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This Survey *was prepared in the Economics Department by Lilas Demmou and Manav Frohde, under the supervision of Piritta Sorsa. Statistical research assistance was provided by Pedro Herrera Gimenez with general administrative assistance provided by Anthony Bolton and Brigitte Beyeler. The* Survey *also benefitted from consultancy contributions by Francois Rycx, Vincent Vandenberghe and Peter Walkenhorst.*

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BASIC STATISTICS OF BELGIUM, 2015

(Numbers in parentheses refer to the OECD average)*

LAND, PEOPLE AND ELECTORAL CYCLE

Population (million)	11.4		Population density per km^2	371.3	(37.0)
Under 15 (%)	17.2	(18.0)	Life expectancy (years, 2014)	81.4	(80.6)
Over 65 (%)	18.2	(16.3)	Men	78.8	(77.9)
Foreign-born (%, 2014)	16.2		Women	83.9	(83.3)
Latest 5-year average growth (%)	0.81	(0.60)	Latest general election	May 2014	

ECONOMY

Gross domestic product (GDP)			Value added shares (%)		
In current prices (billion USD)	455.1		Primary sector	0.7	(2.5)
In current prices (billion EUR)	410.4		Industry including construction	22.2	(27.0)
Latest 5-year average real growth (%)	1.0	(1.9)	Services	77.1	(70.6)
Per capita (000 USD PPP)	45.9	(40.8)			

GENERAL GOVERNMENT

Per cent of GDP

Expenditure	53.9	(40.5)	Gross financial debt	126.7	(114.0)
Revenue	51.3	(37.9)	Net financial debt	97.7	(72.7)

EXTERNAL ACCOUNTS

Exchange rate (EUR per USD)	0.901		Main exports (% of total merchandise exports)	
PPP exchange rate (USA = 1)	0.798		Machinery and transport equipment	33.9
In per cent of GDP			Manufactured goods	15.4
Exports of goods and services	82.9	(54.8)	Chemicals and related products, n.e.s.	13.5
Imports of goods and services	81.3	(50.2)	Main imports (% of total merchandise imports)	
Current account balance	0.4	(0.2)	Machinery and transport equipment	31.1
Net international investment position (2014)	52.5		Chemicals and related products, n.e.s.	14.8
			Miscellaneous manufactured articles	14.1

LABOUR MARKET, SKILLS AND INNOVATION

Employment rate for 15-64 year-olds (%)	61.8	(66.2)	Unemployment rate, Labour Force Survey (age 15 and over) (%)	8.5	(6.8)
Men	65.5	(74.1)	Youth (age 15-24, %)	22.1	(13.9)
Women	58.0	(58.5)	Long-term unemployed (1 year and over, %)	4.4	(2.2)
Participation rate for 15-64 year-olds (%)	67.6	(71.3)	Tertiary educational attainment 25-64 year-olds (%)	36.9	(35.0)
Average hours worked per year	1 541	(1 766)	Gross domestic expenditure on R&D (% of GDP)	2.5	(2.4)

ENVIRONMENT

Total primary energy supply per capita (toe)	4.6	(4.1)	CO_2 emissions from fuel combustion per capita (tonnes, 2014)	7.7	(9.4)
Renewables (%)	6.3	(9.6)	Water abstractions per capita (1 000 m^3, 2012)		
Exposure to air pollution (more than 10 µg/m^3 of $PM_{2.5}$, % of population, 2013)	100.0	(72.3)	Municipal waste per capita (tonnes, 2014)	0.4	(0.5)

SOCIETY

Income inequality (Gini coefficient, 2013)	0.268	(0.311)	Education outcomes (PISA score, 2015)		
Relative poverty rate (%, 2013)	10.0	(11.1)	Reading	499	(493)
Median disposable household income (000 USD PPP, 2013)	26.9	(22.0)	Mathematics	507	(490)
Public and private spending (% of GDP)			Science	502	(493)
Health care	10.4	(9.0)	Share of women in parliament (%)	39.3	(28.6)
Pensions (2013)	10.5	(9.1)	Net official development assistance (% of GNI)	0.42	(0.37)
Education (primary, secondary, post sec. non tertiary, 2013)	4.4	(3.7)			

Better life index: *www.oecdbetterlifeindex.org*

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

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

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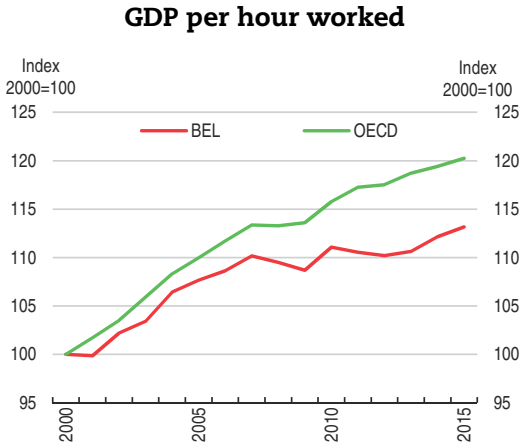
Executive summary

- *Productivity gains have been modest*
- *Raising skills and work opportunities for vulnerable groups would make growth more inclusive*
- *Greater public investment to enhance productivity and inclusiveness while ensuring public debt sustainability*

Productivity gains have been modest

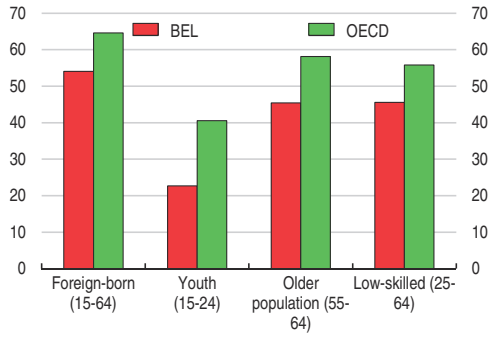


Source: OECD Productivity Statistics Database.

StatLink http://dx.doi.org/10.1787/888933496408

Belgium performs well in many economic and social dimensions. The macroeconomic policy framework is sound and has been strengthened by many important reforms in recent years, including in labour taxation, business regulation and support for the self-employed and SMEs. However, recent productivity gains have been comparatively modest, partly reflecting stronger inclusion of low-skilled workers in employment. Raising productivity is vital to sustaining increases in living standards and supporting inclusive growth. Keys to higher productivity lie in increasing market entry and exit in the business sector, improving public infrastructure to reduce heavy traffic congestion around major urban areas, fostering innovation and more widespread diffusion of advanced technologies. Digitalisation and the rapid growth of the sharing economy through the use of web-platforms can invigorate productivity growth and job creation, but create significant social challenges.

Raising skills and work opportunities for vulnerable groups would make growth more inclusive

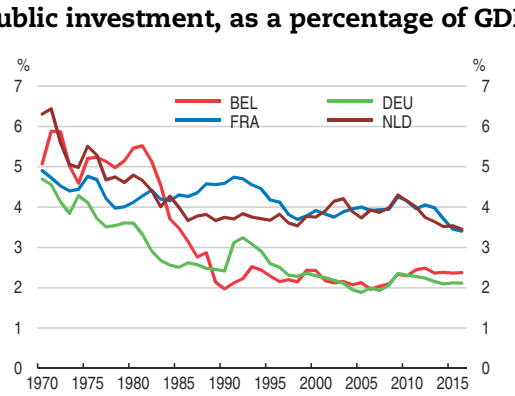


Source: OECD, *Labour force statistics Database*; and OECD, *Migration statistics Database*.

StatLink http://dx.doi.org/10.1787/888933496418

While overall education levels are high, some suffer from poor skills, especially those with a low socio-economic or immigrant background. The labour market performance of immigrants, especially women, and low-skilled and older workers is comparatively weak. Improving the capacity of the educational system to provide disadvantaged students with necessary skills would enhance inclusiveness and improve labour market integration of youth and the children of immigrants. Further efforts to reduce labour costs would help the labour market performance of low-skilled natives and migrants. While recent pension reform will contribute to raise the participation of older people in the labour market, their employment and productivity could be further supported by on-the-job training and increased use of flexitime.

Greater public investment to enhance productivity and inclusiveness while ensuring public debt sustainability



Source: OECD, *Economics Department Database*.

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Enhancing productivity and inclusiveness will depend on social and physical infrastructure investment. Transport infrastructure investment to relieve bottlenecks around big agglomerations would promote both productivity and environmental goals. Given high public debt and the need for fiscal consolidation, these investments could be financed through reductions in inefficient public spending, user fees or by tapping private sources of finance. In addition, a further shift of taxation away from labour would boost activity and job creation.

MAIN FINDINGS	KEY RECOMMENDATIONS
Macroeconomic policies to support productivity and inclusiveness	
Public investment is too low.	To ensure fiscal sustainability, continue with planned fiscal consolidation. Finance growth-enhancing public investment by reducing inefficient public spending, considering user fees and private sources of finance.
The tax mix is not sufficiently conducive to inclusive growth.	Shift taxes further away from labour by lowering employer social security contributions on low wages and broaden the capital income tax base, including by considering the introduction of a federal capital gains tax, as part of a balanced broader reform of household savings taxation.
The high statutory corporate tax rate hurts investment. The corporate tax system is inefficient.	Reduce the federal statutory corporate tax rate. Broaden the tax base by reforming exemptions that facilitate tax avoidance such as the notional interest rate deduction.
Making growth greener	
Traffic congestion contributes to air pollution.	Increase investment in transport infrastructure around major urban areas through joint federal and regional initiatives and when possible through increased private sector involvement. Suppress the favourable tax treatment of company cars, extend the use of congestion charges and continue increasing the tax rate on fuel.
High transaction costs on buyers and support for homeownership impedes residential mobility and increases commuting.	Reduce transaction taxes on housing and phase out the favourable tax treatment of home ownership.
Boosting competitiveness	
Wages grew faster than domestic productivity under the wage-setting mechanism, which the government has recently reformed.	Evaluate the results of the Federal government's wage-setting reform, and make further changes if needed.
Making the business environment more dynamic and innovative	
R&D activity and innovation performance lags behind best performers. Better technology transfer would raise the innovative capacity of firms.	Further streamline public support for R&D and innovation within each region. Regions and communities could step up their innovation support co-operation where appropriate.
Business dynamism is weak, with low rates of enterprise start-ups and exits. Start-ups face several barriers and entrepreneurship is underdeveloped.	Further reduce administrative burdens on SMEs stemming from federal and regional measures; reduce the level of paid-in minimum capital requirements and strengthen contract enforcement by strengthening court automation and case management. Ensure appropriate financing tools are available for scaling up of young, innovative firms.
Raising and mobilising skills to help boost productivity and inclusiveness	
The employment rate of seniors is low.	Ensure firms comply with the new federal legislation to provide workers with at least five working days of education and training per year. Develop flexitime and abolish remaining early retirement schemes.
Educational outcomes of socio-economically disadvantage individuals and first and second-generation immigrants are comparatively poor.	Where appropriate, expand controlled school-choice schemes in the communities to reduce the concentration of pupils with a non-EU immigrant background. Improve teacher training and incentives to attract teachers to schools with a high concentration of disadvantaged pupils.
The decline in spending per student in tertiary education has recently recovered. Too few students graduate with skills in demand.	Where appropriate, consider increasing or adjusting tuition fees, while maintaining the grant and waiver system for disadvantaged students along with income-contingent loans. Better publicise labour market shortages and wage premia to motivate students to choose fields of study more relevant to the labour market.

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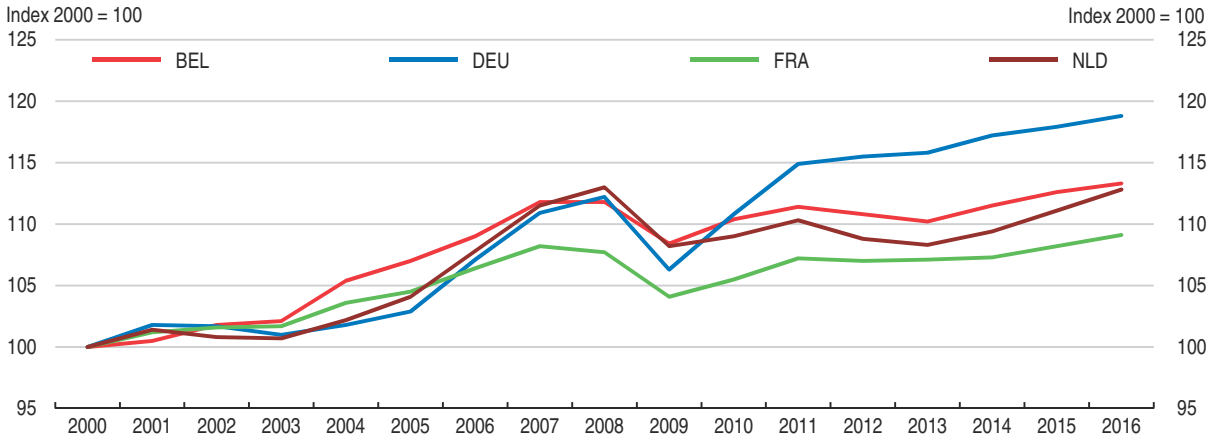
Assessment and recommendations

- *Macroeconomic developments and short-term prospects*
- *Medium-term policy challenges to reignite productivity and strengthen inclusiveness*
- *Making the business environment more supportive of productivity gains*
- *Raising and mobilising skills to boost growth and inclusiveness*

A sound macroeconomic policy framework, high quality education and a combination of market-based policies and a redistributive welfare state have boosted GDP per capita to well above the OECD average. Although growth weakened since the global financial crisis (Figure 1), Belgium ranks among the ten most competitive countries in Europe (WEF, 2016). The financial sector has recovered from the severe shock which hit the banking system in the aftermath of the financial crisis, aided by government bailouts and new prudential measures (IMF, 2016a). Belgians enjoy high well-being in many dimensions, notably work-life balance, health, education and civic engagement. Income inequality after tax and transfers is comparatively low. Belgium has the lowest gender wage gap among the OECD countries (Figure 2).

Figure 1. **GDP growth has weakened since the crisis**

GDP per capita index



Source: OECD Productivity Database.

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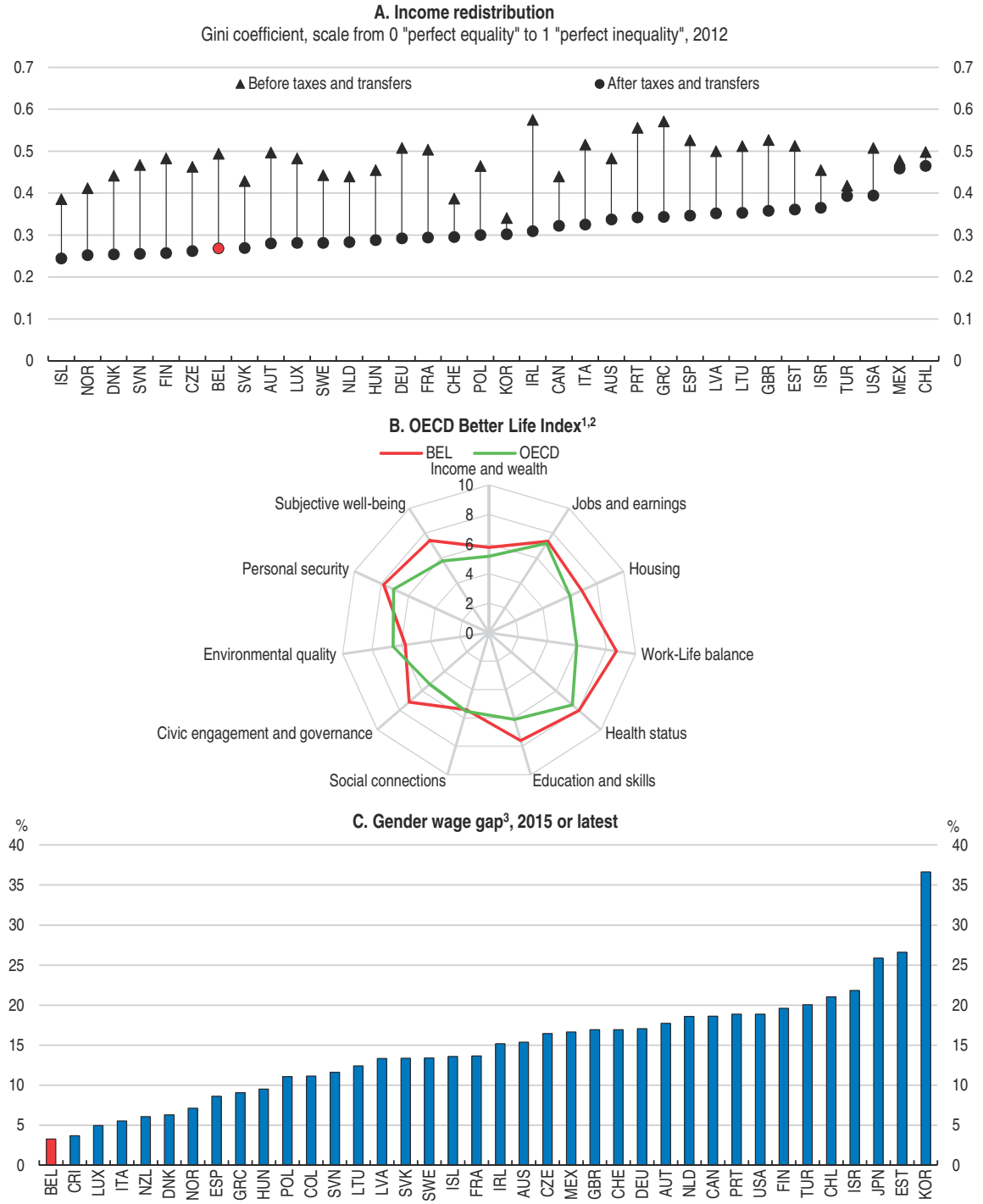
Belgium's strong performance has been supported by important reforms, in line with previous OECD recommendations, at both the federal and regional levels in recent years. Belgium appears as a top performer in the 2017 *Going for Growth* exercise, which evaluates structural reform progress (Figure 3). Notable reforms include:

- A shift of taxation from direct to indirect taxes to support private sector activity and boost job creation, especially by lowering high taxes on labour for vulnerable groups.
- Measures to moderate wages to halt the decline in competiveness.
- Pension reform to increase incentives to work longer and to strengthen long-term sustainability, including tightening of early retirement schemes and an increase of the statutory retirement age.
- A reform of unemployment benefits to make them decline over time and a reduction of the tax wedge have strengthened financial incentives to find work.

Figure 2. **Belgium performs well on almost all dimensions of inclusiveness and well-being**



1. Each well-being dimension is measured using one to three indications from the OECD Better Life Indicator set with equal weights.
2. Indicators are normalised by re-scaling to be from 0 (worst) to 10 (best).
3. The gender wage gap is defined as the difference between male and female median wages divided by the male median wage.

Note: In panel A, calculations for Latvia and Lithuania were made on the basis of EU-SILC – preliminary results. For Japan, data refer to 2009. For Canada and Chile, data refer to 2011. For Finland, Israel, Korea, the Netherlands and the United States, data refer to 2013. For Hungary, data refer to 2014.

Source: Adapted from *OECD Income Distribution Database*; OECD "Better Life Index 2016", OECD Social and Welfare Statistics (database) and; OECD Gender Data Portal.

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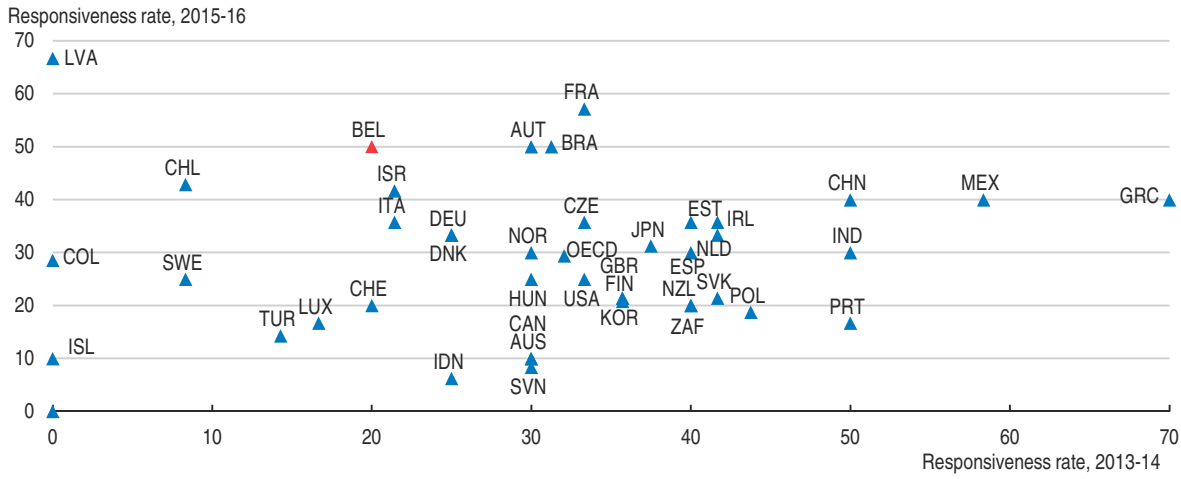
Figure 3. **The pace of reforms has increased**

Responsiveness to *Going for Growth* recommendations



Note: For Colombia and Latvia, there is no responsiveness rate computed for 2013 and 2014.
Source: OECD, *Economic Policy Reforms 2017: Going for Growth*.

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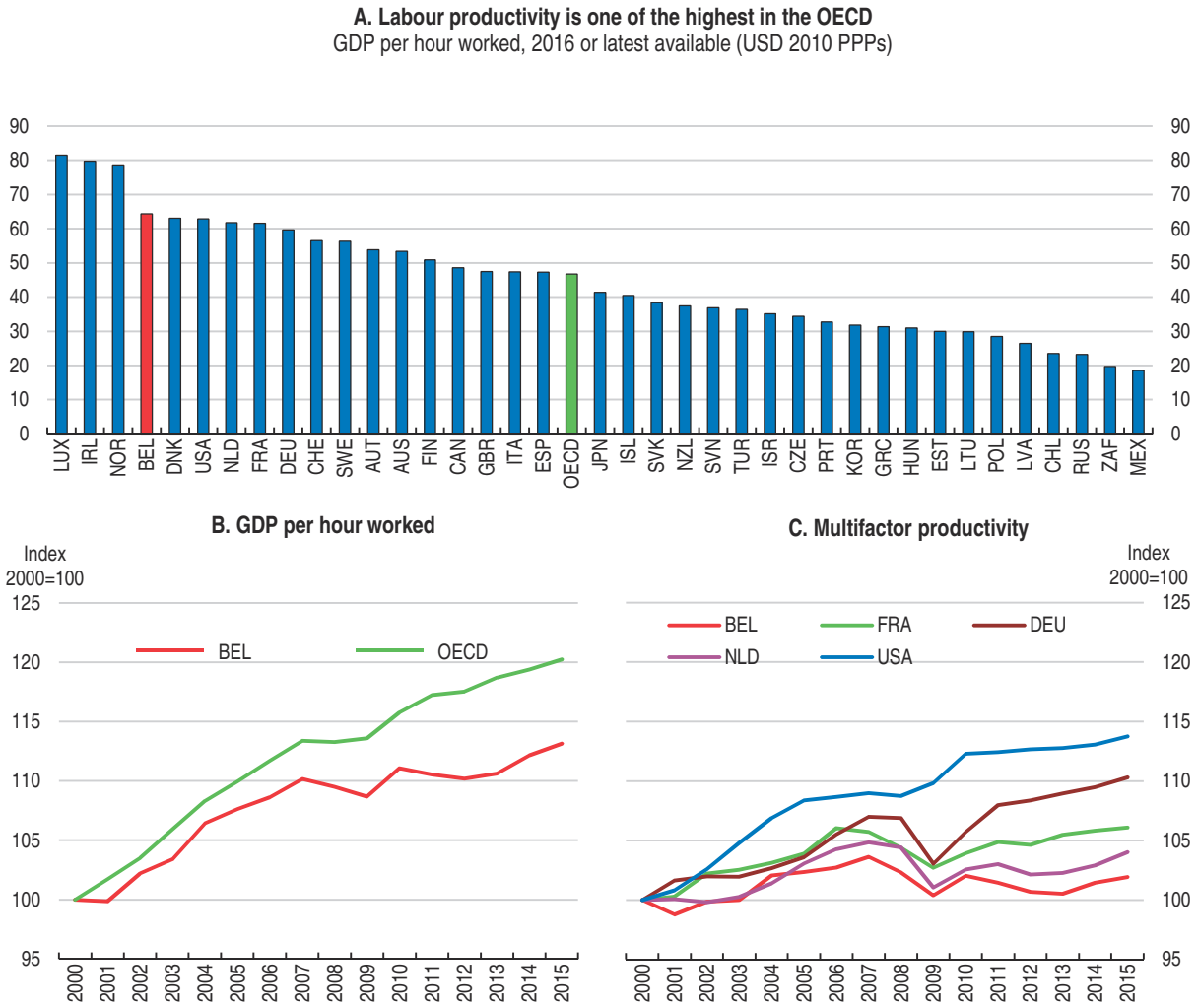
- Measures to improve the business environment for self-employed and SMEs, especially through a reduction of social security contributions, increased R&D and innovation budgets, simplification of administrative procedures, improved access to finance and increased access to public procurement.
- The Sixth State Reform of 2012-14 increased the fiscal autonomy of the regions and devolved a number of competences, including several functions within the labour market and health care.

The level of productivity is among the highest in the OECD, but its growth has been comparatively low in the past decade, especially since the 2008 financial crisis (Figure 4). The high level of productivity is related to a substantial accumulation of productive capital in the past, a highly qualified workforce, and innovative technologies introduced in the lead manufacturing sectors, including in chemicals and chemical products, and basic metal and fabricated metal products (Biatour et al., 2007).

The productivity growth slowdown is partly related to structural change as the demand for low productive services has expanded and absorbed more low-skilled workers into the labour market (Dumont and Kegels, 2016). As these factors reflect the rising demand for services and greater inclusivity they are not in themselves of concern. More worrisome is the continued slowdown of multifactor productivity growth (Figure 4.C), both in the manufacturing and services sectors. This is the result of lower efficiency gains, and weaker innovation and diffusion of advanced technologies within firms. Raising multifactor productivity is an important challenge, and will be crucial in allowing Belgium to maintain sustainable and inclusive growth going forward. As such the in-depth chapters of this Survey examine productivity-enhancing policies.

Regional inequalities are broadly in line with neighbouring countries in terms of disposable income, education, housing and access to services. However, inequalities are much more pronounced in the labour market (employment and unemployment rates), and to a lesser extent with respect to health outcomes (mortality rate and life expectancy) (Figure 5). The labour market is segmented between regions, in part due to institutional

Figure 4. **The level of productivity is high but productivity growth has slowed**



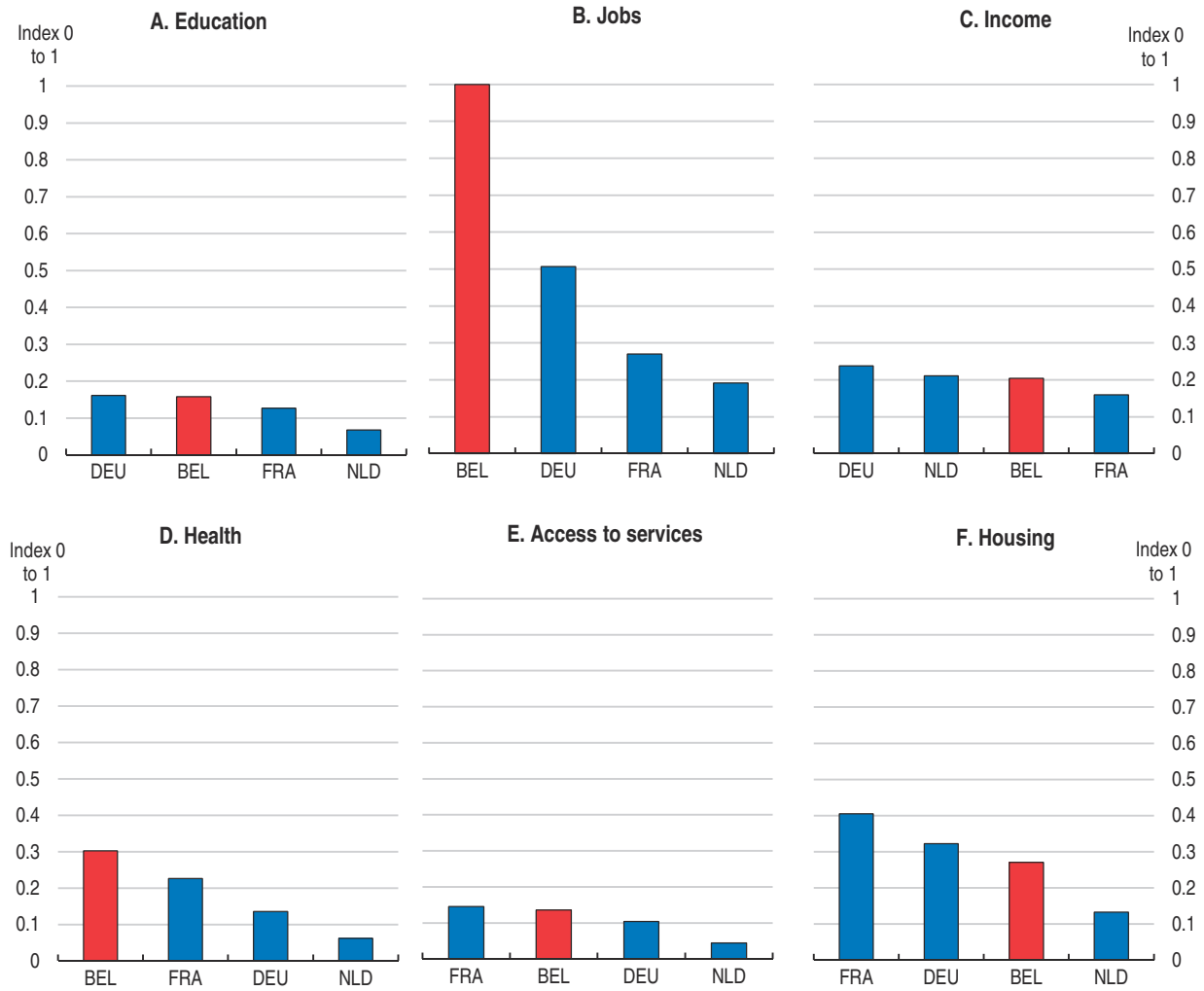
Note: For Australia, Belgium, Chile, Iceland, Ireland, Japan, Korea, Mexico, Poland, Russia, South Africa, Turkey and United States, data refer to 2014 in the panel B.
Source: *OECD Productivity Statistics Database.*

StatLink http://dx.doi.org/10.1787/888933496465

and linguistic differences, but also because underdeveloped transport networks and housing market rigidities hamper mobility. Political decision making is highly decentralised (see Box 1).

Labour market inequalities and regional disparities in employment challenge inclusiveness (Figures 5 and 6). Youth unemployment is above the EU average and is particularly high among the low-skilled with differences among regions (Figure 7.A). Furthermore, labour market integration of non-EU immigrants, especially women, and their offspring is poor. The employment rate gap between second-generation non-EU immigrants and Belgians with a non-immigrant background is among the highest in the EU (EC, 2016a). The employment rate of women of non-EU origin is almost 20 percentage points below the national average (Eurostat, 2016; Figure 7.B). Efforts are being made, however. For example, the youth unemployment rate in the Brussels-Capital Region declined from 40% in 2013 to 36% in 2016 (the youth unemployment rate was 28% in the Walloon Region and 14% in the Flemish Region in 2016). This may in part be due to the

Figure 5. **Regional disparities in well-being**



Note: The indicators measure the dispersion across regions within a country expressed as normalised indexes; for each dimension, countries with the lowest and the highest dispersion levels in the OECD take values 0 and 1. Education category refers to labour force with at least secondary education; Jobs category refers to employment and unemployment rates; Income category refers to household disposable income per capita; Health category refers to mortality rate and life expectancy; Access to services category refers to broadband access; and Housing category refers to number of rooms per person.
Source: *OECD Regional Well-Being Database 2016.*

StatLink http://dx.doi.org/10.1787/888933496476

establishment of a Youth Guarantee which offers 80% of newly registered young jobseekers either employment, training or a traineeship opportunity within six months of registration. The Flemish Region aims to improve employment performance through a new policy approach called "Focus on Talent", which gives tailor-made guidance to workers and jobseekers, by supporting companies to improve their human resource policies, and by addressing discrimination in the labour market. Policies to improve the employment performance of vulnerable groups were thoroughly discussed in the last two Economic Surveys and remain relevant (OECD, 2013a; OECD, 2015a).

Regional inequalities in terms of health are somewhat higher than in neighbouring countries, partly reflecting socioeconomic differences between regions. The Belgian population enjoys relatively good health and long life expectancy, reflecting good access to

Box 1. **Government of Belgium**

Besides the Federal government, the Belgian governance system comprises three regional authorities with significant autonomy, and three language communities (cutting across the regions), with separate competencies (e.g., in education). Authority to tax and spend is thus spread across different levels of government, with complicated sharing arrangements and sometimes overlapping responsibilities. This complex political and institutional setting means that a consensus on economic issues is difficult to achieve. Fiscal policy needs to be negotiated across many different dimensions, and deeper reforms, both fiscal and structural, can be challenging to adopt.

Belgium's federal structure of government has evolved through six state reforms over the past decades (in 1970, 1980, 1988-89, 1993, 2001 and 2012-14). As a result the power to make decisions has been gradually devolved from the Federal Government and the Federal Parliament to the regions and communities.

The Federal government retains control over the judicial system, the army, the Federal police, labour law, social security (unemployment, pensions, health insurance), public debt, prices, income and wage policy financial sector and financial markets (incl. protection of savings and macroprudential policies (the National Bank of Belgium), nuclear energy, state-owned companies (such as Belgian Railways and the Post Office), and the federal scientific and cultural institutions. Furthermore, the Federal State is responsible for the obligations of Belgium and its federalised institutions towards the European Union and NATO.

The powers of the three regions, the Flemish Region, the Brussels-Capital Region and the Walloon Region have been extended in the course of the various reforms. During the Second State Reform in 1980, the Flemish and the Walloon Regions were given their parliament and government. The Brussels-Capital Region, on the other hand, was only granted its institutions following the Third State Reform in 1988-89. The regions have powers relating to the economy (including direct support, guarantees, business sites and cluster policy), employment, minor aspects of social security (such as reduction of social security contributions for targeted groups), economic migration agriculture, water policy, housing, public works, energy, transport (except Belgian Railways), the environment, town and country planning, nature conservation, credit, FDI and foreign trade, supervision of the provinces, communes, and intercommunal utility companies. They also have powers relating to scientific research and innovation and over the research centres and international relations in those fields.

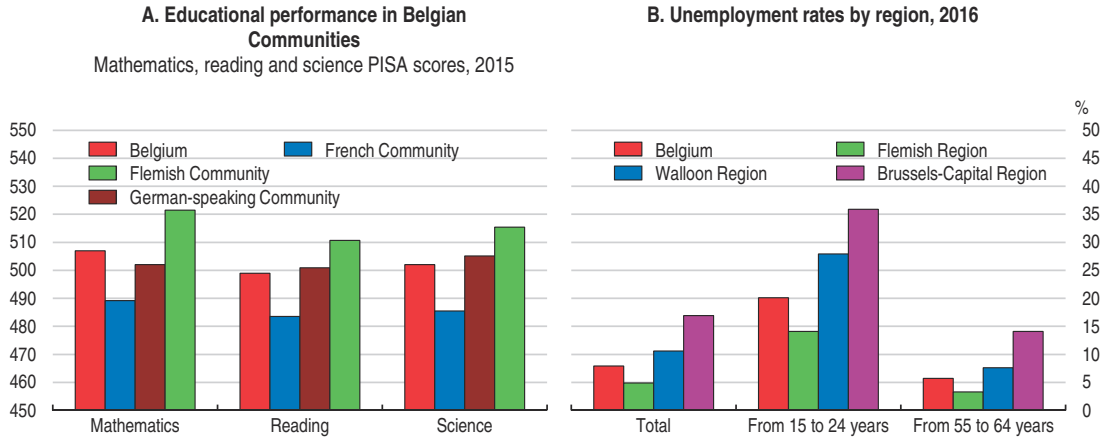
The competences of the three communities, the French, the Flemish and the German-speaking, are culture (theatre, libraries, audio-visual media, etc.), education, (pre-primary to higher and adult education) the use of languages and matters relating to the individual which concern on the one hand health policy (curative and preventive medicine) and on the other hand assistance to individuals (protection of youth, social welfare, aid to families, immigrant assistance services, etc.). They also have powers in the field of scientific research in relation to their powers, the community scientific institutes and international relations associated with their powers.

In Flanders, the community and regional institutions have been merged. So in Flanders, there is one parliament, one government and one administration.

Source: www.belgium.be, OECD.

high-quality and safe care. However there are large variations in medical practices across the country, suggesting there is scope to improve equity and efficiency in health care delivery (OECD, 2014a; 2016i). Cost, waiting time and travelling distance related to the distribution of medical practitioners in the country result in higher unmet medical needs for low-income

Figure 6. **Regional disparities in student performance and unemployment are large**



Note: Mathematics, reading and science PISA scores for OECD are 490, 493 and 493.
Source: OECD, *PISA 2015 Database*; and Statistics Belgium.

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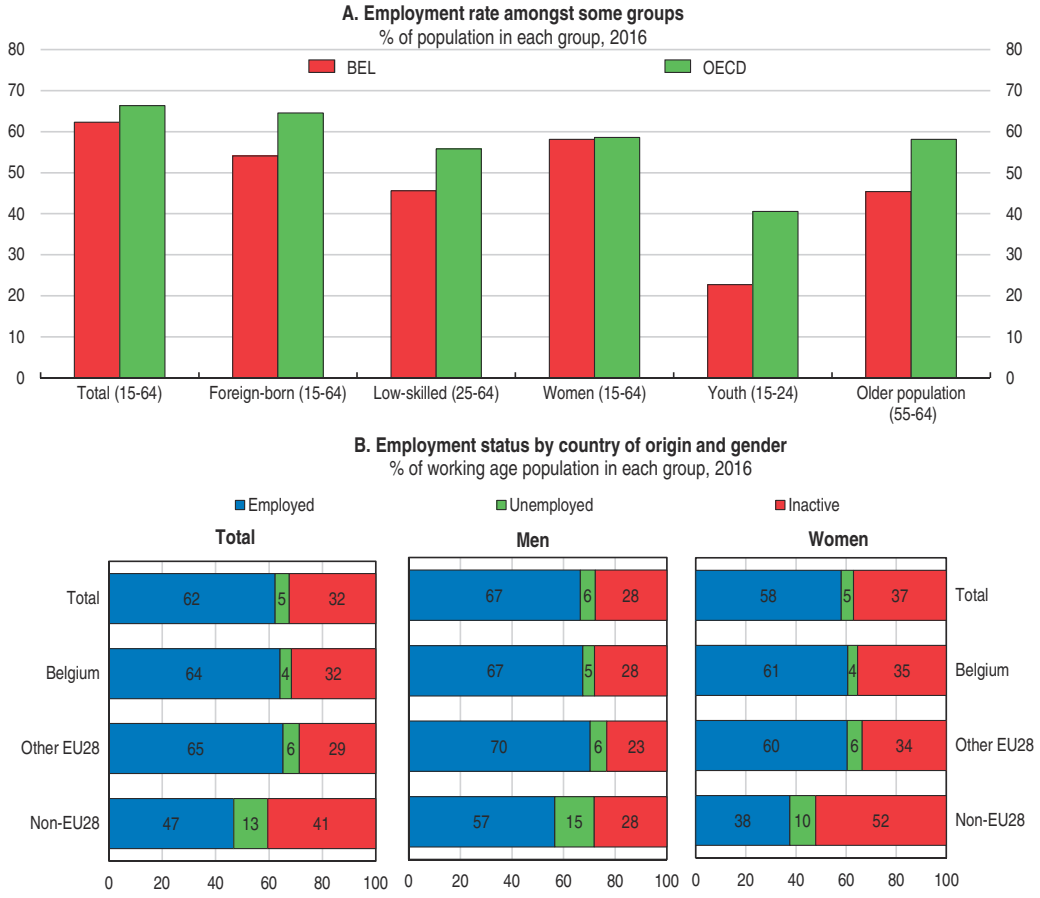
Figure 7. **Employment rate amongst some groups is low**



Note: In panel A, for the low-skilled group, data refer to individuals with a level of educational attainment below upper secondary education (ISCED-11 levels 0-2). For OECD, figures are calculated as a simple average of the available data. In panel B, numbers may not add up to 100 due to rounding.
Source: OECD, *Labour force statistics Database*; OECD, *Migration statistics Database*; OECD, *Education at a glance Database*; and Eurostat, Labour Force Survey.

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people. Despite health expenditure being higher than the OECD average as a share of GDP, 5.5% of low-income individuals had unmet needs for medical examinations in 2013, slightly above the OECD average. At 3% of final household consumption, out-of-pocket spending on health is just above the OECD average. With regard to hospital medical admissions, however, the variation across provinces in Belgium is generally very low, reflecting an equal distribution of hospital facilities across the country, and that people do not face financial barriers to hospitalisation (OECD, 2014a).

The main messages of the Survey are:

- Incomes and productivity levels are high, but invigorating productivity growth is needed to raise prosperity and help address future challenges related to population ageing and fiscal sustainability.
- Increased public investment in infrastructure and R&D is needed to enhance productivity while promoting inclusiveness and sustainability. More investment in transport infrastructure would reduce bottlenecks around large agglomerations, addressing both productivity and environmental challenges. Given high public debt and the need to continue fiscal consolidation, reducing inefficient public spending, user fees, well-designed public-private partnerships and higher non-distortionary taxes could all help finance an investment-led growth strategy.
- Well-functioning labour markets, a dynamic business environment and an effective education and training system would ease adaptation to digitalisation and the sharing economy, and are needed to boost productivity and employment and reduce inequality. Improving opportunities to acquire and maintain skills is particularly important to better integrate youth, older workers and low-skilled immigrants into the labour market.

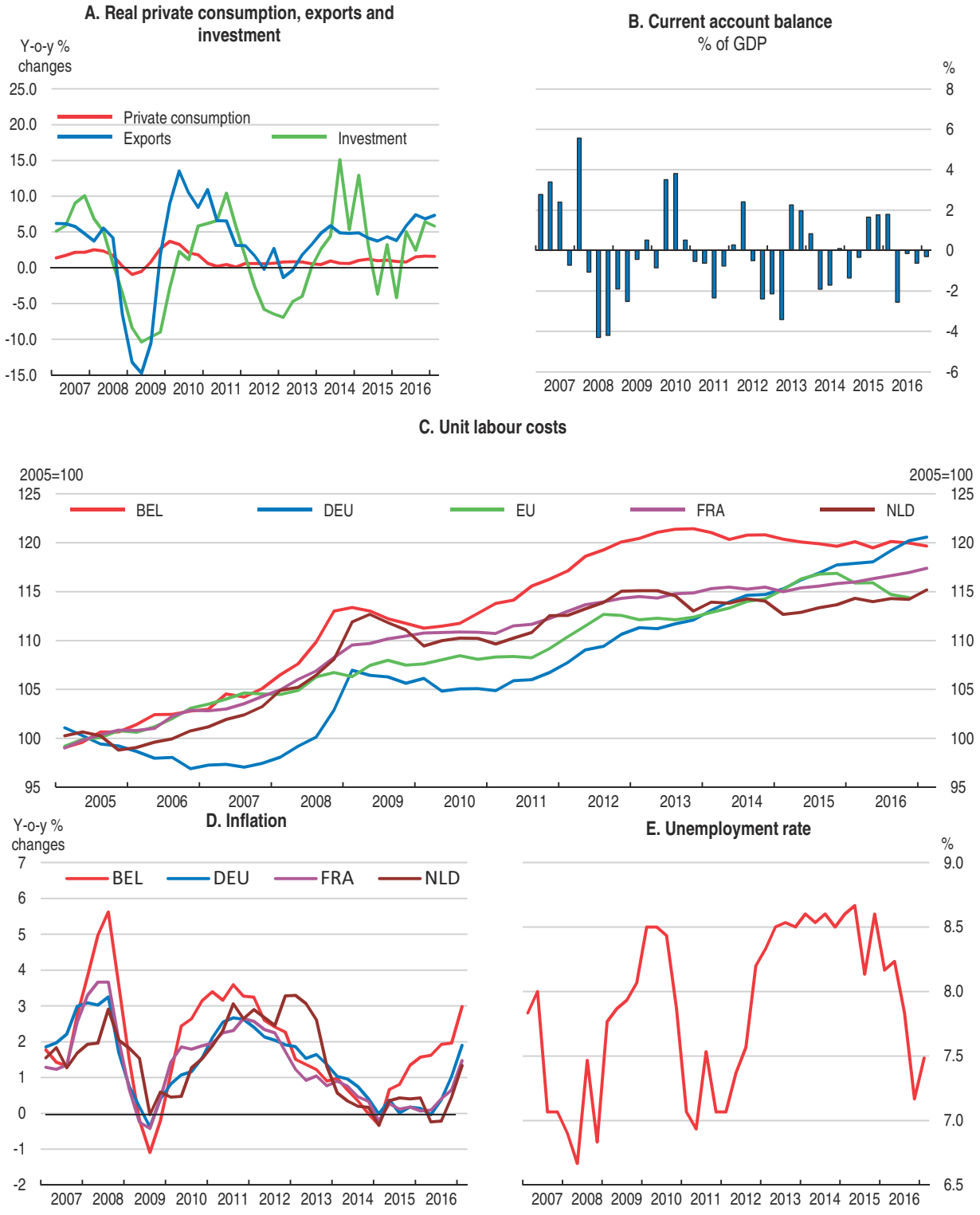
Macroeconomic developments and short-term prospects

Growth has been modest

As in several other European countries, trend growth has decelerated in recent years. The modest economic growth in the post-crisis period has mainly been driven by domestic demand (Figure 8.A). In contrast to many OECD countries business investment in Belgium has remained relatively robust, supported by increased capacity utilisation, low interest rates and high corporate profits. Weak wage growth has held back consumption, but it has also raised international competitiveness. The current account deficit has narrowed since the 2008 financial crisis, supported by low oil prices and a weaker euro (Figure 8.B).

Inflation remains significantly higher than in other euro area countries in part due to transitory factors, but also reflecting high price increases in several services sectors (Figure 8.D). Slightly less than half of the inflation gap with the neighbouring countries in 2016 can be attributed to increases in indirect taxation. Inflation in services prices remained higher than the weighted average of neighbouring countries for the ninth consecutive year. Since 2008 the main contributors to the services price inflation differential have been restaurants and cafés, telecommunication services, and cultural services. Even if price developments are corrected to eliminate price adjustments stemming from government intervention, service inflation remains higher than expected inflation on the basis of macroeconomic variables (Observatoire des Prix, 2017). To safeguard labour cost competitiveness, the authorities have recently reformed the wage-setting system (see below).

Figure 8. **Short-term macroeconomic developments**



Source: OECD, *Economic Outlook 101* and *Economic Department Database*.

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Stronger growth has contributed to a moderate decrease in the unemployment rate since the end of 2015 (Figure 8.E). Wage moderation and lower labour taxation also boosted employment in 2016. Longer-term labour market performance hinges on reducing the labour cost of low wage earners to support the employment of vulnerable groups such as low-skilled, youth and immigrants (see Figure 7).

Outlook and risks

Domestic demand will accelerate through 2018, while a pick-up in international trade will support export demand. Employment growth will remain solid and lead to further declines in the unemployment rate. The past evolution of energy prices will push up headline inflation in 2017, but core inflation will slow due to labour tax reductions and a waning inflationary impact of other measures. Lower unemployment and continued tight capacity utilisation will push up core inflation in 2018 (Table 1).

Table 1. **Macroeconomic developments**

	Current prices (billion EUR) 2013	2014	2015	2016	(projected) 2017	2018
GDP	391.7	1.6	1.5	1.2	1.6	1.7
Private consumption	204.4	0.6	1.1	1.2	1.5	1.6
Government consumption	95.9	1.5	0.3	-0.1	0.0	0.0
Gross fixed capital formation	86.9	5.0	2.5	1.9	2.6	3.3
Housing	19.7	4.7	0.8	4.5	2.3	2.0
Business	58.0	5.6	3.1	1.2	2.8	3.5
Government	9.2	2.1	2.8	0.7	1.8	4.8
Final domestic demand	387.3	1.8	1.2	1.0	1.4	1.6
Stockbuilding[1]	0.0	0.4	0.3	0.1	0.4	0.0
Total domestic demand	387.3	2.2	1.5	1.1	1.7	1.6
Exports of goods and services	320.5	5.1	4.3	6.0	5.1	3.8
Imports of goods and services	316.0	5.9	4.3	6.0	5.3	3.7
Net exports[1]	4.5	-0.6	0.0	0.1	0.0	0.2
Other indicators (growth rates, unless specified)						
Potential GDP	. .	1.1	1.2	1.2	1.3	1.3
Output gap[2]	. .	-1.6	-1.4	-1.3	-1.0	-0.5
Employment	. .	0.4	0.9	1.3	1.3	1.3
Unemployment rate	. .	8.6	8.5	7.9	7.2	6.6
GDP deflator	. .	0.7	0.9	1.6	2.1	1.6
Harmonised consumer price index	. .	0.5	0.6	1.77	2.5	1.8
Harmonised core consumer prices	. .	1.5	1.6	1.75	1.4	1.7
Household saving ratio, net[3]	. .	4.5	3.9	3.8	3.1	3.8
Current account balance[4]	. .	-0.7	0.4	-0.4	-0.3	-0.3
General government fiscal balance[4]	. .	-3.1	-2.5	-2.6	-1.9	-1.9
Underlying government fiscal balance[2]	. .	-1.6	-1.2	-1.6	-1.2	-1.5
Underlying government primary balance[2]	. .	1.3	1.5	0.9	1.1	0.5
General government gross debt (Maastricht)[4]	. .	106.7	106.0	106.0	104.3	102.9
General government net debt[4]	. .	100.3	98.0	98.1	96.4	95.0
Three-month money market rate, average	. .	0.2	0.0	-0.3	-0.3	-0.3

1. Contributions to changes in real GDP, actual amount in the first column.
2. As a percentage of potential GDP.
3. As a percentage of household disposable income.
4. As a percentage of GDP.

Source: OECD (2016), *OECD Economic Outlook: Statistics and Projections* (database).

The housing market is only a moderate downside risk, although a sharp dip in house prices could dampen household consumption and weaken bank balance sheets, potentially slowing credit growth. These risks are mitigated by recent macroprudential measures, as discussed below. The economy is also vulnerable to a deterioration of competitiveness. The high inflation rate combined with wage indexation could lead to self-reinforcing increases of prices and wages, hurting competitiveness, incomes and jobs. The recent reform to the wage-setting system could help to contain this risk, as discussed below.

External risks have increased due to uncertainty regarding Brexit. Although financial linkages with the UK are moderate (OECD, 2016h), the UK is Belgium's fourth largest export market, accounting for 9% of merchandise exports. Brexit will lead to a marked change in the UK trade regime, raising barriers to market access to many exporters, especially in Europe. The UK's eventual exit from the EU will therefore provide a renewed shock to demand through the trade channel, and could increase economic uncertainty (Kierzenkowski et al, 2016). Beyond bilateral trade links, weak trade growth in Europe more broadly, whether Brexit-induced, as a result of a slowdown in the People's Republic of China (hereafter "China"), or for other reasons, would reduce jobs and incomes, given Belgium's deep integration in global value chains. As other OECD countries Belgium also faces risks stemming from potential economic, financial or geopolitical instability (Table 2).

Table 2. **Extreme vulnerabilities for the Belgian economy**

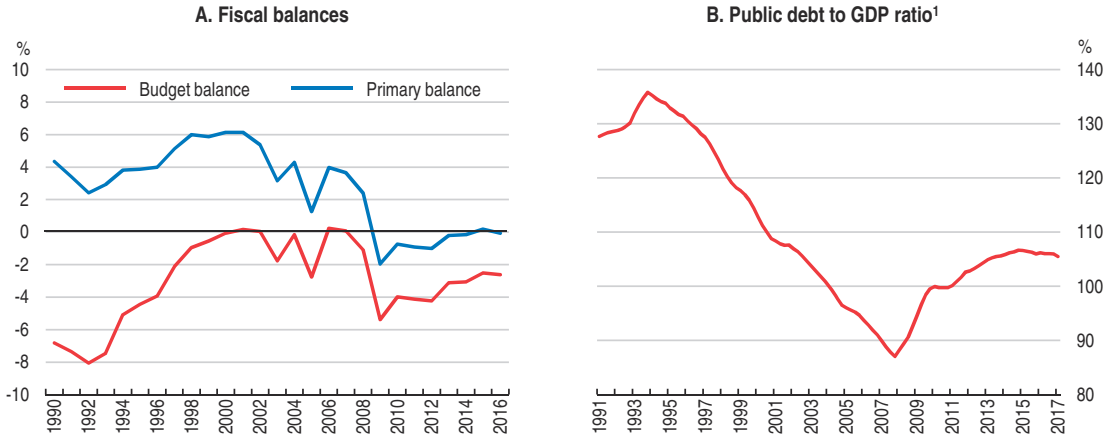
Shock	Possible impact
Financial market instability	A persistent low-interest rate environment has magnified distortions and risks in international financial markets, and a re-appearance of global and euro area tensions cannot be ruled out. If severe, such disturbances could once again seriously damage Belgium's economic prospects.
Trade protectionism	A new wave of global trade protectionism would be detrimental to Belgium's economy, given its deep integration in global value chains. Besides holding back export growth and FDI, increased protectionism could weaken confidence, dampening demand from the domestic household and business sectors.

Fiscal, monetary and financial policies

Sustained primary surpluses helped Belgium reduce its debt-to-GDP ratio by over 40 percentage points from 131% in 1995 to 87% in 2007 (Figure 9). This consolidation created room to absorb the budgetary shock associated with the 2008 financial crisis without undermining financial market confidence. Following the crisis public debt rose to 106% of GDP in 2016. Nevertheless active debt management has improved debt sustainability. The government has taken advantage of low interest rates to extend the duration of outstanding debt, thereby reducing the share of federal debt that matures in the coming year to 15% in 2016 from 20% at the end of 2012 (EC, 2016a). Despite this progress, the high debt-to-GDP ratio suggests that putting debt on a declining path remains an important challenge for the future.

Prudent policies combined with the end of one-off banking support reduced the general government deficit from 5.4% of GDP in 2009 to 2.6% of GDP in 2016, and Belgium exited the EU excessive deficit procedure in 2014. The federal and regional governments have also taken steps, in line with previous OECD recommendations, to make fiscal consolidation more expenditure-based and to strengthen the fiscal framework (See Table 3). Notwithstanding high public debt, the somewhat accommodative fiscal stance in 2016 was appropriate as weak GDP growth weighed on revenues and spending was increased by one-off measures related to security and refugee inflows (EC, 2017a).

Figure 9. **The fiscal situation is improving**



1. Maastricht criterion.

Source: OECD, *Economic Outlook 101 Database*.

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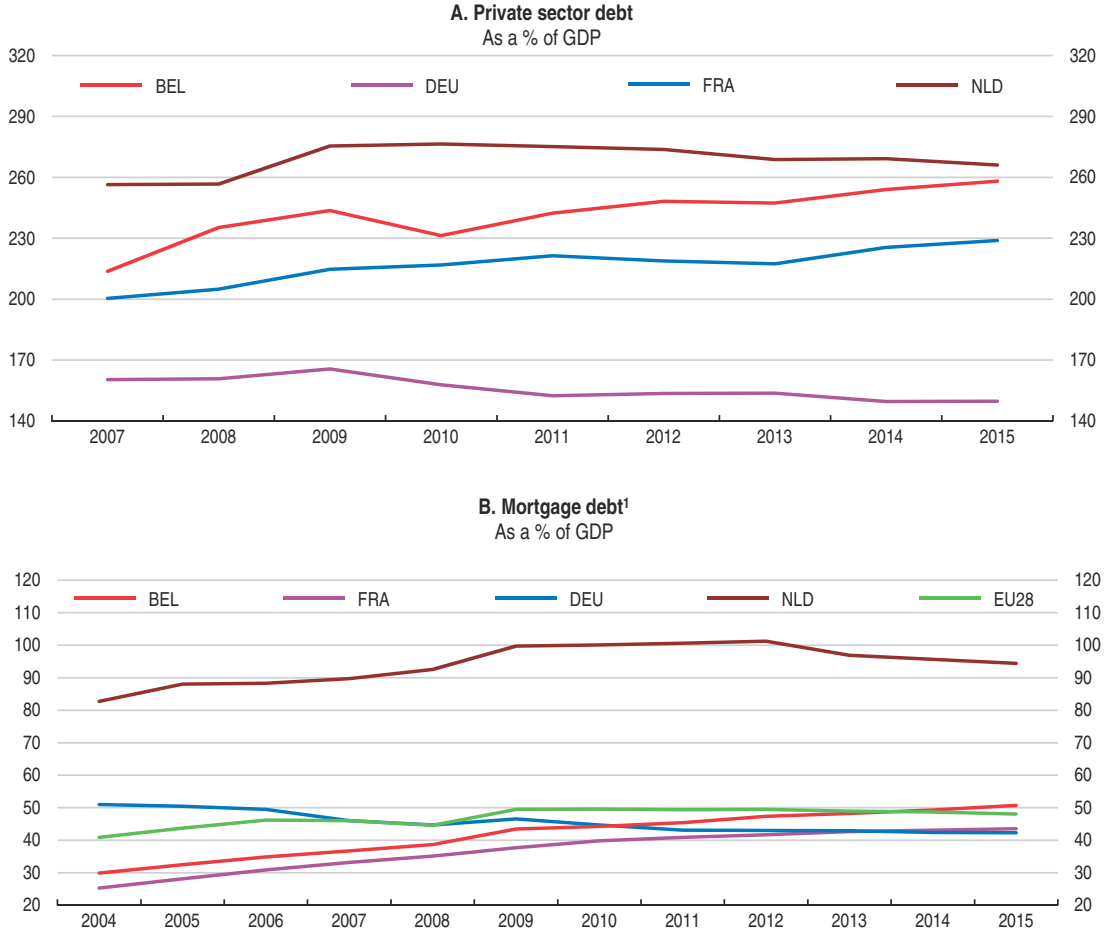
Figure 10. **Private sector debt**



1. Total outstanding residential loans.

Source: OECD, *STD Financial Statistics Database* and; European Mortgage Federation, Hypostat 2016, ECB, Statistical Data Warehouse (database).

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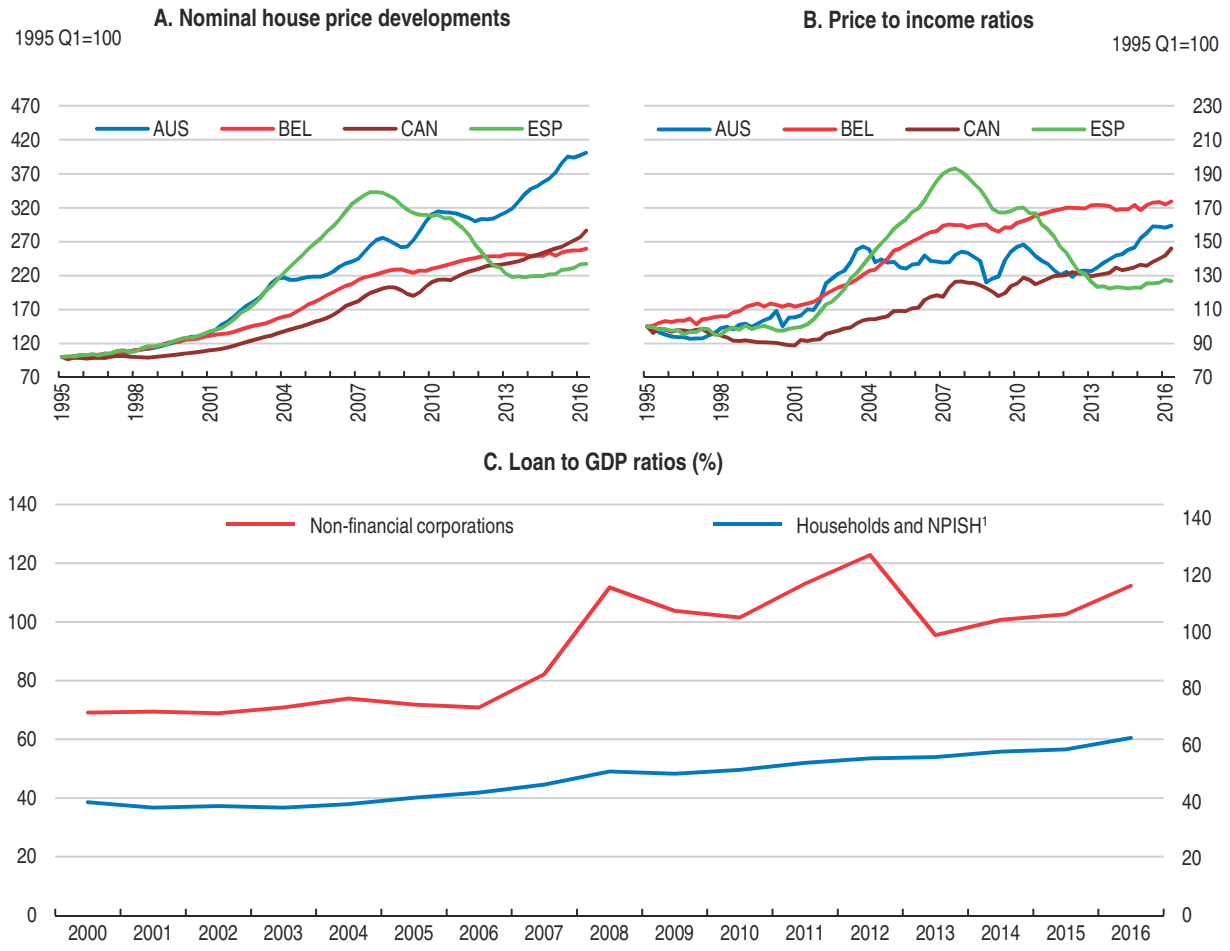
The European Central Bank's (ECB) monetary policy stance remains highly accommodative, and lending rates in Belgium have declined markedly over the past two years. The side-effect has been a steady rise in private debt (Figure 10.A). Anticipated reductions in tax relief on mortgages provided additional upward pressure in 2015. Mortgage debt now stands around the EU average (Figure 10.B). However, the overall financial position of households appears relatively robust. House prices have more than doubled in nominal terms since 2000, but have not risen very much in the last decade (Figure 11.A). Mortgage liabilities are only around 15% of the banking sector's balance sheet, although for some banks they are over 40% (NBB, 2016a). Banks report that the majority of the increase in mortgage liabilities can be attributed to more favourable terms and conditions rather than an easing of credit standards (NBB, 2016a; NBB, 2016b). Furthermore, the prevalence of fixed rate mortgages (65% of the total stock of loans) reduces the risk of defaults should interest rates increase, although it also shifts interest rate risk to the banks themselves. However, in view of the trend increase in household indebtedness, and group of mortgages with high loan-to-value (LTV) and high income-to-debt-service ratios, the European Stability Risk Board has drawn attention to

Figure 11. **The housing market is a relatively moderate downside risk**



1. Non-Profit Institutions Serving Households.

Source: OECD, *Analytical house prices indicators Database*; and OECD, *National Accounts Database*.

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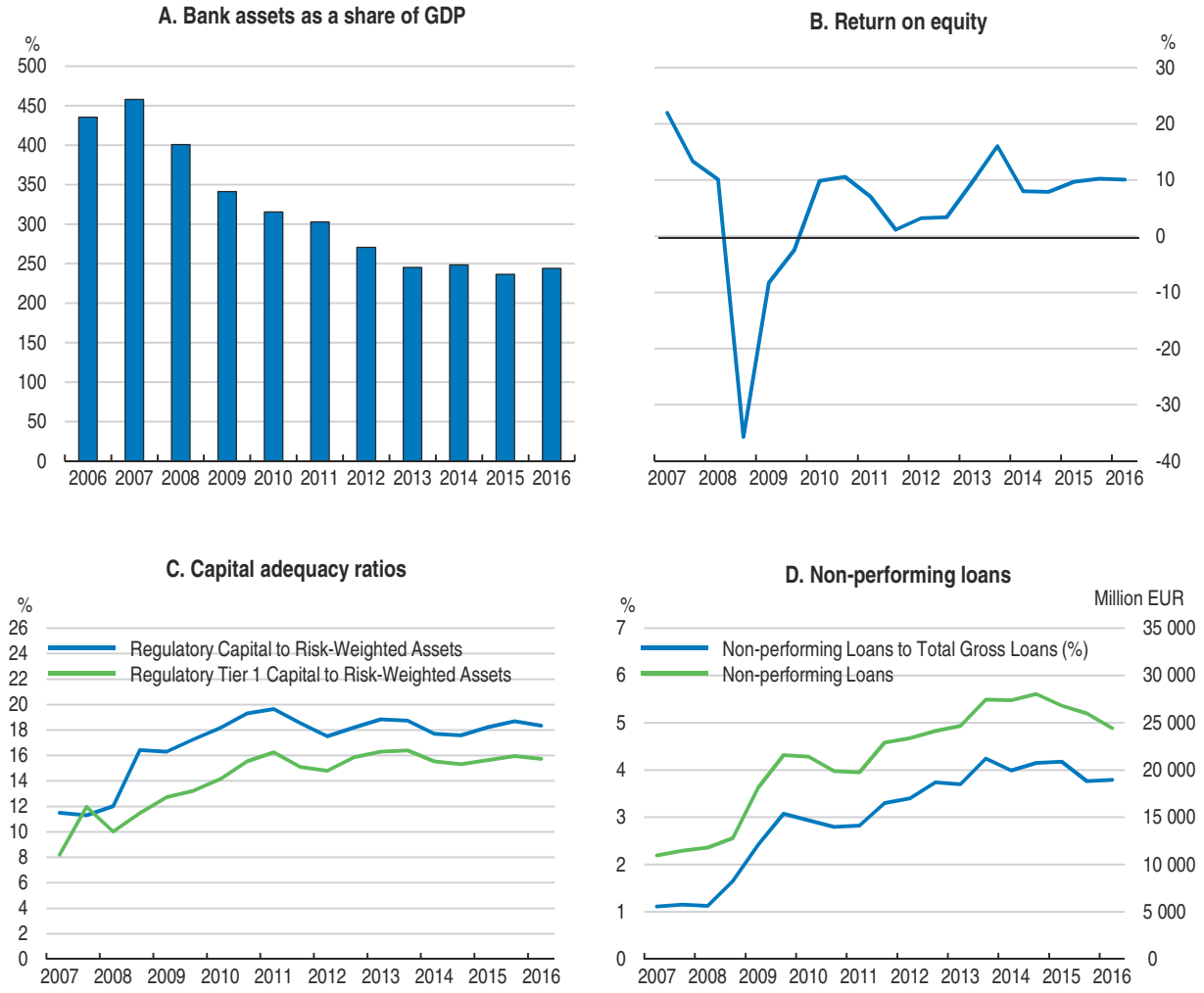
vulnerabilities in the residential property market (ESRB, 2016). In this context, macro-prudential authorities are considering additional measures to mitigate financial risks related to risky mortgages. Reducing the tax deductibility of mortgage debt could help dampen the growth in mortgage debt.

Deleveraging and reorientation of activities towards domestic markets have boosted capital adequacy ratios following the financial crisis (Figure 12). The share of non-performing loans has increased but remains low by international comparison, at 30% below the EU average. Stress test results indicate that the largest systemic banks have made significant headway in shedding legacy assets and appear resilient to economic and financial shocks (EBA, 2016).

Figure 12. **The banking sector has been strengthened**



Source: National Bank of Belgium and; IMF, IFS database.

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Table 3. **Past OECD recommendations on macroeconomic and financial policies**

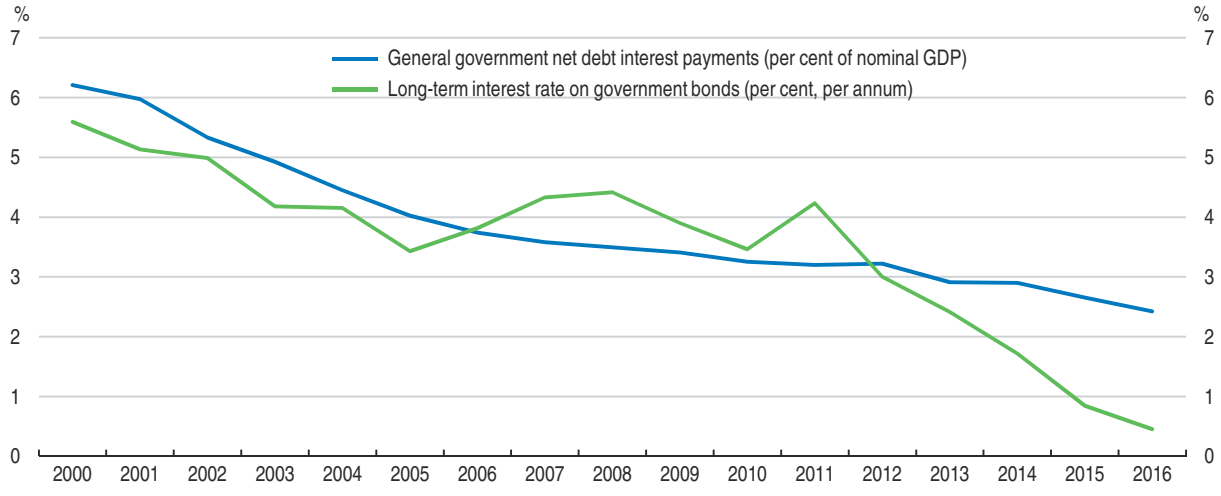
Summary of recommendations	Summary of action taken since 2015 *Survey*
Make fiscal consolidation expenditure-based through savings in social transfers and public consumption	A framework was established since October 2014 at federal level to reduce public expenditure over the period 2015-19: the wage bill, operating costs and personnel costs were reduced. The growth of health care spending and other social transfers were also reduced in structural terms. A "redesign" of public administration aimed at increasing its efficiency was decided in October 2015. The fight against social fraud has been strengthened.
Introduce multi-year expenditure rules at all levels of government, with monitoring by the High Council of Finance	No domestic expenditure rules (other than expenditure benchmark, preventative arm of SGP). Lack of political agreement between federal and regional governments on budget targets implies the High Council of Finance cannot fully monitor compliance. Since the transposition of EU directive in 2014 all entities have the legal requirement to establish medium-term budgets. Since the 2015 budget, the Federal government integrates a multi-annual approach in its yearly budget.
Further improve budget reporting to ensure full coverage of the balance sheets and contingent liabilities of general government and other entities under public control, and publish these data.	Contingent liabilities are published. The Federal government has changed legislation such as to make a completely consolidated balance sheet and annual accounts available.

Medium-term policy challenges to reignite productivity and strengthen inclusiveness

Boosting public investment to increase potential output

The current low interest rate environment could facilitate future consolidation efforts. Long-term government bond yields declined from 5.6% in 2000 to 0.5% in 2016 and Belgian sovereign bond yields are now among the lowest in Europe. Historically low interest rates are reflected in lower interest payments which have fallen from 4% to 2.7% of GDP since 2008 (Figure 13).

Figure 13. **Interest rates have declined**



Source: Calculations made on the basis of *Economic Outlook 101 Database* data.

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Against a backdrop of subdued growth since the crisis, fiscal adjustments have fallen short of targets (Table 4). The primary balance has recorded a small deficit for some years. A financing gap related to the Federal government's tax shift policy and unexpected spending related to security and inflows of refugees in 2016 have narrowed fiscal space. Table 5 summarises the fiscal projections of the main forecasting institutions.

Table 4. **Changes in the structural balance (efforts realised and planned) and the primary balance**

	2011	2012	2013	2014	2015	2016
Structural Efforts realised[1]	-0.1	0.6	0.7	-0.2	0.3	0.3
Structural effort planned in Stability Programme[2]	+0.2	+0.7	+1.1	+0.5	+0.7	+0.6
Primary balance	-0.9	-1	-0.2	-0.2	0.2	-0.1

1. As reported in the stability Programme published in each year.
2. Respective stability programmes.

Source: OECD Economic Outlook 101 Database.

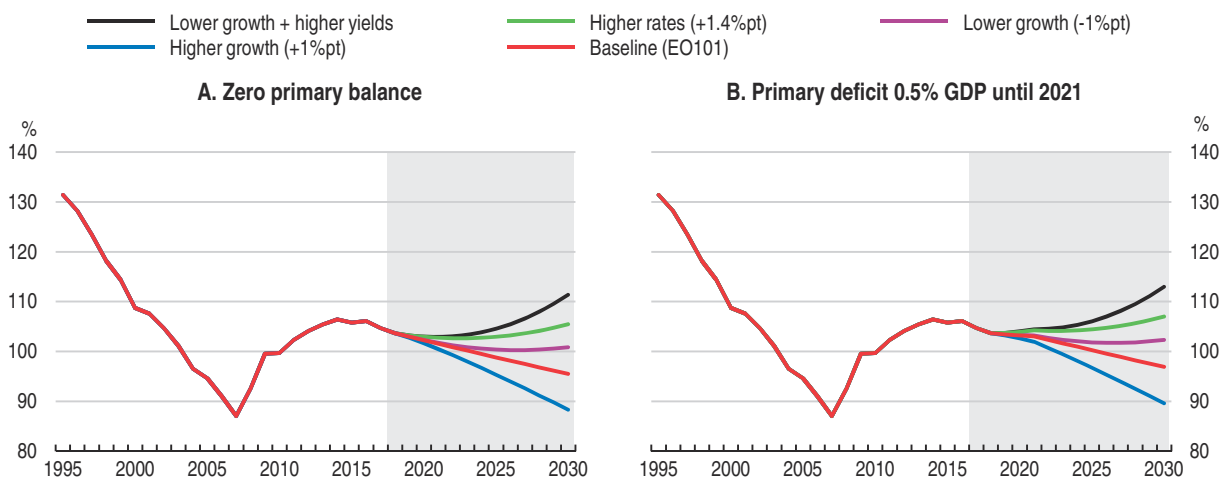
Table 5. **Fiscal projections of main forecasting institutions**

	Primary balance			*Fiscal balance*		
	2016	2017	2018	2016	2017	2018
EU	0.2	0.7	0.5	-2.6	-1.9	-2.0
NBB	-0.1	0.1	-0.2	-2.8	-2.3	-2.3
FPB	-0.2	0.3	-0.0	-2.8	-2.2	-2.3
OECD	-0.1	0.4	0.2	-2.6	-1.9	-1.9
Stability Programme 2017	0.2	1.0	1.6	-2.6	-1.6	-0.7

Source: EU: European Economic Forecast Spring 2017, May 2017; NBB: For 2016: Annual Report, February 2017, for 2017-18: Economic Review, December 2016; OECD: *Economic Outlook 101*, June 2017; Federal Planning Bureau, Medium-Term Economic Outlook (2016-21), June 2016.

Nevertheless, the debt-to-GDP ratio is projected to decline gradually (OECD, 2017o, Figure 12). According to OECD simulations, if the primary balance were held at zero, the debt-to-GDP ratio would decline by 9 percentage points by 2030 (Figure 14.A). A primary deficit of 0.5% for the next five years would still result in debt falling by 7 percentage points. On one hand these simulations are conservative as they do not take into account multiplier effects. On the other hand, substantial increases in interest rates or lower growth could reverse this trend, underlining the need for some caution when formulating policy. More

Figure 14. **Debt-to-GDP ratio simulations**



Note: The baseline scenario considers the projections for the Economic Outlook No. 101 until 2018 and thereafter assuming yearly real GDP growth of 1%, primary fiscal balance for panel A and a deficit of 0.5% of GDP during five years in panel B, effective interest rate of 242% and inflation of GDP deflator of 1.6%.

Source: Calculations made on the basis of *Economic Outlook 101 Database* data.

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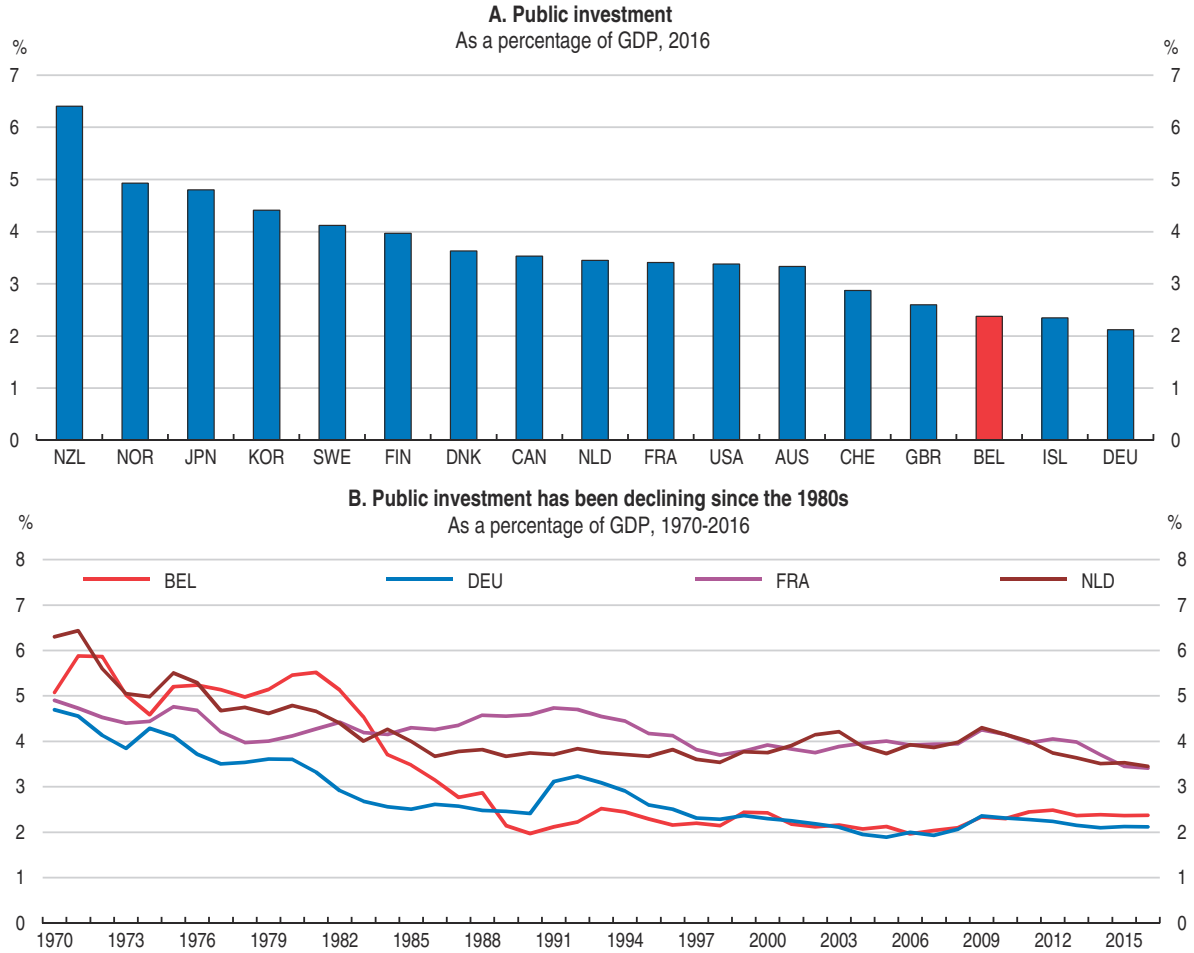
sophisticated exercises estimating the impact of public investment on potential output (OECD, 2016g; Fournier and Fall, 2015; Botev et al., 2016) suggest that delaying the path to the Medium Term Objectives to take advantage of low interest rates, for a period of at least five years, would allow the government to finance investment projects without undermining long-run fiscal sustainability.

However, given high public debt and population ageing, fiscal consolidation is needed even in the short term, both to build risk buffers and to ensure long-term sustainability.

The deficit rules encompassed in the European Stability and Growth Pact are a potential hurdle to public investment. In the Belgian context, where public investment is mainly the responsibility of regional and local authorities, the implementation of the rule should imply a high degree of internal coordination to meet the overall fiscal target. Actually each entity's internal fiscal deficit target is aligned to Belgium's overall target, which could make it harder for an individual entity to undertake very large investment projects in one region.

A boost of well-targeted and cost-efficient investment would be expected to have sizable, positive effects on the economy in the long term given that public investment is comparatively low (Figure 15). The quality of project selection is crucial for the success of

Figure 15. **Public investment is low**



Note: For Switzerland, data refer to 2014.
Source: *OECD Economics Department Database.*

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investment-led growth and should therefore be guided by cost-benefit analyses. As discussed in previous Economic Surveys (OECD, 2015a; OECD, 2013a) there is a particular need to relieve infrastructure bottlenecks. For example, Antwerp and Brussels are among the five worst affected urban centres in Europe, with commuters on average spending 70 hours or more in traffic per year (Inrix, 2015). The authorities should hence prioritise investment in road and public transport infrastructure around the major agglomerations. Such green investments could also reduce air pollution and generate revenue through toll, ideally adjusted to reduce congestion and make better use of infrastructure (OECD, 2015a; Chapter 1).

In April 2016 regional governments introduced a new toll on heavy trucks. The levy is charged for using motorways, as well as a number of regional and municipal roads. In addition, and in line with recommendations made in previous Surveys, regional and federal authorities have taken steps to strengthen investment in transport infrastructure (Table 6; Box 2). The Investment Plan for Europe, the so-called Juncker Plan, set up in 2014 has also made a positive contribution (EC, 2017b). As of March 2017, 11 infrastructure and innovation projects have been approved in Belgium, amounting to over EUR 740 million in European Investment Bank financing. The projects are expected to trigger more than EUR 3.8 billion in investment. Approved projects include support for construction and operation of wind parks off the Belgian coast.

Table 6. **Past OECD recommendations on public investment**

Summary of recommendations	Summary of action taken since 2015 *Survey*
Develop long-term infrastructure plan supported by regions and the Federal government	Agreement for a national plan for strategic investments. The Federal government granted loans to finance investment in railways The government of Wallonia has set up a EUR 640 million investment plan for the period 2016-19 to rehabilitate inland waterways and highways. The Flemish government has set up a EUR 3.6 billion investment plan for the period 2017-23 to complete the Oosterweel Junction in the economic heartland of the Antwerp region. The Brussels government has set up a EUR 1.5 billion investment plan for mobility for the period 2018-25.
Abolish the favourable taxation of company cars and the tax advantages of diesel cars and of diesel as a transport fuel	Tax deduction on company cars was reduced when fuel cards are granted and excises duties on diesel were increased. The Federal government has decided to introduce a multimodal mobility budget for employees as an alternative to company cars.
Introduce a road pricing system and differentiated public transport fares to reduce congestion	New toll on heavy vehicles, but with no higher peak charge.

The government could also increase public investment by broadening the tax base and raising the rates of non-distortionary taxes such as green taxes, capital gains taxes and recurrent taxes on property. The need for tax reform is discussed in detail below. The authorities could also finance investment by making savings in other areas. Certain public spending items (public investment and education) boost growth, while others (pensions and public subsidies) lower it (Fournier and Johansson, 2016). Well targeted reductions in public subsidies, enhanced means-testing in social spending and improved budgetary control can reduce public expenditure needs (IMF, 2016a; Cournede et al., 2014). Moderate progress has been made in this area (see Table 3). Directions to consider, discussed in more details below and in previous Surveys (OECD 2013a; OECD 2015a), are to abolish early retirement schemes and the favourable tax treatment of company cars and mortgage repayments. Dynamic

growth in private investment and high corporate profitability suggest there may also be scope to engage the private sector in infrastructure projects. Along these lines, the authorities are developing a framework for public-private partnerships (see Box 2). Public-private partnerships, if used, should be fiscally transparent and follow best practices identified in OECD guidelines (OECD, 2012c). Establishing a green investment bank has been identified as a useful way to scale up private investment in low carbon infrastructure (OECD, 2016m).

Box 2. **Plans for a Strategic Investment Pact**

To address the deficit in public investment the Federal government has proposed to establish a Strategic Investment Pact. The aim is to mobilise public and private funds for public investment, ensure the sustainability of public finances and promote structural reform. The Pact will be headed by a political steering committee consisting of federal and regional ministers. Since the Sixth State Reform regions are the prime decision makers on public investment. The final strategy note outlining the government's intentions will be presented in early 2017 after consultation with European institutions, policy experts, including the OECD, and social partners. However, the government has already identified several policy areas as potentially within the remit of the pact:

- Public support for innovative firms and funding for research and development
- The impact of tax and regulation on investment
- Developing a framework for public-private partnerships for investment

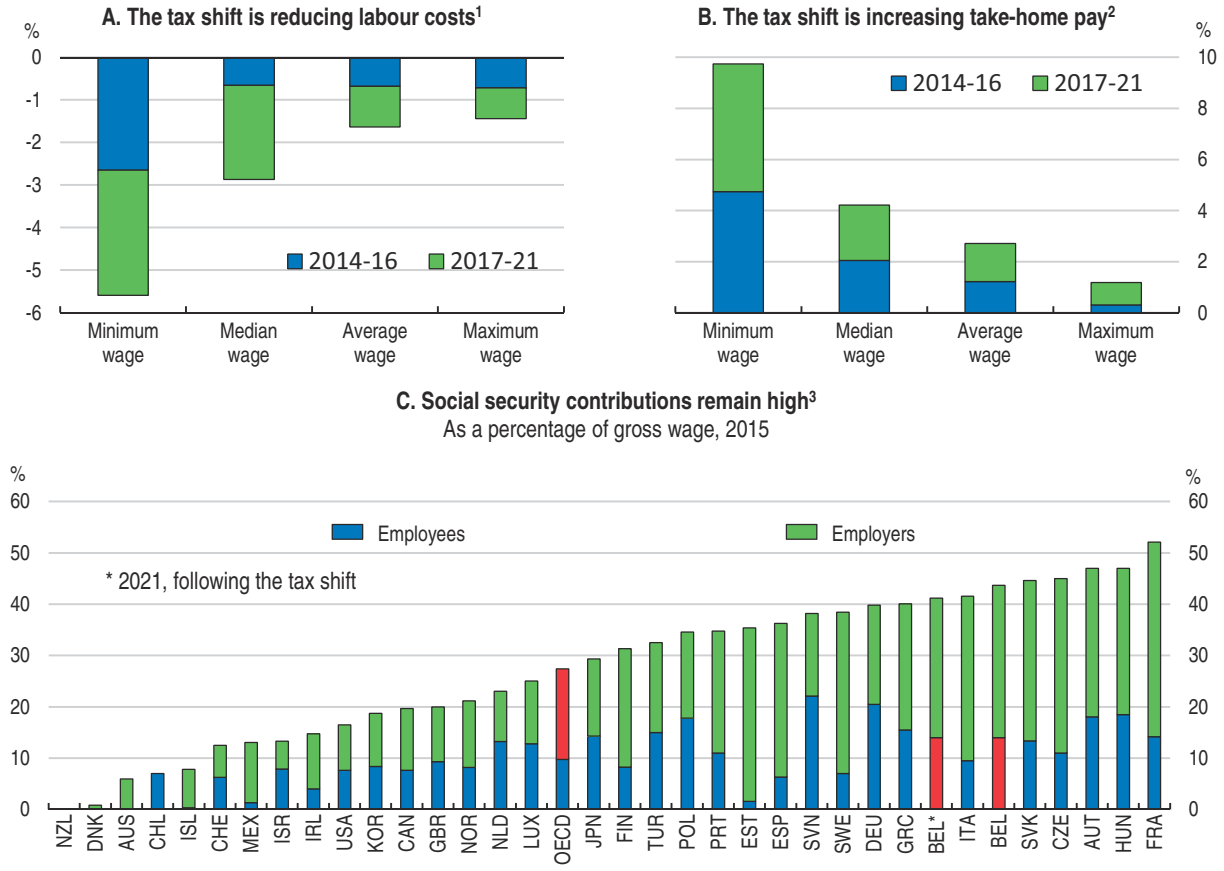
Making the tax mix more supportive of growth and jobs

The rate for employers' social security contributions is being gradually reduced from 33% (effective rate of around 29%) in 2015 to 25% in 2018. Contributions on low wages have been reduced by more (NRP, 2016) to help the low-skilled enter the labour market. Contributions for targeted groups, including young and older workers which since the Sixth State reform of 2012-14 is the responsibility of the regions, are also subject to reduced rates. In addition, a reduction of employee social security contributions, higher tax deductions for professional expenses and revision of tax scales have boosted take-home pay (Figure 16) and provide stronger incentives to enter the labour market, particularly at the lower end of the pay scale. Moreover, a reduction in employer social security contributions, as recommended in the 2015 Economic Survey, has reduced labour costs. However, even after these measures, labour costs will remain relatively high, and will warrant further reduction.

To finance lower labour taxation, and in line with recommendations made in previous Economic Surveys, less distortionary taxes have been increased (Tables 7 and 8). However, the tax shift has not been fully financed (NBB, 2016d). Less distortionary tax bases are available in Belgium:

- Suppressing the favourable tax treatment of company cars, increasing the tax rate on diesel fuel to at least the level of that on petrol as planned by the end of 2018, broadening the base of existing distance-based charges to include cars, increasing congestion charges (Van Steenbergen, 2015), reducing the tax deductibility of commuting costs and increasing taxation of house heating fuel could all help raise revenue. Removing the favourable tax treatment of company cars would also be desirable from an equity perspective as it amounts to a subsidy to high-income individuals.

Figure 16. **Taxation on labour has been reduced**



1. Change in social security contribution rate following the tax shift (as a share of gross income).
2. Change in average taxation of households following the tax shift (as a share of gross income).
3. Average rates of social security contribution, calculated for a single person, with no children, at 100% of the gross wage.

Source: OECD, *Tax-Benefit Models*; OECD, *Taxing Wages Database*.

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- The value added tax (VAT) gap, a measure of the shortfall in revenue due to exemptions and reduced VAT rates on certain products, is currently one of the highest in Europe, despite a recent broadening of its tax base (Figure 17.B). The base could be broadened further.
- There may be room to raise tax on household capital income. While the withholding tax has been increased since the last Survey, the authorities could identify room for further enlargement of the capital income tax base, including by considering a carefully designed capital gains tax.
- Federal authorities could raise the cadastral values of dwellings to make them better reflect market values, while regional authorities could reduce the tax deductibility of mortgage debt, as recommended in the last Survey

Reforming the corporate income tax regime could increase competitiveness and firm creation. The authorities are considering reducing the statutory rate from 34% to between 20 and 25% by 2020 (Figure 18). In order to prevent corporate tax reform from translating into a permanent reduction in budget revenues particular attention should be paid to closing tax loopholes. The implementation of the Anti-Tax Avoidance Directive (ATAD) provides a first basis for a simultaneous broadening of the tax base. In addition, the authorities should consider reforming the following schemes:

Table 7. **Main federal and regional measures on taxation**

Type of taxes	Main measures taken in 2015 and 2016
Environmental taxation	• New toll on heavy vehicles. • Increase of excise duty on diesel coupled with a smaller decrease of excise duty on petrol. • Indexation of electricity and gas prices, on the basis of market-based parameters. • Lower tax deduction on company cars. • Stronger link established between tax on cars and the air pollution of vehicles due to small particles in the Flemish Region. Reduction or elimination of vehicle tax for less polluting vehicles in the Flemish Region.
Real estate taxation	• Reform of the housing bonus by establishing a "cheque Habitat" conditional on income in the Walloon Region. • Reduction of the housing bonus for individuals with more than one residence in the Flemish Region. • Suppression of the housing bonus in the Brussels-Capital Region, but increase of the abatement of the registration tax for the acquisition of the first house. The gift tax on real estate has been reduced in the Brussels-Capital Region. • As of July 2015 the gift tax on real estate has been substantially reduced in the Flemish Region. • Higher deductions on property tax for energy refurbishments of existing buildings in the Flemish Region.
Value added tax	• Elimination of the reduced rate on electricity, e-commerce and esthetical surgery. • Limitation of the reduced rate applied on renovation of property older than 10 years compared to 5 years previously.
Excise duties	• Increased excise duties on tobacco, alcohol and soft drinks.
Labour taxation	• Reduction of employers' social security contributions (SSC) to 25% by 2019. • Reduced rates of SSC for low wages and other targeted groups. • Exemption of SSC for SMEs and self-employed for the first hire, and reduced rates for the second to the sixth hire. • Exemption of wage withholding tax for shift and night work increased from 15.6% to 22.8%. • Reduction of the Regional surcharge on personal income tax in Brussels-Capital Region combined with abolition of tax deductions on personal income for a number of expenses relating to housing refurbishment.
Capital gains taxation	• Introduction of tax on capital gains on shares held for less than six month in 2016 but the measure was abolished in 2017. • In line with the OECD/G20 BEPS "modified nexus approach", the Federal government established a new regime for tax deductions for income stemming from patents.

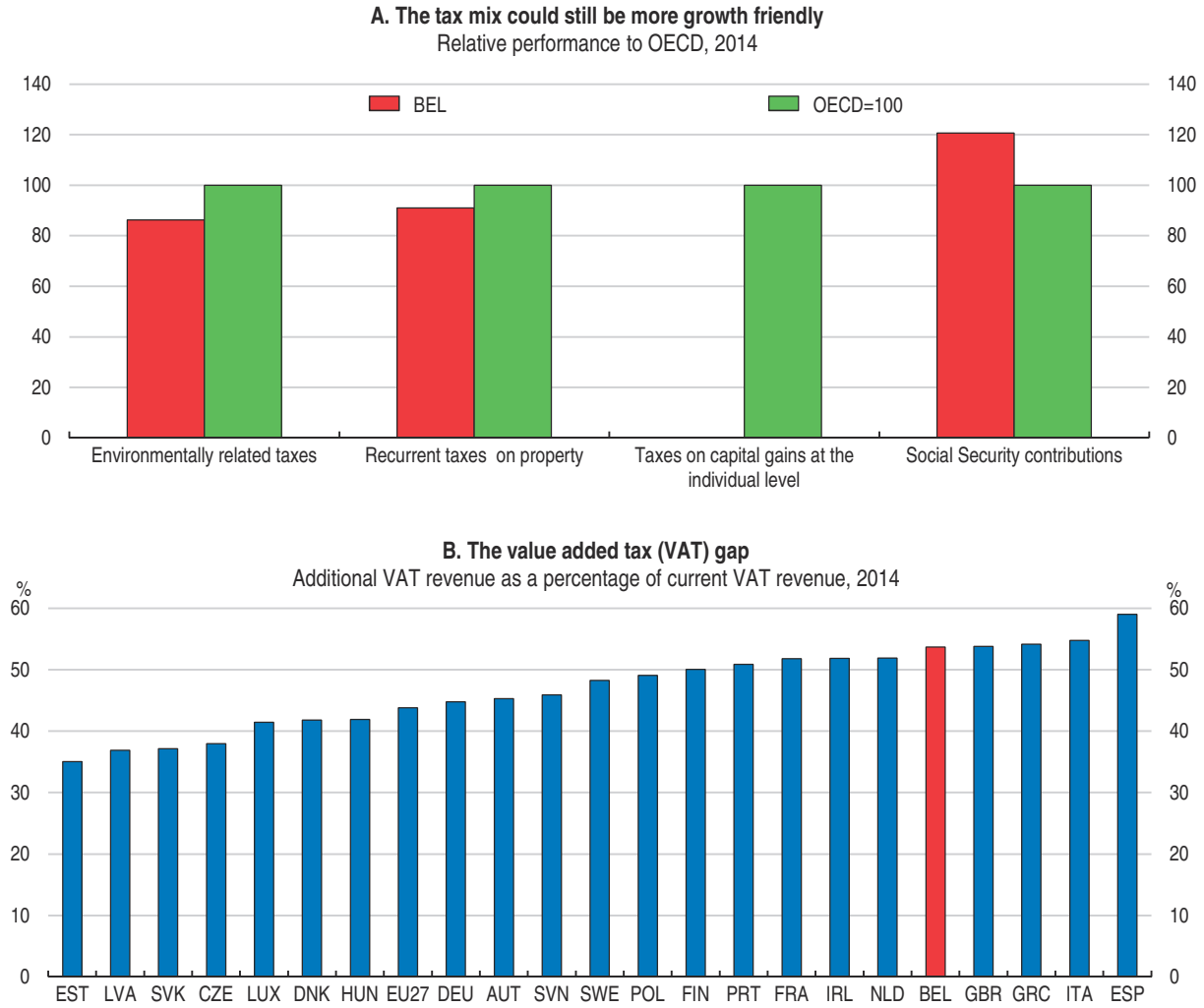
Source: NRP, 2016.

Table 8. **Past OECD recommendations on taxation**

Summary of recommendations	Summary of action taken since 2015 *Survey*
Broaden tax bases and lower tax rates. Reduce labour tax wedge. Tilt housing taxation towards recurrent taxes and away from transaction taxes. Increase less growth-distorting taxes, including environmental and consumption taxes	Employer social security contributions reduced, social contributions for self-employed reduced and various personal income tax adjustments made to boost take-home pay. VAT revenue and excise duties increased. Price indexation of energy products and electricity and elimination of reduced VAT rate on electricity as September 2015 for residential consumers
Consider increasing taxation of capital income	Withholding tax on income from investment has been harmonised and increased. Increase of the tax on stock-exchange transactions and abolition as of 2017 of the speculation tax on listed shares and derivative instruments introduced in 2016. Introduction of anti-abuse measures (internal capital gains)
Gradually remove the tax deductibility of interest and capital repayments on mortgage loans. Tilt housing taxation towards recurrent taxes and away from transaction taxes.	The housing bonus has been made means-tested in the Walloon Region and its application has been narrowed in the Flemish Region Abolition of the housing bonus in the Brussels-Capital Region and replacement by a reduction of transaction taxes.

- The notional interest deduction allows firms to deduct an imputed return calculated on the basis of their equity from their taxable income. This reduces debt bias, and has strengthened the capital structure of firms and their resilience to shocks (Hebous and Ruf, 2015). However it has also been used for tax avoidance, the opportunity for which should be eliminated through better enforcement.

Figure 17. **Tax rates relative to other OECD countries**



Note: Panel A, presents the shares of fiscal revenues for a selection of tax categories. These are calculated as a % of total tax revenue and displayed as a percentage of OECD average in 2014 which equals 100. For Belgium, underlying data on recurrent taxes on property refer to 2015.

Source: OECD, *Environment Database* – Instruments used for environmental policy; OECD, *Revenue Statistics Database* and; European Commission. Study and Reports on the VAT Gap in the EU-28 Member States: 2016 Final Report (Directorate General Taxation and Customs Union).

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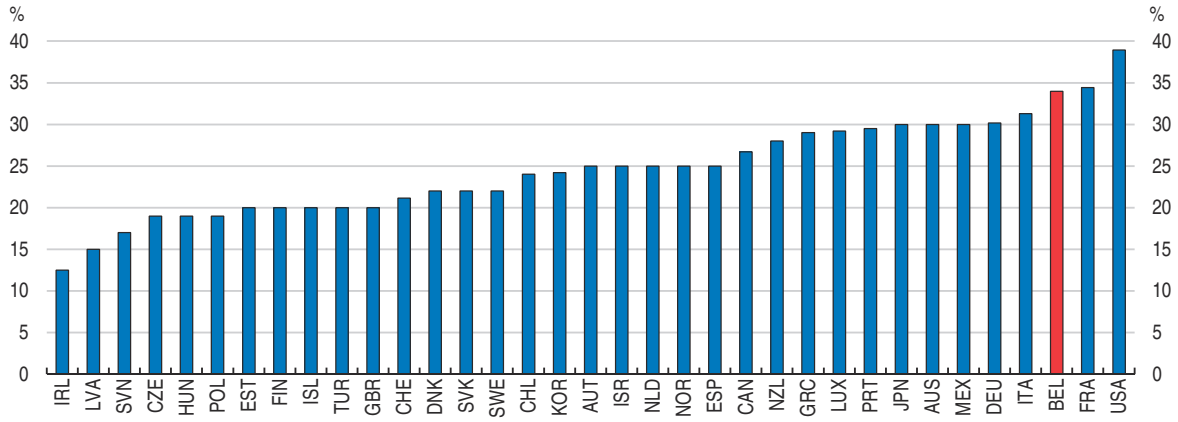
- Ensuring a more equal tax treatment of different financial assets could push savings into a broader range of asset classes. It could also improve the effectiveness of existing tax incentives for retail investors to lend to SMEs.
- Other avenues to broaden the tax base currently considered by the authorities are repealing certain tax expenditures, and on the corporate side, stricter rules for depreciation and a basket for carried-over deductions. A review of the tax system by the OECD could help identify additional directions for reform.

Continuing pension reform to promote active ageing

Population ageing will put the pension and health care systems under pressure. Ageing also affects growth via employment and spending as people tend to work less as they grow older. The old age dependency ratio (the share of those aged 65 years or above to the working

Figure 18. **The statutory corporate income tax rate is high**

Tax rates, 2016



Source: OECD Tax Database.

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age population) is expected to increase from 28% in 2015 to 40% in 2060 (Figure 19.A). While the contribution period of 45 years is one of the longest in the OECD, the effective retirement age remains below the OECD average (Figure 19.B). Age-related spending on health care was discussed at length in the 2013 OECD Economic Survey.

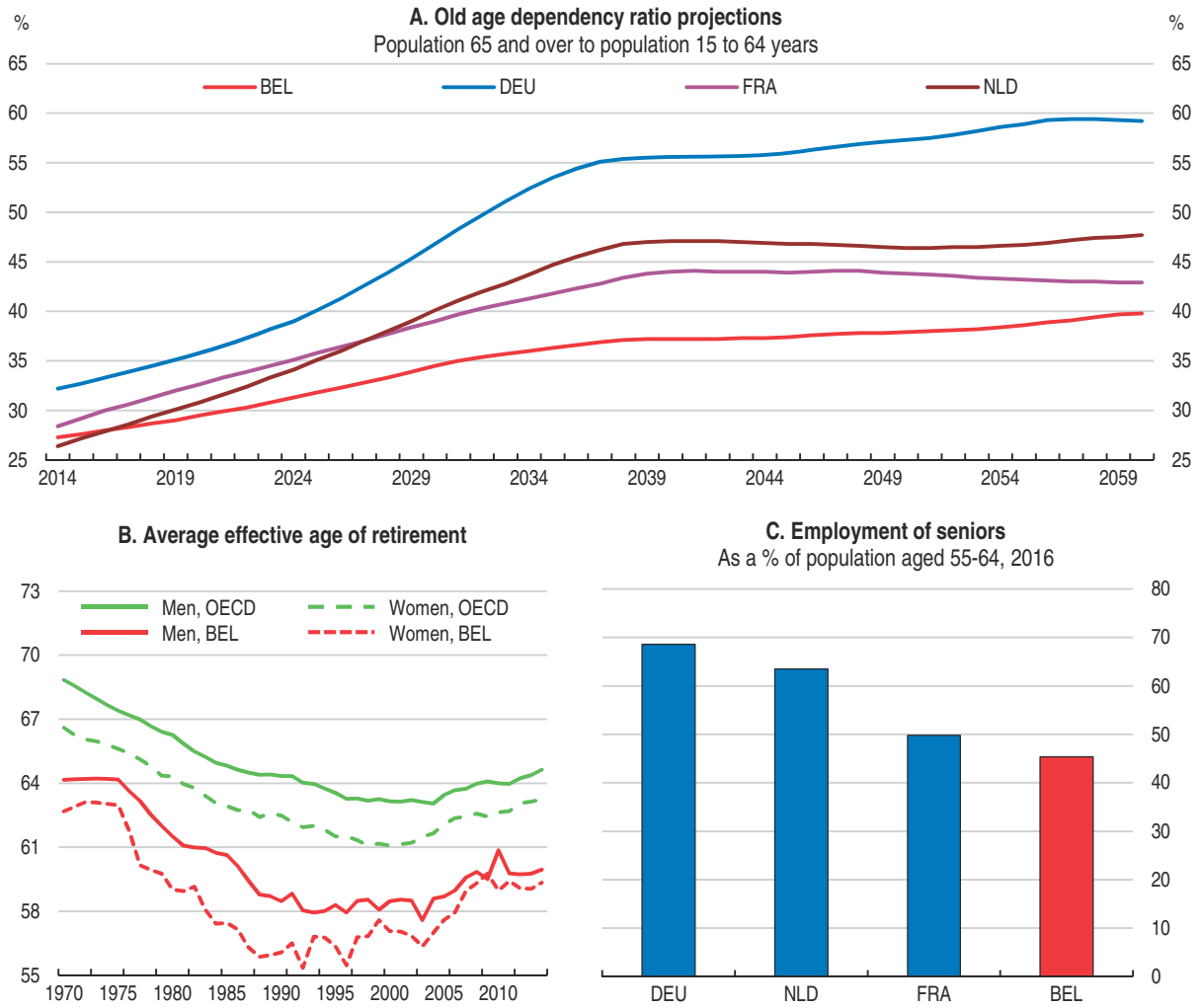
In line with recommendation made in previous Economic Surveys, the authorities have implemented several pension reforms since the 2000s (Table 9). The 2015 reforms will enhance inclusiveness by allowing older workers to remain in the labour market and are an important step towards long-term fiscal sustainability (Box 3). The Working Group on Ageing Populations and Sustainability projects pension spending to increase from 11.8% of GDP in 2013 to 13.1% of GDP in 2060, compared to an increase to 15.1% of GDP in 2060 in a no-reform scenario (EC, 2016b).

Keeping people in work longer would enhance inclusiveness and reduce age-related public spending. Further tightening of early retirement schemes and increasing taxes on occupational pensions in case of early retirement could reduce incentives to retire prematurely. The incentives for retirement could be made more balanced by taking additional years of work (above the minimum 45 years) into account when determining pension benefits and by reducing benefits upon early retirement. The goal should be to make the fiscal aspect of the retirement decision as neutral as possible. Poverty risks should be considered when designing such measures given that the replacement rate is already below the OECD average (OECD, 2015f). Additional measures are also needed to strengthen the employability of seniors (workers aged 55 and above), including promoting lifelong learning, enhancing career counselling and ensuring age-friendly working environments (OECD, 2013a; OECD, 2015a; Chapter 2).

Reducing barriers to SME growth

While access to finance is not a significant impediment to the business sector at the macro level (WB, 2016a), young innovative firms face financing constraints, particularly in the scale-up phase, and SMEs more broadly rely heavily on banks (Figure 20). According to an ECB survey, in both 2015 and 2016 roughly 35% of Belgian SMEs reported having applied

Figure 19. **Ageing and jobs**



Source: Eurostat; OECD database on effective ages of labour market exit, OECD pension models and; Eurostat.

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Table 9. **Past OECD recommendations on pension reform**

Summary of recommendations	Summary of action taken since 2015 Survey
Raise the statutory and effective retirement age to enhance long-run debt sustainability.	Progressive increase in the retirement age and career length requirements. Changes in the calculation of the amount of pension to encourage a rise in the effective retirement age.
Create stronger links between working careers and pensions in the early retirement system and subject all older unemployed to standard search monitoring and activation conditions.	Progressive increase in the contribution period and minimum age for early retirement and older workers submitted to job search and activation programmes.

for a bank loan during the previous six months, which is among the highest rates in the EU (ECB, 2015; 2016). At the same time the share of SMEs that consider debt securities to be relevant is lower in Belgium than in the EU (ECB, 2016). The heavy dependence on bank finance makes the SME sector vulnerable to downturns. Although there was no credit crunch, increased risk-aversion led banks to tighten credit standards for SMEs during the crisis years of 2008 and 2009 (Piette and Zachary, 2015). Finally, while the level of venture

Box 3. **Main elements of the 2015 pension reform**

A number of measures were taken in 2015 to increase the effective average age of retirement from the labour market, thereby improving the sustainability of the pension system.

The statutory *retirement age* will be increased from 65 to 66 years in 2025 and to 67 years in 2030.

Early retirement conditions will be made more stringent.

- The minimum age and number of career years required to qualify for early retirement will progressively increase: starting from 62 years and 40 years respectively in 2016, they will increase to 62.5 and 41 years in 2017, then to 63 and 41 years in 2018 and finally to 63 and 42 years in 2019.
- Exceptions for long careers will also be tightened. The required career length to retire at 60 (61) will increase from 42 (41) years in 2016 to 43 (42) years in 2017 and 44 (43) years in 2019.
- In the civil servants scheme, the years of studies taken into account in the aforementioned career condition for early retirement will be progressively phased out as from 2016 (by steps of 4 to 6 months/year).

The terms for *pre-pension benefits* (unemployment benefits with employer top-up) have been made more stringent:

- The minimum age has been increased from 60 years to 62 years in 2015, subject to transitional arrangements.
- The age limit for pre-pension benefits for loss-making and restructuring companies is to increase from 55 years in 2015 to arrive at 60 years in 2020.
- The minimum age for pre-pension benefits after very long careers (40 years) has been increased from 56 years to 58 years in 2015.
- The minimum age for pre-pension benefits in case of night and shift work or incapacity to work in the building sector has been increased from 56 years to 58 years in 2015 and will be raised to 60 years on a date to be set by the National Labour Council.
- The minimum age for pre-pension benefits in case of arduous jobs will be raised to 60 years on a date to be set by the National Labour Council.

The possibility to use a *complementary pension* to retire earlier and to bridge the income gap until being eligible to a full pension has been abolished, subject to transitional arrangements.

The minimum age required to qualify for *government subsidy for working time reduction (end of career)* to part time has been raised from 55 years in 2013 to 60 years in 2015, subject to transitional arrangements.

The minimum age for receiving a *survivor's pension* (46 years in 2017, increased by 6 months/year until 2025) will be increased from 50 years in 2025 to 55 years in 2030.

The provisions for purchasing credits related to the years of studies in the various retirement schemes will be gradually harmonised. Civil servants will have to purchase credits related to their years of studies if they want to increase their pension amount (as for workers from the private sector and for self-employed) instead of benefitting automatically and free of these years. This will be fully applied after a long transition period.

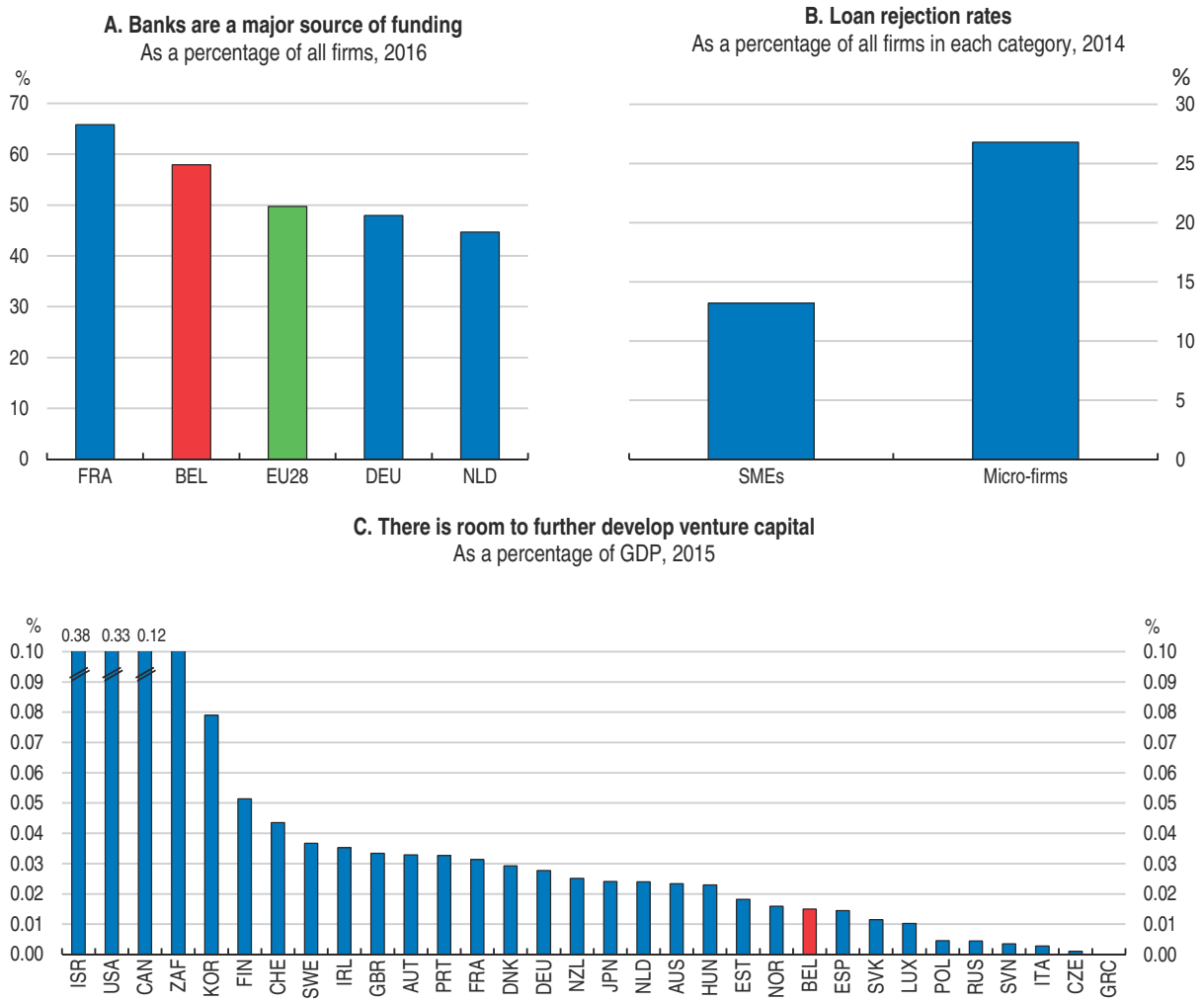
Pensioners could combine pension benefits and professional incomes within limits. Since 1/1/2015, pensioners who either are aged 65 years or have a 45-year career are no longer subject to a limit.

Source: Ministry of Pensions, Federal Planning Bureau, IMF.

capital investment is in line with other euro area countries, Belgium lags far behind OECD best-performers (OECD, 2015b, Figure 20.C).

The federal and regional authorities have launched several programmes to improve SMEs' financing, including tax incentives to stimulate investment in SMEs through venture capital and by retail investors, as well as loan guarantees (OECD, 2016a; Chapter 1). Loan

Figure 20. **SMEs' access to finance could be improved**



Note: Panel A, shows the share of enterprises which consider bank loans as a relevant source of financing, that is, they have used them in the past or consider to use them in the future. Data exclude subsidised bank loans, overdrafts and credit lines. Scope population includes firms with at least one employee which were active in September and October 2016.

Source: ECB and the European Commission, Survey on the access to finance of enterprises, September to October 2016; Belgian Federal Public Service of Economy, SMEs, Self-employed and Energy – SME Observatory and; OECD (2016), *Entrepreneurship at a Glance 2016*, OECD Publishing.

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guarantees help overcome collateral requirements and can be particularly useful to micro-firms that are more subject to loan rejection (Figure 20.B).

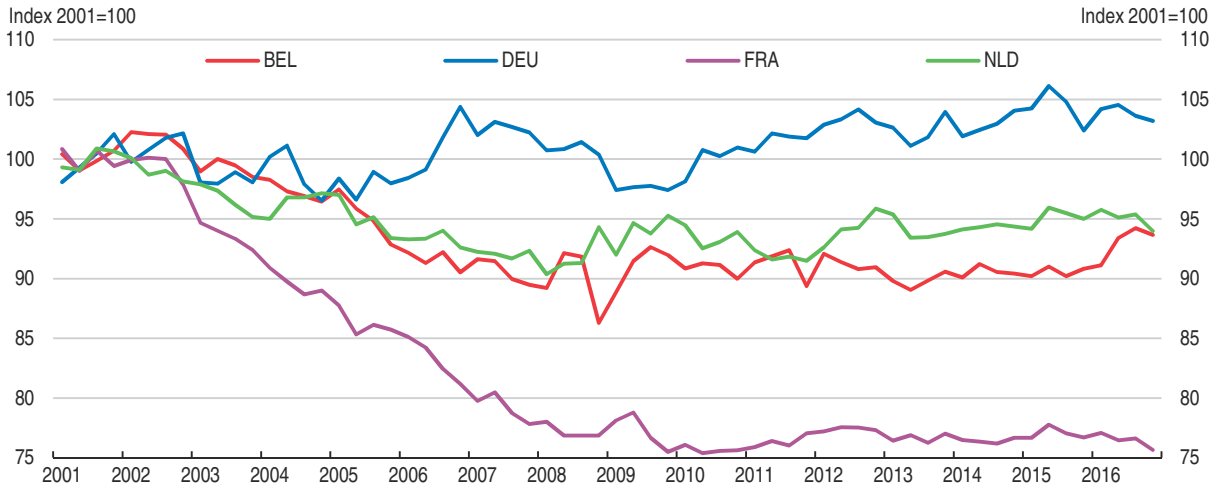
To broaden the range of funding options the government could promote the use of instruments which allow SMEs to access capital markets directly without obtaining a credit rating or preparing a prospectus (HLEG, 2016). A more neutral tax treatment of income from savings deposits could improve the effectiveness of existing tax incentives for retail investor-based SME financing. Increased integration through the Capital Market Union could help diversify Belgian capital markets. To mobilise private capital and support access to finance for young, dynamic enterprises, a new personal income tax reduction from 30% to 45% was introduced for investments in start-ups. Since mid-2015, investors benefit from this tax shelter for direct investments up to 100 000 EUR in start-ups. As of 2017, indirect investments via licenced crowdfunding platforms or starter funds also benefit from this tax shelter for start-ups.

Enhancing external competitiveness

Belgium is one of the most open economies in the OECD and is deeply integrated in global value chains. One-third of exports have foreign content (OECD, 2016l). Access to foreign markets enhances productivity as firms specialise in line with comparative advantage, reap economies of scale and benefit from technology transfers (Kegels and van der Linden, 2011; NBB, 2013).

Weak productivity growth and rapid wage growth adversely affected export performance in the 2000s, as unit labour costs grew faster than in neighbouring countries (See Figure 8.C). Moreover, a relatively large share of exports are oriented towards low-growth European markets (Idea Consult, 2013). As a result, Belgium lost over 10% of its export market share between 2000 and 2009, although the share has remained stable since then (Figure 21). Belgium's largest export market is Germany (17% of merchandise exports), followed by France (16%) and the Netherlands (11%). The same countries dominate imports. 17% of merchandise imports are from the Netherlands, 13% from Germany and 10% from France. The largest product groups of exports are chemical products (25%), transport equipment (11%) and machinery and equipment (11%) (NBB, 2016c).

Figure 21. **Ratio of export volumes to export markets**



Source: OECD, *Economic Department Database.*

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Wage growth has moderated more recently. Following a lack of agreement between social partners, the Federal government intervened directly in collective bargaining setting a moderate wage norm for both 2011-12 and 2013-14. Furthermore, in April 2015 the government suspended wage indexation, allowing for a 2% decline in real wages. Indexation was resumed in 2016. The reduction of employers' social security contributions also reduced labour costs. On the back of these measures unit labour costs declined slightly in 2014-16 (Figure 8.C). Social partners decided on a maximum real wage growth of 1.1% for the period 2017-18. As explained below, the wage-setting system has been fundamentally reformed (see Box 4; Table 10).

The new system has features that should make it more effective in safeguarding competitiveness. However, under some circumstances indexation to inflation could conflict with maintaining competitiveness. In the past, wage indexation caused wages to grow

Box 4. **Amendments to the wage-setting system**

The wage formation process in Belgium is defined by the Competitiveness Law of 1996. With the aim to support employment, safeguard cost competitiveness by ensuring that wage increases are in line with developments in the three main trading partners, the law prescribes a ceiling for wage growth which must be respected by social partners. The ceiling is set according to projected wage growth in Belgium's main trading partners (the Netherlands, France and Germany). In addition, wages are indexed to inflation. In the absence of direct government intervention in wage bargaining, this system has allowed for rapid wage increases, both because wages in trading partners tended to be overestimated (by on average 0.9 percentage points for the eight two-year periods preceding 2013 [CCE, 2014]), and because inflation in Belgium was relatively high (Figure 8.D).

As part of the 2017 budget the Federal government proposed several changes to the Competitiveness Law of 1996. The reforms' principal aim is to better safeguard cost competitiveness, but without removing wage indexation. The ceiling for wage growth ("the maximal available margin") will be set in the following way:

- First, the expected wage growth in France, Germany and the Netherlands for the two coming years (A) is established.
- Projected inflation in Belgium will form the basis of the expected wage indexation (B).
- An *ex-post* correction term (C) will then be applied in order to correct for divergence in wage evolution between Belgium and the neighbouring countries since 1996. Thus when determining wage growth for the forthcoming two-year period, cumulated wage developments in Belgium and neighbouring countries from 1996 will be considered.
- An *ex-ante* correction mechanism, or safety margin (D), will also be put in place in order to reduce the possibility of forecasting errors (in domestic inflation and/or wage growth in the neighbouring countries) arising in the first place.
- The ceiling will be determined in the following way: A-B-C-D. Based on this and other information provided in the report of the Central Economic Council, the social partners will bargain over the maximum margin.
- In addition, the reductions of employers' social security contribution that result from the Federal government's tax shift in the period 2016-20, at least half of all future employers' social contribution reductions and half of all negative handicaps since 1996 will be excluded from calculations of wage growth. These exclusions will be used to reduce the historical wage gap that existed before 1996.

Source: Office of the Minister for Economy, Employment and Consumer Affairs.

Table 10. **Past OECD recommendations on wage-setting and competition policy**

Summary of recommendations	Summary of action taken since 2015 *Survey*
Reform the wage formation process, notably the system of wage indexation, to better reflect domestic productivity developments	Wage indexation temporarily suspended. Reform to the wage formation process.
Make regulation retail distribution and professional services less restrictive	On the federal level the professional qualifications directive has been transposed horizontally and vertical transposition is on-going. In the Flemish Region, the decision was approved to deregulate most of the regulated professions on 17 March 2017.
Reduce administrative burdens on start-ups	Federal and regional initiatives aimed at simplifying administrative procedures for SMEs, including for micro-firms (e.g. The Brussels-Capital Region's Small Business Act).

faster than domestic productivity (OECD, 2015a), and it reduces adjustment to real shocks that would require internal devaluations, important in a currency union. In this respect competitiveness would be better safeguarded by linking wages more directly to

productivity, although productivity growth can be difficult to reliably estimate and predict. The authorities should evaluate the results of the reformed wage-setting system and assess the need for additional reform.

Improving environmental quality and promoting a greener and more inclusive economy

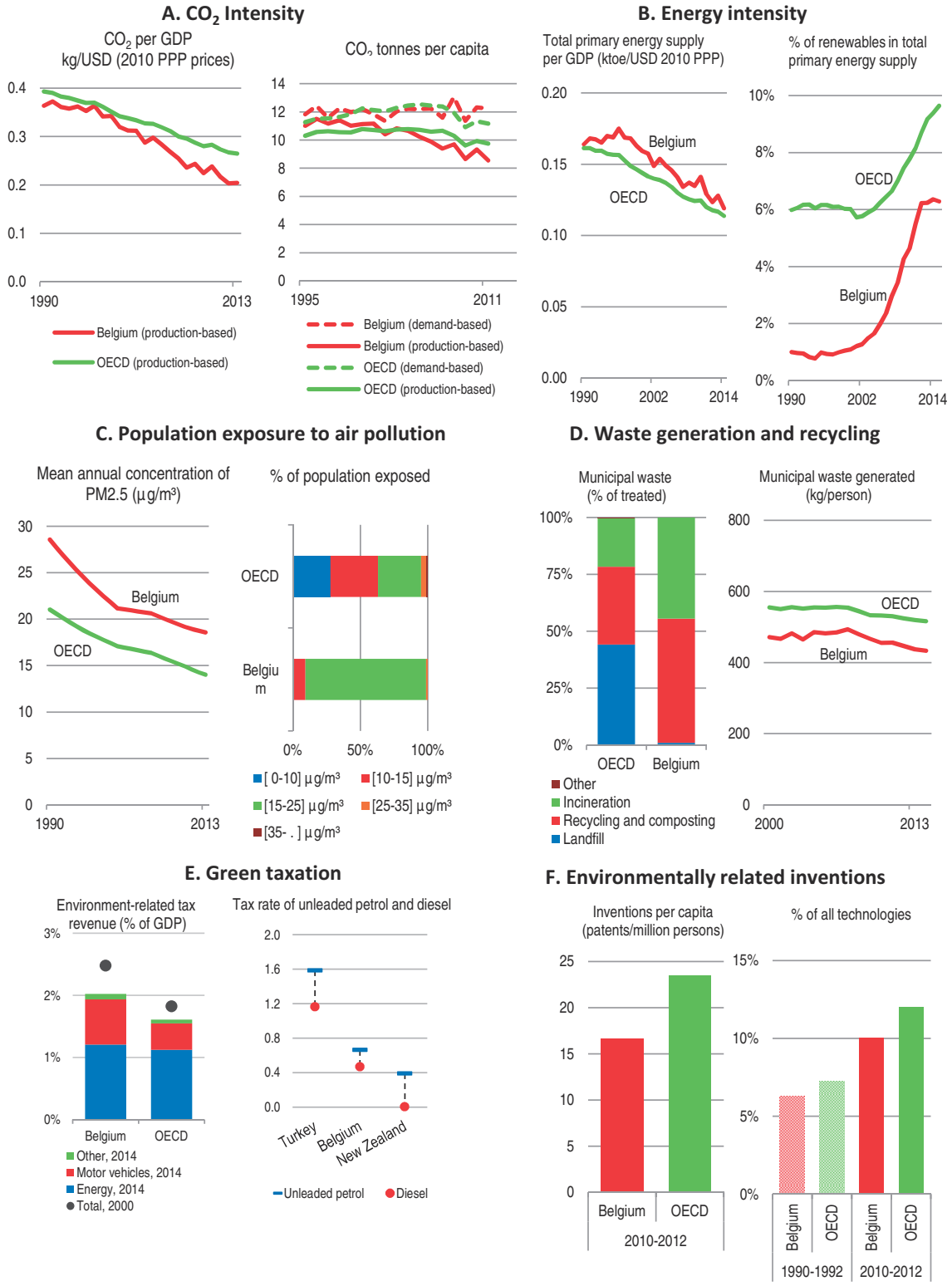
Belgium's high degree of urbanisation and extensive commuting and congestion contribute to an average exposure to harmful small particles that is significantly higher than the OECD average. However, the proportion of people exposed to some of the highest levels of pollution is below the OECD average. The overall trend is improving in Belgium, but it is not catching up with the also improving OECD average (Figure 22.C). Green investment, especially in transport infrastructure, could reduce bottlenecks and contribute to the transition to a low-carbon economy. Besides raising growth and productivity, such investments combined with environmental taxes could make growth greener and more inclusive. Improving public transport, increasing use of congestion charges and eliminating the favourable tax treatment of company cars are all policies that could improve air quality. The authorities have already taken steps in this direction (Table 11). The transition toward a greener economy can also reshape the labour market and create new opportunities, including for the most vulnerable (OECD, 2012b). Appropriate skills policies, as discussed below, are key to making the most of these new opportunities.

Belgium's economy is somewhat more energy intensive than the OECD average, but intensity has declined faster than in other countries over the past two decades. CO_2 emissions per capita and per unit of GDP are below OECD averages, as nuclear energy provides around half of Belgium's electricity and nearly 17% of total primary energy supply. Furthermore, over one fifth of Belgium's electricity is imported. The share of renewables grew quite rapidly during the 2000s, due to increasing exploitation of biofuels and waste. Although there has been a surge in wind and solar generation, the overall share has stagnated in recent years. Renewables contributed 8% of total primary energy supply in 2014. This share will need to increase substantially to meet the national target for 2020 (13% of total final energy consumption). The Federal government's plan to phase out nuclear power production by 2022-25 calls for further renewable energy development and will also require investment in gas-fired power plants. Phasing out nuclear energy is likely to have a significant impact on energy supply, on electricity prices and on Belgium's ability to meet its long-term greenhouse emission targets (IEA, 2016).

The transition to cleaner energies is an opportunity to develop and adopt new technologies which could boost growth, jobs and inclusiveness while addressing environmental concerns. The share of environmental inventions in total patents has risen very substantially since the early 1990s, as in many countries, but still lags the OECD average by around 30% on a per-capita basis.

Other environmental challenges include the coverage of sewage water treatment, where Belgium is still behind some of its neighbours. 84% of households are connected to at least secondary urban wastewater treatment. In some parts of the country the limited coverage is in part due to dispersed building patterns that impede a cost-effective connection of every household to a public water treatment plant. On the positive side, household waste generation in Belgium has been falling since 2007 and remains somewhat below the OECD average. Disposals to landfills have been entirely eliminated and a much higher share of non-landfill waste is recycled or composted than in many other countries.

Figure 22. **Environmental challenges**



Source: OECD (2016), *OECD Environment Statistics Database* (Green Growth Indicators, Patents: Technology Development, Municipal Waste); *OECD National Accounts Database*; IEA (2016), IEA World Energy Statistics and Balances database; IEA Energy Prices and Taxes database; OECD calculations based on data from M. Brauer et al. (2016).

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Table 11. **Past OECD recommendations on green growth**

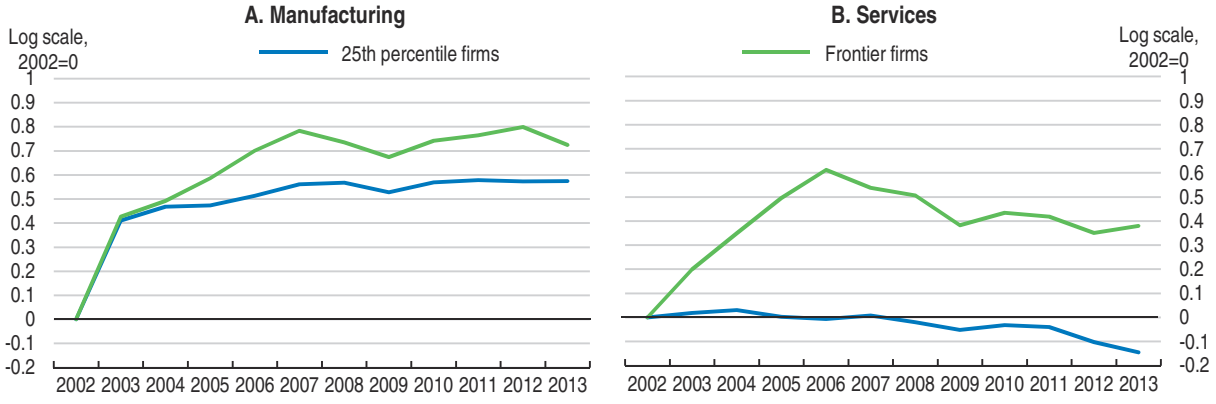
Summary of recommendations	Summary of action taken since 2015 *Survey*
Shift subsidies of energy-saving investments towards more cost-effective technologies.	Flemish Region subsidies of energy-saving investments in residential and non-residential buildings reformed: subsidies and property tax discount for new installations in solar and wind energy; subsidies and property tax discount for energy-related renovation of existing buildings.
Increase energy taxation for residential use.	Indexation of electricity and gas prices, on the basis of market-based parameters and elimination of reduced VAT rate on electricity as of September 2015 for residential consumers. Higher consumption tax on electricity in the Flemish Region.
Reduce subsidies to commuting by car and introduce congestion charges in the largest cities.	New toll for heavy trucks. Lower tax deduction on company cars. Introduction of a mobility budget for employees benefiting from a company car. Grants/tax subsidies for individuals/companies buying environmentally friendly cars in the Flemish Region.
Increase power generation from renewables in order to meet 2020 emissions targets.	Co-operation agreement on burden sharing between the regions and federal authority on climate-energy targets by 2020. Flemish Action Plans 2020 and targets for photovoltaic and wind energy were approved in 2016.

Making the business environment more supportive of productivity gains

While GDP per hour worked increased by 1.5% a year between 1996 and 2005, the rate dropped to 0.5% between 2006 and 2015 (see Figure 4.B). A similar deceleration in productivity growth occurred in most OECD countries, but the decline has been more pronounced in Belgium (See Figure 4.C). In most OECD countries, the decline in productivity growth is mainly explained by lower productivity gains from laggard firms (OECD, 2015c). The same is broadly true of Belgium, although productivity gains among frontier firms in the services sector also appear to have stagnated in recent years (Figure 23). The challenge in this context is to revive broad-based productivity growth, notably by fostering a business environment that facilitates innovation and widespread diffusion of advanced technologies.

Figure 23. **Multifactor productivity growth has slowed for frontier and laggard firms**

MFP productivity according to the distance to the frontier
Average level of MFP productivity by type of firm



Note: Frontier firms are those with the 3-year moving average multifactor productivity (MFP) equal or above 95% distribution of productivity within its sector. MFP is calculated using Wooldridge method to estimate productivity, as in Andrews et al. (2016). The calculations are based on the sample of firms with an average of 20 and more employees and at least three years presence in the ORBIS data set. On average, the sample constitutes of about 1432 firms in manufacturing and 3456 firms in services each year.
Source: OECD calculation, ORBIS data.

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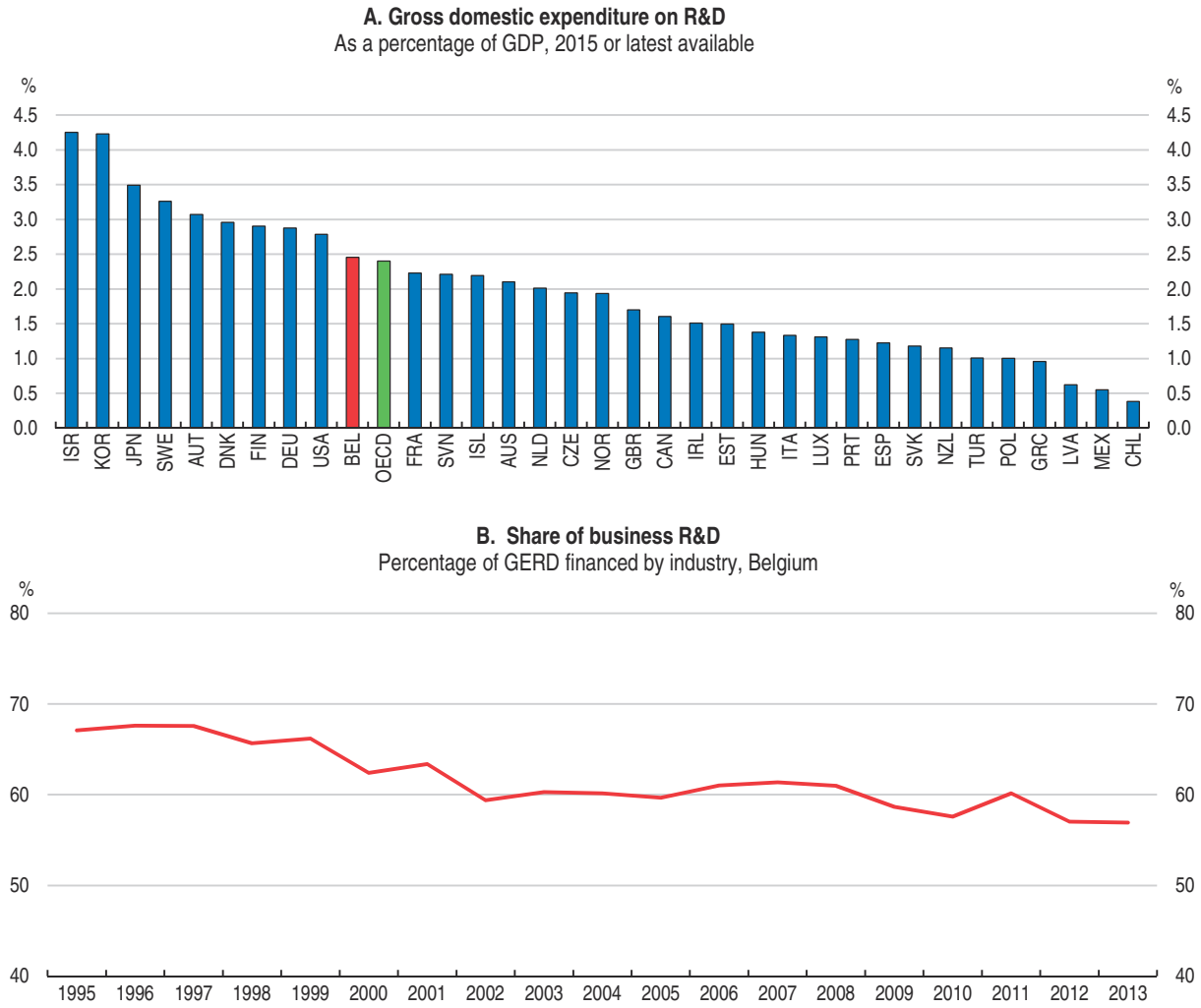
Strengthening innovation at the frontier

The European Innovation Scoreboard 2016 classifies Belgium as a "Strong Innovator", with a normalised score of 0.6. One of the main drivers of innovation and productivity is investment in intangibles, in particular spending on research and development (R&D) (OECD, 2015c). Belgium's gross spending on R&D, at 2.5% of GDP in 2014, was higher than both EU and OECD averages, though short of the Lisbon target of 3% (Figure 24.A). However, the share of business enterprise R&D in total R&D has declined over the past two decades, stabilising below 60% after the financial crisis (Figure 24.B). Business expenditure on R&D tends to be concentrated in firms that are already highly productive and want to stay at or reach the technological frontier (OECD, 2015c). Therefore, the challenge for policy makers is to induce more firms to expand their investment in R&D intangibles.

Figure 24. **R&D investment is around the OECD average**



Note: For Australia, Canada, Ireland and Turkey, data refer to 2014.
Source: OECD, *Main Science and Technology indicators*.

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The federal and regional governments have launched a number of programmes to foster firm-level R&D and innovation. For example, firms may deduct 80% of their patent income from their taxable income, while there is a partial withholding exemption on wages paid to

researchers working on R&D projects. The former was repealed in July 2016, with a grandfathering rule for existing patents. A new regime which is in line with the OECD/G20 BEPS "modified nexus approach" (OECD, 2014b), has recently been approved . Another reform is the widening of the scope of innovation income (such as licences and exclusive rights) qualifying for deductions. Restricting eligibility to firms that engage in substantial R&D activities is under discussion. In this context, the authorities should make sure that tax incentives are backed by R&D activity (spending) to reduce the scope for tax avoidance.

The three regions have developed their own set of research and innovation support policies to nurture economic clusters, simplify government aid procedures and reduce administrative burdens. Industrial cluster promotion in global value chains is among the main policy aims in the Flemish Region and the Walloon Region, and services clusters are prominent in the Brussels-Capital Region. Some progress has been made in reducing fragmentation in support schemes within regions. As of 2016, in the Flemish Region there is a single agency for all business support and a single agency for researcher support. There is also explicit support at the interregional level for joint R&D projects between firms located in different regions.

Each regional authority should continue to streamline public support schemes for R&D and innovation. To maximise transparency and the impact of support, federal and regional authorities should further stimulate collaboration between research institutions, all types of companies and community actors.

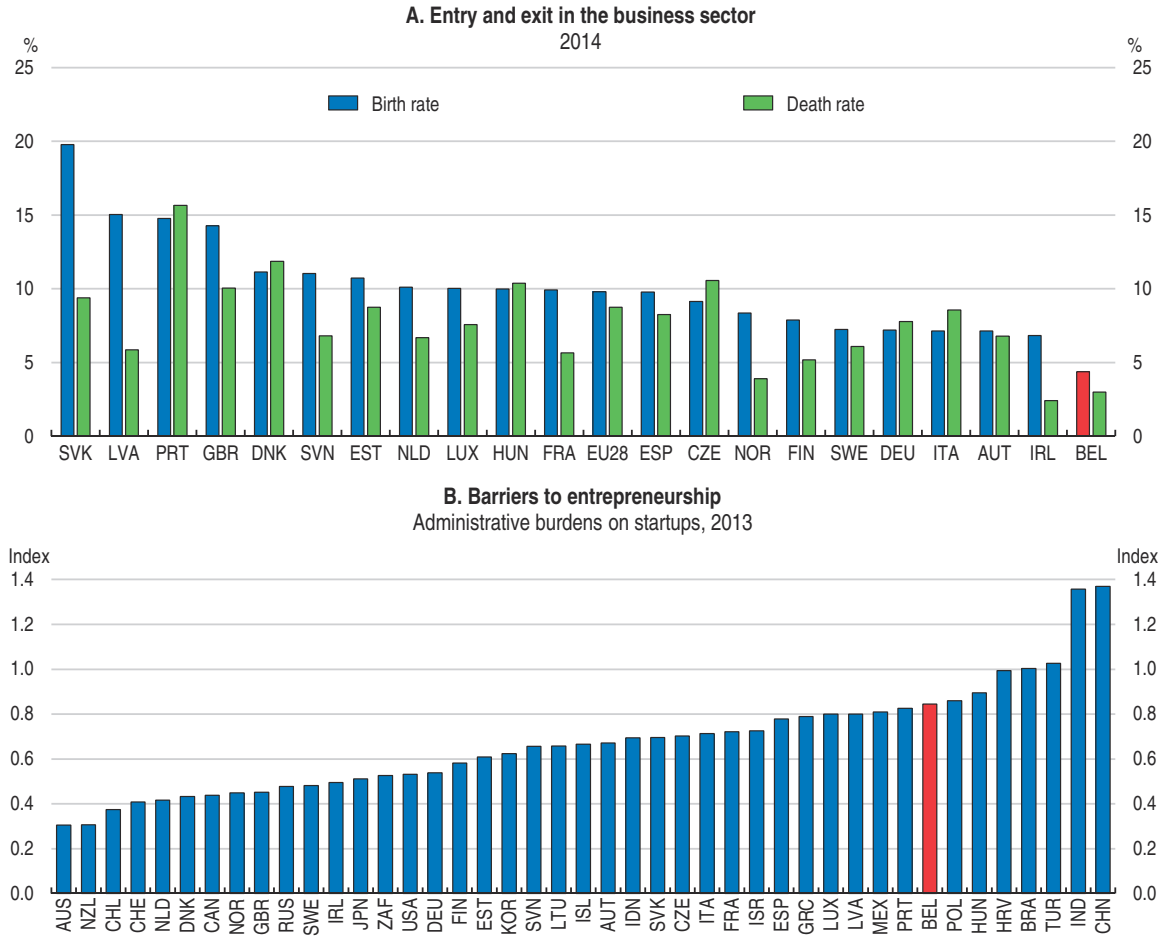
Strengthening business dynamism

Young firms often have a comparative advantage in commercialising radical innovations (Baumol, 2002), so that a vibrant start-up culture is conducive to innovation and high productivity growth. The business landscape in Belgium is characterised by very low rates of enterprise creation and exit (Figure 25.A), although recently the number of start-ups has accelerated (Table 12). The World Bank's Doing Business report ranks Belgium favourably overall, especially on its regulatory framework, market conditions, access to finance, and entrepreneurial capabilities (De Mulder and Godefroid, 2016; Figure 26). However, Belgium scores poorly on contract enforcement (Calvino et al., 2016, Table 13) and its high paid-in minimum capital requirements (Dreher and Gassebner, 2013). The relatively poor "enforcing contracts" score is mainly due to low court automation and weak case management (WB, 2016a).

The relatively high administrative burden on start-ups may also have dampened entrepreneurship (Figure 25.B). To encourage start-up enterprises, the Federal government has implemented measures within its "SMEs plan" of February 2015 that aim to reduce administrative costs associated with firm registration by 30%, for example by creating a single administrative contact for SMEs. These efforts are complemented at the regional level by initiatives to simplify administrative procedures for SMEs.

Some elements of the tax system might also hamper growth of young firms and discourage firm creation. In particular, like many other countries, Belgium exempts small companies from registration for VAT in order to simplify their tax procedures. However, the threshold from which registration is required is relatively low and, across EU countries, low VAT registration thresholds are associated with low rates of business entry as they tend to increase administrative burdens (IMF, 2016b). The Belgian authorities, aware of the potentially detrimental impact of a very low VAT registration threshold, raised it to EUR 25 000 as part of the reforms of the "SMEs plan" of 2015.

Figure 25. **Business dynamism is weak**



Source: Eurostat and; OECD, *PMR indicators Database*.

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Table 12. **Growth rate of the number and start-ups and failures in Belgium**

	2009	2010	2011	2012	2013	2014	2015	2016
Start-ups	-2%	10%	4%	-6%	1%	4%	2%	7%
Failures	10%	4%	6%	5%	10%	-9%	-6%	-5%

Source: Graydon and Unizo.

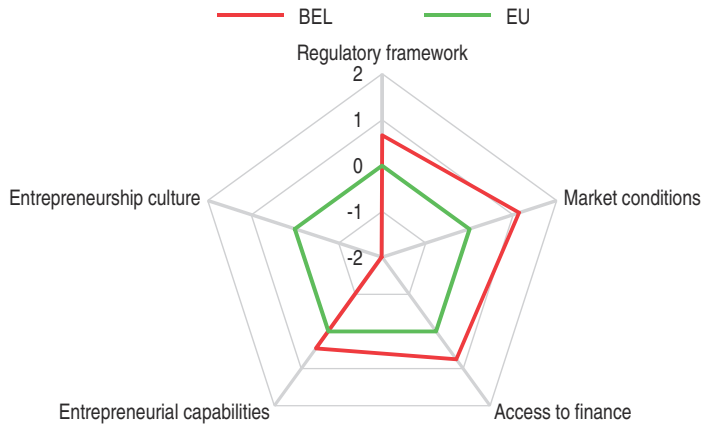
Recent empirical work also found that Belgium ranks last among EU countries in terms of entrepreneurship culture (De Mulder and Godefroid, 2016), which captures factors like job prestige and risk aversion. These findings suggest that the authorities should further extend existing advocacy programmes in schools to strengthen entrepreneurship education and better inform young graduates about the nature and opportunities in private business.

Enhancing technological diffusion

Strong, broad-based productivity growth requires diffusion of technological and organisational advances. Belgium has a rather heterogeneous distribution of productivity performance at the firm level (Figure 27). A small fraction of firms are as productive as any in Europe, but many others are far less productive.

Figure 26. **More should be done to foster entrepreneurship culture**

Relative performance to the EU, 2009-15



Note: Lower scores indicate lower performance. Scores are expressed relative to EU average equal to zero for each indicator. For EU, data refer to the unweighted average of scores calculated for Austria, Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain and Sweden.
Source: De Mulder and Godefroid, 2016.

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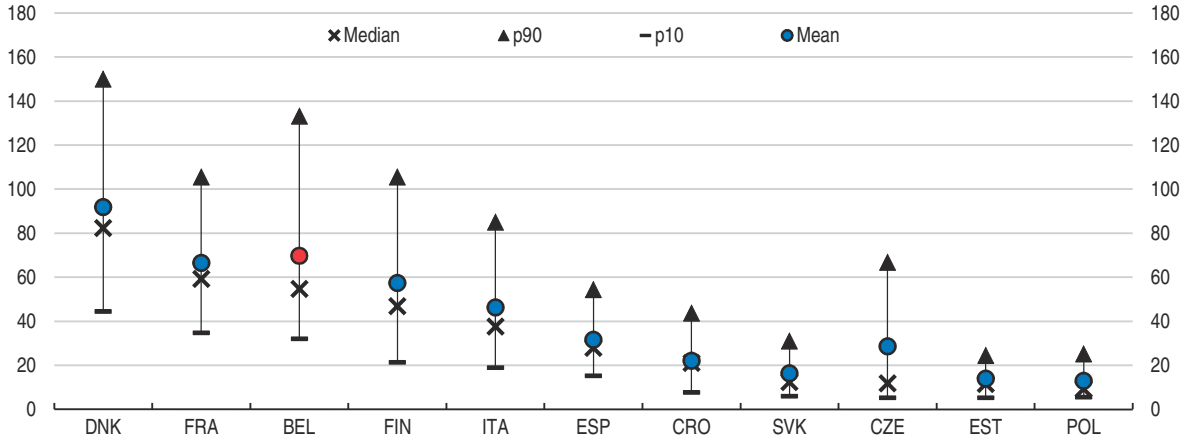
Table 13. **World Bank Doing Business indicator for Enforcing Contracts**

	Time (days)	Cost (% of claim)	Quality of judicial processes index (0-18)
Belgium	505	18	8
OECD Median	431	22.1	11
OECD Best	216	9	15.5
OECD Worst	1 580	43.9	7

Source: World Bank, *Doing Business Database*.

Figure 27. **The distribution of labour productivity across firms is wide**

Real value added per employee averaged over the period 2007-13



Source: CompNet, 2016.

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The inter-firm diversity in productivity performance is partly explained by the level of integration into global value chains (GVCs). Innovations at the global frontier tend to be quickly adopted by multinationals and dispersed to their affiliates around the world.

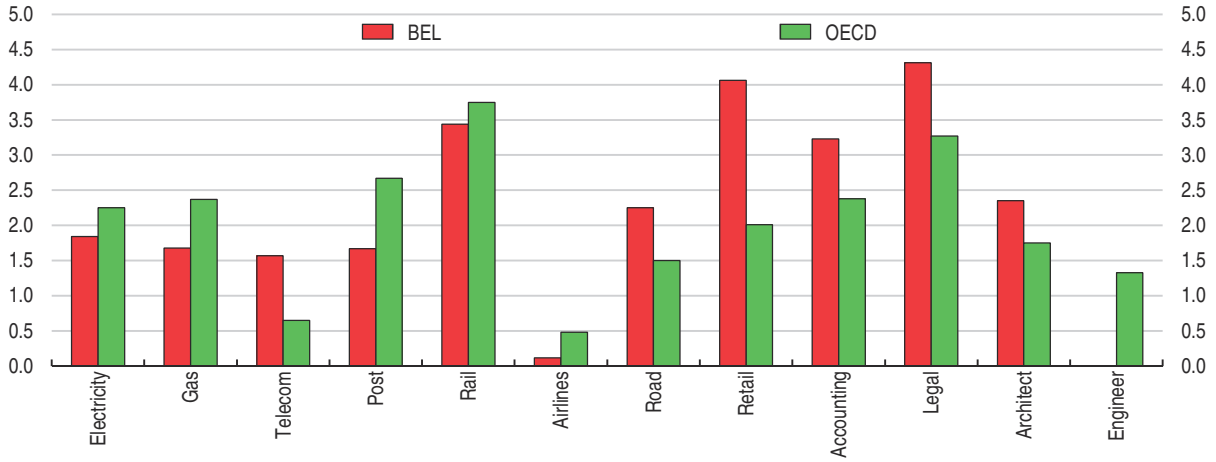
Moreover, domestic companies that have direct commercial relationships with multinationals tend to benefit through spill-over effects (NBB, 2013). Belgium maintains an open trade regime and has less stringent regulations than the OECD average in 20 out of 22 service sectors (OECD, 2016a). However, in accounting, auditing and architectural services ownership restrictions impede international integration. In companies providing auditing and accounting services, 50 % + 1 of the voting rights must be owned by locally registered professionals. In companies providing architectural services, 60% of the voting rights and equities must be owned by locally registered professionals. These rules apply equally to Belgian and foreign nationals. For EU nationals, the rules of recognition of qualifications of directive 2005/36/EG are applicable. The conditions for access of legal persons to economic and intellectual professions such as architects and accountants are currently being studied. The authorities should continue to promote trade openness, international connectivity and mobility of highly skilled labour in order to achieve more pervasive GVC integration of domestic firms.

Global production chains rely on well-functioning transport and logistics networks. Belgium is a major logistics hub in Europe due to its geographical position and strong port infrastructure (WB, 2016b). The quality of some types of infrastructure, in particular the road and rail network, is slowly adjusting to changing needs after a period of weakness in public investment contributed to the deterioration of infrastructure. The World Economic Forum ranked Belgium 10th in the world with respect to the quality of roads in 2006/07, but only 30th in 2015 (WEF, 2016).

The co-existence of firms with very different productivity levels in Belgium may also suggest that there is room to further improve the allocation of resources. Part of the slowdown in productivity growth has been attributed to a change in the composition of the Belgian economy, with the contraction of highly productive manufacturing activities and the expansion of relatively less productive services sectors (Biatour and Kegels, 2015). Some non-tradable services, such as retail distribution or some professional services, remain highly regulated (Figure 28). Better implementation of the Single Market for Services could also yield important benefits for Belgium. Main other areas to be considered by the authorities for reform include:

Figure 28. **Some sectors remain highly regulated**

OECD PMR indicator, lower is less restrictive



Source: OECD (2013), *Product Market Regulation Database*.

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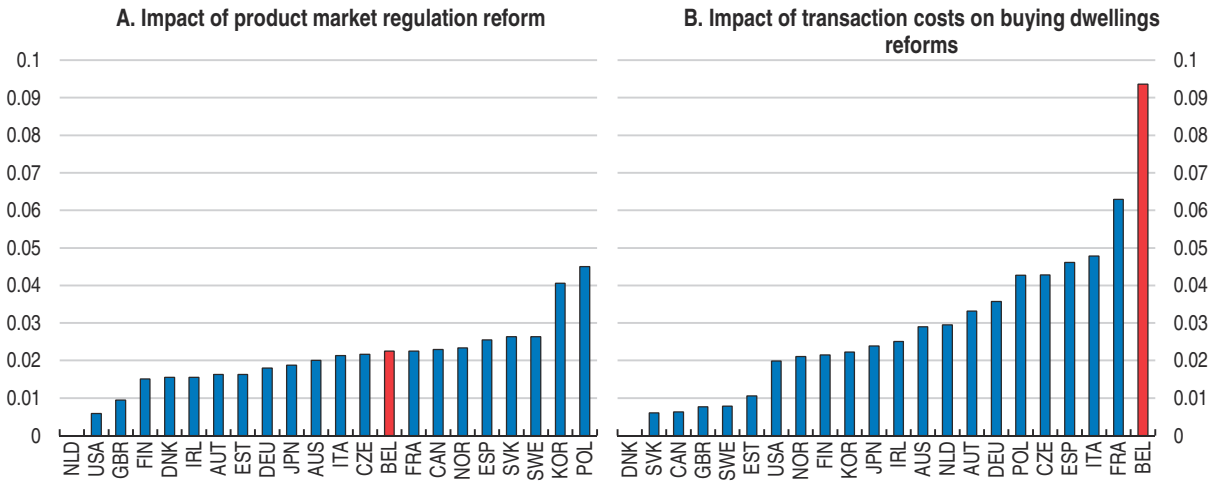
- In retail trade, specific regulation of large outlets persists, protecting existing firms.
- In accounting, architectural and legal services, professional association membership remains compulsory.

Raising and mobilising skills to boost growth and inclusiveness

Making better use of existing skills

Recent evidences suggest that university-educated workers are not optimally located in firms where they might contribute the most to the creation of economic value (Vanderberghe, 2016; Chapter 2). PIAAC micro-data drawn from interviews of a panel of employers in the Flemish Region suggest that skills mismatches risk to negatively affect productivity at both the aggregate and sector level (Adalet and Andrews, 2015). While over-educated workers may improve the productivity of individual firms (Mahy et al., 2015), macroeconomic performance may be reduced as the productivity-enhancing effect of advanced education is greater among the most productive and innovative firms that are part of the efficiency frontier or located close to it (Aghion et al., 2006; 2009) and if some firms have difficulty attracting the workers that they would employ more productively (Andrews and Cingano, 2014). Overall, OECD estimates suggest that reducing skills mismatches to the lowest level of the OECD could increase economy-wide productivity gains by about 3% in Belgium (Adalet and Andrews, 2015).

Figure 29. **The potential impact of regulation on skills mismatches**



Note: Estimation of cross-country reductions in skill mismatch from reforms to the best practice level of the two policy variables. For instance, if Belgium reformed product market regulation to best practice the probability of skills mismatch would fall by almost 2.5%. Product Market Regulation is the aggregate indicator for 2008. Transaction costs include a number of fees such as transfer taxes (e.g. stamp duties), registration fees incurred when registering the property in the land registry, notarial or other legal fees and typical real estate agency fees and refer to 2009.
Source: Adalet and Andrews (2015).

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Housing, product and labour market policies (Figure 29) could all contribute to a better allocation of resources:

- Residential mobility is low, with about 10% of workers changing place of residence within a two-year period and job-to-job mobility below the EU average (Eurostat, 2016). This contributes to skills mismatches as it is associated with weak worker reallocation (Caldera Sánchez and Andrews, 2011). Despite recent reductions in fiscal support for

home ownership (see Table 7), owner occupancy as a share of total housing tenure and transaction costs in the housing market are high. Federal authorities could thus raise the cadastral values to make them better reflect market values, while regional authorities could reduce the tax deductibility of mortgage debt, as recommended in the 2015 OECD Economic Survey. At the same time the authorities should assess the need for compensatory measures for financially constrained owner-occupiers, such as the right to accumulate tax arrears until the property is sold.

- Comparatively stringent product market regulation and high barriers to entry also protect low-productivity incumbents and contribute to skills mismatches and lower productivity growth by preventing more productive firms from entering the market and making better use of highly skilled workers (Adalet and Andrews, 2015). As discussed above, there is some scope to ease product market regulation, particularly in service industries and retail trade, to boost firms dynamism and improve the allocation of resources (see also Chapter 1).

Improving the employability of seniors for a more productive and inclusive society

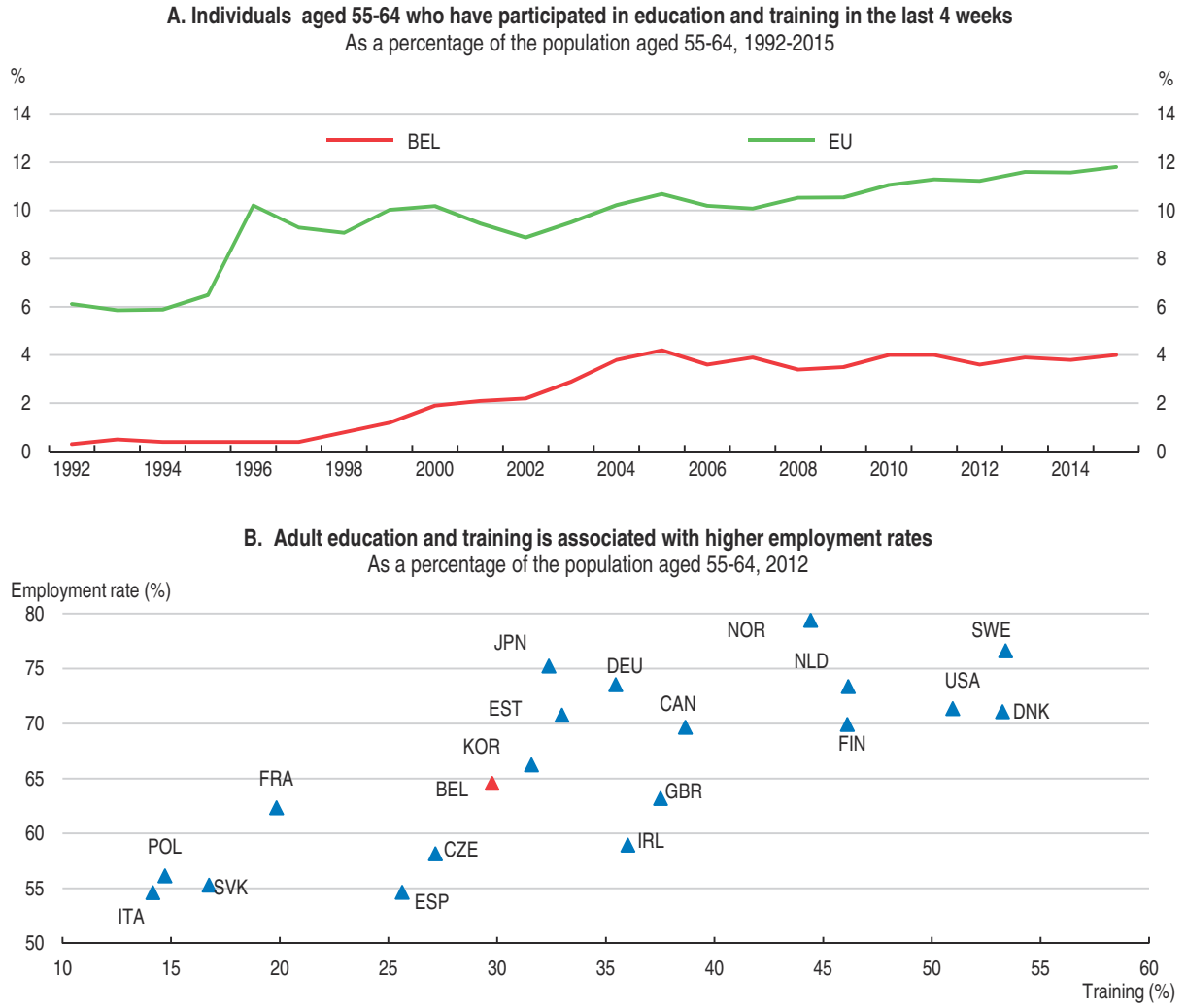
In terms of demographic trends, the situation in Belgium is very similar to that of other European countries. Population ageing heightens the importance of ensuring older workers are not excluded from the labour market. Adult education and training (AET) is useful in this regard as it can help workers maintain and update their skills to match labour market demands. Participation in AET is well below the EU average and is particularly poor among older workers (Figure 30). While a higher retirement age will increase incentives for both employer and employee to invest in AET, more proactive policies should also be considered. The government's decision to oblige firms to provide workers with at least five working days of AET per year as legislated in the recent *Werkbaar, Wendbaar Werk* (WWW) labour market reform is welcome.

Establishing age-friendly organisational structures and working environments can help older workers make the most of their skills (Appannah and Biggs, 2015). Existing measures aimed at older workers, like the obligation for every firm with more than 20 workers to implement a *Werkgelegenheidsplannen voor oudere werknemers* (Employment opportunity plan for older workers), or the financial help provided by the regions to accommodate the needs of older workers should be evaluated and, if appropriate, amplified. The Flemish government is currently developing a new scheme to help workers retrain or reorient themselves towards different professional careers. Social partners should more systematically identify and disseminate best practices to improve the working environment for older workers.

Greater work flexibility should be used to accommodate older workers' need for flexible work. However, authorities should ensure that fewer hours worked are associated with lower labour costs. If flexitime leads to an increase in unit labour costs it is likely to be negative for employment growth (Kantarci and Soest, 2008). The WWW reform will introduce an annualisation of the calculation of working time, an extended right to teleworking and portability of paid holidays in case of job changes.

As many other countries Belgium has a seniority-based pay structure. Such arrangements have been found to motivate greater effort over a working life (Lazear, 1979; Kirsten and Heywood, 2007), but if wages increase too steeply a seniority-based pay structure may also dampen professional mobility and decrease employment opportunities of older workers as their wages and productivity levels diverge (Zwick, 2012). Although

Figure 30. **Participation in adult education and training is low**



Note: In panel B, training axis refers to participation in training activities over the past year. For Belgium, data refer to Flanders.
Source: Eurostat, Labour Force Statistics and; OECD, PIAAC 2013.

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confined to white-collar workers, seniority-based wages are relatively high in Belgium (Figure 31). The Federal government's General Policy Statement of 2014 contains an explicit commitment to reduce seniority-based pay, concomitantly to pension and early retirement reforms. The government could guide efforts to reduce the steepness of seniority-based wage profiles through the well-established tri-partite wage bargaining process.

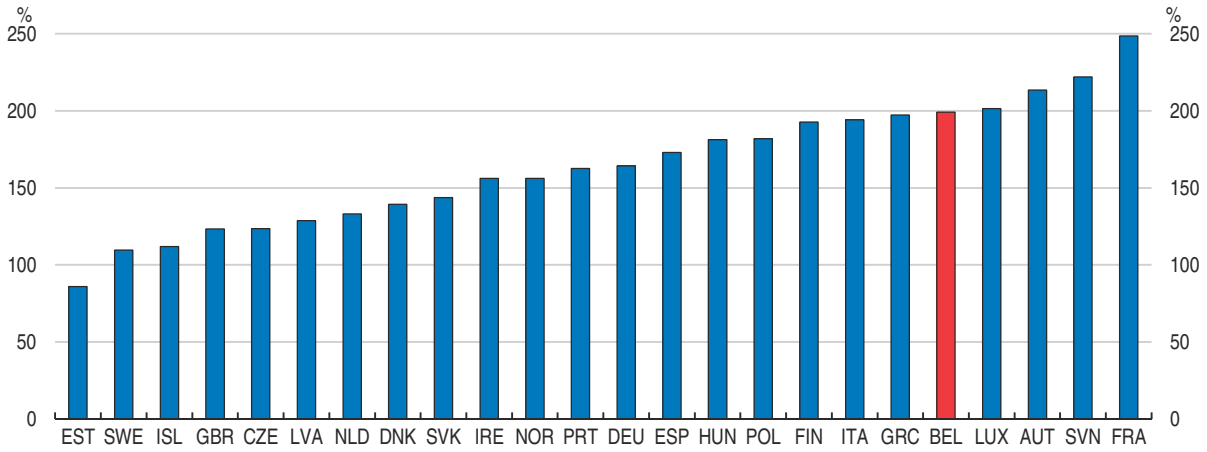
With one of the highest shares of long-term unemployed for those aged 55 and above (Table 14), the risk of skills loss for older people is high. Federal and regional authorities have introduced a number of initiatives to support older jobseekers, including job placement services and stricter job search obligations. These efforts should continue, also by tightening of the career-break scheme for public sector workers.

Building the skills for the future and a future for all

A relatively large share of youth does not complete upper-secondary education (Nusche et al., 2015). This may explain the gradual reduction of Belgium's lead in tertiary education

Figure 31. **Estimation of relative wages for seniors are comparatively high in Belgium**

Wage of male workers aged 60-64 relative to workers aged 30-35, 2012



Note: For Belgium, data refer to Flanders. Relative wages are obtained using HECKIT 2-stage estimation, regressing (log) gross hourly wages on age group, controlling for years of schooling, PIAAC scores and occupational status.
Source: OECD, PIAAC 2013.

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Table 14. **Long-term unemployment among seniors (aged 55+)**

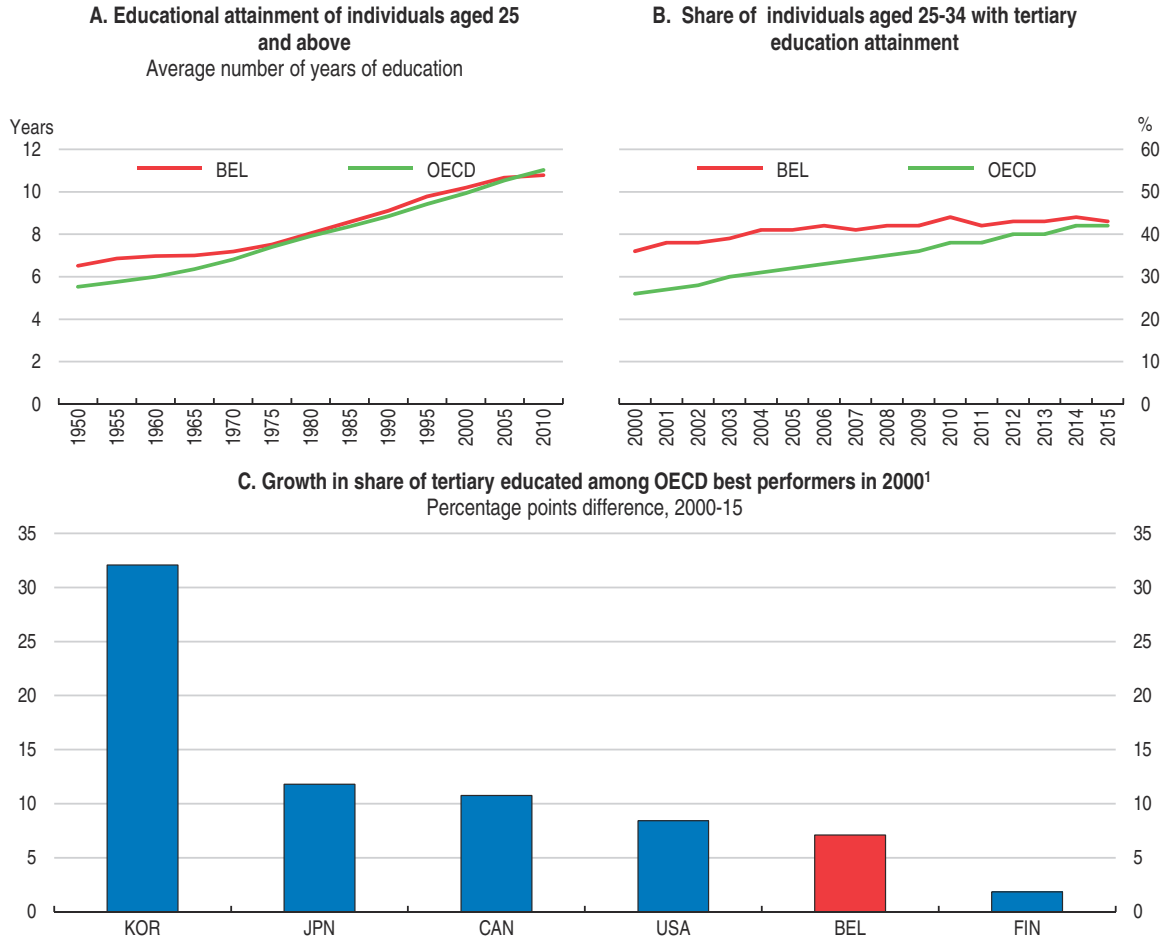
	Unemployment duration above 1 year
Belgium	76.2
France	63.7
Germany	60.1
The Netherlands	68.4
OECD	42.6

Source: OECD Database.

vis-à-vis other countries in recent decades. Although Belgium does well in absolute terms, progression has been slow (Figure 32). These dynamics cannot be explained by a catching-up effect. All but one of the countries that had higher shares of tertiary-educated individuals in 2000 have made more progress than Belgium (Figure 32.C). Moreover, the share of over-educated among workers is comparatively low, suggesting that there is still room to increase educational attainment (Chapter 2; Adalet and Andrews, 2015). Shortcomings in the educational system extend to the labour market. The youth unemployment rate (15-24 years) was 20.1% in Belgium in 2016, compared to an OECD average of 13%.

Socio-economic background is an important determinant of educational attainment, as described in the previous Economic Survey (OECD, 2015a). Youth with an immigrant background are only 65% as likely to obtain a tertiary degree as their native peers; almost the lowest ratio across the OECD (Figure 33). Cross-country evidence suggests that educational support for migrant children and youth is most effective in early childhood (Nusche, 2009). Despite having spent their entire childhood in Belgium, many second-generation (non-EU) immigrants may have limited proficiency in the language of instruction when they start primary school. Providing pre-primary language education to these children would improve their school readiness and allow them to start on an equal footing with their peers. The 2015 Survey analysed in detail the determinants behind lower educational outcomes of children of (non-EU) immigrants and identifies a set of actions

Figure 32. **The progression of education attainment is slowing down**



1. Top six countries with highest share of individuals aged 25-34 with tertiary education attainment in 2000.

Source: Barro & Lee, 2016 and; OECD, *Education at a Glance 2016 Database*.

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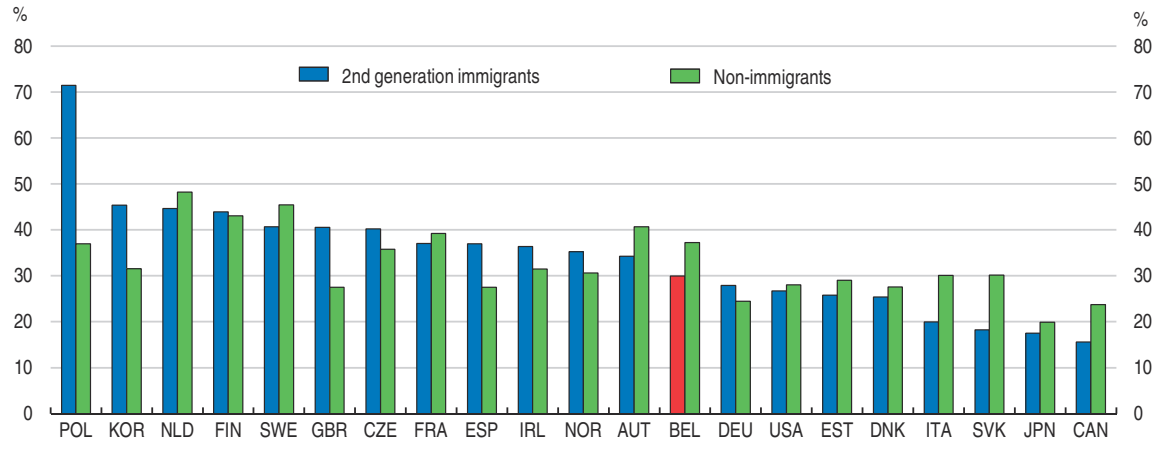
Figure 33. **The educational attainment of immigrants is low**

Share of people aged 25-34 with tertiary education by population group, 2012



Note: For Belgium, data refer to Flanders.

Source: OECD, PIAAC 2013.

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Table 15. **Past OECD recommendations to enhance labour market integration of immigrants, mobility and skills**

Summary of recommendations	Summary of action taken since 2015 *Survey*
Monitor enrolment to reduce the concentration of disadvantaged students in particular schools. Improve teacher training and incentives to attract more qualified teachers to disadvantaged schools.	Adoption of a concept note by Flemish Government on March 25, 2016 containing proposed measures for raising the profile of new entrants to teacher education programmes and streamlining of programmes and quality enhancement of teacher training. Recent evidence suggests that a 2011 decree by the Flemish government to grant priority to certain places in oversubscribed schools in proportion to the socioeconomic composition of each school's neighbourhood, has led to a decrease in segregation. As part of the "Pact for Excellence in Education" (FWB) The French Community has implemented measures to foster inclusive education, reduce school dropouts and grade repetition.
Proceed with reforms to reduce grade repetition and delay tracking in secondary education. Expand workplace-based learning in vocational education.	Increased funding by regions and communities for a variety of initiatives to reduce early school leaving: a Youth Guarantee scheme in Brussels-Capital Region, a decree to closely monitor those at risk of leaving school early by Parliament of the French Community, an action plan 'together against early school leaving' and a pilot programme on dual learning in Flemish Community. The "Opleidingsplan 2020/Plan Formation 2020" adopted by the Brussels-Capital Region on December 6, 2016 plan to strengthen work-based learning.
Continue to co-operate with social partners to further expand diversity plans in firms. Expand training offers, including on languages, and skill validation for immigrants	In response to the refugee crisis, the Federal Individualised Project for Social Integration (IPSI) was expanded to provide immigrants with necessary skills to enter the labour market: a job-insertion plan including languages training, skills validation and proposition of a training offer in the future and in-demand technological jobs in the Walloon Region A social, professional and linguistic assessment of migrants as well as specific offer of training and/or validation for newly arrived migrants included in The "Plan Formation 2020" in Brussels-Capital Region. The Flemish Region also recruited additional language counsellors to its employment service and extra language support in pre-primary, primary and secondary education. In addition, the Flemish government approved a 'Horizontal Integration Policy Plan' in July 2016. The plan aims to reduce the ethnic gap: the social position of persons with a migrant background is in many areas worse than the position of persons of Belgian origin.
Improve vocational training to better reflect labour market demands	The Walloon Region and the Brussels-Capital Region has set up a single contract for young people attending dual vocational education to strengthen incentive from employers. Both regions have also appointed sectoral tutors, financed both by the regional authority and employers. The French Community reformed the apprenticeship training in September 2015. Increase in the number of trainee placements in the Brussels-Capital Region. In Flanders multi-annual planning, including through dual learning programmes, has contributed to a clear increase in the outflow from vocational training to work over the past two years In the French Community "Pact for Excellence in Education" (FWB) includes an upgrade of vocational education. An employment and training observatory was established in December 6, 2016 to improve the relevance of the training offer.
Enhance labour market flexibility in order to facilitate entry of excluded groups	Implementation of the *Werkbaar, Wendbaar Werk* reform will make working time more flexible

(Table 15; OECD, 2015a). The three communities are all aware of these challenges and have implemented major education reform (Chapter 2).

Another important challenge is to reduce the concentration of pupils with low socio-economic and (non-EU) immigrant backgrounds in some schools as this tends to be detrimental to educational outcomes. The introduction of controlled school-choice schemes is welcome and should be expanded if proven effective in reducing school segregation (Nusche et al., 2015). Authorities should also consider the use of incentives schemes to attract teachers to schools with a high concentration of disadvantaged pupils. Another challenge is to promote the participation of teachers in training with content on teaching in multicultural settings, currently comparatively less developed in Belgium (OECD, 2013d). In addition, measures to improve the socio-economic conditions of disadvantaged pupils by

combatting persistent underemployment among their adult family members (Table 16), when relevant, and reinforcing national languages learning (Fondation Roi Baudouin, 2016) are examples of policies that could have a positive indirect impact.

Table 16. **A persistent immigrant-native employment gap**

Employment rate by country of birth

	Employment rate (20-64 years old)		
	Native	Extra-EU28	Gap
2006	68.8	47.4	-21.4
2008	69.9	50.7	-19.2
2015	69.7	48.7	-21.0

Source: Eurostat, 2016.

Educational outcomes also differ by gender. As in every participating country in PISA 2015 among 15 year-old girls outperform boys in reading, although the gap in Belgium is narrower than the OECD average (OECD, 2016j). On the other hand Belgian boys outperform girls in mathematics and science by a wider margin than the OECD average. These differences extend to the tertiary level. Around 49% of 25-34 year-old women had attained tertiary education in 2015, compared to 37% for men (OECD, 2016b). However, in 2014 only 26% of bachelor's degrees in science, mathematics and computing were awarded to women, compared to an OECD average of 40%. This is the third lowest share of all OECD and partner countries with available data. The share of female graduates in this field is also considerably lower than the OECD average at the master's and doctoral or equivalent levels (OECD, 2016b). The underrepresentation of women in science-related fields reflects gender differences in attitudes (OECD, 2016j). Providing girls and boys with objective and reliable career information about science-related careers, including personal contact with employers and professionals could help reduce the influence of informal sources of information, which may lack reliability, solid information and impartiality, and confine choices to the known and familiar.

Per-student spending at the tertiary level has declined over the past few years (Table 17). In primary and secondary school, there is no mechanical link between expenditure (or the number of teachers per student) and learning outcomes (OECD, 2012a; Hanushek and Woessmann, 2017). Less is known about the tertiary level. However, highly skilled researchers and graduate students are increasingly mobile, and favour well-funded institutions (Gérard and Uebelmesser, 2014). Although both the French and Flemish communities increased funding for the fiscal year 2017, concerns remain about the long-term sustainability of the current model of financing tertiary education.

Table 17. **Changes in the number of students, expenditure on educational institutions and expenditure per student in tertiary education**

In % (2008-13)

	Change in expenditure	Change in the number of (full time) students	Change in expenditure per student
EU	11	7	6
OECD	17	11	5.5
Belgium	15	18	-3

Source: OECD (2016b).

Belgium has one of the lowest shares of private expenditure on educational institutions in the OECD. Public sources account for 95% of the expenditure for all levels of education combined, compared with an OECD average of 84% (OECD, 2016b). In 2015 roughly 6% of students in tertiary education were from other European countries, particularly from neighbouring countries with restricted access to studies in certain academic fields in their own national higher education system. Rather than entering the Belgian labour market many of these students choose to leave Belgium upon completion of their studies (Gérard and Vandenberghe, 2007).

The level of tuition fees in Belgium depends on a student's financial situation, the type of qualification (regulated for initial programmes, free for most advanced/executive programmes) and whether or not the student is an EU national. In the French Community around 70% of students in public or government-dependent private higher education institutions pay the maximum fee of EUR 836 per academic year. In the Flemish Community 77% of students in initial bachelor's degree and master's degree programmes pay the maximum fee of EUR 890, while in the German-speaking Community nearly all students pay EUR 450 (EC, 2015). In Germany students do not pay tuition fees. In France fees are generally fixed at around EUR 400 a year for an undergraduate degree and EUR 470 for a master's degree, although around one-third of students are exempt from fees. At certain schools and for certain subjects fees are higher and may reach up to EUR 10 000 per year. In the Netherlands all students pay fees of EUR 1951 per year.

Against a background of high public debt and significant fiscal constraints some OECD countries have chosen to increase tuition fees to sustain spending on tertiary education. For instance, tuition fees were increased in England in 2011, which markedly increased overall spending on tertiary education. Despite an initial decline, the participation rate in higher education has continued to increase (Department for Education, 2016). The Belgian authorities could consider increasing tuition fees in tertiary education while maintaining the grant and waiver system to support disadvantaged students. Granting loans with repayment contingent on the level of their future income would help compensate graduates who have not achieved wage gains from their studies.

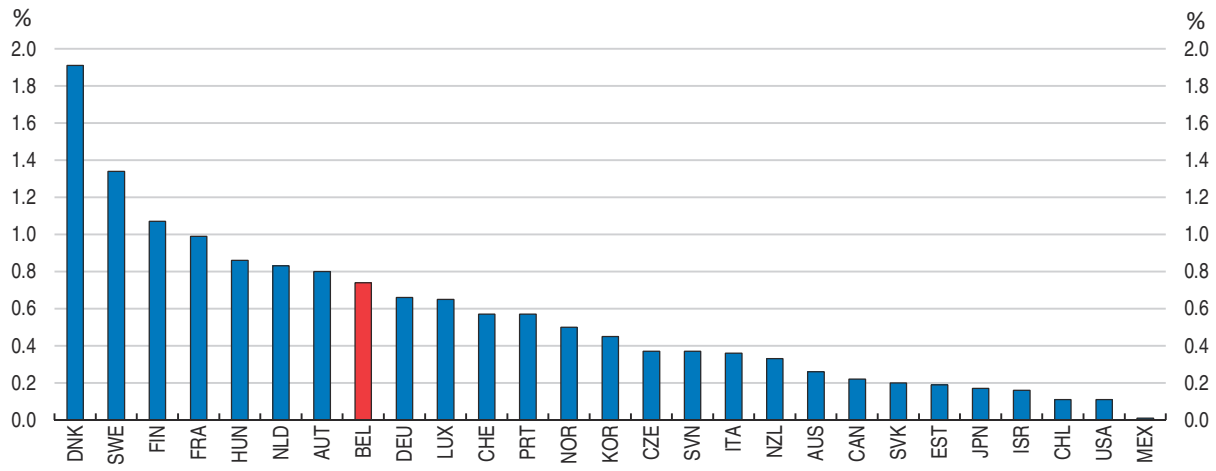
Seizing the benefits of digitalisation and addressing related social challenges

Productivity gains from digitalisation are likely to be accompanied by structural changes (Brynjolfsson and McAfee, 2014). While benefitting living standards overall these changes will affect employment patterns and have distributional consequences. Disadvantaged groups may be at risk of exclusion from the labour market due to job automation (CSE, 2016). To ensure that the benefits from productivity gains are widely dispersed, labour market institutions should be improved to help workers transition smoothly between tasks, jobs, firms, industries and regions.

International evidence demonstrates that well designed and targeted activation measures can increase the employability of jobseekers and their employment opportunities in a cost-effective manner (OECD, 2015d). For example, resources devoted to training have raised employability and the quality of jobs in the medium to long-term (Card et al., 2015; Wulfgramm and Fervers, 2013). Training programmes are most effective when focused on identified employer needs, but there is also some evidence in favour of classroom and preparatory programmes (OECD, 2015e). At 0.75% of GDP in 2014, Belgium's public expenditure on activation policies, is well above the OECD average (Figure 34). However, there is scope to improve the spending mix and increase public expenditure on training,

Figure 34. **Public expenditure on active labour market policies**

Public expenditure as a percentage of GDP, 2014



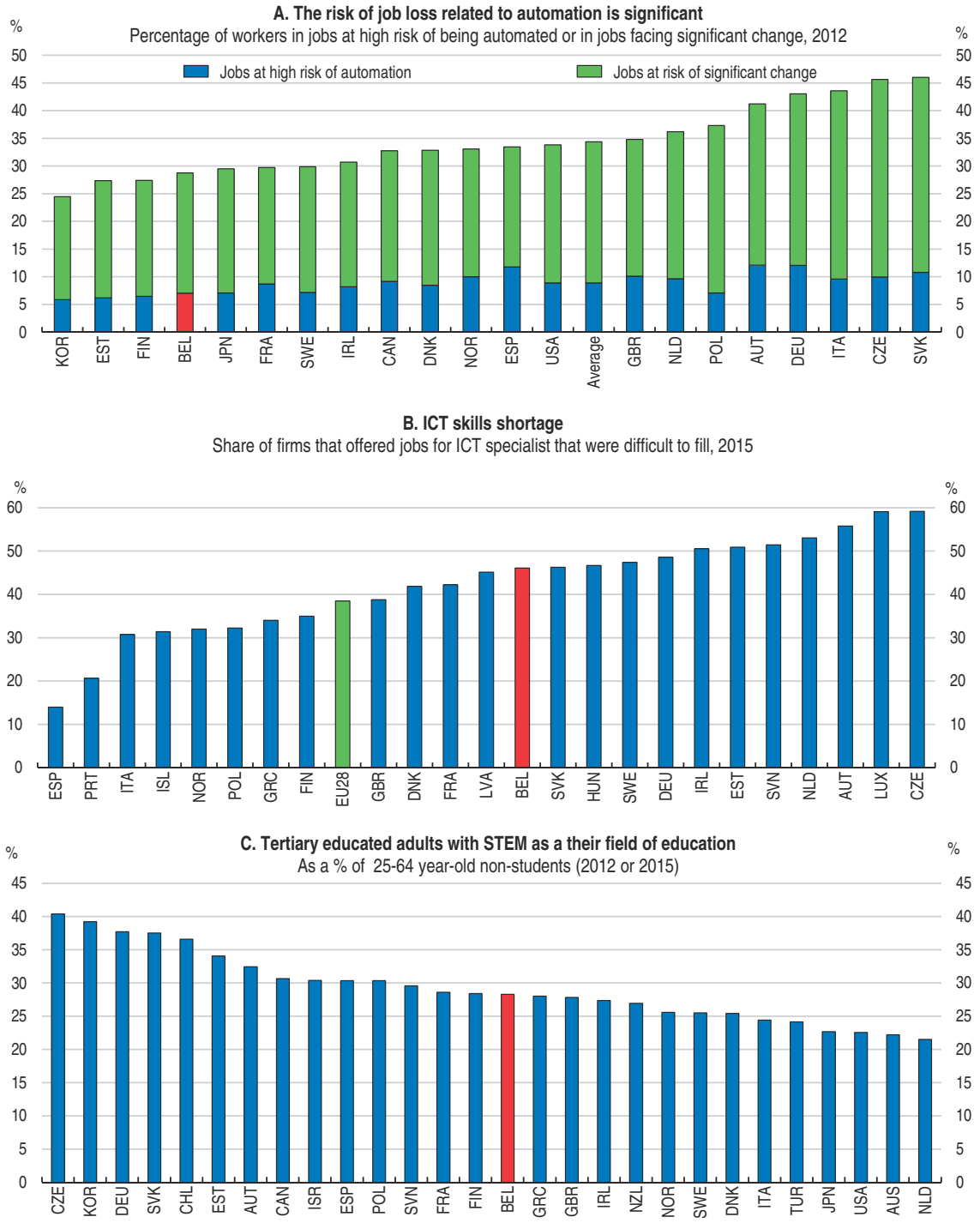
Source: OECD labour market policy statistics.

StatLink http://dx.doi.org/10.1787/888933496760

which at 0.16% of GDP in 2014 is around the OECD average and below the average level of neighbouring countries (OECD, 2017b). Training programmes should primarily aim to improve the skills of those with lower educational attainment. In addition to active labour market policies redistributive policies should play a role in supporting those people who are unsuccessful in adapting to structural changes in the labour market.

Firms will increasingly seek advanced information and communications technology (ICT) skills (OECD, 2016c). Despite labour market shortages (Figure 35), in 2013 only 17% of students in tertiary education enrolled in science, technology, engineering and mathematics (STEM) subjects (OECD, 2016c), although STEM enrolment in the Flemish Community has increased over the past few years and more students are enrolled in courses that partly integrate STEM subjects in the curriculum. The heterogeneity of wage premia across fields of study is largely overlooked by both students and policy makers (Chapter 2). A first step would simply consist of largely disseminating data on wage premia by field of study. This could entice more people to opt for STEM and other high-income fields.

Figure 35. **Building skills for the future**



Notes: In panel A, jobs are at high risk of automation if the likelihood of their job being automated is at least 70%. Jobs at risk of significant change are those with the likelihood of their job being automated estimated at between 50 and 70%. Data for Belgium correspond to Flanders and data for the United Kingdom to England and Northern Ireland.

In panel B, STEM refers to science, technology, engineering and mathematics subjects, data for Germany refer to 2014. For Iceland, data refer to 2012 and 2014.

In panel C, data for Chile, Greece, Israel, New Zealand, Singapore, Slovenia and Turkey refer to 2015. For all other countries, 2012 is the reference year. For Belgium, data refer to Flanders. For United Kingdom, data refer to England.

Source: Arntz and Zierahn (2016); Eurostat, Information Society database and; OECD Survey of Adult Skills (PIAAC) (2013, 2016).

StatLink http://dx.doi.org/10.1787/888933496779

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ANNEX

Follow-up to previous OECD policy recommendations

This Annex *reviews action taken on recommendations from previous Surveys. They cover macroeconomic and structural policy priorities. Each recommendation is followed by a note of actions taken since the February 2015* Survey. *Recommendations that are new in this Survey are listed in the relevant chapter.*

Macroeconomic and financial policies

Summary of recommendations	Summary of action taken since 2015 *Survey*
Make fiscal consolidation expenditure-based through savings in social transfers and public consumption	A framework was established since October 2014 at Federal level to reduce public expenditure over the period 2015-2019: the wage bill, operating costs and personnel costs were reduced. The growth of health care spending and other social transfers were also reduced in structural terms. A "redesign" of public administration aimed at increasing its efficiency was decided in October 2015. The fight against social fraud has been strengthened.
Introduce multi-year expenditure rules at all levels of government, with monitoring by the High Council of Finance	No domestic expenditure rules (other than expenditure benchmark, preventative arm of SGP). Lack of political agreement between Federal and Regional governments on budget targets implies the High Council of Finance cannot fully monitor compliance. Since the transposition of EU directive in 2014 all entities have the legal requirement to establish medium-term budgets. Since the 2015 budget, the Federal government integrates a multi-annual approach in its yearly budget.
Further improve budget reporting to ensure full coverage of the balance sheets and contingent liabilities of general government and other entities under public control, and publish these data.	Contingent liabilities are published. The Federal government has changed legislation such as to make a completely consolidated balance sheet and annual accounts available.

Public investment

Summary of recommendations	Summary of action taken since 2015 *Survey*
Develop long-term infrastructure plan supported by regions and the federal government	Agreement for a national plan for strategic investments. The federal government granted loans to finance investment in railways The government of Wallonia has set up a 640 million euro investment plan for the period 2016-2019 to rehabilitate inland waterways and highways. The Flemish government has set up a 3.6 billion euro investment plan for the period 2017-2023 to complete the Oosterweel Junction in the economic heartland of the Antwerp region. The Brussels government has set up a 1.5 billion euro investment plan for mobility for the period 2018-2025.
Abolish the favourable taxation of company cars and the tax advantages of diesel cars and of diesel as a transport fuel	Tax deduction on company cars was reduced when fuel cards are granted and excises duties on diesel were increased. The federal government has decided to introduce a multimodal mobility budget for employees as an alternative to company cars.
Introduce a road pricing system and differentiated public transport fares to reduce congestion	New toll on heavy vehicles, but with no higher peak charge.

Taxation

Summary of recommendations	Summary of action taken since 2015 *Survey*
Broaden tax bases and lower tax rates. Reduce labour tax wedge. Tilt housing taxation towards recurrent taxes and away from transaction taxes. Increase less growth-distorting taxes, including environmental and consumption taxes	Employer social security contributions reduced, social contributions for self-employed reduced and various personal income tax adjustments made to boost take-home pay. VAT revenue and excise duties increased. Price indexation of energy products and electricity and elimination of reduced VAT rate on electricity as September 2015 for residential consumers
Consider increasing taxation of capital income	Withholding tax on income from investment harmonised and increased. Increase of the tax on stock-exchange transactions and abolition as of 2017 of the speculation tax on listed shares and derivative instruments introduced in 2016. Introduction of anti-abuse measures (internal capital gains)
Gradually remove the tax deductibility of interest and capital repayments on mortgage loans. Tilt housing taxation towards recurrent taxes and away from transaction taxes.	The housing bonus has been made means-tested in the Walloon Region and its application has been narrowed in the Flemish Region Abolition of the housing bonus in the Brussels-Capital Region and replacement by a reduction of transaction taxes.

Pension reform

Summary of recommendations	Summary of action taken since 2015 *Survey*
Raise the statutory and effective retirement age to enhance long-run debt sustainability.	Progressive increase in the retirement age and career length requirements. Changes in the calculation of the amount of pension to encourage a rise in the effective retirement age.
Create stronger links between working careers and pensions in the early retirement system and subject all older unemployed to standard search monitoring and activation conditions.	Progressive increase in the contribution period and minimum age for early retirement and older workers submitted to job search and activation programmes.

Wage-setting and competition policy

Summary of recommendations	Summary of action taken since 2015 *Survey*
Reform the wage formation process, notably the system of wage indexation, to better reflect domestic productivity developments	Wage indexation temporarily suspended. Reform to the wage formation process.
Make regulation retail distribution and professional services less restrictive	On the federal level the professional qualifications directive has been transposed horizontally and vertical transposition is on-going. In the Flemish Region, the decision was approved to deregulate most of the regulated professions on 17 March 2017.
Reduce administrative burdens on start-ups	Federal and regional initiatives aimed at simplifying administrative procedures for SMEs, including for micro-firms (e.g. The Brussels-Capital Region's Small Business Act).

Green growth

Summary of recommendations	Summary of action taken since 2015 *Survey*
Shift subsidies of energy-saving investments towards more cost-effective technologies.	Flemish Region subsidies of energy-saving investments in residential and non-residential buildings reformed: subsidies and property tax discount for new installations in solar and wind energy; subsidies and property tax discount for energy-related renovation of existing buildings.
Increase energy taxation for residential use.	Indexation of electricity and gas prices, on the basis of market-based parameters and elimination of reduced VAT rate on electricity as of September 2015 for residential consumers. Higher consumption tax on electricity in the Flemish Region.
Reduce subsidies to commuting by car and introduce congestion charges in the largest cities.	New toll for heavy trucks. Lower tax deduction on company cars. Introduction of a mobility budget for employees benefiting from a company car. Grants/tax subsidies for individuals/companies buying environmentally friendly cars in the Flemish Region.
Increase power generation from renewables in order to meet 2020 emissions targets.	Co-operation agreement on burden sharing between the regions and federal authority on climate-energy targets by 2020. Flemish Action Plans 2020 and targets for photovoltaic and wind energy were approved in 2016.

Enhancing labour market integration of immigrants, mobility and skills

Summary of recommendations	Summary of action taken since 2015 *Survey*
Monitor enrolment to reduce the concentration of disadvantaged students in particular schools. Improve teacher training and incentives to attract more qualified teachers to disadvantaged schools.	Adoption of a concept note by Flemish Government on March 25, 2016 containing proposed measures for raising the profile of new entrants to teacher education programmes and streamlining of programmes and quality enhancement of teacher training. Recent evidence suggests that a 2011 decree by the Flemish government to grant priority to certain places in oversubscribed schools in proportion to the socioeconomic composition of each school's neighbourhood, has led to a decrease in segregation. As part of the "Pact for Excellence in Education" (FWB) The French Community has implemented measures to foster inclusive education, reduce school dropouts and grade repetition.
Proceed with reforms to reduce grade repetition and delay tracking in secondary education. Expand workplace-based learning in vocational education.	Increased funding by Regions and Communities for a variety of initiatives to reduce early school leaving: a Youth Guarantee scheme in Brussels-Capital Region, a decree to closely monitor those at risk of leaving school early by Parliament of the French Community, an action plan 'together against early school leaving' and a pilot programme on dual learning in Flemish Community. The "Opleidingsplan 2020/Plan Formation 2020" adopted by the Brussels-Capital Region on December 6, 2016 plan to strengthen work-based learning.
Continue to co-operate with social partners to further expand diversity plans in firms. Expand training offers, including on languages, and skill validation for immigrants	In response to the refugee crisis, the Federal Individualised Project for Social Integration (IPSI) was expanded to provide immigrants with necessary skills to enter the labour market: a job-insertion plan including languages training, skills validation and proposition of a training offer in the future and in-demand technological jobs in the Walloon Region A social, professional and linguistic assessment of migrants as well as specific offer of training and/or validation for newly arrived migrants included in The "Plan Formation 2020" in Brussels-Capital Region. The Flemish Region also recruited additional language counsellors to its employment service and extra language support in pre-primary, primary and secondary education. In addition, the Flemish government approved a 'Horizontal Integration Policy Plan' in July 2016. The plan aims to reduce the ethnic gap: the social position of persons with a migrant background is in many areas worse than the position of persons of Belgian origin.
Improve vocational training to better reflect labour market demands	The Walloon Region and the Brussels-Capital Region has set up a single contract for young people attending dual vocational education to strengthen incentive from employers. Both regions have also appointed sectoral tutors, financed both by the regional authority and employers. The French Community reformed the apprenticeship training in September 2015. Increase in the number of trainee placements in the Brussels-Capital Region. In Flanders multi-annual planning, including through dual learning programmes, has contributed to a clear increase in the outflow from vocational training to work over the past two years In the French Community "Pact for Excellence in Education" (FWB) includes an upgrade of vocational education. An employment and training observatory was established in December 6, 2016 to improve the relevance of the training offer.
Enhance labour market flexibility in order to facilitate entry of excluded groups	Implementation of the *Werkbaar, Wendbaar Werk* reform will make working time more flexible

Other past OECD recommendations

Summary of recommendations	Summary of action taken since 2015 *Survey*
As one way to improve labour market outcomes, in particular for the low-skilled, consider reintroducing lower statutory minimum wages for younger workers.	Reintroduction of the exceptions to the minimum wage for younger workers (with compensation by an increase in the work bonus for the worker). Negotiations with the social partners on best way to implement the exception are on-going.
Expand regional rental allowance schemes for low-income tenants renting on the private market. In parallel, increase subsidies for social rental agencies and make publicly-owned plots available for construction of affordable housing, notably by the private sector.	In Flanders financing for the rental allowance scheme has been increased. Subsidies and a mandatory growth path for social rental agencies have contributed to an increase in the number of rented dwellings. The Flemish Decree on Land and Housing Policy requires municipalities to use part of undeveloped plots for the construction of social housing.
Increase urban building densities by re-designating land and converting non-residential buildings, further easing restrictions on the construction of denser buildings, and increasing the costs of keeping urban land and buildings unused.	The Flemish Government has adopted a White Paper on spatial development calling for a dampening of additional space requirements and an increase in residential density and business floor space around strategic public transport nodes
Health care: Once adequate incentives to control costs are in place, enable a more flexible health supply by phasing out the overly prescriptive regulation on hospital supply.	No significant action taken.
Infrastructure: Make the costs of public services obligations (PSO) explicit and compensate service providers for the provision of these PSOs	No significant action taken.

Thematic chapters

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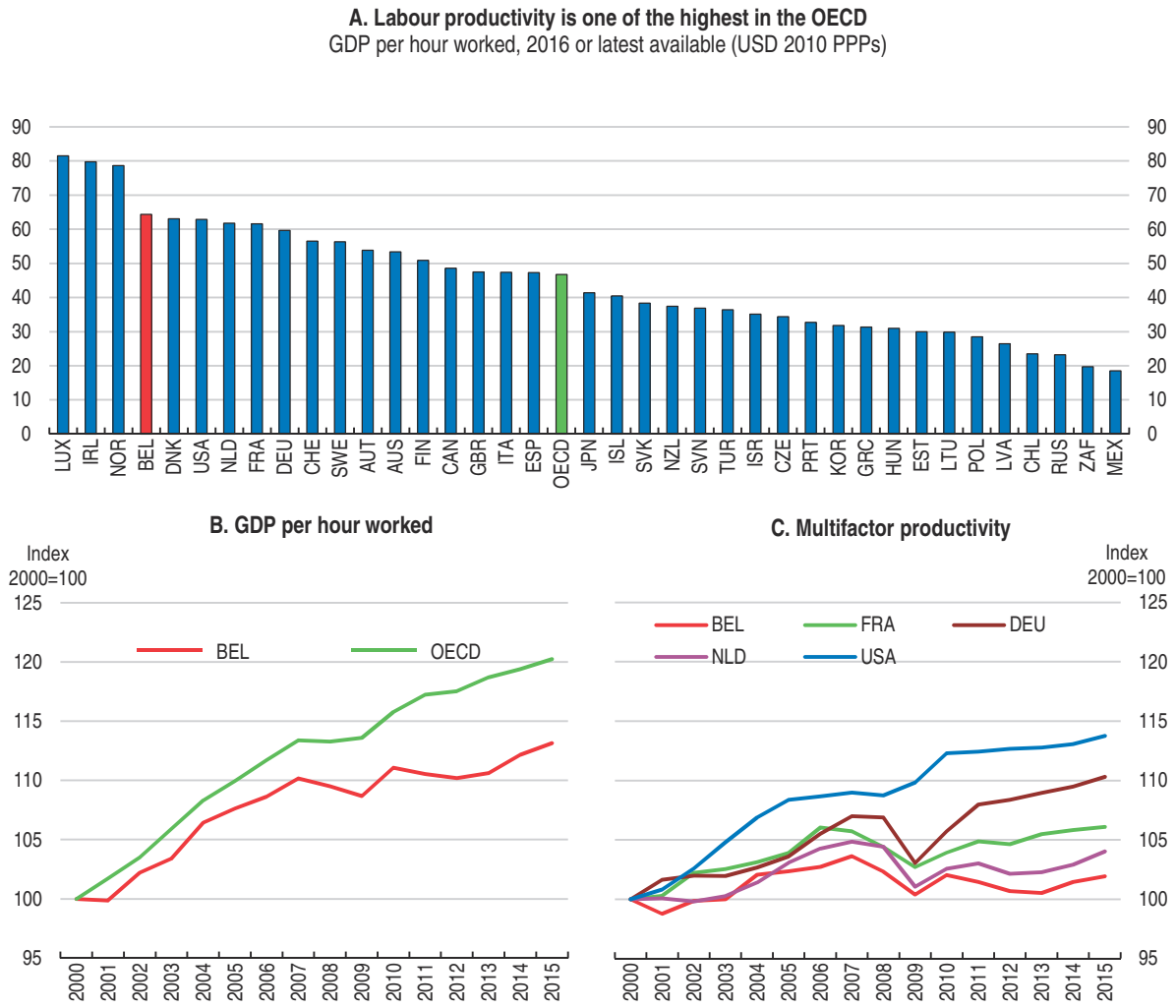
Chapter 1

Making the business environment more supportive of productivity

A favourable business environment is crucial to boosting Belgium's productivity and inclusiveness and to sustain improvements in long-term economic prosperity. This chapter assesses the impact of the business environment on productivity performance. Innovation management, technological diffusion, private and public sector investment, and regulatory and competition policies all affect productivity growth. Key challenges for Belgium include improving the effectiveness of existing tax exemptions for R&D activities, addressing regulatory burdens on firms, improving access to finance for young innovative firms and fostering an entrepreneurial start-up culture.

Productivity has been a key driver of economic growth and prosperity in Belgium. GDP per hour worked amounted to USD 63 in 2015 (in 2010 purchasing power parities [PPP]), which was a third higher than the OECD average and next only to labour productivity in Luxembourg, Norway and Ireland (Figure 1.1.A). The high productivity level is the result of substantial capital deepening in the past; a highly-qualified workforce and strong multifactor productivity (MFP), in particular in the lead manufacturing sectors: chemicals and chemical products, and basic metal and fabricated metal products (Dumont and Kegels, 2016; Biatour et al., 2008). However, the growth in productivity has slowed over time.

Figure 1.1. **The level of productivity is high but productivity growth has slowed**



Note: For Australia, Belgium, Chile, Iceland, Ireland, Japan, Korea, Mexico, Poland, Russia, South Africa, Turkey and United States, data refer to 2014 in the panel B.

Source: *OECD Productivity Statistics Database*; and The Conference Board Total Economy Database.

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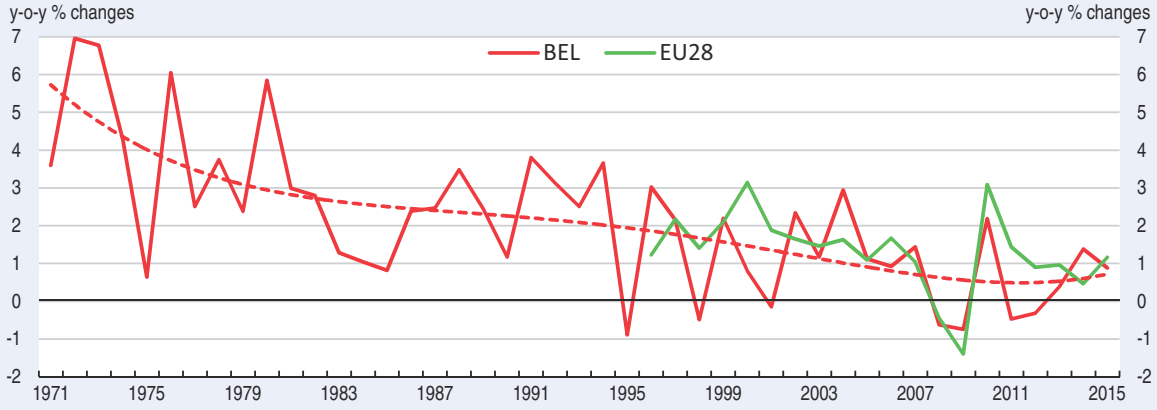
A similar deceleration in MFP growth occurred for most OECD countries, but it has been more pronounced in Belgium (Figure 1.1.B and C). In particular, the 2008 financial crisis led to negative labour productive growth rates in many OECD countries in 2008 and 2009, as companies retained workers while output declined. Belgium's productivity briefly recovered in 2010, but subsequently fell back and only picked up again in 2014 and 2015. A part of the recorded productivity slowdown is related to changes in the composition of the Belgian economy (Box 1.1), as well as from problems of accurately measuring quality improvements stemming from new information and communication technology (ICT) products and services (Box 1.2).

Box 1.1. **The decline in productivity growth is partly a composition effect**

The productivity slowdown in Belgium began in the mid-1970s (Figure 1.2). Part of this slowdown is due to changes in the composition of the Belgian economy. Shift-share analysis of labour productivity growth at the two-digit industry level over the period 2000-14 shows that the intra-industry effect, which represents productivity growth in individual industries, was higher than aggregate labour productivity growth. This suggests that industries with higher productivity growth decreased their share in total employment (Dumont and Kegels, 2016). The structural or inter-industry effect, which captures the reallocation of labour resources between industries, was slightly negative during the same period, implying an expansion of low-productivity sectors, such as non-tradable services, relative to high-productivity sectors.

Figure 1.2. **Productivity slowdown has been continuous since the 1970s**

GDP per hour worked (USD, current PPPS)



Source: OECD Productivity Database.

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Another composition effect comes from labour market reforms that integrated low-productivity workers into the economy and thereby depressed average productivity (Boulhol and Turner, 2009). In 2003, the Federal government introduced service vouchers, which provide a wage cost subsidy for labour-intensive, low-skilled household work. The measure also aimed to transform previously undeclared work into regular jobs. The policy proved popular and uptake was high. Over the period 2000-14, employment growth in "Administrative and support service activities" increased from 5% of total hours worked in the Belgian economy to almost 8%. This employment category experienced the strongest decrease in productivity growth during the period, pointing to important trade-offs between productivity and inclusiveness.

Box 1.1. **The decline in productivity growth is partly a composition effect** *(cont.)*

Another factor that has contributed to the deceleration of productivity growth in Belgium is population ageing. One study found that the cumulative multifactor productivity of the Belgian workforce declined by 4.5 percentage points as a result of the increase in the share of older workers in total employment (Ariu and Vandenberghe, 2014). Workers above 55 years of age were found to be almost a third less productive than their colleagues in their late 30s.

Box 1.2. **The challenge of measuring productivity**

Over the past decade, productivity growth has slowed markedly in many OECD countries. This broad-based decline is puzzling, since technological innovations have continued strongly. Some analysts have therefore pointed to the possibility that productivity growth might be underestimated (Dervis and Qureshi, 2016; Ahmad and Schreyer, 2016).

An important source for the underestimation of productivity is related to the fact that quality improvements in new information and communication technology (ICT) products are not fully reflected in prices or are not fully adjusted for by statistics agencies. As a result price deflators will be biased upwards and real output will be underestimated. Second, some internet-based services, such as search engines and social media networks, are provided free of charge. Their consumption is therefore not taken fully into account in GDP measurements, even though these services provide significant utility for consumers.

While mismeasurement cannot explain the full magnitude of the observed decline in productivity (Syverson, 2016), it is difficult to track the impact of ICT innovations and digital services. As the composition of ICT innovations shifts from hardware to software, the impact of new technologies on productivity becomes more difficult to predict and could well differ substantially across applications or sectors, by for example raising quality in some cases while reducing costs in others. Moreover, the structural change in economies with a relative strengthening of services sectors might amplify mismeasurements if quality adjustments for digital inputs used in these services are not properly captured. Thus, statistics experts and analysts should pay close attention to the digital measurement challenge in order to maintain high quality productivity data.

Given the central importance of productivity for economic prosperity, an important challenge for policy makers is to identify and implement measures to lift productivity growth. Growth should also be inclusive, so that all share in rising incomes, if it is to be sustainable in the longer term. Belgium ranks relatively well on many of the key determinants of productivity growth such as overall business environment, skills and innovation indicators. The recent OECD flagship report on *The Future of Productivity* (OECD, 2015a) identifies two main avenues through which productivity growth can be enhanced: creating a business environment that facilitates innovation and widespread distribution of advanced technologies; and improving resource allocation within the economy, notably by better matching employee skills with workplace requirements. This chapter discusses the role of various areas of the business environment in productivity performance, including innovation management, technological diffusion, private and public sector investment, and regulatory and competition policies. Chapter 2 covers human capital formation and skill acquisition.

Strengthening innovation at the frontier

One key determinant of productivity growth is the extent to which new products, processes and organisational know-how are developed by frontier firms. Public policy has a key role to play in this context. In particular, strengthening firm-level innovation and investment in research often requires public financing of basic research to support the continued emergence of breakthrough innovations. Moreover, public entities can frequently act as catalysts in fostering collaboration between firms, research labs, and universities.

Tax incentives are generally supportive of R&D investment but could be streamlined

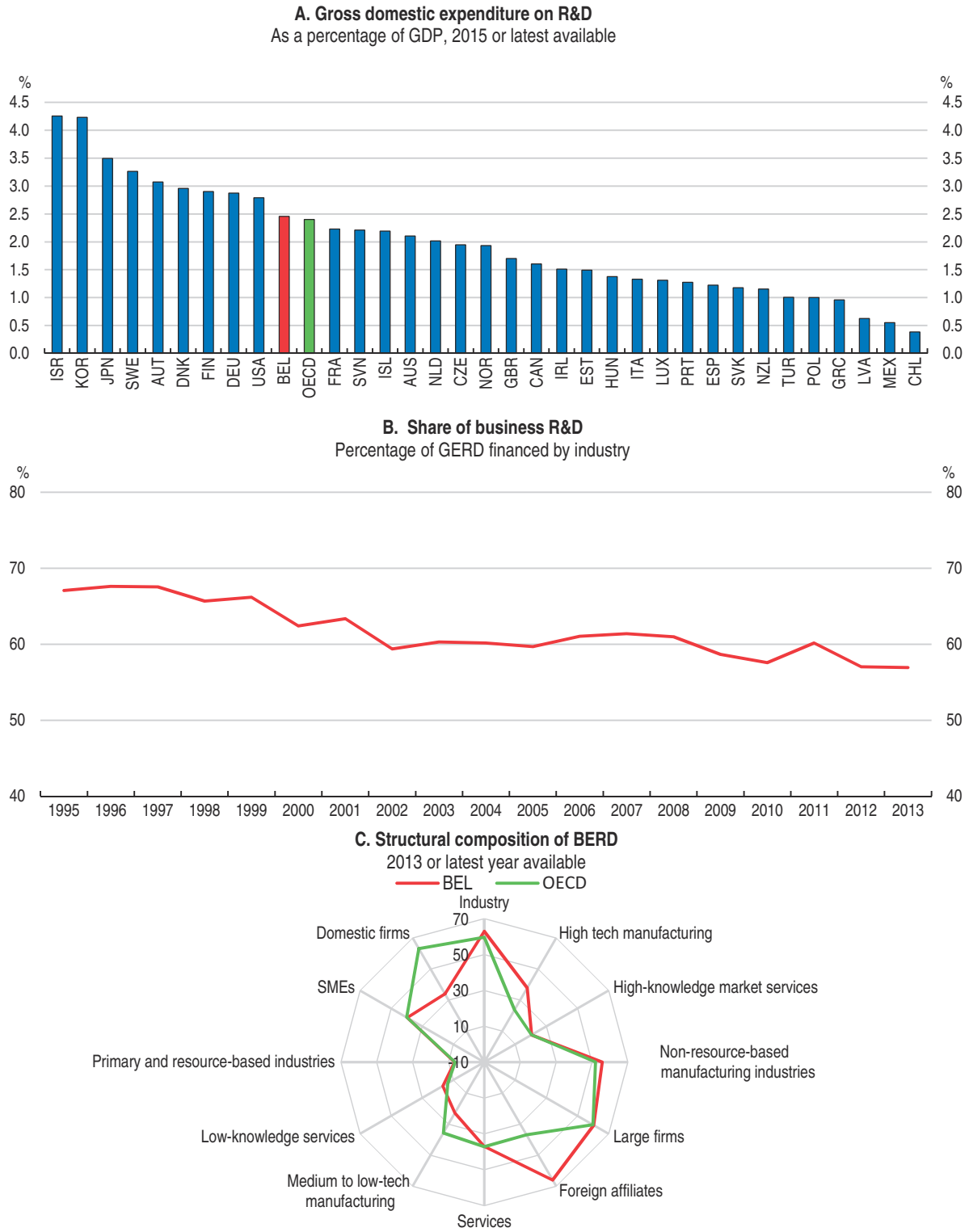
The European Innovation Scoreboard 2016 classifies Belgium as a "Strong Innovator", with a normalised score of 0.6. This falls short of the 0.7 of top-ranked Sweden and Denmark, but exceeds the EU28 average of 0.52. Investment in intangibles such as research and development (R&D) is important to boost productivity (Andrews et al., 2015). At 2.5% of GDP in 2014 Belgium's gross spending on R&D was higher than both the EU and OECD averages (Figure 1.3.A), but fell short of the Lisbon target of 3%. Publicly financed expenditure on R&D has been expanding by an annual average growth rate of 7% since 2008 and amounted to 0.72% of GDP in 2013, exceeding the OECD average of 0.61%.

Most R&D occurred within manufacturing, notably through firms in the pharmaceuticals, chemicals and bio-tech sectors, and more than half of all business enterprise R&D (BERD) was carried out by foreign affiliates (Figure 1.3.C). However, not all R&D is necessarily concentrated in large firms. Firms below 250 employees accounted for 35% of all BERD in Belgium in 2011 (OECD, 2013). The share of gross domestic expenditure on R&D (GERD) that is financed by the business sector has declined over the past two decades (Figure 1.3.B). Business expenditure on R&D tends to be concentrated in firms that are already highly productive and want to stay at or reach the technological frontier (Andrews et al., 2015, Figure 1.3.C). Therefore, the challenge for Belgian policy makers is to induce more such firms to expand their investment in R&D intangibles.

The federal and regional governments have launched a number of programs to foster firm-level R&D and innovation. Science, technology and innovation are largely a sub-federal responsibility. Scientific research is mainly a community competence, whereas innovation is almost entirely a regional responsibility. Following consecutive state reforms, which devolved many spending areas, about 80% of total public R&D and innovation support derives from the communities and the regions. The remaining part of support consists of resources from EU projects or federal initiatives. The latter are related to a partial exemption of withholding tax on researchers' wages, tax deductions on investments that stimulate R&D and innovation, and tax deductions on patent income. The Federal government also retains responsibility for research infrastructure of national interest, several scientific institutes, and a small number of research programmes (climate change, nuclear energy, space policy, and polar research). It also sets the framework conditions in areas such as intellectual property rights, normalisation, standardisation, and scientific visas.

The tax credit system is being reformed. Since 2008 firms have been entitled to an 80% tax deduction on income from patents. This patent box regime was abolished in July 2016, with a five-year grandfathering period for patent applications submitted before 1 July 2016. The objective was to bring the new regime in line with the OECD G20 minimum standards of a "modified nexus approach", which requires substantial activity in IP regimes (OECD, 2014). Furthermore, a new innovation income deduction regime has recently been approved

Figure 1.3. **R&D investment is around OECD average**



Source: OECD, *Main Science and Technology indicators*; and OECD, *Science Technology and Industry Outlook 2016*.

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aiming to widen the scope of qualifying innovation income (such as licences and exclusive rights), while restricting deductibility according to the "Nexus" rules. In this context, the authorities should make sure, for example through careful monitoring, that a strong link between the tax incentive and R&D spending is established and that the support granted is not merely used by firms as a tax planning tool.

Another incentive scheme consists of deductions for R&D-related investments and patents. Investments in assets that promote R&D and advanced technologies that are environment friendly, as well as investments in R&D that result in self-developed patents or in the acquisition of patents, benefit from a 13.5% tax deduction on the investment value. The deduction can be carried forward for an unlimited period. Alternatively, the support can take the form of an R&D tax credit, which offers the same tax benefits as the investment deduction, but the part which is not used after five years is refunded. Other OECD countries operate similar R&D tax credit programmes, with some, such as the French *Crédit d'impôt recherche* (CID), providing a tax credit of up to 30% of R&D expenses (up to EUR 100 million), while other countries are far less generous than in Belgium. Overall, Belgium provides the most generous R&D incentives in the OECD (OECD, 2016a).

The federal government also offers support to R&D by allowing firms to recover up to 80% of the withholding tax on professional wages for their researchers, providing certain conditions are met. In particular, there is an upfront reporting obligation on the nature and duration of research projects to the Belgian Science Policy Office (BELSPO). The partial exemption of wage withholding tax on researchers' salaries corresponds well to the principle that R&D incentives should be focused on those types of expenditures that bring about strong knowledge spill-overs (Straathof et al., 2014). Also, tax incentives related to R&D wages generally tend to have low administration and compliance costs.

Trans-regional synergies are not fully exploited

The regions and communities have developed their own complementary set of research-support policies, which were slightly expanded after taking over additional responsibilities for R&D activities upon the Sixth State Reform of 2012-14 (Box 1.3). The generally direct support thereby complements the indirect R&D promotion of the federal government through tax incentives, which is a welcome policy practice (Appelt et al., 2016). Key policy frameworks for R&D support are provided in the Flemish Region's Governing Agreement (2014-19) and Policy Note 2014-19, the Walloon Region's Marshall Plan 4.0 (2015-19), and the Regional Innovation Plan (2015-20) in the Brussels-Capital Region. In 2013, total R&D expenditure by region varied from 2.85% of GDP in the Walloon Region to 2.52% in the Flemish Region and 1.52% in the Brussels-Capital Region. Several structural factors explain the relatively weak R&D intensity in the Brussels-Capital Region: the strong presence of low-skilled services activities, the scarcity of high and medium-technology manufacturing industries, and the weak representation of corporate headquarters of industrial companies, which are often located in the other Belgian regions or abroad (Kalenga-Mpala and Wautelet, 2016). In the Flemish Region and the Walloon Region, private sector R&D spending relative to GDP exceeds the EU28 average, while the share of publicly funded R&D in GDP is below the EU average. In the Brussels-Capital Region, the reverse is the case.

The regional innovation programmes provide considerable variety in terms of support activities. The authorities are aware that too large a fragmentation of programmes and executing agencies could be detrimental to transparency and cost effectiveness. For example, Flanders commissioned an evaluation of its innovation support landscape

Box 1.3. **Regional research support policies**

The Flemish authorities have established a number of R&D funding options. Feasibility studies can be funded up to 50%, with a ceiling of EUR 50 000; SME innovation projects can be supported up to 45% for small enterprises and 35% for medium-sized enterprises (with a ceiling of EUR 250 000). The development of new innovative products can benefit from 25% funding rate for development activities, and 50% for industrial research activities (ceiling EUR 250 000). Projects to gain new knowledge to realise an important innovation can obtain funding up to 25% (ceiling fixed at EUR 250 000); and pre-doctoral researchers can obtain a 50-60% fellowship for up to four years if they co-operate with private companies in a specific sector.

In the Walloon Region, financial support is granted for feasibility studies, covering between 40 and 75% of expenses incurred by external service providers; basic industrial research can be supported up to 50% of the expenses; applied research or technological development can benefit between 50 and 75% of admissible research costs; patent registrations can receive financial aid between 35 and 70% of the registration costs; and managerial costs of enterprise spin-outs can be supported for the first two years.

In the Brussels-Capital Region, the creation of new companies (spin-offs) is supported with grants of 25-75%; industrial research projects can receive financial aid of 50-70% of the eligible costs; participative research and social innovation for urban resilience can benefit from support between 25% and 70% of outlays; experimental development projects can receive grants of 25-45% or advances of 40-60% of eligible expenses; implementation of process innovations is supported with 15-35% of the costs; the preparation of feasibility studies can be subsidised by 50-75%, and 35-70% of the costs of obtaining and validating patents can be financed by the region

(Soete, 2012) and has been consolidating its activities based on the assessment's recommendations. As of 2016 there is a single agency for all business support and a single agency for researchers' support in the Flemish Region. Also, the agreement on the inter-university attractiveness poles between the French and the Flemish Communities is a good example of co-operation. The French Community and the Walloon Region decided to establish a common roadmap in the context of the European Research Area (ERA) framework. Such co-operation has led to more coherence between similar programmes offered in different regions (EC, 2016a). Going forward, continued streamlining of programmes within each region and more developed co-operation between regions and with communities would strengthen the efficiency of regional support for innovation (EC, 2016b). The Flemish Region, the Brussels-Capital Region, and the federal authority have also drafted their own ERA roadmaps.

The regions also provide support to innovators by nurturing innovative economic clusters, simplifying government aid procedures, and reducing administrative burdens. These initiatives differ in line with regional characteristics and policy priorities. For example, industrial cluster promotion is among the main policy aims in the Flemish Region and the Walloon Region, while clustering is more focused on services in the Brussels-Capital Region. All the clustering programmes seek to form or reinforce networks among public and private entities, including companies, universities, polytechnics, training organisations, and research centres, with the aim of stimulating project partnerships and innovative value chains in areas in which the regions already have some potential.

Flanders has adopted a smart specialisation strategy that prioritises support for eight different domains: sustainable chemistry, specialised manufacturing solutions, personalised

cure and care, value-added logistics, specialised agro-foods, an integrated building-enviroment-energy cluster, and new ICT platforms. In the Walloon Region, support is available through the region's Marshall Plan for six competitiveness clusters: transport and logistics; aerospace; green chemistry and durable materials; biotechnology and health; food; and mechanical engineering. In the Brussels-Capital Region, there are five clusters: eco-construction; biotechnology, pharma and medical activities; software production; audio-visual production, post-production and distribution; and green technologies. Three of these clusters correspond to the region's smart specialilsation priorities; namely personalised medicine, green economy, and digital economy. Also, all regions provide overarching frameworks in accordance with the EU's Small Business Act to foster entrepreneurship, simplify the regulatory and policy environment for SMEs, and remove barriers to their development. In 2016 Flanders introduced a "New Cluster Policy" based on two types of clusters: small-scaled innovative business networks (fourteen of which were approved for public support), and on the other hand spearhead clusters (at present five have been approved, namely in the domains of sustainable chemistry, logistics, materials, energy and agro-foods).

In 2014, the Walloon Institute for Evaluation, Prospective and Statistics published a set of recommendations for the future development of the region's cluster policy based on a detailed evaluation (Iweps, 2014). Some of the key suggestions for improvement included the need for better coordination of cluster activities with other governmental programmes, the usefulness of a stronger monitoring of cluster projects and their impact, the need to better integrate the training components with other cluster activities, and the potential benefits from a stronger marketing and customer orientation for newly developed products. Similar evaluations of the clustering programmes in the other regions could help inform the policy-making process.

Fostering corporate dynamism

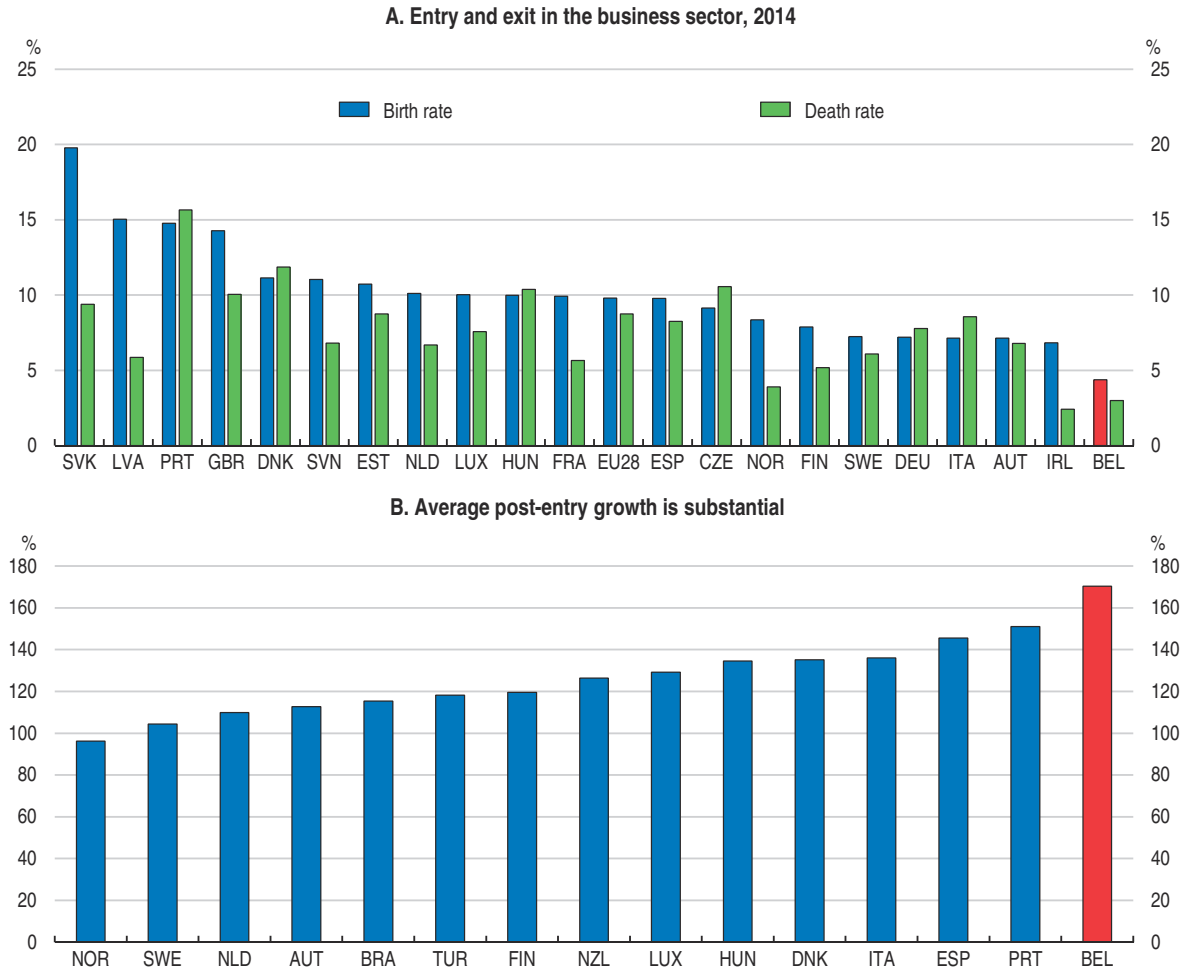
Despite a sound business environment, enterprise creation is low

Young firms often have an advantage in commercialising radical innovations (Baumol, 2002), and a vibrant start-up culture is conducive to high productivity growth. The World Bank's Doing Business 2017 report ranks Belgium 17th out of 190 countries for starting a business (WB, 2016a), making it the 9th best ranked OECD country. Belgium scores better than the OECD average for procedures, time and costs to start a company. Belgium also scores well for bankruptcy procedures, which is another necessary element for a strong start-up culture (Calvino et al., 2016). In "resolving insolvency" Belgium ranks 10th out of 190 countries and 9th among OECD countries.

Despite the generally favourable environment for starting (and closing) a firm, somewhat surprisingly, the business landscape is rather stable with very low rates of enterprise creation and exit. Belgium had the lowest enterprise birth and death rates among all EU15 countries in 2014 (Figure 1.4A). On the other hand, Belgium has the highest average post-entry employment growth of surviving entrants (over a seven-year period following establishment) among all participating countries in the OECD's Dynemp project (Figure 1.4B), suggesting that once established, firms tend to prosper.

The low birth and death rates might be related to the dominating presence of large, established firms, which do not leave sufficient space for newcomers (Calvino et al., 2016), while the strong post-establishment growth may reflect the good overall business environment. Yet, some aspects of the regulatory framework could be improved.

Figure 1.4. **Business dynamism is weak**



Note: Average post-entry growth defined as the ratio of total employment at t + 3 to total initial employment of surviving entrants.
Source: European Commission and; Calvani et al. (2016).

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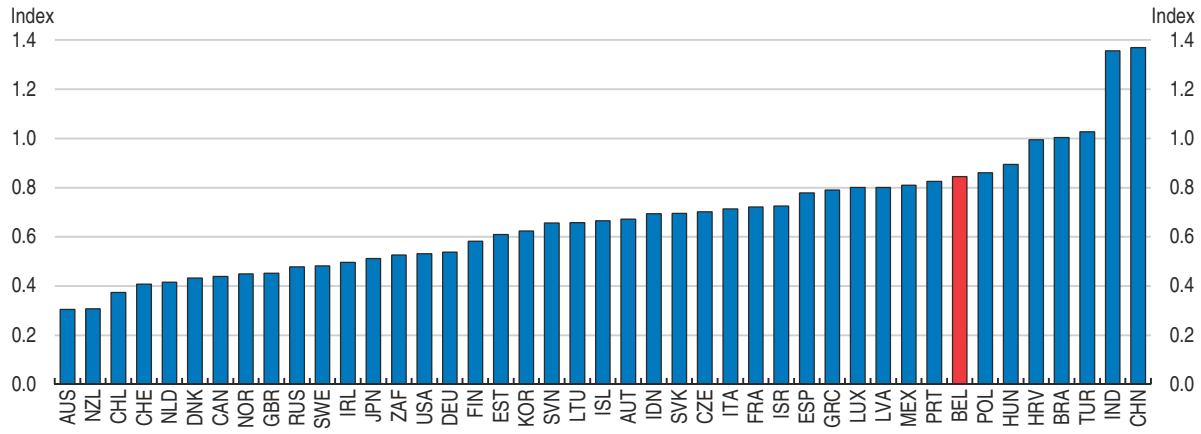
In particular, high minimum capital requirements may act as a financial barrier to start a business. Another area where Belgium's performance is relatively weak is "enforcing contracts": the country ranks 50th overall and is number 23 among OECD countries mainly due to low scores for court automation and case management (WB, 2016a).

To encourage start-up enterprises, the Federal government is implementing measures within its "SMEs plan" of February 2015 to reduce the administrative costs associated with firm registration by 30%, for example by creating a single administrative contact for SMEs, the *Banque-carrefour des Entreprises*, and systematically disseminating information and tender documents to SMEs that have expressed interest in certain types of tenders. These efforts reduce the comparatively high administrative burdens on start-up (Figure 1.5). Federal initiatives are complemented by regional efforts to simplify administrative procedures for SMEs and rationalise business support services, notably by establishing single contact points for all administrative procedures.

Some elements of the Belgian tax system might hamper growth of young firms and discourage firm creation. In particular, as many other countries, Belgium exempts small

Figure 1.5. **Administrative burdens on start-ups**

Barriers to entrepreneurship, administrative burdens on startups, 2013



Source: OECD, *PMR indicators Database.*

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companies from registration for value added tax (VAT) to simplify tax procedures and lower administrative costs. However, the threshold from which registration is required is relatively low, and, across EU countries, low VAT thresholds are associated with low rates of business entry (IMF, 2016). The Belgian authorities are aware of the potentially detrimental impact of a very low VAT registration threshold raising it to EUR 25 000 as part of the reforms of the "SMEs plan" of 2015.

SMEs rely heavily on bank finance

While access to finance is not a significant impediment to the business sector at the macro level (WB, 2016a), young innovative firms face financing constraints, particularly in the scale-up phase, and SMEs more broadly rely heavily on banks. In 2014, the Belgian Federal Public Service of Economy, SMEs, Self-employed and Energy conducted a survey on the financing of SMEs (SPF Economie, 2015). The results indicate that young firms that have been active for less than four years are much more dependent on bank loans than older companies, who can draw on retained earnings to finance their operations. About 68% of Belgian start-ups applied for bank loans in 2014, but only a third of the total applications were approved. For firms older than four years, the approval rate was 83%. According to a European Central Bank (ECB) survey, in both 2015 and 2016 roughly 35% of Belgian SMEs reported having applied for a bank loan during the past six months, which is among the highest rates in the EU (ECB, 2015; 2016).

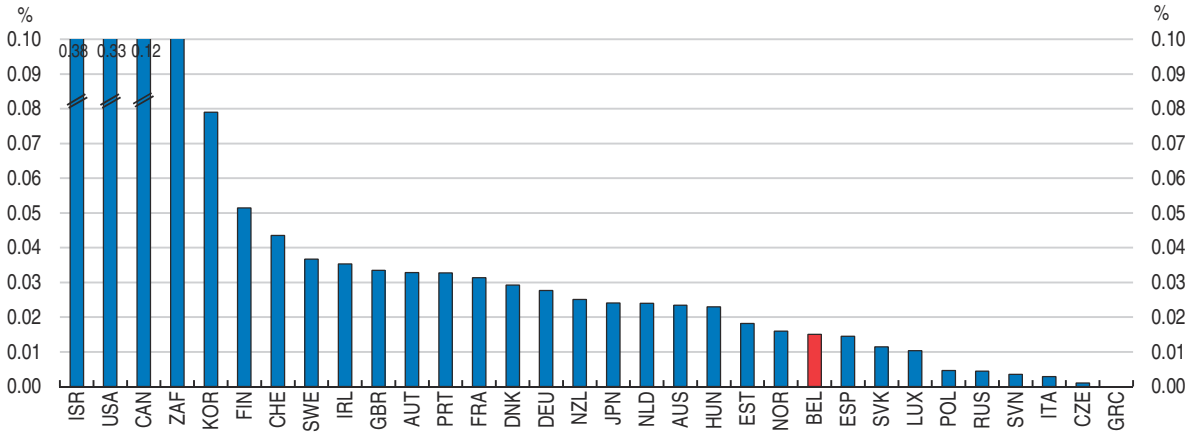
The heavy dependence on bank finance makes the SME sector vulnerable to downturns. Although there was no credit crunch, increased risk-aversion led banks to tighten credit standards for SMEs during the crisis years of 2008 and 2009 (Piette and Zachary, 2015; Wilson and Silva, 2013). To broaden the range of funding options the government could promote the use of small-scale debt instruments and securitised receivables. Such instruments would allow SMEs to access capital markets directly without obtaining a credit rating or preparing a prospectus (HLEG, 2016). High quality securitisation of SME loans (and other liabilities such as leasing) can be used as a market-based shortcut to indirectly promote SME financing, without the complete disintermediation of banks (Nassr and Wehinger, 2015). Private

placements also offer an alternative to public corporate bond issuance, providing a source of funding without the need for a formal credit rating or reporting requirements common for other capital market debt products (OECD, 2015c). In order to mobilise private capital and support access to finance for young, dynamic enterprises, a new personal income tax reduction from 30% to 45% was introduced for investments in start-ups. Since mid-2015, investors benefit from this tax shelter for their direct investments up to EUR 100 000 in start-ups. As of 2017, indirect investments via licenced crowdfunding platforms or starter funds also benefit from this tax shelter.

Increased integration through the Capital Markets Union could also help diversify Belgian capital markets. In this context, the government is supporting private equity finance for SMEs to strengthen the provision of venture capital (Figure 1.6) and improve access to finance for start-ups. Closed-end investment funds ("Pricafs Publiques") that raise a fixed amount of capital through an initial public offering and are listed on the stock exchange have been in existence since 1997. However, the disclosure and transparency requirements of publicly listed funds are substantial, which has deterred many SMEs from using these vehicles. Proportionality in listing rules and requirements could allow for more affordable transaction and regulatory costs for small equity issuers, while ensuring investor protection and market integrity (Nassr and Wehinger, 2016). Moreover, stringent regulations on dividend pay-outs and portfolio management often made the funds unattractive to investors, so that only one such fund ("Quest for Growth") remained in existence by mid-2016.

Figure 1.6. **Venture capital could be strengthened**

As a percentage of GDP, 2015



Source: OECD (2016), *Entrepreneurship at a Glance 2016*, OECD Publishing.

StatLink http://dx.doi.org/10.1787/888933496816

In August 2016, a new legal framework for *Pricafs Publiques* was introduced to bolster the development of these financial instruments. In particular, the obligation to pay an annual dividend was dropped and fund management obtained greater flexibility in shaping the investment portfolio, for example, by reducing the share of funds that have to be invested in unlisted firms or companies with a market capitalisation of less than EUR 1.5 billion from 100% to 70%.

The authorities run a range of other initiatives to improve funding for SMEs. Guaranteed loans and guarantees given by public sector entities partially offset negative growth rates in the stock of loans from banks to businesses in 2009 and 2013 (OECD, 2016b). In parallel,

privately-held Pricafs Privés (managed financial funds) are facilitating the access of unlisted SMEs to risk capital have existed since 2003. The funds allow investors to benefit from professional management and risk pooling without incurring a fiscal penalty compared to direct investments. By the end of 2016, 42 Pricaf Privés were registered with the Finance Ministry.

These instruments were complemented in July 2015 by a new tax shelter at the federal level for start-ups and small enterprises less than 4 years old. Under this scheme, individuals investing in a start-up company can obtain an income tax reduction of 30% of an investment in an SME, and of 45% for an investment in micro-enterprises. A person can benefit from this tax-shelter for investments up to EUR 100 000 per year, with a cumulative investment ceiling of EUR 250 000. The investments can be made either directly or indirectly through a crowdfunding platform, but have to be held for at least four years. In addition, start-up labour costs are being reduced during the first years of operation, with the young companies being exempted from payment of 10-20% of the withholding tax applied to wages. Also, digital goods, such as payment systems and cyber-security, benefit from a tax exemption of 13.5% of the invested amount.

The federal efforts to improve access to finance for start-ups and SMEs are supplemented by regional initiatives. In particular, all regions offer financial assistance to regional business angel networks ("beangels" in the Brussels-Capital Region and the Walloon Region; "Business Angels Netwerk" in the Flemish Region). Furthermore, the Flemish Region has been offering win-win-loans ("winwinleningen") since 2006. Under this scheme, investors in SMEs can deduct 2.5% of any outstanding loan volumes from their income tax. An SME can borrow up to EUR 200 000 under the facility. In April 2016, the Walloon Region introduced a similar scheme ("Prêt coup de pouce"), which differs in some aspects. The support is limited to start-ups and a duration of 8 years, and the ceilings are set at EUR 100 000 per firm and EUR 50 000 per lender. Individual lenders benefit from a tax deduction of 4% of the invested amount during the first 4 years and 2.5% thereafter. However, while regional authorities have taken steps to simplify support schemes and make them more accessible to firms, better coordination between different government entities could reduce information and search costs for SMEs and help ensure a more efficient allocation of available funds (HLEG, 2016). In addition, a more neutral tax treatment of income from savings deposits could improve the effectiveness of existing tax incentives for retail investors-based SME financing.

Evidence increasingly suggests that firm age, and not necessarily firm size, is the most decisive factor for net job creation and productivity growth (OECD, 2015a). Also, size-based taxes and social security or labour advantages may create disincentives for companies to grow, thereby creating a small business trap (IMF, 2016). In this context, the more focused support provided in the Walloon Region is welcome, and the Flemish authorities might want to consider targetting their tax deductions more directly at start-ups and young firms.

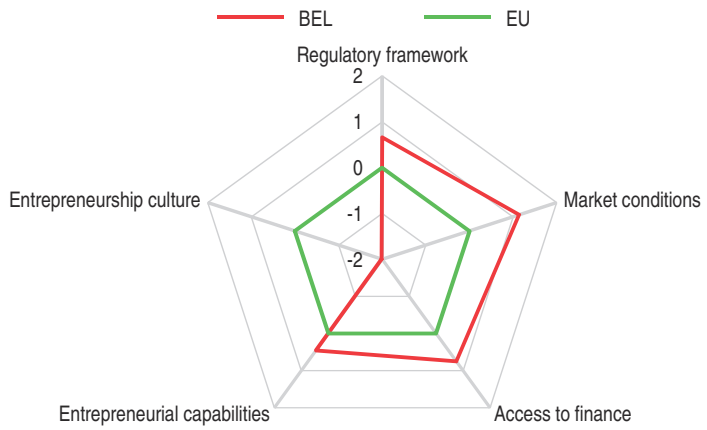
Low enterprise culture influences rates of enterprises dynamism

Recent empirical work found that with respect to the regulatory framework, market conditions, access to finance, and entrepreneurial capabilities, Belgium scores favourably in comparison with the EU average (De Mulder and Godefroid, 2016). However, Belgium comes last in terms of enterprise culture, which captures factors like job prestige and risk aversion (Figure 1.7). These findings suggest that the authorities should continue to strengthen

entrepreneurship education and better inform young graduates about the nature and opportunities of private business. Case study evidence from initiatives to foster a more entrepreneurial culture in East Germany also suggest that the creation of identifiable role models and champions, as well as the establishment of mentor and patron panels of retired business people that counsel company founders can be beneficial (Bergmann, 2007). Regional authorities could thus consider expanding existing mentor programmes.

Figure 1.7. **More should be done to foster entrepreneurship culture**

Relative performance to the EU, 2009-15



Note: Lower scores indicate lower performance. Scores are expressed relative to EU average equal to zero for each indicator. For EU, data refer to the unweighted average of scores calculated for Austria, Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain and Sweden.
"Access to Finance" refers to financing conditions for all enterprises, not just young firms or SMEs.
Source: De Mulder and Godefroid, 2016.

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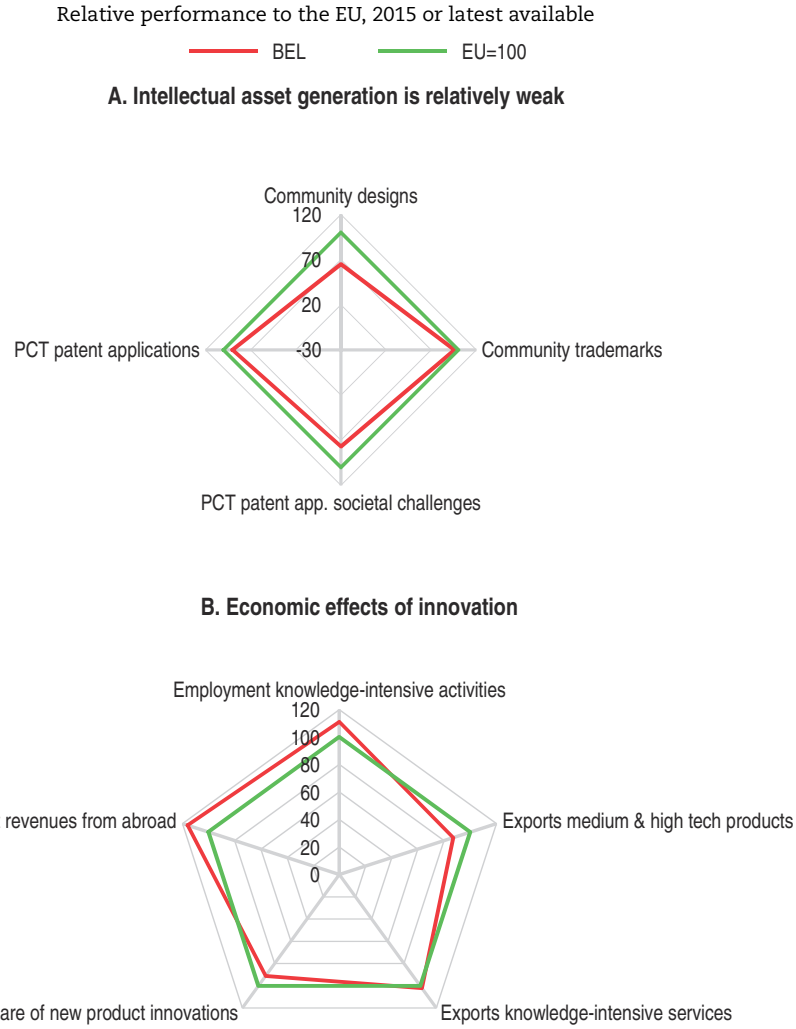
One innovation area where Belgium does not score well relative to the EU average is patenting (Figure 1.8). This finding may to some extend reflect Belgium's industrial structure, which is not focused on high-tech activities. To encourage potential innovators to undertake research and development, effective protection of intellectual property rights is important. Belgium had already ratified the regulation concerning the European Patent with Unitary Effect in June 2014, and are considering establishing a local division of the Unified Patent Court in Brussels that works in English as well as in the national languages. The European patent provides firms with an opportunity to obtain legal protection for their innovation in the 26 participating EU countries and without applying for protection in each individual member state. It thereby makes it possible to reduce the costs of patent filing and alleviates the administrative work involved, which are welcome developments, particularly for SME-innovators. Belgium also implemented the London Agreement on the application of Article 65 of the European Patent Convention by the Act of 29/6/2016 by abolishing in the code of economic law and in other legislation the requirement to provide a translation in a national language of a European patent granted in English for validation purposes.

Another relatively weak area regarding innovation performance is related to the commercialisation of new products ("sales share of new product innovations"), which points to challenges with respect to the valorisation of R&D. Commercialisation of public research can occur through several channels, including patents, licences, and spin-offs, as well as

Figure 1.8. **Intellectual asset generation and commercialisation are relatively weak**

Relative performance to the EU, 2015 or latest available



Source: European Commission, European Innovation Scoreboard, 2016.

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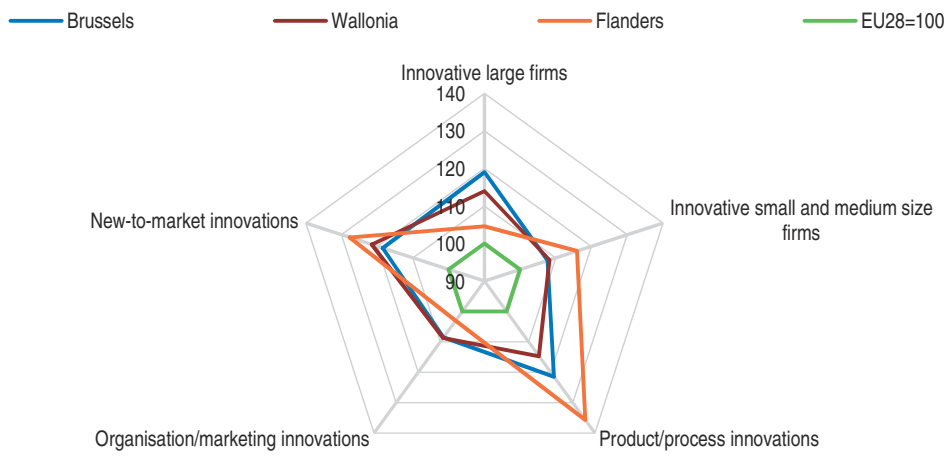
collaborative research, researcher mobility and contract research (OECD, 2013). All major research universities and research centres in Belgium have technology transfer offices that act as liaisons between researchers, companies and public authorities. In particular, they are responsible for the protection of intellectual property, the transfer of technologies to private firms and the creation of spin-off companies. However, the evaluation of the competitiveness clusters in the Walloon Region (Iweps, 2014) suggest that many R&D projects focusing on the commercialisation of their output too late thereby insufficiently implicating potential customers in the process. On the other hand, some Belgian research institutions, such as KU Leuven, rank among the most innovative research outlets in Europe.

In terms of innovation outcomes Belgium performs well. This is particularly the case for product and process innovations, where all three regions score well above the EU average (Figure 1.9). The Brussels-Capital Region scores relatively poorly in new-to-market innovations, but this outcome can be attributed to its economic structure, which is heavily dominated by services and lacks manufacturing firms.

Figure 1.9. **Innovation outcomes are generally strong**

Relative performance to the EU, 2012



Note: Data for 2012.

Source: *innovationdata.be*, Scientific and Technical Information Service, Belgian Science Policy Department.

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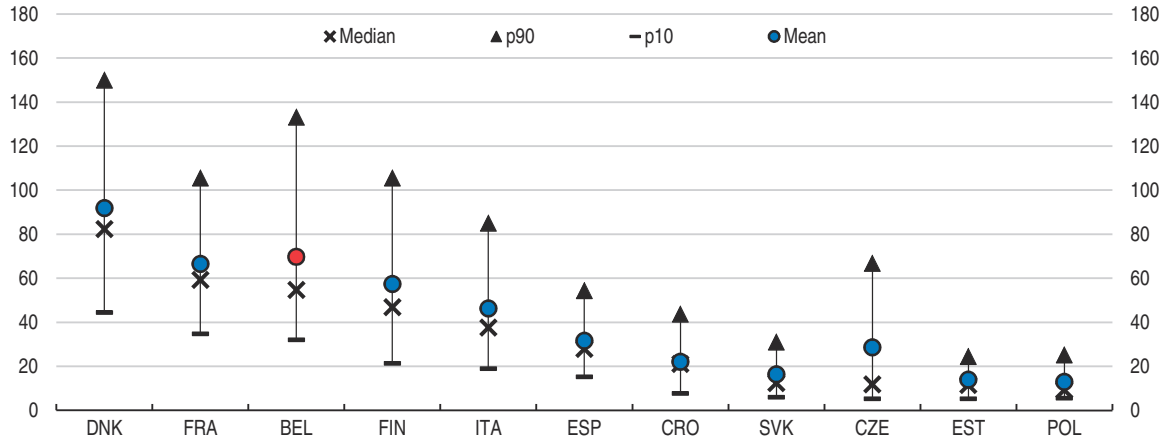
Enhancing technological diffusion throughout the economy

Strong, broad-based productivity growth requires that the technological and organisational advances that innovators make are widely diffused to other firms in the economy. Belgium has a heterogeneous distribution of productivity performance at the firm level (Figure 1.10). A small share of firms have productivity levels that are among the highest in Europe, while many others are far less productive. While a high dispersion of productivity levels across firms is not unique to Belgium (Verschelde et al., 2014), the difference between the productivity levels of the mean and median firms is unusually large.

Figure 1.10. **The distribution of labour productivity across firms is wide**

Real value added per employee averaged, 2007-13



Source: CompNet, 2016.

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One explanation for the inter-firm diversity in productivity performance is the level of integration in global value chains. Belgium has been very successful in attracting inward foreign direct investment (FDI), with the FDI-to-GDP ratio amounting to 98% in 2016,

compared with an average of 37% for the OECD. For example, Belgium has a large presence of so-called coordination centres, which finance the international activities of multinational groups. While multinationals represent only 1% of all firms registered in Belgium, they account for 38% of the country's value-added and 29% of private sector employment (Duprez and Van Nieuwenhuyze, 2016), as well as more than 60% of all R&D spending (Figure 1.3). Moreover, innovations at the global frontier tend to be quickly adopted by multinationals and dispersed to their affiliates around the world. Also, survey results indicate that 37% of all multinationals in Belgium invested in R&D in 2013, compared with only 8% of non-exporting firms (NBB, 2016a). Thus, domestic companies that have direct commercial relationships with multinationals can benefit from their innovation through spill-over effects. Indeed, recent research shows that the productivity gap to frontier firms increases with the distance to multinationals (OECD, 2015a; NBB, 2016a). A firm that directly supplies intermediate inputs or services to a multinational has a productivity level that is 28% below the multinational itself, while the gap is 44% for a company without any direct or indirect exposure to a frontier firm (Table 1.1).

Table 1.1. **The productivity gap widens with distance to multinationals**
(Difference in productivity level with respect to multinational firms)

Firm type	Gap %
1st rank domestic suppliers	-27.6
2nd rank domestic suppliers	-35.9
3rd rank domestic suppliers	-45.3
Other domestic firms	-44.4

Note: A 1st rank domestic supplier is a Belgian firm that supplies intermediate inputs to at least one multinational. A i-th rank domestic supplier is a Belgian firm that does not supply a multinational, but that supplies (i-1)th rank domestic suppliers
Source: NBB, 2016a.

As in many other countries, the number of Belgian firms that export is relatively small. Less than 5% of enterprises sell their products abroad and almost half of these firms export less than 10% of their total turnover (Dhyne and Duprez, 2013). However, if indirect exports by providing inputs for downstream exporters are taken into account, the share of exporting firms rises to 82%, with about 10% of firms exporting more than a quarter of their production. In Belgium, a high degree of specialisation and integration into long supply chains with many separate production stages is associated with higher MFP growth of the participating firms (Dhyne and Duprez, 2015). The results also indicate that the positive effects on productivity are not evenly distributed along the production chain, with firms closer to the end-consumer generating more value added, as they often have larger pricing power. Belgium's strong export sectors, including chemicals and metals, tend to be in intermediate products rather than consumer goods, so that only a part of total exports benefit from the progressive supply chain effect.

To foster supply chain integration, Belgium maintains an open trade regime and has less stringent regulations than the OECD average in 20 out of 22 sectors according to the OECD's Services Trade Restrictiveness Index. However, in accounting, auditing and architectural services ownership restrictions impede international integration (OECD, 2017a). In companies providing auditing and accounting services, 50 % + 1 of the voting rights must be owned by locally registered professionals. In companies providing architectural services,

60% of the voting rights and equities must be owned by locally registered professionals. These rules apply equally to Belgian and foreign nationals. For EU nationals, the rules of recognition of qualifications of directive 2005/36/EG are applicable. The conditions for access of legal persons to economic and intellectual professions such as architects and accountants are currently being studied. In addition restrictions on the movement of people (for example, duration of stays are limited to 6 months for non-EU service suppliers) impede international integration. The authorities should continue to promote trade openness, international connectivity and mobility of highly skilled labour to achieve more pervasive GVC integration of domestic firms.

Continuing infrastructure and regulatory reforms

Global production chains require strong transport and logistics networks to effectively move goods and people. Belgium ranks sixth out of 160 countries in the World Bank's Logistics Performance Index (WB, 2016b). However, dearth of public investment has meant that the quality of some types of infrastructure, in particular the road and rail network, is deteriorating and is only slowly adjusting to changing needs. In 2006/07, the World Economic Forum ranked Belgium 10th in the world with respect to the quality of roads, by 2015 it had dropped to 30th (WEF, 2016). As a result, traffic around the major cities has become very dense and congestion costs are substantial. The Inrix 2015 traffic scorecard, which is based on real-time monitoring of average speeds and traffic volumes in more than 100 metropolitan areas in the United States and Europe, ranked Belgium as the European country with the worst congestion. Out of the five worst affected urban centres in Europe, two are Belgian (Antwerp and Brussels), with commuters on average spending 70 hours or more in traffic per year. These congestion costs discourage FDI and the inflow of highly qualified professionals. In addition to improving public transport the authorities should prioritise public investment in road infrastructure around the major agglomerations.

Some promising infrastructure investment initiatives have already been initiated. In April 2016 the regions, which have the authority over the road system, introduced a new toll on heavy trucks. The levy is charged for using motorways, as well as a number of regional and municipal roads. The proceeds of the charges are used to finance road maintenance. The authorities might want to explore whether such user fees could also be introduced for other infrastructure services, such as the rail network, to help fund upkeep and avoid further deterioration of the existing infrastructure stock.

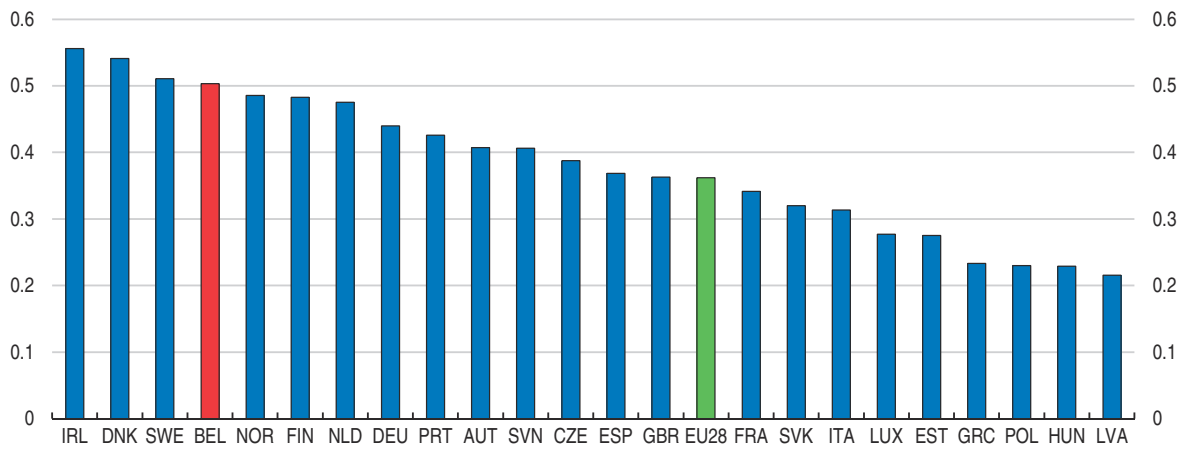
Equally in April 2016, the government of the Brussels-Capital Region approved a multi-annual investment plan to renovate the tunnels in the region. Many of the latter had been built in the 1960s and 1970s and are in urgent need of refurbishment. The investment plan foresees annual outlays of EUR 50 million to EUR 60 million over a period of 15 years. In March 2017 the Flemish government set up a EUR 3.6 billion investment plan for the period 2017-23 to complete the Oosterweel Junction.

One welcome development in traffic management is the ongoing development of a Regional Express Network (Réseau Express Régional/Gewestelijk ExpresNet) around Brussels since December 2015. This mobility solution, which had been under discussion for many years, aims to integrate different modes of public transport, notably trains, subways, trams and buses, to reduce congestion. The approach could also usefully be extended to other urban centres in the country.

Belgium invested 2.7% of its GDP in ICT in 2013, just below the OECD average, and ICT is well adopted at the enterprise level. According to the EU's Digital Economy and Society sub-index on integration of digital technology, which measures the digitisation of businesses and their exploitation of online sales channel, Belgium ranks fourth among the 28 EU countries (Figure 1.11). Results from the underlying enterprise survey of 4 500 firms show that broadband usage was almost universal in Belgium by 2016, and that more than two-thirds of all companies had an internet presence. However, there is some regional diversity in ICT adoption. In particular, the use of internet and e-commerce facilities was on average somewhat lower in the Walloon Region than in the Flemish Region and the Brussels-Capital Region (Figure 1.12).

Figure 1.11. **ICT usage in Belgian firms is comparatively high**

EU's Digital Economy and Society sub-index on integration of digital technology, 2016



Source: European Commission.

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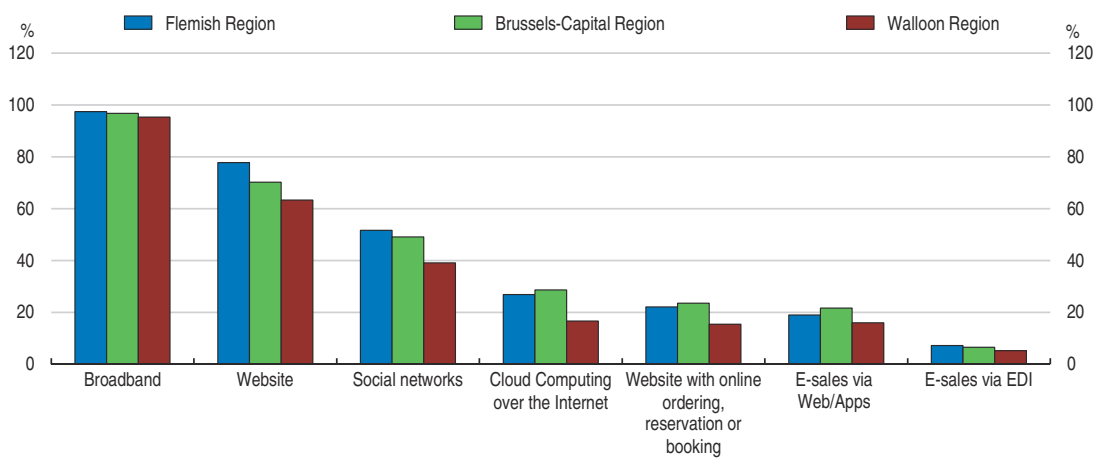
Figure 1.12. **ICT adoption by enterprises varies across regions**

As a percentage of all enterprises, 2016



Source: Statistics Belgium.

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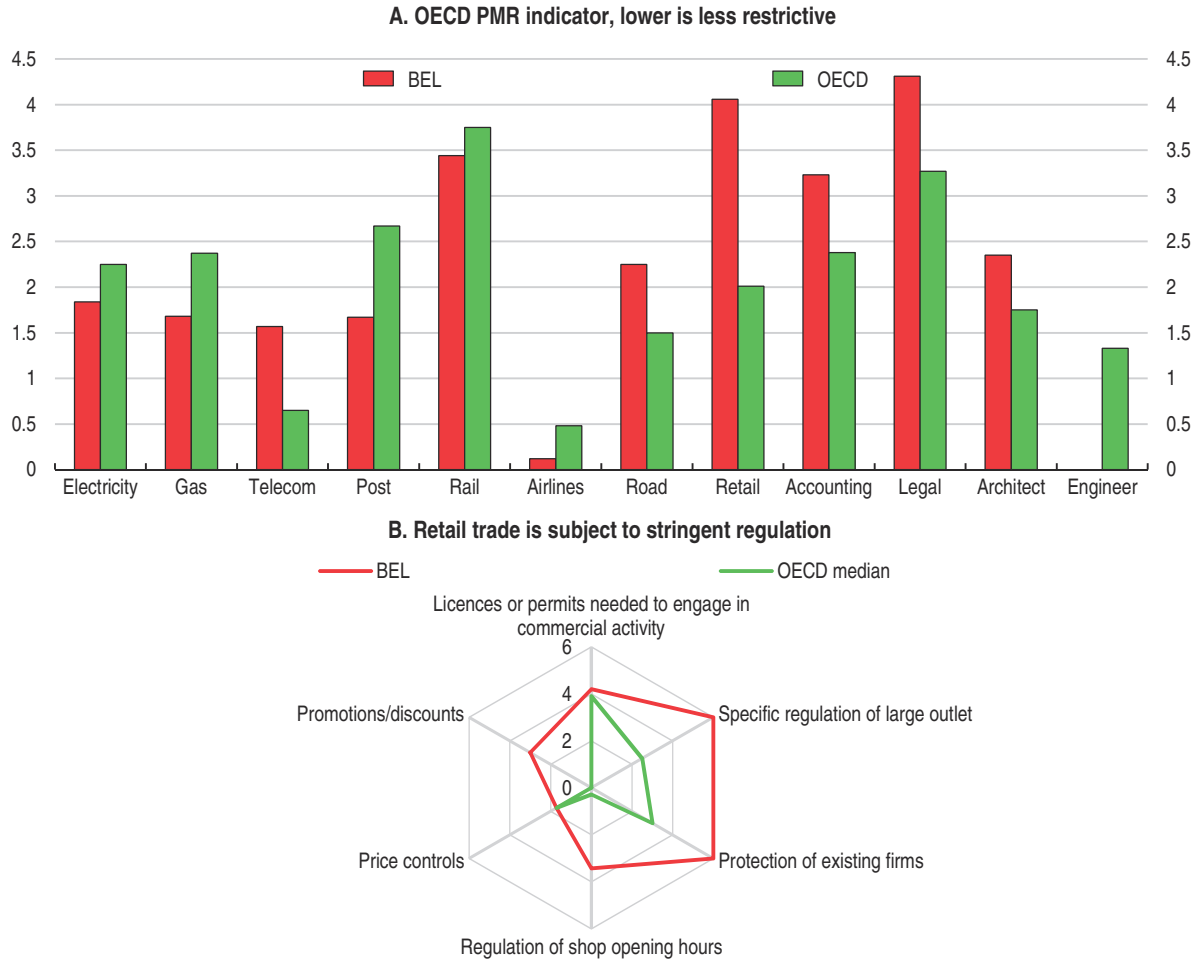
In April 2015, the Federal government launched a new medium-term action plan "Digital Belgium" to further strengthen ICT usage. It strengthens the digital economy, develops digital infrastructure, fosters digital skills and jobs, enhances digital security and

confidence, and facilitates digital government. It contains three numerical objectives that are to be achieved by 2020: move into the top 3 in the EU's ranking according to the overall Digital Economy and Society Index (up from rank 5 in 2016); create 50 000 new jobs in sectors related to the digital economy; and help foster 1 000 start-ups.

New models of doing business based on innovative internet platforms, such as ride-sharing or accommodation renting, have developed rapidly in recent years. These new service providers often offer cost advantages for consumers and businesses and, thus, make it possible for the economy to be more productive with its existing resources. To take full advantage of the benefits of such market disruption, the policy challenge is to provide an enabling environment that removes any unintended barriers to entry, while ensuring a level playing field between newcomers and traditional service providers in terms of taxation and respect of social values (Figure 1.13).

Figure 1.13. **Some sectors remain highly regulated**



Source: OECD (2013), *Product Market Regulation Database*.

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In March 2017, Belgium introduced new income tax legislation aimed at ensuring more equal treatment of income obtained through the sharing economy. The law consists of an advantageous (but limited) tax regime for individual service providers who operate through

a digital platform and a tax withholding at source by the digital platform. In particular, the effective tax rate on income from the sharing economy that does not exceed EUR 5 000 per year is fixed at 10%, and thus often lower than the personal income tax rate, and collected based on electronic payment records of the digital platform. However, the scope of the new taxation framework remains limited to services that are provided between non-professional individuals, and excludes goods (e.g. takeaways) as well as the letting of real property (e.g. AirBnB) or movables (e.g. car-sharing). With such important parts of the sharing economy excluded, there is a risk that income from platform activities is not fully reported and distortions vis-à-vis traditional service providers persevere. In this context, the authorities should aim to broaden the coverage of the legislation to other activities within the sharing economy.

Policy Recommendations on improving the business environment

Key recommendations

- Further streamline public support for R&D and innovation within each region. Regions and communities could step up their innovation support co-operation where appropriate.
- Further reduce administrative burdens on SMEs stemming from federal and regional measures; reduce the level of paid-in minimum capital requirements and strengthen contract enforcement by strengthening court automation and case management. Ensure appropriate financing tools are available for scaling up of young, innovative firms.

Other recommendations

Research and Innovation

- Critically assess the effectiveness of the tax credit/investment deduction for R&D program, with a view to improving the existing programmes.
- Continue to strengthen entrepreneurship education, promote identifiable role models and champions, and expand existing mentor and patron panels of retired business people to counsel new company founders.

Access to finance for start-up

- Improve the effectiveness of existing tax incentives for retail investors based SME funding by a more neutral tax treatment of income from savings deposits. Encourage simple transparent and standard securitisation of SME loans by banks. Improve coordination between public sector entities responsible for SME financing.

Infrastructure

- Explore whether user fees could be introduced for a broader range of infrastructure services to fund upkeep and avoid a further deterioration of the existing infrastructure stock.
- Articulate a clear medium to long-term strategy for energy production to reduce policy uncertainty and thus facilitate long-life-cycle investments.

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Chapter 2

Raising and mobilising skills to boost productivity and inclusiveness

A highly educated and skilled workforce has been an important driver of productivity performance and prosperity in Belgium. This chapter examines the skills policies that could help improve productivity and inclusiveness. Productivity growth would benefit from an increased focus on lifelong learning, and improved and more flexible working conditions for older workers. Establishing institutions to foster more efficient allocation of students and skills would also help underpin productivity growth. Improving inclusiveness requires increasing access and participation in tertiary education, especially for students with a disadvantaged background. Digitalisation opens great opportunities for labour productivity growth but is disrupting the nature of employment relationships. It calls for measures that encourage information and communication technology (ICT) upskilling and adapting tax and benefit systems to the rise of on-demand jobs linked to the use of e-platforms.

While the level of productivity in Belgium remains one of the highest among OECD countries, its lacklustre growth in recent years is a concern. Productivity gains are important to improve living standards and to help sustain inclusive growth. The determinants of productivity are diverse, and in addition to the business environment discussed in Chapter 1, productivity growth is influenced by two important structural socio-demographic trends – ageing and educational attainment. They affect productivity by changing the structure of the labour force. Boosting productivity will thus depend on i) the country's ability to preserve and upskill workers aged 50 years and above as their share in the working age population will increase substantially over the coming decades, ii) the capacity to keep expanding the pool of tertiary-educated workers, who contribute the most to productivity gains, and iii) the use and allocation of skills across firms and industries in rapidly evolving production processes, especially in the context of digitalisation. Against this background, policies that enhance inclusiveness and productivity are mutually reinforcing. Policy makers should endeavor to provide framework conditions to allow all individuals to contribute to improved productivity growth through the labour market.

This chapter addresses in particular four issues related to raising productivity growth and enhancing inclusiveness:

- How to make the most of an ageing workforce, equipping workers with the necessary skills along their careers and avoiding premature exclusion from the labour market.
- How to retain Belgium's advantage in education and help people acquire the skills and competences they need to be employable and function well in society.
- How to best use the existing pool of skills, which entails addressing (mis)allocation of skills across firms or industries and the sub-optimal allocation of students among fields of study.
- How digitalisation and automation of tasks are changing the mix of skills needed, as well as the work organisation and the nature of the employment relationship for many of the new "on-demand" jobs linked to the ever greater use of e-platforms.

Making the most of an ageing society

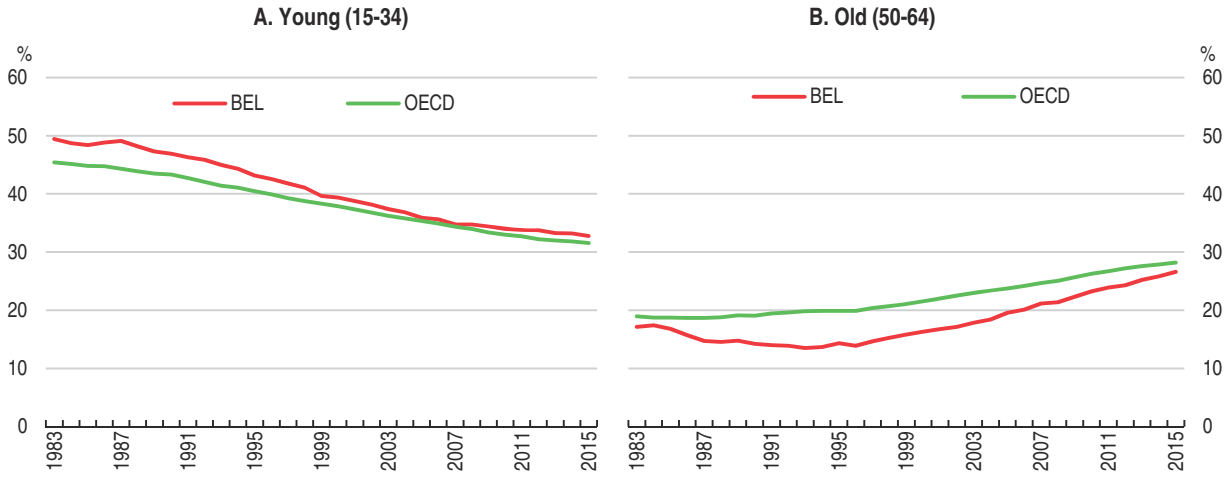
Challenges ahead: strengthening inclusiveness and productivity of seniors

Belgium's workforce is ageing. The share of workers aged 50 years and above increased from 17% in 1983 to 27% in 2015, while the share of workers under 35 years of age decreased from above 49% to about 33% over the same period (Figure 2.1). An important consequence of ageing is that growth will increasingly depend on a country's ability to generate labour productivity gains. As the share of the employed in the total population declines, income per capita will be dragged down unless either workers are able to produce more efficiently or the overall employment rate increases. Boosting the employment and productivity of seniors would increase living standards overall and would make society more inclusive.

Despite increasing over the last two decades, the employment rate of seniors is among the lowest in the OECD. It is expected to rise further as policy makers continue to reform

Figure 2.1. **The workforce is ageing**

Share of young (15-34) and older workers (50-64) in total employment



Note: For OECD, data refer to the weighted average 50-64 employment rate of OECD countries for which the 50-64 employment rate is reported since at least 1983 (Australia, Canada, Finland, France, Germany, Ireland, Italy, Japan, Korea, Netherlands, Norway, Portugal, Spain,Sweden and United States).Rates are weighted by the size of overall population for each country.
Source: OECD, Labour force statistics.

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retirement policies such as reducing early retirement, pre-pensions, and long-term sick leave, and increase labour supply by prolonging working life (see Assessment and Recommendations; Figure 2.2). More proactive policies should also be considered to reduce the risk of seniors being excluded from the labour market. Appropriate measures range from increased focus on lifelong learning to changing work organisation practices.

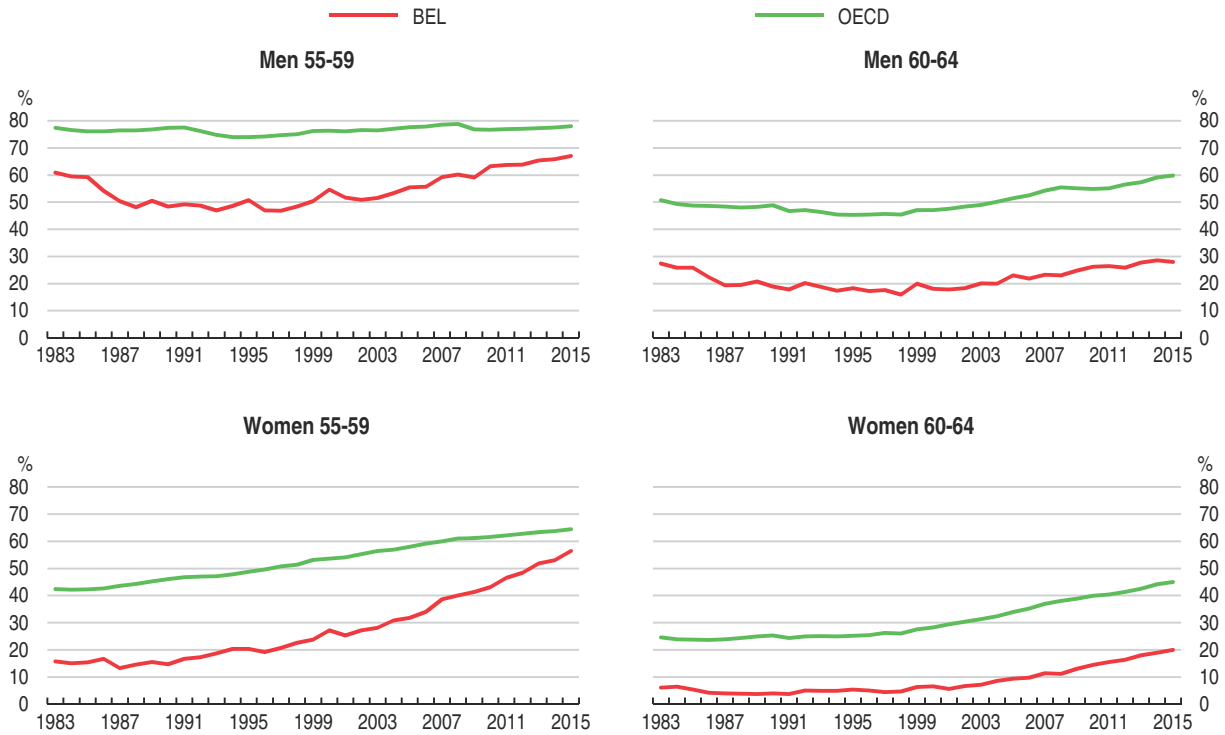
Supporting productivity and jobs of seniors

Maintaining the productivity and employability of older workers calls for more systematic access to adult education and training (AET) as skills needed in a job tend to change during a professional career. Participation in AET was 7% in 2015, compared to 11% on average in the EU, with even lower rates for seniors (EC, 2016; Figure 2.3.A). Several factors may act as barriers to lifelong learning (Box 2.1). So far, as careers have been of a relatively short duration, in part due to early retirement schemes, the reward from training beyond a certain age has been limited. The 2015 pension reform (see Box 3 in Assessment & Recommendations) and expected higher employment rates of seniors should make a difference in the future (Figure 2.3.B). Low incentives for firms to invest in transferable skills may also be explained by the risk of free-riding from other firms trying to poach their newly trained workers. If well enforced the Federal government's decision to oblige firms to provide workers with at least five working days of AET a year as legislated in the recent *Werkbaar, Wendbaar Werk* (WWW) reform should reduce underinvestment in training. Higher participation could also be achieved by strengthening incentives for training towards shortage occupations, for example by allowing for longer training leave, providing higher subsidies, or through the possibility to maintain unemployment benefits during training.

The lack of a training culture has also been highlighted as an important explanation for the low participation of workers in lifelong learning. European surveys on training show that workers often do not see the advantages of training (AES, 2011). Providing more information on the returns from training would strengthen incentives to engage in lifelong learning. The

Figure 2.2. **The employment rate of seniors is comparatively low**

Employment rates of workers aged 55-64, 1983-2015



Note: For OECD, data refer to the weighted average 50-64 employment rate of OECD countries for which the 50-64 employment rate is reported since at least 1983 (Australia, Canada, Finland, France, Germany, Ireland, Italy, Japan, Korea, Netherlands, Norway, Portugal, Spain, Sweden and United States) rates are weighted by the size of overall population for each country.

Source: OECD, Labour force statistics.

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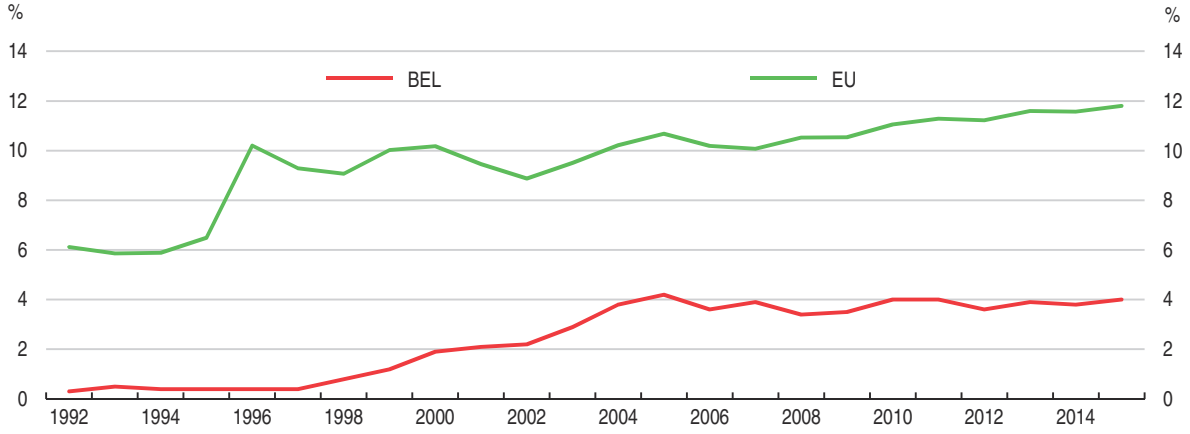
Flemish Community has opened support centres to provide guidance and counselling services to adults. The Flemish government will also launch a new scheme in 2017 to help workers retrain or reorient themselves towards different professional careers. The French Community runs information campaigns and has established a single service in charge of providing guidance to citizens (EC, 2016).

Social partners should also play a stronger role by more systematically identifying and disseminating best practices. Establishing age-friendly organisational structures and working environments could also help older workers make the most of their skills (Appannah and Biggs, 2015). Existing federal measures targetted at older workers, like the obligation for every firm with more than 20 workers to implement an employment opportunity plan for older workers (*Werkgelegenheidsplannen voor oudere werknemers*), or the financial help provided by the regions to accommodate the needs of older workers should be evaluated and, if appropriate, amplified.

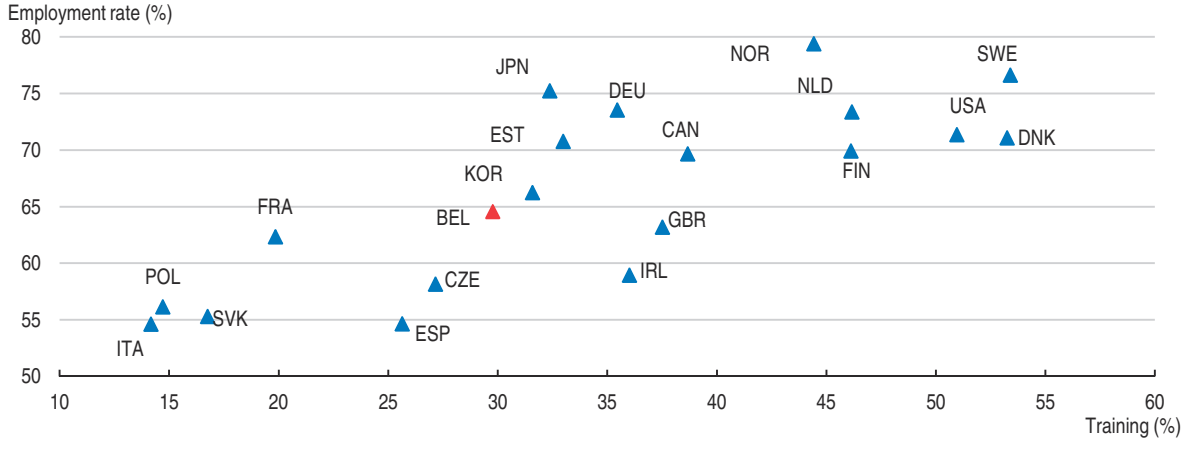
More systematically generalising ergonomic workplaces would also strengthen productivity and working conditions for seniors. Small changes to the work environment can make a big difference as illustrated by an experiment by BMW which decided to staff one of its production lines with workers of an age likely to be typical at the firm in 2030 (Loch et al., 2010). The firm improved the productivity of this line by introducing 70 relatively small changes, such as new chairs, more comfortable shoes, magnifying lenses and adjustable tables.

Figure 2.3. **Participation in adult education and training is low**

A. Individuals aged 55-64 who have participated in education and training in the last 4 weeks
As a percentage of the population aged 55-64, 1992-2015



B. Adult education and training is associated with higher employment rates
As a percentage of the population aged 55-64, 2012



Note: In panel B, training axis refers to participation in training activities over the past year. For Belgium, data refer to Flanders.
Source: Eurostat, Labour Force Statistics and; OECD, PIAAC 2013.

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Box 2.1. **Main barriers to the development of adult education and training (AET)**

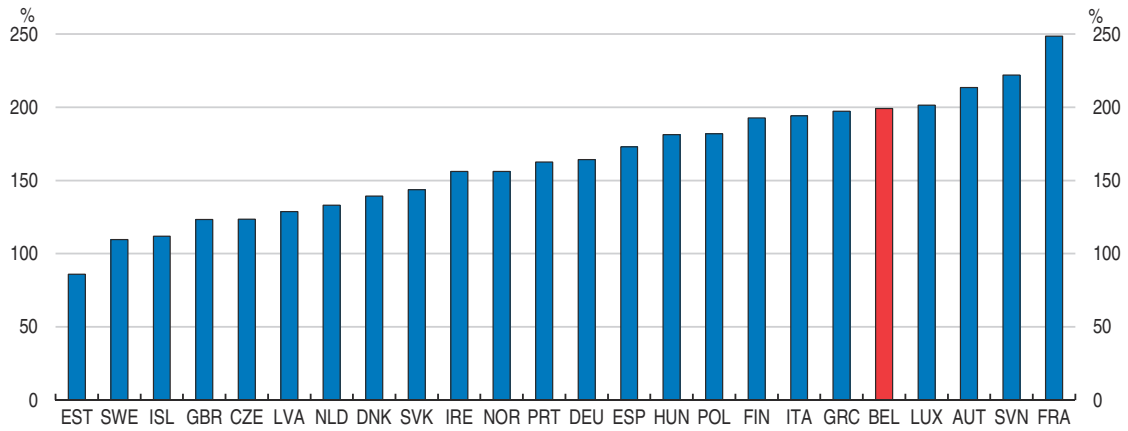
- There is compelling evidence that many skills or traits are more readily acquired during childhood than adulthood (Heckman, 2008).
- Financial constraints may be an additional variable as adults generally need the money that only a full-time job earns to support their family or service their mortgage
- Firms may be reluctant to invest in transferable skills that could be used by competitors (Becker, 1964).
- Shorter careers in Belgium reduce the private return from training.

Accommodating older workers' needs for flexible working time could also reduce early exit from the labour force (Blanchet et al., 2016). However, authorities should ensure that fewer hours worked are associated with lower labour costs. If flexitime leads to an increase in unit labour costs it is likely to be negative for employment growth (Kantarci and Soest, 2008). The federal WWW reform contains interesting ideas, such as annualisation of working time, an extended right to telework, and the portability of paid holidays in case of job changes.

The relatively high labour cost of older workers may also reduce their employability. In many industries labour costs rise mechanically with seniority and tend to exceed productivity beyond a certain point. Similarly, wages tend to be below productivity in early years of careers making these arrangements inter-temporarily coherent for employers. They probably entice workers to make more effort and remain fully committed (Lazear, 1979; Kirsten and Heywood, 2007). However wage profiles appear to be particularly steep in Belgium (Figure 2.4). In some cases this contributes to early retirement clauses and job separations many years before the legal retirement age.

Figure 2.4. **Estimated relative wage for seniors is comparatively high in Belgium**

Wage of male workers aged 60-64 relative to workers aged 30-35, 2012



Note: For Belgium, data refer to Flanders. Relative wages are obtained using HECKIT 2-stage estimation, regressing (log) gross hourly wages on age group, controlling for years of schooling, PIAAC scores and occupational status.
Source: Calculations based on PIAAC 2013 database.

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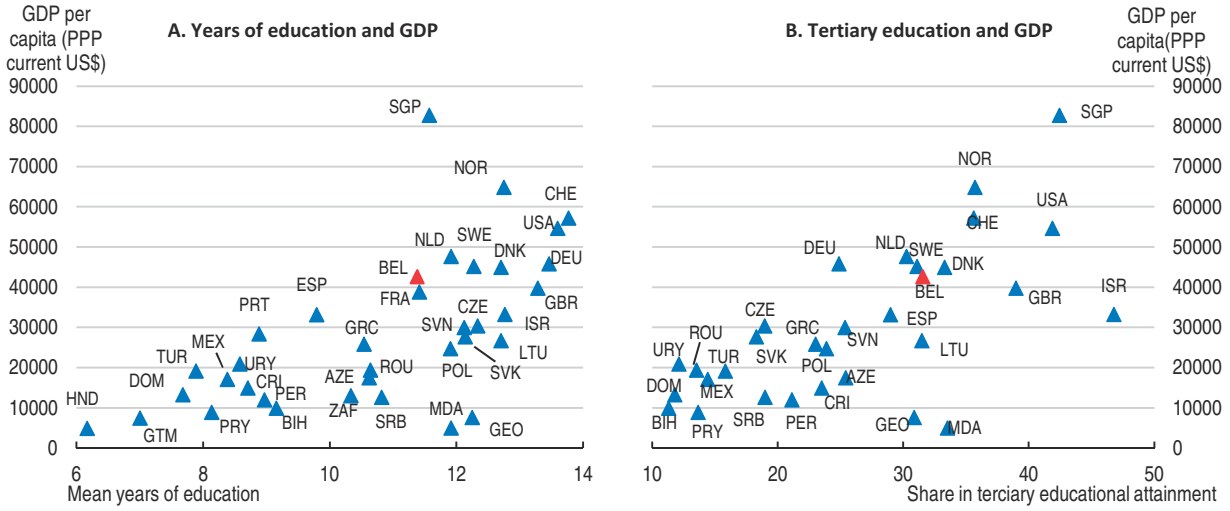
The Federal government's General Policy Statement of 2014 contains an explicit and welcome commitment to reduce seniority pay, concomitantly to pension and early retirement reforms. Many steps have already been taken to increase the pension age and to make early retirement less generous and accessible, including as part of the 2015 pension reform (See Assessment and Recommendations chapter). The government could also foster efforts to reduce the steepness of seniority profiles through the well-established wage bargaining process.

Preserving Belgium's comparative advantage in education

High educational attainment has been an important factor in Belgium's high productivity and prosperity (Figure 2.5, Lebedinski and Vandenberghe, 2014). International experience suggests that for advanced economies like Belgium, changes in production techniques that underpin productivity growth depend on the quality of higher education (Aghion et al., 2006,

Figure 2.5. **The rise of educational attainment underpins Belgium's prosperity**

Belgium vs. rest of the world, 2014



Source: UNESCO database (2016).

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2009; Vandenberghe, 2017). This underscores the importance of improving access, quality and participation in tertiary education and maintaining its quality.

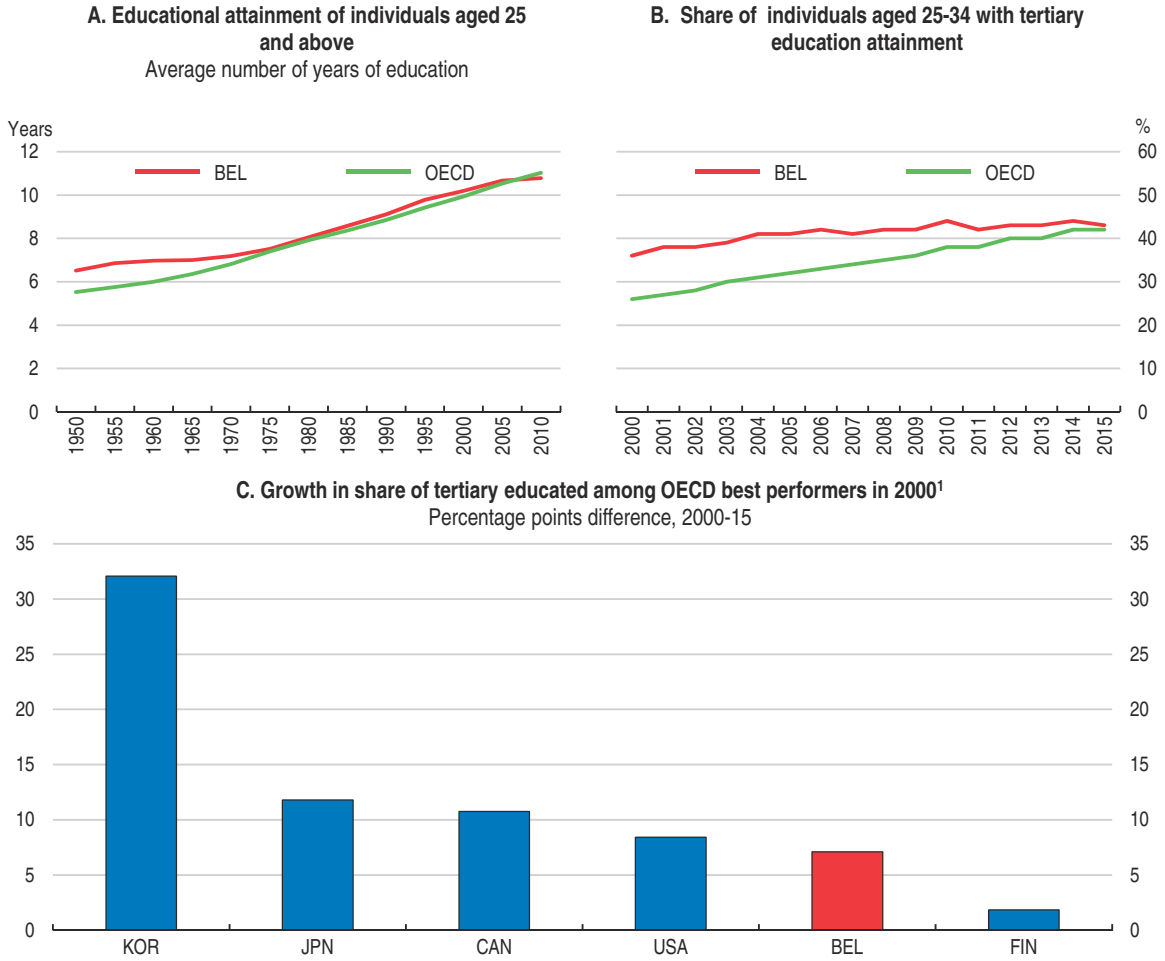
Educational attainment is high

Belgium has successfully lifted the educational attainment of its population since the 1950s, but progress has slowed in recent years. Starting from a relatively high level, the increase in tertiary education attainment between 2000 and 2015 has been one of the lowest among OECD countries (Figure 2.6 A and B), although the number of students enrolling for higher education in Flanders increased markedly in 2015/16. A catching-up effect does not fully explain the slowdown in the years preceding 2015 as most countries with a higher share of tertiary educated than Belgium in 2000 have had stronger growth rates (Figure 2.6.C).

Education mismatches are moderate. Under-education can have an impact on productivity by mismatching skills and job needs, while over-education points to a misallocation of resources. About 15% of workers in Belgium were overeducated in 2012 and 10% under-educated (Figure 2.7, Box 2.2). This puts Belgium (Flanders) significantly below the OECD average in terms of over-education and slightly above the OECD average for under-education. Other estimates for the Belgian private sector suggest somewhat higher figures with about 20% of workers over-educated and 25% under-educated (Karakaya et al., 2007; Kampelmann and Rycx, 2012; Giuliano et al., 2017).

The high return on tertiary education suggests that the economy has benefitted from the increased supply of educated workers. Estimates at the firm level suggest that those with a bachelor's degree are 58%, and those with a master's degree 92%, more productive than workers with at most primary education attainment (see Annex 1). At the individual level, Mincerian wage equations, which relate earnings to educational attainment, show that taking individuals without a degree as a reference, those with a lower secondary degree earn about 10% more per month (gross). The premium rises incrementally to 64% for university graduates (Figure 2.8.A). Similar equations relating the level of education to the risk of unemployment confirm the premium for tertiary educated students: the risk of

Figure 2.6. **The progression of education attainment is slowing down**



1. Top six countries with highest share of individuals aged 25-34 with tertiary education attainment in 2000.
Source: Barro and Lee, 2016; and OECD, *Education at a Glance 2016 Database*.

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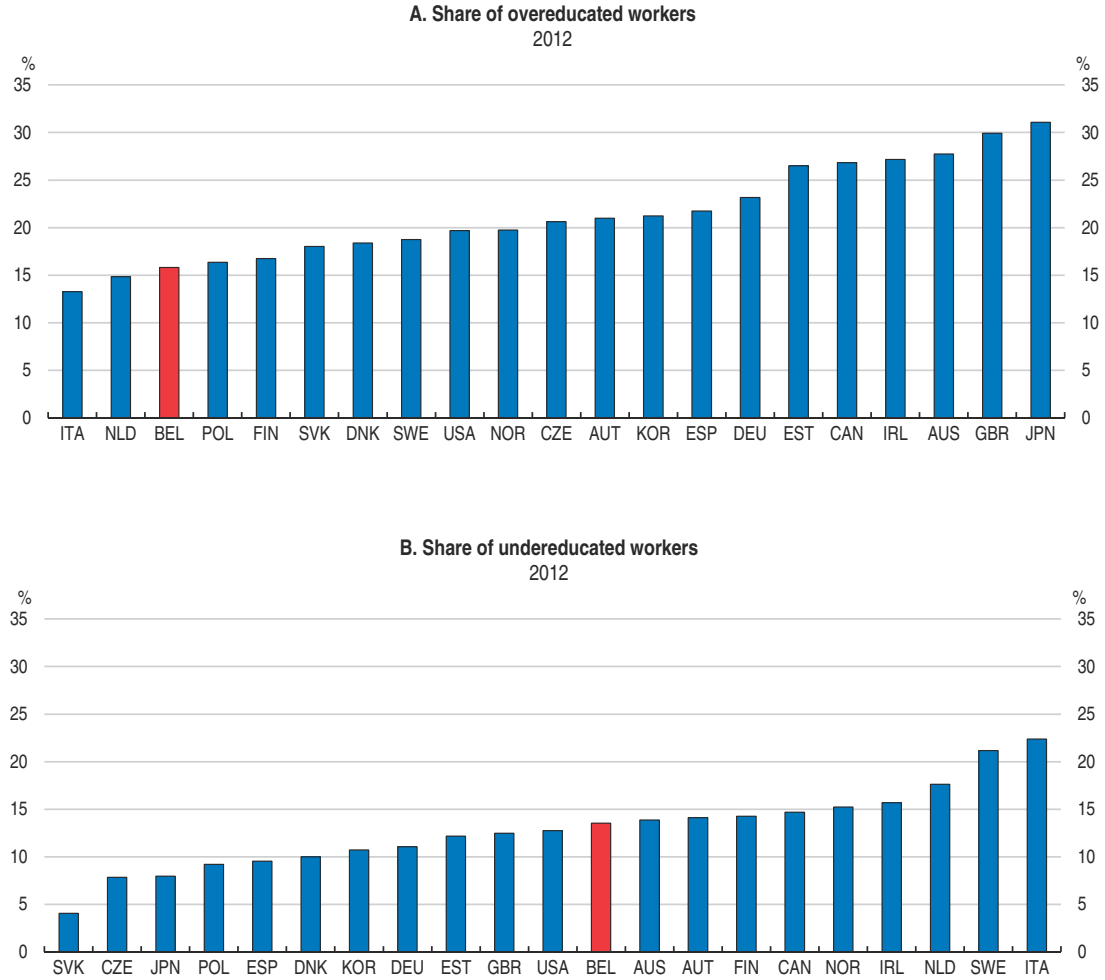
unemployment is 59% higher for someone with at most a primary degree compared to someone with a university degree (Figure 2.8.B).

The still high returns to tertiary education, and moderate education mismatches suggest that Belgium would benefit from expanding its pool of tertiary-educated individuals further. This would raise productivity. However, given the slow rise in attainment in recent years this is likely to prove challenging. The lower progression in tertiary education attainment is partly related to weak performance at lower levels of education limiting the supply of potential tertiary students.

Improving compulsory education outcomes

Too many youth do not successfully complete upper-secondary education. This means that, in spite of liberal admission rules, they cannot undertake tertiary education. Socio-economically disadvantage individuals and first and second generation immigrants are particularly at risk. Youth living in areas with high unemployment rates, are over-represented among early school leavers (Table 2.1). In addition, PISA results indicate that the score gap between native born students and those with an immigrant background are among the largest

Figure 2.7. **Education mismatches remains comparatively moderate**



Notes: For Belgium, data refer to Flanders. For the United Kingdom, data refer to England and Northern Ireland. Qualification mismatch is defined relative to the qualification needed to get the job, as reported by the respondents. Over-skilled workers are those whose proficiency score is higher than that corresponding to the 95th percentile of self-reported well-matched workers – i.e. workers who neither feel they have the skills to perform a more demanding job nor feel the need of further training in order to be able to perform their current jobs satisfactorily – in their country and occupation. Under-skilled workers are those whose proficiency score is lower than that corresponding to the 5th percentile of self-reported well-matched workers in their country and occupation.
Source: OECD, PIAAC 2013.

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Box 2.2. **Measuring over- and under-education**

What is over-education?

First highlighted by Freeman (1976), education mismatch has been extensively studied, especially since the late 1980s, to evaluate the consequences of the continued expansion of participation rates in higher education in developed economies.

Over-education occurs when workers are more highly educated than required for their particular job. This may typically happen when educational attainment has risen a lot but firms fail to take advantage of a more educated labour force, or simply do not need it to remain productive and profitable. Educated workers may then be forced to take jobs for which they are over-educated; something that may be costly to the economy.

Box 2.2. **Measuring over- and under-education** *(cont.)*

Measures of over-education

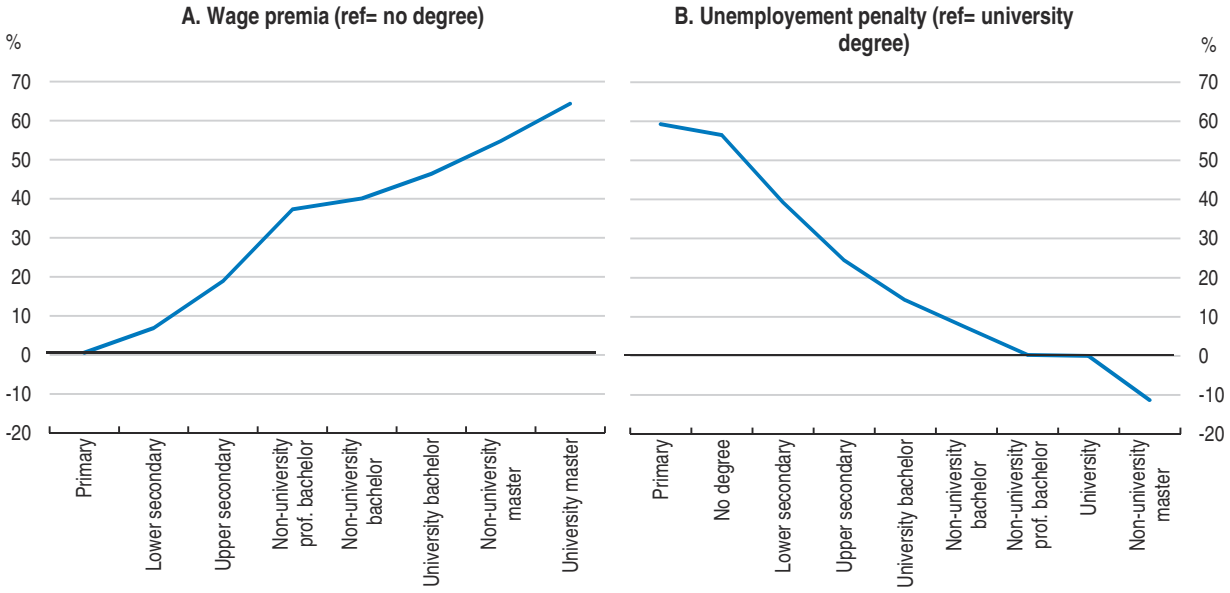
There are three ways of measuring educational mismatches, each method has its advantages and weaknesses (for a detailed discussion see Leuven and Oosterbeek (2011)

- An objective measure or job analysis approach is based on the evaluation by professional analysts of the level and type of education that is required for a specific job. The American Dictionary of Occupational Titles (DOT) is an example of such an approach.
- A subjective or self-assessment approach requires the employee/employer to determine the type and level of formal education that is necessary for the achievement of the tasks associated with a given job. This measurement thus relies on employee and/or employer surveys.
- An empirical or realised matches approach derives the required level of education for a job from what workers in the corresponding job or occupation have usually attained. The required education is then generally computed based on the mode of the education in each occupation.

Over-education and productivity

Firm level evidence suggests that (over-)education contributes positively to productivity (Rycx et al., 2015). This is especially the case for firms with a high share of high-skilled jobs and in knowledge-based industries (Kampelmann and Rycx, 2012). By contrast, the incidence of under-education is found to be detrimental to firm productivity, but only among young workers.

Figure 2.8. **The return from tertiary education is high in terms of gross wages and time in unemployment**



Note: Marginal effect of degree, conditional on age, age2 and gender.
Source: Vacature, 2008, 2010 and 2012.

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Table 2.1. **Early drop-out and unemployment rates**

2015

	Early drop-out rate	Unemployment rate
Whole country	18	8.5
Brussels	26	17
Flanders	15	5
Antwerpen	15	6
Limburg	15	6
Oost-Vlaanderen	16	4
Vlaams-Brabant	12	5
West-Vlaanderen	15	4
Wallonia	22	12
Brabant Wallon	11	8
Hainaut	25	13
Liège	24	13
Luxembourg	23	9
Namur	15	11

Note: Early drop-out rate refers to the share of 30-34 without upper-secondary education.
Source: Eurostat.

in the OECD, although this is not true for all the Belgian regions. As a result, youth with an immigrant background are only 65% as likely to obtain a tertiary degree as their native peers; near the lowest ratio in the OECD (Figure 2.9).

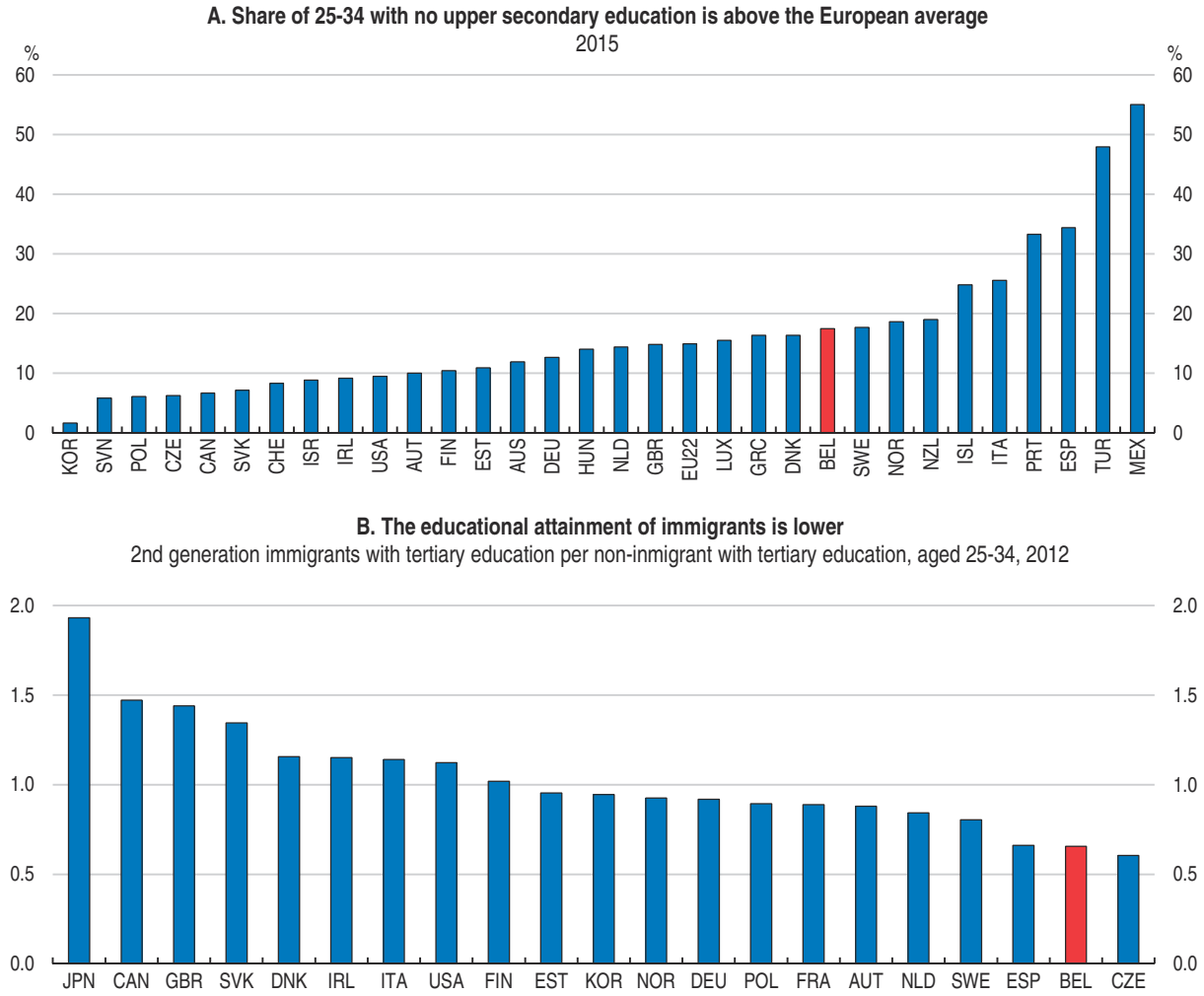
The determinants of the lower educational outcomes of socio-economically disadvantaged students was analysed in the previous *Economic Survey of Belgium* (OECD, 2015). The authorities from the three communities are aware of these challenges and have implemented major education reforms (Box 2.3; EC, 2016). Some issues require specific attention:

- Both the Flemish and the French Communities (the communities are responsible for public education) have enacted policies aimed at reducing socio-economic segregation. A closer evaluation of the effectiveness of these polices is needed.
- More should be done to ensure that socio-economically disadvantaged pupils are exposed to more qualified and experienced teachers. The existing uniform pay structure prevents policy makers from using teacher pay to achieve this goal. Existing efforts to improve the quality of schools where disadvantaged pupils are over-represented, by attracting and retaining effective teachers could be made more effective by developing incentives schemes.
- According to TALIS 2013, which was only conducted in the Flemish Community, teachers have comparatively less training in teaching in multicultural settings than teachers in the majority of OECD countries (Figure 2.10).
- In Flanders spending per student is higher in secondary than elementary education despite evidence that the rate of return on investment in human capital is greatest in the earlier years of school (Nusche et al., 2015).

Raising resources for tertiary education

Education quality may be affected by a decline in per-student spending in tertiary education (Table 2.2). First, more severe budgetary constraints – high public debt, increasing pension and health care costs – make it intrinsically more difficult for the state to implicitly lend the younger generations the resources they need to invest in human capital. Second, Belgium's geographical location at the heart of Europe coupled with its comparatively liberal admission rules, has contributed to a rising presence of many non-resident students

Figure 2.9. **There is room to improve educational attainment**



Note: In panel B, a value of 1 corresponds to equality and data for Belgium refer to Flanders.
Source: OECD, *Education at a Glance 2016* and; OECD, PIAAC 2013.

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Box 2.3. **Main elements of education reforms in the communities**

Both the French and Flemish Communities are engaged in major school reforms aimed at providing more inclusive education and reducing dropouts. Both communities are currently revising their enrolment policies. Government agreements for 2014-19 refer to the need to realise a better repartition of experienced teachers to schools with many disadvantaged pupils (EC, 2016).

Flemish Community

In early 2016 the Flemish government approved a revised concept note on the new integrated early school leaving approach, including an action plan. A concept note containing proposed measures for raising the profile of new entrants to teacher education programmes and streamlining of programmes and quality enhancement of teacher training has also been adopted. Some measures are already implemented, such as the introduction of a (non-binding) entrance test for students at the beginning of initial teacher training offered

Box 2.3. **Main elements of education reforms in the communities** *(cont.)*

by university colleges. Other planned reforms include the introduction of a specific master's in education. A draft decree is planned in early 2017 in view of finalising the reform by 2020. In May, 2016 the government agreed on two concept notes on modernising secondary education. Plans include measures to increase guidance for pupils, to provide more options courses for pupils who do not hold a primary certificate, and to reorganise the structure of educational offers.

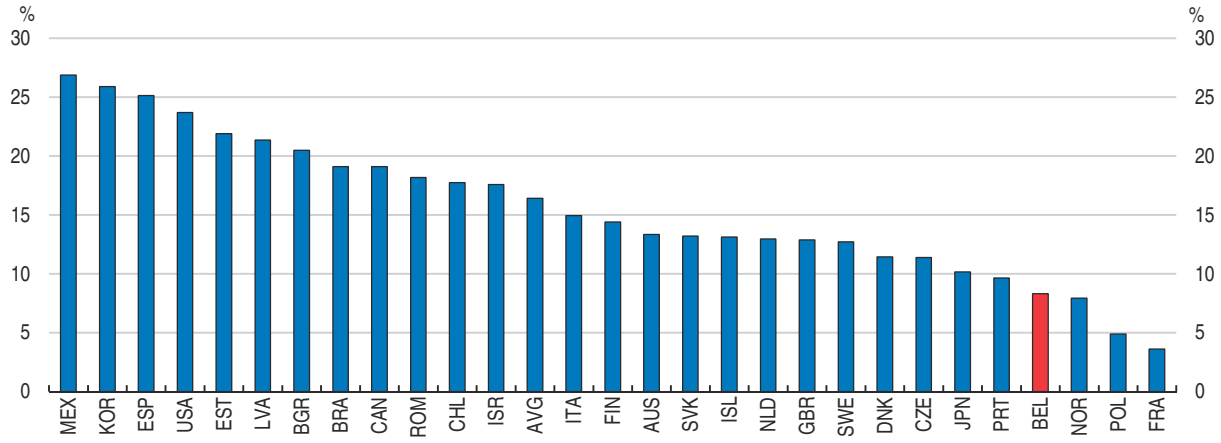
French Community

The French Community is currently rolling out its reform programme of compulsory education *Pacte pour un Enseignement d'Excellence, 2015-2025*. The reform will grant individual schools and teachers greater autonomy. Heads of underperforming schools will be required to draw up plans to tackle low achievement, on-the-job teacher training will be made more relevant to the school, and teachers made more equipped for social, cultural and pedagogical diversity. The pathway from the elementary to the lower secondary level will be streamlined and initial vocational education and training will be simplified by reducing the number of tracks and integrating apprenticeships into the education system. An increase in the course length for initial teacher training from the current level of 3 years is also under consideration. However, budget constraints likely rule out opting for a 5-year master's for all teachers (EC, 2016).

Source: EC, 2016; French Community; Flemish Community.

Figure 2.10. **Percentage of teachers who report having participated in professional development with content in teaching in multicultural settings**

Percentage of teachers, 2013



Note: For Belgium, data refer to Flanders. For Canada, data refer to Alberta. For the United Kingdom, data refer to England. Percentage of lower secondary education teachers who report having participated in professional development on teaching in a multicultural or multilingual setting in the 12 months prior to the survey.
Source: OECD, *TALIS 2013 Database*.

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from other EU countries with restricted access to studies in certain academic fields in their own national higher education system, who rarely enter the Belgian labour market upon completion of their studies (Gérard and Vandenberghe, 2007).

The level of tuition fees in Belgium depends on a student's financial situation, the type of qualification (regulated for initial programmes, free for most advanced/executive

Table 2.2. **Changes in the number of students, expenditure on educational institutions and expenditure per student in tertiary education**

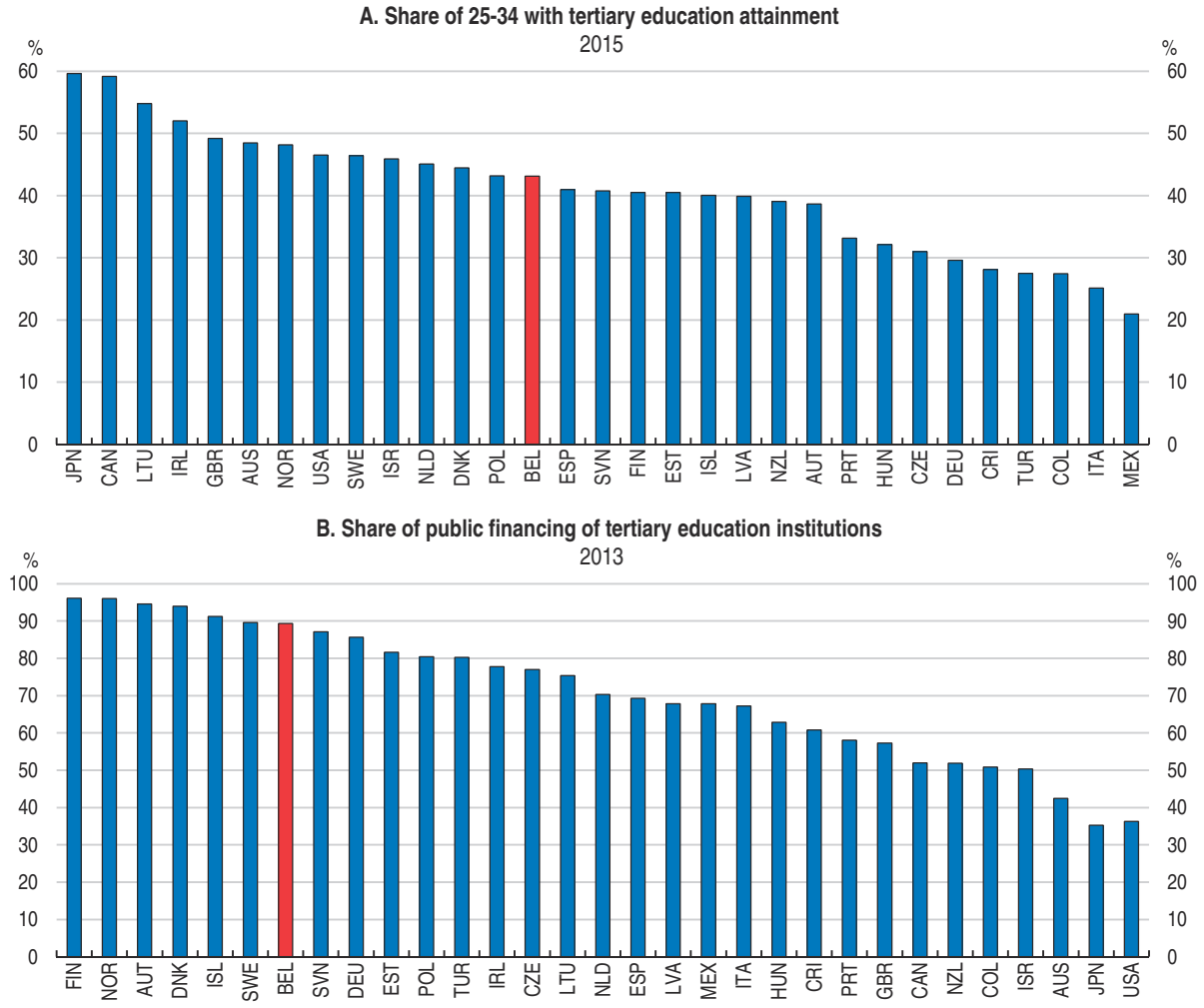
In % (2008-13)

	Change in expenditure	Change in the number of (full time) students	Change in expenditure per student
EU	11	7	6
OECD	17	11	5.5
Belgium	15	18	-3

Source: OECD (2016c).

programmes) and whether or not the student is an EU national. In the French Community around 70% of students in public or government-dependent private higher education institutions pay the maximum fee of EUR 836 per academic year. In the Flemish Community 77% of students in initial bachelor' and master's programmes pay the maximum fee of EUR 890, while in the German-speaking Community nearly all students pay EUR 450 (EC, 2015). In Germany students do not pay tuition fees. In France fees are generally fixed at around

Figure 2.11. **Share of population aged 25-34 with tertiary education and share of public financing of tertiary education institutions**



Source: OECD, Labour Force Statistics 2016; and OECD, *Education at a Glance 2016*.

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EUR 400 a year for an undergraduate degree and EUR 470 for a master's degree, although around one third of students are exempt from fees. At certain schools and for certain subjects fees are higher and may reach up to EUR 10 000 per year. In the Netherlands all students pay fees of EUR 1951 per year.

Against a background of high public debt and significant fiscal constraints some OECD countries have chosen to increase tuition fees to sustain spending on tertiary education. For instance, tuition fees were increased in England in 2011, which markedly increased overall spending on tertiary education. Despite an initial decline, the participation rate in higher education has continued to increase (Department for Education, 2016). The Belgian authorities could consider increasing tuition fees in tertiary education while maintaining the grant and waiver system to support disadvantaged students. Granting loans with repayment contingent on the level of their future income would help compensate graduates who have not achieved wage gains from their studies.

Better matching skills with labour market needs

Reallocation of workers to boost productivity

Although over-educated workers contribute positively to the productivity of their current employer (as discussed above) this does not entail that workers are employed where they would be the most productive. Many firms find it difficult to attract those workers who they would employ more productively (Andrews and Cingano, 2014). According to PIAAC micro-data Belgium (Flanders) productivity at both the aggregate and the sector level is negatively affected by skills mismatches (Box 2.4). Reducing skills mismatches to the lowest level of the OECD would lead to an estimated economy-wide productivity gain of 3% (Adalet and Andrews, 2015; Figure 2.12).

Box 2.4. **Skills mismatch**

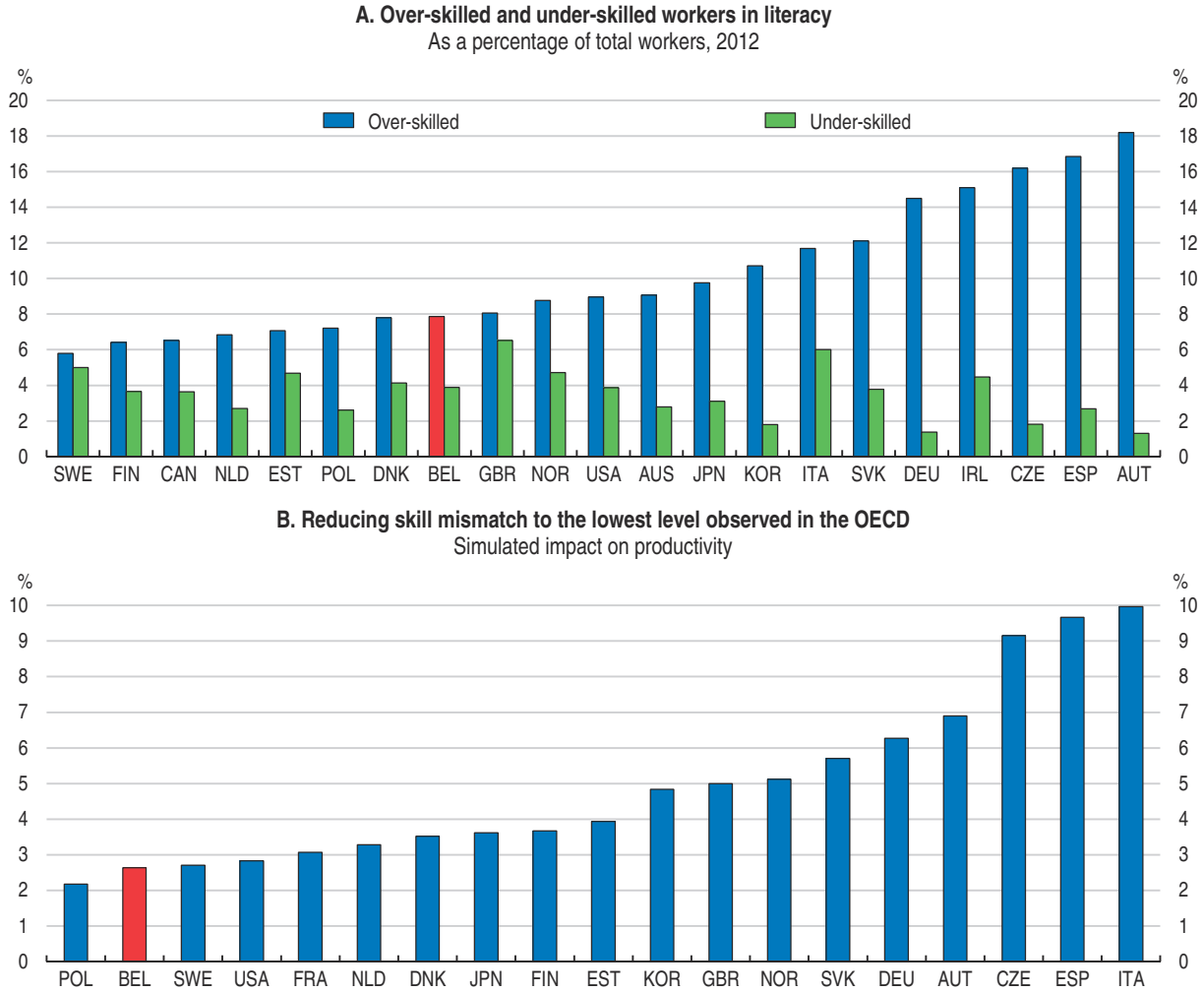
Occupational mismatch may be measured through educational mismatches (see Box 2.2) or skills mismatches. Educational mismatches do not necessarily imply skills mismatches (Quintini, 2011; OECD, 2013a). The former ignores the possibility that workers with the same level of education may be heterogeneous in the level of skills acquired through experience, on-the-job training, or even stemming from innate ability (Chevalier, 2003; Chevalier and Lindley, 2009). Moreover, skills acquired through schooling are likely to depreciate over time so that educational mismatches may be an imperfect proxy for job-related skills mismatches, especially among older workers. Therefore, a growing literature focuses on skills mismatches. A worker is considered under-skilled (or over-skilled) if she/he suffers a skill deficit (or surplus) in a specific field of knowledge, e.g. literacy or numeracy, needed to perform her job.

Using PIACC data the OECD has developed a novel approach to measure skills mismatches in literacy and numeracy. A survey asked workers whether they feel they "have the skills to cope with more demanding duties than those they are required to perform in their current job" and whether they feel they "need further training to cope well with their present duties". To compute the OECD measure of skills mismatches, workers are classified as well-matched in a domain if their proficiency score in that domain is between the minimum and maximum score observed among workers who answered "no" to both questions in the same occupation and country. Workers are over-skilled in a domain if their score is higher than the maximum score of self-reported well-matched workers, and they are under-skilled in a

Box 2.4. **Skills mismatch** *(cont.)*

domain if their score is lower than the minimum score of self-reported well-matched workers. The OECD measure of skills mismatch is an improvement over existing indicators. However, this approach does not measure all forms of skills mismatch; rather, it focuses on mismatches in the proficiency domains assessed by PIAAC.

Figure 2.12. **Improving allocative efficiency of skills would boost productivity**



Note: Panel B shows the difference between the actual allocative efficiency and a counterfactual allocative efficiency based on lowering the skill mismatch in each country to the best practice level of mismatch. Both the actual and counterfactual numbers are calculated by aggregating 1-digit industry level mismatch indicators using a common set of weights based on the industry employment shares for the United States. For example, lowering the skill mismatch to best practice leads to a simulated gain of around 10% in Italy and 3% in the United States.

Source: OECD, PIAAC 2013 and; Adalet McGowan, M. and D. Andrews (2015).

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International experience suggests that the productivity-enhancing effect of advanced education is greater among the most productive and innovative firms that are part of the efficiency frontier or located close to it (Aghion et al., 2006, 2009). However, recent estimates for Belgium show that workers with a university/master's degree are not allocated differently

to other workers. Many of them are in firms that are distant from the "efficiency frontier" suggesting that they could be more productive in frontier firms. Moving more workers with tertiary education to firms closer to the efficiency frontier would have a large impact on productivity – a 10 percentage point increase in the share of these workers in frontier firms could raise MFP growth by 2.5 percentage points (Box 2.5, Figure 2.13.A). The size of the effect declines the further the firm is from the technological frontier.

Box 2.5. **The productivity of university-educated workers as a function of the distance to the efficiency frontier**

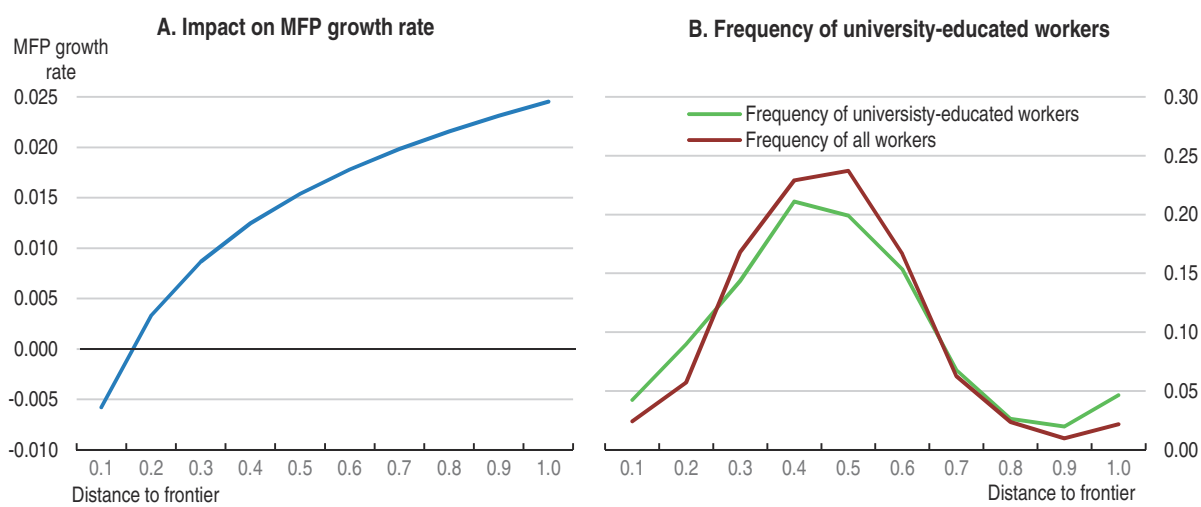
The impact of university workers on firm productivity is estimated on the basis of Belgian firm-level data, covering the 2008-13 period in three steps.

- First, each firm's MFP level is estimated on the basis of the capital and labour parameters of a log-linearised Cobb-Douglas technology using OLS but also Levinsohn & Petrin (LP) and Ackerberg, Caves & Fraser (ACF) methods to account for endogeneity.
- Second, each firm's distance to the MFP frontier is estimated by computing the difference (in logs) between a firm's MFP and the 99th percentile of its NAICS 2-digit industry-specific MFP distribution; each measure also being year-specific.
- Third, each firm MFP annual growth rate is regressed on i) the share of university-educated workers S^{univ}_{it-1}, ii) its distance to the efficiency frontier $lnDTF_{it-1}$ and iii) the interaction between these two variables, whose sign provides a direct test of the Aghion et al. assumption.

$$g_{it} \equiv lnMFP_{it} - lnMFP_{it-1} = \alpha + \beta\, lnDTF_{it-1} + \delta\, S^{univ}_{it-1} + \rho\, S^{univ}_{it-1} * lnDTF_{it-1} + \tau\, F_{it} \qquad [1]$$

$\rho > 0$ can be interpreted as evidence that the closer firms are from their MFP frontier, the more the presence of university-educated workers matters for their MFP growth performance.

Figure 2.13. **There is room to better allocate university-educated workers**



Note: In panel A, the left-hand vertical axis measures the impact on annual firm-level productivity growth of a 10 %-points rise of the share of workers with a university degree. The closer the firm from the frontier the larger the positive impact of university education on productivity growth and below a certain threshold, that contribution is even negative. The right-hand axis (and the two frequency curves) measures the distribution of the workforce according to the distance to the efficiency frontier of the firm they work in. The distance to the efficiency frontier is computed as the difference (in logs) between a firm's MFP and the 99th percentile of its NAICS 2-digit industry MFP distribution (i.e. the frontier).
Source: Vandenberghe (2016).

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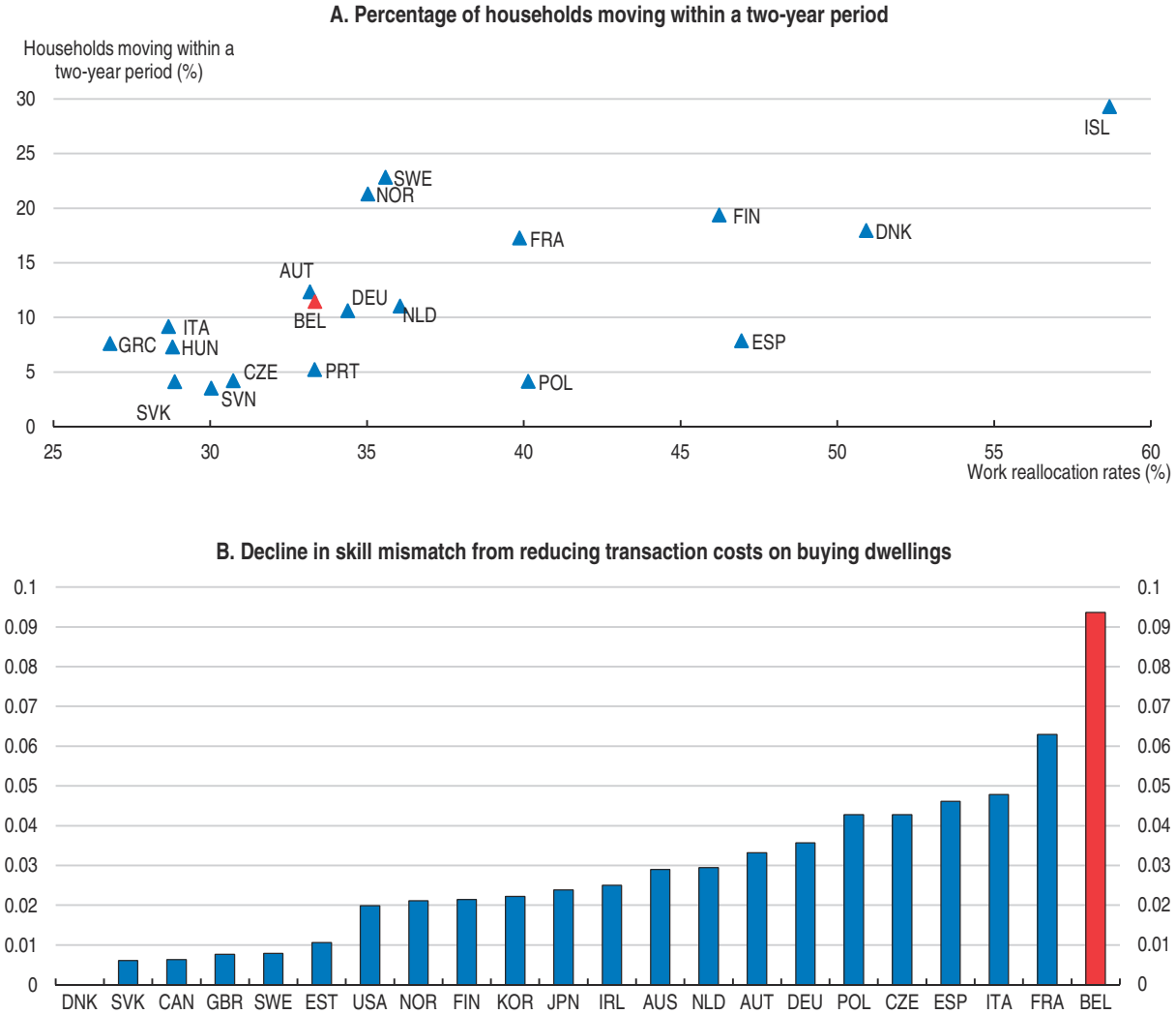
Establishing institutions to foster more efficient allocation of students and skills

Residential mobility in Belgium is comparatively low, with about 10% of workers moving within a two-year period (Figure 2.14.A). This contributes to skills mismatches as residential mobility is positively correlated with the worker reallocation rate (Caldera Sánchez and Andrews). Aligning housing-related regulations to best practices, especially by reducing high transactions costs for house sales, could improve productivity gains (Figure 2.14.B). Reducing the severe road congestion problem by developing better public transport and adequate direct pricing of the use of roads would greatly facilitate the geographical mobility of the labour force and contribute to raise job-to-job mobility.

Figure 2.14. **Geographical mobility and workers' reallocation rates**



Note: In Panel A, worker reallocation rates are country averages of reallocation rates (hiring and firing rates) expressed in percentage of total dependent employment. The data refer to 2000-07 or shorter time period depending on data availability. Residential mobility data are from Andrews et al. (2011) based on 2007 EU-SILC Database, on HILDA for Australia, AHS for the United States and SHP for Switzerland.
In Panel B, the figure reports the impact on the probability of skills mismatch: if Belgium reformed transaction costs to best practice the probability of skills mismatch would fall by more than 9%. Transaction costs include a number of fees such as transfer taxes (e.g. stamp duties), registration fees incurred when registering the property in the land registry, notarial or other legal fees and typical real estate agency fees and refer to 2009. Denmark has the lowest transaction costs.
Source: Caldera Sánchez and Andrews, 2011, Adalet and Andrews (2015).

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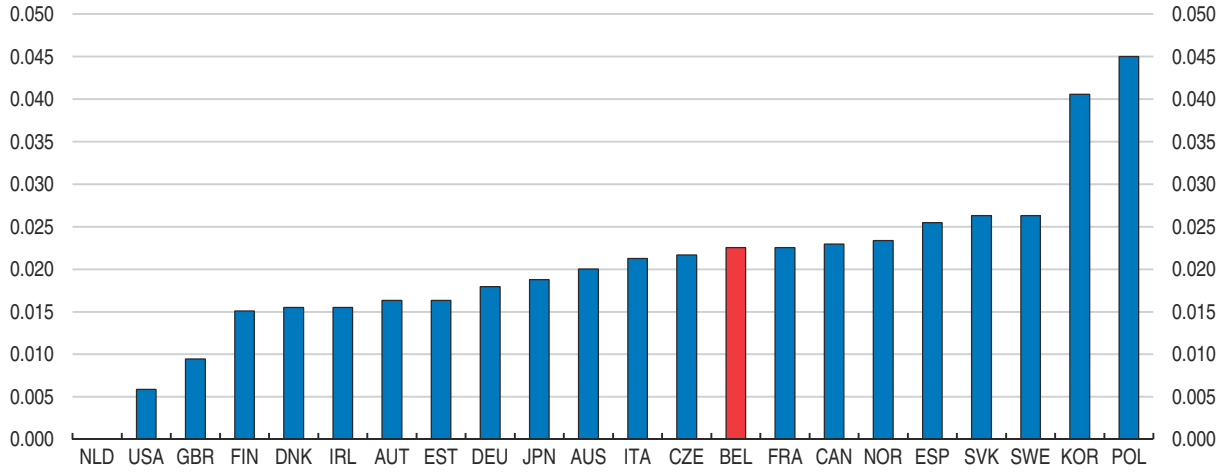
Business dynamism (i.e. the propensity of relatively less productive firms to die and be replaced by relatively more productive ones) is also comparatively low (see Chapter 1). This may lock resources in low-productivity firms. Empirical evidence shows that healthy market economies typically exhibit a high pace of churning of outputs and inputs (including workers) across businesses and that churning is productivity-enhancing as outputs and inputs move from less productive to more productive businesses (Bartelsman et al., 2009). Comparatively stringent product market regulation and high barriers to entry that protect low-productivity incumbents contribute to skills mismatches. This lowers productivity by preventing new high-productivity firms from entering the market to make a better use of highly-skilled workers (Figure 2.15). There is scope to ease product market regulation, particularly in service industries (see Chapter 1).

Figure 2.15. **Decline in skills mismatch from easing product market regulation could be substantial**

Impact of product market regulation reform



Note: The figure reports the impact on the probability of skills mismatch: if Belgium reformed product market regulation to best practice the probability of skills mismatch would fall by almost 2.5%. Product Market Regulation is the aggregate indicator for 2008. The Netherlands have the less stringent product market regulation.
Source: Adalet and Andrews (2015).

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Belgium has relatively strong employment protection legislation (EPL). Strict EPL may contribute to skills mismatches by preventing firms from adapting their workforce to technological (or business cycle) changes, or by reducing professional mobility from one job to another (Eurostat, 2017). Fixed-term and temporary contracts help, but developing such atypical contracts comes with the risk of reducing, from an already low level, firms' investment in training. One factor undermining job mobility might be the prevalence of seniority wages (see Figure 2.4) and perks that are, de facto, indexed on seniority (e.g. extra legal pensions and stock options).

Ensuring that the allocation of students among the different fields of study is broadly in line with labour market needs is a first step towards a more efficient allocation of resources. Wage premia by field of study for bachelor's and master's degree holders confirm that most fields deliver a positive wage premium, and on average long/master's degrees pay more than short/bachelor's programmes. However, wage premia between fields of study are very large (Annex 2.2). This suggests room for some reallocation of students

across fields of study within tertiary education. In a system where individuals have ample freedom of choice, both in the institution and the field of study they opt for, achieving reallocation is challenging. A first step would simply consist of largely disseminating data on wage premia by field of study instead of just by level of study. This might entice more prospective students to choose fields of study more relevant to the labour market.

The promises and challenges of digitalisation

The digitalisation of the economy opens great opportunities for labour productivity growth. The magnitude (big data, internet-of-things…) is debated, but growth in computation and artificial intelligence could rapidly cross some threshold after which productivity could accelerate sharply as an ever-accelerating pace of improvements cascade through the economy. Some economists consider the current period of "secular stagnation" to be transitory and expect a "new age of the machine" to lead to a third industrial revolution (Brynjolfsson and McAfee, 2014).

Digitalisation-induced productivity gains are unlikely to be distributed evenly across the economy (CSE, 2016). Despite a large number of baby boomers retiring, some sectors where digitalisation accelerates will see large employment losses and a high degree of job transformation (Figure 2.16.A). The final demand for goods and services will re-orient; and other jobs will most likely be created elsewhere in the economy. Coping with these reallocations may require a lot of effort on the side of labour. Workers will need to move between tasks, jobs, firms, industries and perhaps also regions of residence.

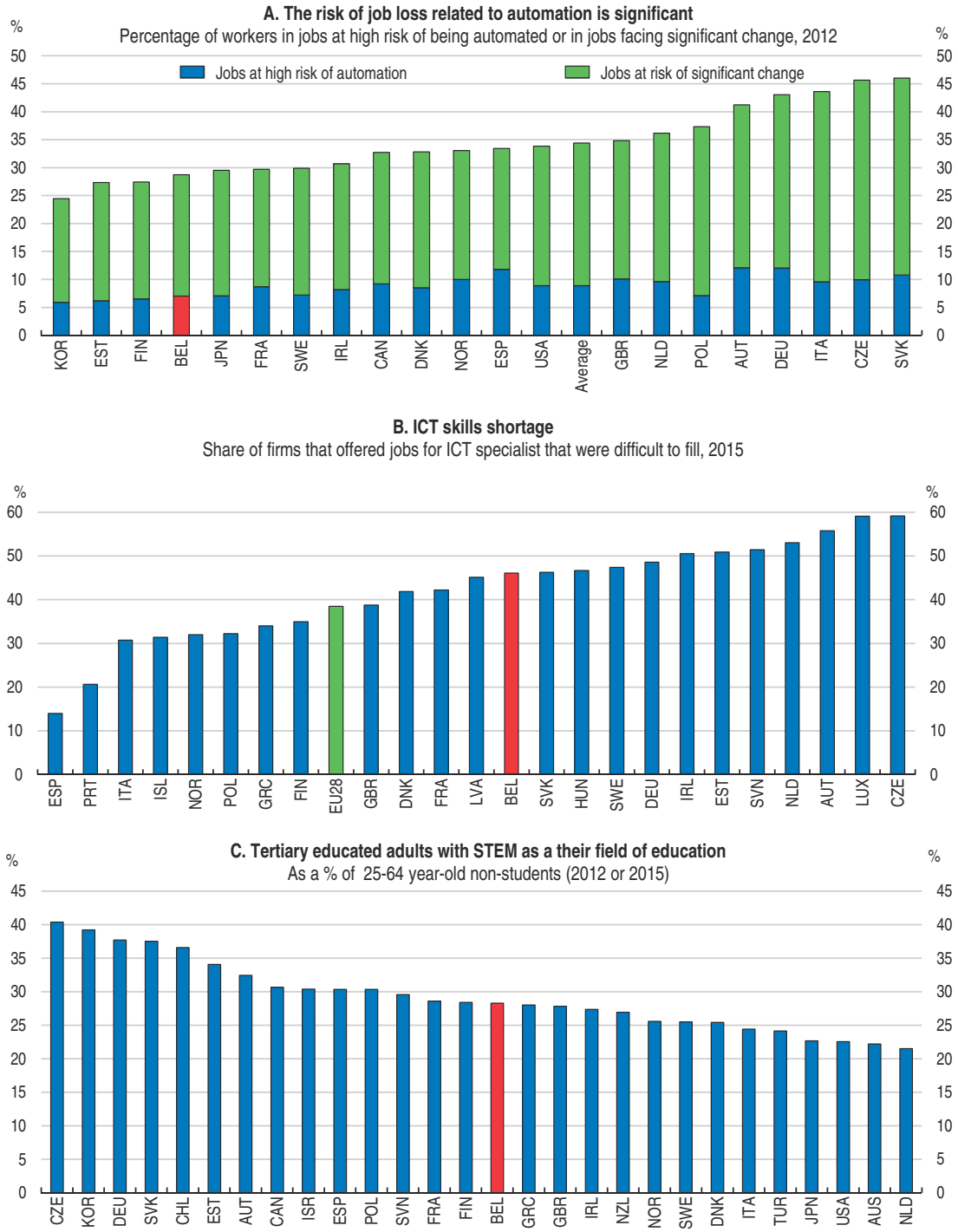
It is crucial to continue to strengthen the labour market institutions to help facilitate these transitions for workers. A lot has already been done in Belgium to "activate" welfare protection, for example individualised guidance or coaching, access to training, and a near-universal right to outplacement paid by the employer in case of dismissal. The agenda for the future is more about optimising and selectively amplifying existing policies. For that, much more evaluation of the actual use and the effectiveness of existing schemes is needed.

Digitalisation is also disrupting the nature of employment relationships, via the rise of internet jobs platforms and its corollary: on-demand jobs. There is no systematic data for Belgium, but evidence from the US suggests that these jobs could rapidly represent a non-negligible part of the total workforces. Krueger and Katz (2016) estimate that the percentage of US workers engaged as temporary help agency workers, on-call workers, contract workers, and independent contractors or freelancers rose from 11% in February 2005 to 16% in late 2015.

On-demand jobs have advantages, including more time flexibility and diversity for individuals, and access to a larger pool of skills, lower costs of hiring, and lower administrative burdens for firms. They probably also contribute to higher labour productivity via an overall reduction of slack, a better adjustment of employment to fluctuations in final demand, and better use of the existing capital stock.

To level the playing field with existing forms of business the fiscal and social security status applicable to these "alternative" workers needs to be clarified (Box 2.6). Many "alternative workers" operate in a triangular relationship with an intermediary (e.g. Uber) using a proprietary application to identify customers for their services. One option would be to require the intermediaries to provide some welfare benefits and protection to these

Figure 2.16. **Building skills for the future**



Notes: In panel A, jobs are at high risk of automation if the likelihood of their job being automated is at least 70%. Jobs at risk of significant change are those with the likelihood of their job being automated estimated at between 50 and 70%. Data for Belgium correspond to Flanders and data for the United Kingdom to England and Northern Ireland.

In panel B, STEM refers to science, technology, engineering and mathematics subjects, data for Germany refer to 2014. For Iceland, data refer to 2012 and 2014.

In panel C, data for Chile, Greece, Israel, New Zealand, Singapore, Slovenia and Turkey refer to 2015. For all other countries, 2012 is the reference year. For Belgium, data refer to Flanders. For United Kingdom, data refer to England.

Source: Arntz and Zierahn (2016); Eurostat, Information Society database and; OECD Survey of Adult Skills (PIAAC) (2013, 2016).

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Box 2.6. **E-platforms, "alternative" jobs and the need for a relevant legal framework**

Digitalisation prompts major transformations in how work is organised; blurring the traditional distinction between "employee" and "self-employed". With high-speed internet, audio and video technology, etc. workers have the flexibility to work at any time and from anywhere. E-platforms are an important driver of this evolution, and could boost labour productivity. Employers can hire specialists on demand and keep their workforce flexible in response to demand fluctuations.

But there are also concerns about the protection of on-demand workers as well as their tax obligations. In a recent policy paper Harris and Krueger (2015) explain that "alternative" workers do not fit easily into the existing legal definitions of "employee" vs "self-employed". The distinction is important because employees qualify for a range of legally mandated welfare benefits that are not available to self-employed people, such as unemployment or occupational accident insurance. Instead they propose a new category of "independent workers" for those who occupy the grey area between traditional employees and self-employment. Most operate in a triangular relationship with a business (i.e., an intermediary like Uber or AirBnB) and customers. Typically, they use a communication channel, such as an app, created by an intermediary to identify customers for their services. Harris and Krueger recommend requiring (or allowing) intermediaries to provide some welfare benefits and protections to these "independent workers" (but not all, e.g. no fully-fledged unemployment insurance), but also require intermediaries to enforce tax and social security contribution withholding services, akin to what employers traditionally do on behalf of salaried employees.

"independent workers" and to require them to enforce tax and social security contribution withholding services, as traditional employers do on behalf of salaried employees.

Important steps were recently taken to adapt tax legislation to the challenges of the sharing economy. In July 2016, Belgium introduced income tax legislation to improve the treatment of income obtained through the sharing economy. The law consists of an advantageous (but limited) tax regime for individual service providers who operate through a digital platform and a tax withholding at source by the digital platform. In particular, the effective tax rate on income from the sharing economy that does not exceed EUR 5 000 per year is fixed at 10% and collected based on electronic payment records of the digital platform. However, the scope of the new taxation framework remains limited to services that are provided between non-professional individuals, and excludes goods (e.g. takeaways) as well as the letting of real property (e.g. AirBnB) or movables (e.g. car-sharing). With such important parts of the sharing economy excluded, there is a risk that income from platform activities is not fully reported and distortions in relation to traditional service providers persevere. In this context, the authorities should aim to broaden the coverage of the legislation to other activities within the sharing economy.

Finally, digitalisation creates an upskilling challenge. Although some recent technological developments (e.g. voice recognition) may lead to "deskilling" of some jobs and occupations, the bulk of existing evidence suggests higher skill requirements for those who work in environments rich in information and communication technology (ICT), and certainly for those whose task consists of developing new goods and services (Brynjolfsson and McAfee, 2014). The labour demand for ICT specialists and people with coding skills seems to rise

unabatedly, leading to more and more unfilled vacancies (Figure 2.16.B). For instance, in 2014 more than half of firms located in Belgium looking for an ICT specialist reported unfilled vacancies over relatively long periods (Eurostat, 2014).

Digitalisation is already changing the type of skills employers demand. Increasingly desirable skills range from basic digital literacy (e.g. browsing, sending emails) to advanced technical skills (e.g. big data analytics, app development). Moreover, it is the combination of "foundation" skills (literacy and numeracy) and skills directly related to technologies (e.g. coding) that make individuals employable (OECD, 2016a). This combination is especially important for medium-skilled white-collar workers, whose jobs will increasingly disappear due to technological change (Arntz et al, 2016). In the Belgian context, this will require a sharp rise in adult education and training, as discussed above. In the Walloon Region *Centres de Compétences* have been set up in strategic areas and sectors with a solid technology base and aim to support innovation and growth through the development of relevant skills. The model is based on a partnership approach and the centres intervene both upstream (through monitoring, information, awareness, etc.) and downstream (though validation of skills, improved integration courses, etc.) A similar approach exists in the Flemish Region with the *kennisinstellingen*. The strategic research centres Imec (semi-conductors) and iMinds (software) merged in end-2016, and budgets increased to EUR 110 million a year. In addition, a transition path for Industry 4.0 was approved by the Flemish government in March 2017.

The dissemination of basic digital literacy should be the most effective way to ensure the labour force is appropriately skilled. It will come as a by-product of the growing availability of digital products and services, the reduction of the price of broadband internet and mobile communications, or from the ability of citizens to conduct all communication with the government digitally (a 2020 objective, part of the "Digital Belgium" agenda). A plus would be to systematically offer basic ICT training to groups at risk of the so-called digital divide.

The "production" of advanced ICT skills – i.e. those related to application development and web development, scriptwriting and virtualisation, or underpinning the development of the cloud – will probably remain dependant on the capacity of Belgium's tertiary education to attract more youth to science, technology, engineering and mathematics (STEM) subjects. In 2013 only 17% of students in tertiary education enrolled STEM subjects (Figure 2.16.C), although STEM enrolment in the Flemish Community has increased over the past few years and more students are enrolled in courses that partly integrate STEM subjects in the curriculum. Moreover, women are largely underrepresented (OECD, 2016b). The Flemish government has launched a STEM Action Plan aimed at increasing the number of students opting for STEM disciplines, particularly within the fields of technology and ICT. However, more needs to be done to properly inform prospective students that the field of study matters in terms of job prospects and future earnings.

The dissemination of "intermediate" coding skills could be achieved via more participation in adult education and training (AET). For younger people it may happen outside fully fledged STEM programmes, via the generalisation of ICT minors (i.e. as a student's declared secondary academic discipline) accessible to any tertiary education student; and at a fraction of the cost of traditional STEM programmes.

Policy recommendations to raise skills for higher productivity growth and more inclusiveness

Key recommendations

- Ensure firms comply with the new federal legislation to provide workers with at least five working days of education and training per year. Develop flexitime and abolish remaining early retirement schemes.
- Where appropriate, expand controlled school-choice schemes in the Communities to reduce the concentration of pupils with a non-EU immigrant background. Improve teacher training and incentives to attract teachers to schools with a high concentration of disadvantaged pupils.
- Where appropriate, consider increasing or adjusting tuition fees, while maintaining the grant and waiver system for disadvantaged students along with income-contingent loans. Better publicise labour market shortages and wage premia to motivate students to choose fields of study more relevant to the labour market.

Further recommendations

- Foster efforts to reduce the steepness of seniority profiles through the well-established bargaining wage process.
- Improve professional mobility by investing in public transport, reducing transaction costs in the housing market and applying direct pricing on the use of roads.
- Increase spending per student in elementary education to at least the level of that of secondary education.
- Support dissemination of intermediate ICT skills (including coding) through both adult education and training and by generalising access to ICT minors for all tertiary education students.
- Increase the coverage of existing legislation on the sharing economy to include a broader range of activities.

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ANNEX 2.1

Firm-level analysis of workforce composition's impact on productivity

The Hellerstein-Neumark Methodology

The methodology to estimate productivity (and/or wage) profiles according to a given characteristic of the workforce (e.g.; age, gender or education attainment), is a simplified version of the Hellerstein-Neumark approach, recently applied on Belgium data by Lallemand and Ryckx, 2009; Vandenberghe 2011a, 2013; Vandenberghe et al., 2013.

Following most authors in this area, we consider a Cobb-Douglas technology (Hellerstein et al., 1999; van Ours and Stoeldraijer, 2011; Vandenberghe, 2011a, 2011b):

$$\ln Yit = \ln A + \alpha \ln QLit + ß \ln Kit \quad [1]$$

where: Yit/Lit is the average value added per worker (average productivity hereafter) in firm i at time t, QLit is an aggregation of different types of workers, and Kit is the stock of capital.

The variable that reflects the heterogeneity of the workforce is the quality of labour index QLit. Let Lijt be the number of workers of type j (e.g. young /old; men/women; low/high educated) in firm i at time t, and μij be their contribution to output. We assume that workers of various types are substitutable with different marginal products. As each type of worker j is assumed to be an input in quality of labour aggregate, the latter can be specified as:

$$QLit = \sum j\ \mu ij\ Lijt = \mu i0\ Lit + \sum j > 0\ (\mu ij - \mu i0)\ Lijt \quad [2]$$

where: $Lit \equiv \sum j\ Lijt$ is the total number of workers in the firm, μi0 the marginal productivity of the reference category of workers (e.g. prime-age men) and μij that of the other types of workers.

If we further assume that a worker has the same marginal product across firms, we can drop subscript i from the marginal productivity coefficients. After taking logarithms and doing some rearrangements equation (2) becomes:

$$\ln QLit = \ln \mu 0 + \ln Lit + \ln (1 + \sum j > 0\ (\lambda j - 1)\ Sijt) \quad [3]$$

where $\lambda j \equiv \mu j/\mu 0$ is the relative marginal productivity of type j worker and $Sijt \equiv Lijt/Lit$ the share of type j workers over the total number of workers in firm i .

Since $\ln(1 + x) \approx x$, we can linearize [3] by:

$$\ln QLit = \ln \mu 0 + \ln Lit + \sum j > 0\ (\lambda j - 1)\ Sjt \quad [4]$$

And the production function becomes:

$$\ln Yit = \ln A + \alpha\ [\ln \mu 0 + \ln Lit + \sum j > 0\ (\lambda j - 1)\ Sijt] + ß \ln Kit \quad [5]$$

Or, equivalently, if j = 0,1,….N with j = 0 being the reference group (e.g. prime-age male workers)

$$yit = B + \eta 1\ Si1t + \ldots\ \eta N\ SiNt + \alpha lit + ß\ kit \qquad [6]$$

where:

$B = \ln A + \alpha \ln \mu 0$;

$\eta j = \alpha(\lambda j - 1)$, $\lambda j = \mu j/\mu 0j = 1 \ldots N$

$yit = \ln Yit$; $lit = \ln Lit$; $kit = \ln Kit$

Finally, if we focus on the (log of) labour productivity and assume constant returns to scale (α+ß=1) expression [6] becomes

$$yit - lit = TFPit + ß(kit - lit) \qquad [7]$$

where

$TFPit = B + \eta 1\ Si1t + \ldots\ \eta N\ SiNt$

$kit - lit$ = capital intensity

Note first that [6], [7] being loglinear in S, have coefficients can be directly interpreted as the percentage change in the firm's average labour productivity of a 1 unit (here 100 percentage points) change of the considered type of workers' share among the employees of the firm. Note also that, strictly speaking, to obtain a type j worker's relative marginal productivity, (i.e. λj), coefficients ηj should be divided by α, and 1 needs to be added to the result.

The key point is that the $\eta j Sijt$ terms appear as direct components of TFP, while the last term is capital intensity. And in dynamics terms, conditional on the different types of labour being not equally productive (i.e. estimated ηj being different that zero [one]), we have that a change of the overall mix of the labour force should directly impact TFP growth

Results

Firm-level estimation of marginal labour productivity: age, gender and educational attainment 3 age groups: < 35, 35-49[ref], 50+

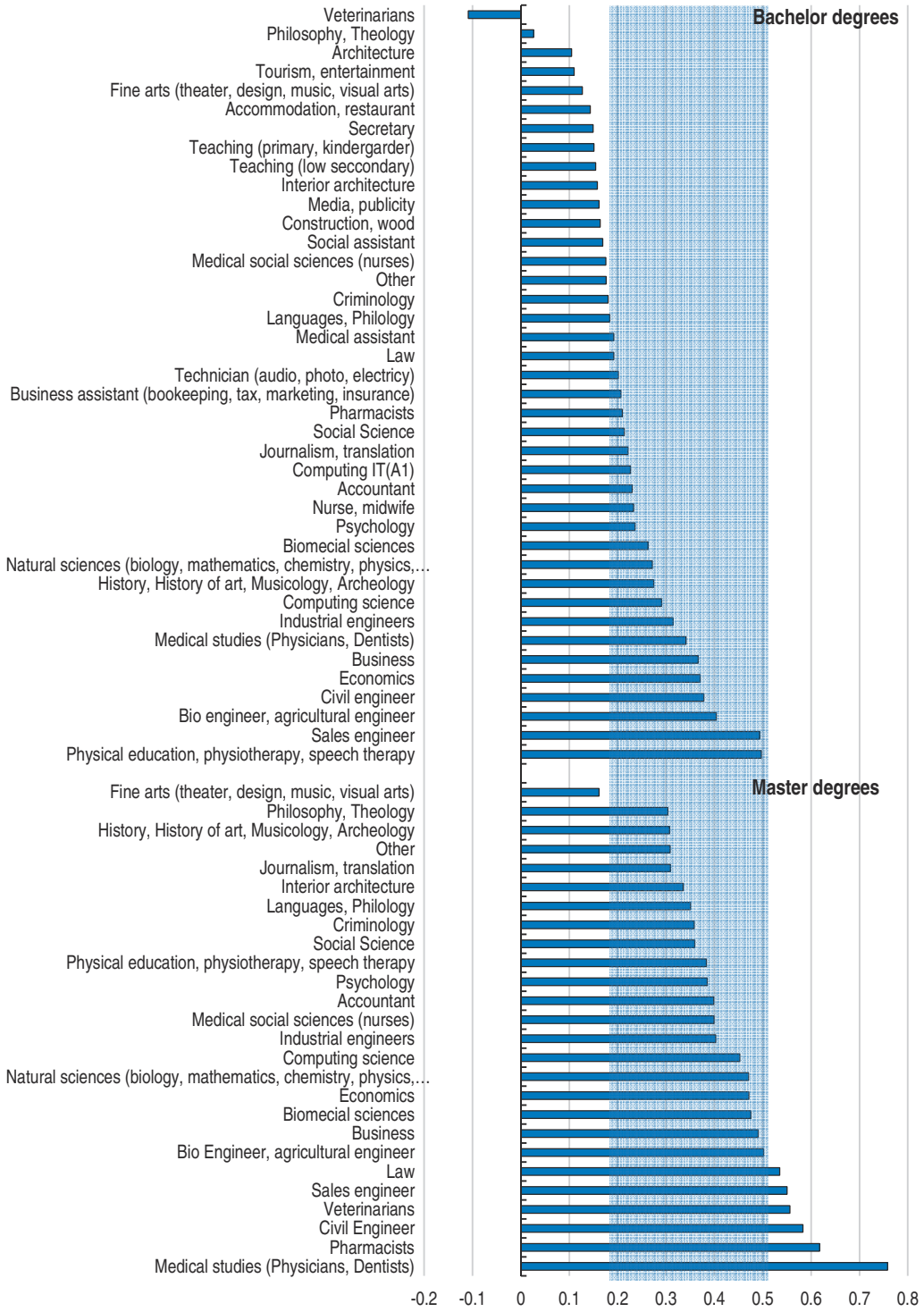
	Model 1	Model 2
$lnK_{it}(\beta)$	0.1987***	0.1896***
	(0.0025)	(0.0026)
$lnL_{it}(\alpha)$	0.8104***	0.8217***
	(0.0036)	(0.0038)
Share < 35 ($\eta_{<35}$)	-0.2538***	-0.1643***
	(0.0291)	(0.0282)
Share50+ (η_{50+})	-0.1184***	-0.1449***
	(0.0332)	(0.0325)
Share female (η_F)	-0.0370*	-0.0590**
	(0.0154)	(0.0185)
Share secondary (η_{Sec})	0.0413***	0.0372**
	(0.0125)	(0.0121)
Share bachelor (η_{Bac})	0.4720***	0.4133***
	(0.0189)	(0.0191)
Share master (η_{Mast})	0.7566***	0.7572***
	(0.0272)	(0.0283)
_cons (B)	3.3578***	4.3167***
	(0.0252)	(0.4096)
R^2	.87	.88
Nobs	18950	18950
	Implies marginal labour productivities λ (1 = ref category)	
Old (λ_{50+})	0.854	0.824
Female (λ_F)	0.954	0.928
Secondary (λ_{50+}) (η_{Sec})	1.051	1.045
Bachelor (λ_{50+}) (η_{Bac})	1.582	1.503
Master (λ_{50+}) (η_{Mast})	1.934	1.922
Controls	Year	Year, Nace 3-digit, date of incorporation, provinces

Standard errors in parentheses.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
All models are estimated using ordinary least squares, with standard errors robust to firm-level clustering.
Source: Bel-first 2002-2010; Crossroads bank for enterprises.

ANNEX 2.2

Wage premium

(ref = upper secondary degree) and type of tertiary education degree
(Bachelor/Master & field of study)



Note: Marginal effect (in percentage points) on gross earnings per hour of worker holding a tertiary education degree compared to only an upper secondary degree. Estimates control for differences in gender and labour market experience.
Source: Vacature 2008, 2010 and 2011.

StatLink http://dx.doi.org/10.1787/888933496998

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While overall education levels are high, some suffer from poor skills, especially those with a low socio-economic or immigrant background. The labour market performance of immigrants, especially women, and low-skilled and older workers is comparatively weak. Improving the capacity of the educational system to provide disadvantaged students with necessary skills would enhance inclusiveness. Further reducing social security contributions on low wages would facilitate the entry of low-skilled workers into the labour market, while the participation of older people could be boosted by more on-the-job training and increased use of flexitime.

Enhancing productivity and inclusiveness will depend on enhancing social and physical infrastructure investment. Transport infrastructure investment to relieve bottlenecks around big agglomerations would promote both productivity and environmental goals. Given high public debt, these investments could be financed through reductions in inefficient public spending, user fees or by tapping private sources of finance.

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