revive productive investment**

#### **Further strengthening the business environment**

##### **Key recommendation:**

- To increase credit recovery and shorten insolvency procedures, allow creditors to initiate restructuring; introduce early warning mechanisms, such as one-line insolvency tests, and develop options for out-of-court settlements.

##### **Other recommendations:**

- Strengthen incentives for creditors to invest in business restructuring by ensuring new investors are paid before unsecured creditors in the event of liquidation. Limit the period during which debt-collection is stopped.
- Establish a bankruptcy ombudsman to strengthen incentives for company managers and owners to file for bankruptcy early.
- Continue efforts to reduce red tape and eliminate remaining regulatory barriers to service business.
- Simplify the issuance of permits for business with low environmental impact.

#### **Improving access to finance**

##### **Key recommendation:**

- To foster competition in the financial sector, create a centralised credit bureau that will collect both positive and negative information on creditors.

##### **Other recommendation:**

- To develop new sources of financing, increase protection of investors using Fintech platforms by introducing licencing requirements. Provide more information about financial innovation and the related risks.

#### **Addressing skill shortages**

##### **Key recommendations:**

- Reduce the gender participation gap by extending the share of parental leave reserved for fathers.
- To reinforce the quality of adult education, strengthen the monitoring of training courses by using *ex post* evaluation of training, including labour market outcomes of participants.
- Extend the accreditation system to all publicly funded learning programmes to signal and improve their quality.

##### **Other recommendation:**

- Improve career guidance services after lower-secondary education.

### Recommendations to revive productive investment (cont.)

#### Improving infrastructure and green investment

##### Key recommendations:

- Set tax rates on oil shale, vehicle and energy use at a level that better reflects the environmental damage they generate.
- Carry out *ex ante* cost-benefit analyses for all large-scale infrastructure projects based on a uniform methodology.

##### Other recommendations:

- Continue efforts to improve logistics infrastructure in particular intermodal connections.
- Ensure long-term funding for infrastructure investment. Draw more revenues from user fees and set appropriate road prices.
- Establish a national supervisory authority in charge of the selection and the design of investment projects.
- Extend the road pricing system to all motor vehicles, phase out subsidies for company cars, and introduce a car registration fee reflecting the environmental characteristics of vehicles.
- Support the deployment of renewable energy sources through competitive tendering as planned.
- Align the level of monetary penalties for environmental violations on the gravity of the offense.
- Identify areas where public programmes supporting energy efficiency investments can be replaced by market instruments, such as Energy Performance Contracting, and remove barriers to the development of such instruments.

#### Bibliography

- Adalet McGowan, M. and D. Andrews (2017), "The Design of Insolvency Regimes", *OECD Economics Department Working Papers*, forthcoming.
- Adalet McGowan, M., D. Andrews and V. Millot (2017), "Insolvency Regimes, Zombie Firms and Capital Reallocation", *OECD Economics Department Working Papers*, No. 1399, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5a16beda-en>.
- Adalet McGowan, M. and D. Andrews (2016), "Insolvency Regimes and Productivity Growth: A Framework for Analysis", *OECD Economics Department Working Papers*, No. 1309, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5jlv2jqhxgq6-en>.
- Adalet McGowan et al. (2015), *The Future of Productivity*, OECD Publishing, Paris, [www.oecd.org/eco/growth/OECD-2015-The-future-of-productivity-book.pdf](http://www.oecd.org/eco/growth/OECD-2015-The-future-of-productivity-book.pdf).
- Alfaro, L. (2016), "Gains from Foreign Direct Investment: Macro and Micro Approaches", *World Bank Economic Review*, (2016), pp. 1-14.
- Andrews, D. and C. Criscuolo (2013), "Knowledge-Based Capital, Innovation and Resource Allocation", *OECD Economics Department Working Papers*, No. 1046, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5k46bj546kzs-en>.
- Baddeley, M. (2003), "Putty-clay models of investment" in *Investment: Theories and Analysis*. London: Palgrave MacMillan, pp. 79-91.
- Barkbu, B. et al. (2015), "Investment in the Euro Area: Why Has It Been Weak?", *IMF Working Paper*, No. 32.
- Bernanke, B. (1983), "Irreversibility, Uncertainty and Cyclical Investment", *Quarterly Journal of Economics*, Vol. 98.
- Bertoldi, P. et al. (2014), *The ESCO market report 2013*, JRC Science and Policy Report, EC.
- Bloom, N. et al. (2012), "Management Practices across Firms and Countries", *NBER Working Papers*, No. 17850.
- Bris, A. et al. (2006), "The cost of bankruptcy: Chapter 7 liquidation versus Chapter 11 Reorganization", *The Journal of Finance*, Vol. 62.

- Brown, M., T. Jappelli and M. Pagano (2009), "Information sharing and credit: Firm-level evidence from transition countries", *Journal of Financial Intermediation* Vol. 18/2, pp. 151-172.
- Carbo-Valverde, S. et al. (2009), "Bank Market Power and SME Financing Constraints, *Review of Finance*", Vol. 13/2, pp. 309-40.
- Carstensen, K. and F. Toubal (2003), "Foreign Direct Investment in Central and Eastern European Countries: A Dynamic Panel Analysis", *Kiel Working Paper*, No. 1143.
- Clerides, S., M.D. Delis and S. Kokas (2015), "A new data set on Competition in National Banking Markets", *Financial Markets, Institutions and Instruments*, Vol. 24/2-3, pp. 267-311.
- CMA and FCA, (2014), "Banking services to small and medium-sized enterprises: A CMA and FCA market study", Financial Conduct Authority, Competition & Markets Authority.
- Coe, D.T., E. Helpman and A.W. Hoffmaister (2008), "International R&D spillovers and institutions", *IMF Working paper*, International Monetary Fund, Publications Services, Washington.
- Cuestas, J.C., Y. Lucotte and N. Reigl (2017), "Banking sector concentration, competition and financial stability: The case of Baltic countries", mimeo, [https://sisu.ut.ee/sites/default/files/nem2017/files/lucotte\\_cuestas\\_reigl.pdf](https://sisu.ut.ee/sites/default/files/nem2017/files/lucotte_cuestas_reigl.pdf).
- Doh, J.P., K. Bunyaratavej and E.D. Hahn (2009), "Separable but not equal: The location determinants of discrete services offshoring activities", *Journal of International Business Studies*, Vol. 40/6, pp. 926-943.
- EBRD (2016a), *Strategy for Estonia*, Document of the European Bank for Reconstruction and Development.
- EBRD (2016b), "Life in Transition: A decade of measuring transition, European Bank for Reconstruction and Development report", London, <http://litsonline-ebd.com/>.
- Eco-Innovation Observatory (2016), "Eco-innovation in Estonia, EIO Country Profile 2014-15", Brussels, [https://ec.europa.eu/environment/ecoap/sites/ecoap\\_stayconnected/files/field/field-country-files/estonia\\_eco-innovation\\_2015.pdf](https://ec.europa.eu/environment/ecoap/sites/ecoap_stayconnected/files/field/field-country-files/estonia_eco-innovation_2015.pdf).
- Eesti Pank (2017), *Financing the Economy*, February 2017, Estonian Central bank, Tallinn.
- Égert, B. (2016), "Regulation, Institutions and aggregate Investment: New evidence from OECD countries", *OECD Economics Department Working Paper*, forthcoming.
- Égert, B., T. Koźluk and D. Sutherland (2009), "Infrastructure and Growth: Empirical Evidence", *OECD Economics Department Working Papers*, No. 685, OECD Publishing, Paris, <http://dx.doi.org/10.1787/225682848268>.
- EIB (2016), "Investment and Investment Finance in Europe, Financing productivity growth", Economics Department, European Investment Bank, Luxembourg.
- European Commission (2017), "Country report Estonia 2017", *Commission staff working document*, European Commission, Brussels.
- European Commission (2016a), "Country report Estonia 2016", *Commission staff working document*, European Commission, Brussels.
- European Commission (2016b), *Education and Training Monitor 2016, Country Analysis, Estonia*, European Commission, Brussels.
- European Union (2014), "European area of skills and qualifications", Special Eurobarometer, No. 417, European Union, [http://ec.europa.eu/public\\_opinion/archives/ebs/ebs\\_417\\_en.pdf](http://ec.europa.eu/public_opinion/archives/ebs/ebs_417_en.pdf).
- EU Skills Panorama (2014), *Estonia Analytical Highlight*, prepared by ICF and Cedefop for the European Commission, [http://skillspanorama.cedefop.europa.eu/sites/default/files/EUSP\\_AH\\_Estonia\\_0.pdf](http://skillspanorama.cedefop.europa.eu/sites/default/files/EUSP_AH_Estonia_0.pdf).
- Forth, J. and G. Mason (2006), "Do ICT Skill Shortages Hamper Firms' Performance? Evidence from UK Benchmarking Surveys", *National Institute of Economic and Social Research Discussion Papers*, No. 281.
- Havrylchuk, O. (2012), "The Effect of Foreign Bank presence on Firm entry and Exit in Transition Economies", *Journal of Banking and Finance*, Vol. 36/6, pp. 1710-1721.
- Havrylchuk, O. et al. (2012), "Foreign Bank entry and Credit Allocation in Emerging Markets", *Journal of Banking and Finance*, Vol. 36/11, pp. 2949-2959.
- Hilmola, O.P. and V. Henttu (2015), "Border-crossing constraints, Railways and Transit transports in Estonia", *Research in Transportation Business & Management*, 31 March 2015, Vol. 14/72-9.
- IMF (2017), "Republic of Estonia – Selected issues", *IMF Country report*, No. 17/10, International Monetary Fund, Publications Services, Washington.

- IMF (2016), “Central, Eastern, and South Eastern Europe, How to Get Back on the Fast Track”, *Regional Economic Issues*, May 2016, [www.imf.org/external/pubs/ft/reo/2016/eur/eng/pdf/rei0516.pdf](http://www.imf.org/external/pubs/ft/reo/2016/eur/eng/pdf/rei0516.pdf).
- IMF (2015), “Making Public Investment more efficient”, *IMF Policy Paper*, [www.imf.org/external/np/pp/eng/2015/061115.pdf](http://www.imf.org/external/np/pp/eng/2015/061115.pdf).
- IRENA (2017), “Global Energy Transition and the Role of Renewables”, Chapter 3 in *Perspectives for the Energy Transition: Investment Needs for a Low-Carbon Energy System*, International Renewable Energy Agency, Abu Dhabi, [www.energiewende2017.com/wp-content/uploads/2017/03/Perspectives-for-the-Energy-Transition\\_WEB.pdf](http://www.energiewende2017.com/wp-content/uploads/2017/03/Perspectives-for-the-Energy-Transition_WEB.pdf).
- ITF/OECD (2017), *Quantifying the socio-economic benefits of transport*, ITF Roundtable Report, <http://dx.doi.org/10.1787/9789282108093-en>.
- Karabarbounis, L. and B. Neiman (2013), “The Global Decline of the Labor Share”, *NBER Working Paper No. 19136*.
- Lewis, C. et al. (2014), “Investment Gaps After the Crisis”, *OECD Economics Department Working Papers*, No. 1168.
- Love, I. and M.S.M. Peria (2012), “How Bank Competition affects firms’ access to Finance”, *The World Bank Economic Review*, Vol. 29/3.
- Lundqvist, L. and L.G. Mattsson (2002), “National Transport Models: Introduction and Comparative Analysis” in Lundqvist, L. and L.G. Mattsson (eds) *National transport models: Recent developments and prospects*, Springer, Heidelberg, pp. 1-16.
- Ministry of Education and Research (2016), *Annual analysis summary 2016*.
- Ministry of Education and Research (2015), “Adult skills: Their use and usefulness in Estonia”, *Summaries of thematic reports on the PIAAC study*.
- National Audit Office (2015a), “Accessibility of Preschool places in Municipalities, Towns and Cities”, English summary of *Lasteaiakohtade kättesaadavus valdades ja linnades*, [www.riigikontroll.ee/tabid/206/Audit/2372/language/en-US/Default.aspx](http://www.riigikontroll.ee/tabid/206/Audit/2372/language/en-US/Default.aspx).
- National Audit Office (2015b), “Effectiveness of the development of a broadband network or high-speed Internet”, English summary of *Lairibavõrgu ehk kiire interneti väljaehitamise tulemuslikkus*, [www.riigikontroll.ee/tabid/206/Audit/2346/language/en-US/Default.aspx](http://www.riigikontroll.ee/tabid/206/Audit/2346/language/en-US/Default.aspx).
- National Audit Office (2015c), “Government Actions in the Organisation of Oil Shale Mining and Processing Waste Management”, National Audit Office of Estonia, Tallinn, 20 May 2015, [www.riigikontroll.ee/tabid/206/Audit/2350/Area/15/language/en-US/Default.aspx](http://www.riigikontroll.ee/tabid/206/Audit/2350/Area/15/language/en-US/Default.aspx).
- Nickell, S. and D. Nicolitsas (2000), “Human Capital, Investment and Innovation: What Are the Connections?” in Barrell, R., G. Mason and M. O’Mahoney (eds.) *Productivity, Innovation and Economic Performance*, Cambridge University Press, Cambridge, pp. 268-280.
- OECD (2017a), *OECD Environmental Performance Reviews: Estonia 2017*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264268241-en>.
- OECD (2017b), *The Pursuit of Gender Equality: An Uphill Battle*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264281318-en>, forthcoming.
- OECD (2017c), *Investing in Climate, Investing in Growth*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264273528-en>.
- OECD (2016), *Effective Carbon Rates: Pricing CO<sub>2</sub> through Taxes and Emissions Trading Systems*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264260115-en>.
- OECD (2015a), *OECD Economic Surveys: Estonia 2015*, OECD Publishing, Paris, [http://dx.doi.org/10.1787/eco\\_surveys-est-2015-en](http://dx.doi.org/10.1787/eco_surveys-est-2015-en).
- OECD (2015b), *Policy Guidance for Investment in Clean Energy Infrastructure: Expanding Access to Clean Energy for Green Growth and Development*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264212664-en>.
- OECD (2015c), *OECD Regulatory Policy Outlook 2015*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264238770-en>.
- OECD (2013), *Supporting Investment in Knowledge Capital, Growth and Innovation*, OECD Publishing, <http://dx.doi.org/10.1787/9789264193307-en>.
- OECD (2012a), *Closing the Gender Gap: Act Now*, OECD Publishing, <http://dx.doi.org/10.1787/9789264179370-en>.

- OECD (2012b), *OECD Economic Surveys: Estonia 2012*, OECD Publishing, [http://dx.doi.org/10.1787/eco\\_surveys-est-2012-en](http://dx.doi.org/10.1787/eco_surveys-est-2012-en).
- OECD (2011), *OECD Economic Surveys: Estonia 2011*, OECD Publishing, [http://dx.doi.org/10.1787/eco\\_surveys-est-2011-en](http://dx.doi.org/10.1787/eco_surveys-est-2011-en).
- Praxis (2017), "Impact assessment of EU-funded transport investments", Executive Summary, in *Euroopa Liidu struktuurivahenditest teostatud transpordiinvesteeringute mõjude hindamine*.
- Rossin-Slater, M. (2017), "Maternity and Family Leave Policy", *IZA Discussion Paper No. 10500*, <http://ftp.iza.org/dp10500.pdf>.
- Ryan, R.M. et al. (2014), "Does Bank Market Power Affect SME Financing Constraints?", *Journal of Banking and Finance*, No. 49, pp. 495-505.
- Santiago, P. et al. (2016), *OECD Reviews of School Resources: Estonia 2016*, OECD Reviews of School Resources, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264251731-en>.
- Sihtasutus Kutsekoda (2016), "Short overview of main findings in OSKA ICT sector", <http://oska.kutsekoda.ee/en/field/information-communication-technology/>.
- Stein, J. (2002), "Information Production and Capital Allocation: Decentralized Versus Hierarchical Firms", *Journal of Finance*, Vol. 57, pp. 1891-921.
- Thévenon, O. and A. Solaz (2013), "Labour Market Effects of Parental Leave Policies in OECD countries", *OECD Social, Employment and Migration Working Papers*, No. 141, OECD Publishing, <http://dx.doi.org/10.1787/5k8xb6hw1wjf-en>.
- World Bank (2016), *Doing Business 2017: Equal Opportunity for All*, World Bank, Washington, DC.
- World Economic Forum (2015), *The Global Competitiveness Index Historical Dataset 2005-2015*, World Economic Forum.
- World Economic Forum (2016), *Global Competitiveness Report 2016-2017*.
- Yeaple, S.R. and S.S. Golub (2007), "International Productivity Differences, Infrastructure, and Comparative Advantage", *Review of International Economics*, Vol. 15, No. 2, pp. 223-242.

## **ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT**

The OECD is a unique forum where governments work together to address the economic, social and environmental challenges of globalisation. The OECD is also at the forefront of efforts to understand and to help governments respond to new developments and concerns, such as corporate governance, the information economy and the challenges of an ageing population. The Organisation provides a setting where governments can compare policy experiences, seek answers to common problems, identify good practice and work to co-ordinate domestic and international policies.

The OECD member countries are: Australia, Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The European Union takes part in the work of the OECD.

OECD Publishing disseminates widely the results of the Organisation's statistics gathering and research on economic, social and environmental issues, as well as the conventions, guidelines and standards agreed by its members.

## OECD Economic Surveys

# ESTONIA

OECD Economic Surveys are periodic reviews of member and non-member economies. Reviews of member and some non-member economies are on a two-year cycle; other selected non-member economies are also reviewed from time to time. Each Economic Survey provides a comprehensive analysis of economic developments, with chapters covering key economic challenges and policy recommendations addressing these challenges.

The Estonian economy displays numerous strengths, including an excellent business environment, high educational attainment, and solid public finances. However, around a quarter of the population is still at risk of poverty and productivity growth has slowed down. Fiscal room should be used to make growth stronger and more inclusive.

Estonia is well integrated into global trade, and export potential and value-added drawn from trade can improve further. Efforts should concentrate on strengthening adult education, immigration of talents, and cooperation between businesses and researchers.

Investment has weakened, particularly in projects required to increase business productivity. Addressing skill shortages and inefficiencies in the insolvency regime can help raise firms' investment capacity. Improving the quality of infrastructure projects and developing green investment further is a priority.

### **SPECIAL FEATURES: GETTING THE MOST OUT OF TRADE; REVIVING INVESTMENT**

Consult this publication on line at [http://dx.doi.org/10.1787/eco\\_surveys-est-2017-en](http://dx.doi.org/10.1787/eco_surveys-est-2017-en).

This work is published on the OECD iLibrary, which gathers all OECD books, periodicals and statistical databases. Visit [www.oecd-ilibrary.org](http://www.oecd-ilibrary.org) for more information.

**Volume 2017/  
Supplement 3  
September 2017**

OECD *publishing*  
[www.oecd.org/publishing](http://www.oecd.org/publishing)



**INTERNATIONAL  
EXCELLENCE  
Awards 2017**  
IN PARTNERSHIP WITH THE PUBLISHERS  
ASSOCIATION



**ISSN 0376-6438  
2017 SUBSCRIPTION  
(18 ISSUES)**

**ISBN 978-92-64-28115-8  
10 2017 21 1 P**

