

Research & Innovation

in the 2016 European Semester Country Reports

This document, compiled by DG Research & Innovation, collects all the research and innovation (R&I) aspects covered by the 2016 European Semester Country Reports. In particular, for each Member State the document shows: (i) the full Executive Summary of the Report with boxes that highlight the R&I aspects; (ii) the R&I specific section (if any) of the Report; (ii) any additional references to R&I issues in other sections of the Report. Cyprus and Greece are not covered by this document, as the Country Reports for those countries have not been published yet.

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1. Austria

1.1. Executive Summary

This country report assesses Austria's economy in light of the European Commission's Annual Growth Survey published on 26 November 2015. The survey recommends three priorities for the EU's economic and social policy in 2016: re-launching investment, pursuing structural reforms to modernise Member States' economies, and responsible fiscal policies. At the same time, the Commission published the Alert Mechanism Report that initiated the fifth round of the macroeconomic imbalance procedure. The Alert Mechanism Report identified Austria as warranting an in-depth review.

After four years of slow economic growth, the Austrian economy is expected to expand. Austria's economy has been on a rather flat growth path since 2012, but the growth rate is projected to pick up from 0.7 % in 2015 to around 1½ % in 2016 and 2017. This acceleration is expected to be driven by private consumption and housing investment. Investment activity has been sluggish, but is expected to pick up due to improved confidence, favourable financing conditions and the need to renew equipment. The unemployment rate is expected to stay contained at around 6 %. Inflation should return to almost 2 % in 2017 as the dampening effect of energy prices fades. The tax reform and additional expenditure on refugees and migrants add pressure to the fiscal outlook. The headline deficit of 1.6 % in 2015 is nonetheless projected to stabilise at 1.7 % in 2016 and 2017. Public debt increased in 2014-2015 due to the impact of financial sector measures, but is projected to fall to 84 % of GDP in 2017.

Sluggish investment activity has been an important reason for slow economic growth in Austria in recent years. Subdued investment followed in the wake of overall weak export market prospects, including relatively pronounced market share losses of Austrian exporters. It coincided also with declining corporate profits and a continuous reduction of non-financial corporate debt along with muted corporate credit growth. At the same time, major banking groups have been addressing their challenges from low profitability, increasing non-performing loans in their foreign subsidiaries, and important foreign currency loan exposures. This went hand-in-hand with supervisory and regulatory action, both in Austria and at the European level, which set a necessary focus on building capital buffers and de-risking of bank balance sheets. Moreover, government bank support measures taken in the past to preserve financial stability and restructure distressed banks have continued to impact on public finances. Although the banking sector has remained resilient, some issues in relation to specific banks have impacted on investor sentiment, what has been reflected in bank capital costs. The 2015 Council recommendation to Austria already recognised these challenges and pointed to the need to address potential financial sector vulnerabilities.

Austria faces a number of other challenges in order to improve its growth and investment dynamics and preserve sound public finances in a way that supports growth by increasing the efficiency of public expenditure while reducing public debt. This entails to take steps to increase efficiency in the public sector and secure long-term sustainability of public finances. Particularly pensions, healthcare and long-term care constitute challenges for the future. Strengthening economic growth and investment to bring them back to pre-crisis levels constitutes an ongoing challenge for Austria for which many opportunities exist. Improving competition in the services sector and access to it would create new investment opportunities and strengthen business dynamics. Strengthening the activity rate of older workers and women would contribute to ensuring the long-term availability of adequately qualified labour.

Overall, Austria has made limited progress in addressing the 2015 country-specific recommendations. Measures to finance the 2016 tax reform may not yield the expected revenues, and this poses a risk to compliance with fiscal rules. No concrete proposals have been put forward for streamlining federal fiscal relations. Efforts to ensure the long-term sustainability of the pension system have been limited to reducing access to early retirement, with no action towards linking the retirement age to life expectancy or bringing forward the alignment of women's retirement age with that of men. There has been only limited progress towards the better use of the labour market potential of older workers, women and workers with migrant background. The same is the case as regards improving the educational situation of disadvantaged young people. In the services sector, no measures have been taken to increase competition.

Regarding progress in reaching the national targets under the Europe 2020 Strategy, Austria has already reached its targets on tertiary education attainment and on limiting early school leaving. Austria is on track as regards the renewable energy target while more effort is needed in terms of research and development expenditure, reduction of greenhouse gas emissions, improving energy efficiency and reducing poverty and social exclusion.

The main findings of the in-depth review contained in this country report, and the related policy challenges, are as follows:

- **Austria's banking sector is resilient, but faces some key challenges, in particular below average capitalisation, low profitability and reduced loan portfolio quality for the subsidiaries abroad. Supervisory actions have helped to further improve bank capitalisation and the effects of the banks' balance sheet adjustments on other sectors have been contained.** These achievements are important, but ongoing efforts are needed to ensure that the sector's lending capacity is preserved and that potential vulnerabilities are addressed, as recommended by the Council. Structurally low profitability in the domestic market, increased provisioning needs and more volatile earnings from abroad owing to economic and political risks in several markets remain important challenges to be addressed. Going forward, further improvements in profit generation and efficiency, de-risking abroad and building capital buffers, as planned, would bolster resilience and mitigate the tail risk of the supply of bank credit not keeping up with improved economic prospects.
- **Austrian banks' focus on Central, Eastern and South-eastern Europe contributes to profit generation, but entails also a risk of spillovers.** The large foreign exposure of the Austrian banking sector has declined in recent years, but the share of foreign currency lending is still sizeable in several cases. Despite the strategic merits of Austrian banks' engaging in dynamic economies, this does involve relatively pronounced credit, currency and political risks, as highlighted by developments in Russia and Ukraine. Supervisory guidance to increase risk-bearing capacity, improve funding sources abroad and closely monitor risks has been stepped up, thus mitigating the risk of bank-specific problems impacting on the Austrian economy.
- **The restructuring of Austria's banking sector has reached a point where it advances without the need for additional public support.** Crisis-related public support for the Austrian banking sector has been significant. On the one hand, these measures involved sizeable net costs for public finances. On the other hand, public intervention averted the potential negative consequences on financial stability. Looking ahead, a limited further impact

on public finances of past financial sector support measures could still occur, but this would mainly relate to legacy issues in specific institutions.

- **Austrian exporters' loss of market share in recent years does not appear to pose a serious risk to future growth.** Geographical specialisation, especially in EU economies, has meant that Austria has taken comparatively less advantage of the growth in overseas markets such as China, Brazil, India and the US. At the same time, the loss of market share in terms of volume is much more limited than in terms of value. Also, as Austria's traditional export markets are faring better some market shares have been regained. Austria has experienced some loss in price and non-price related competitiveness in recent years, which requires monitoring but in a longer time perspective appears to be limited.

Other key economic issues analysed in this report which point to particular challenges for Austria's economy are:

- **Organisational relations between levels of governments remain complex and inefficient.** The 2012 reform of Austria's Internal Stability Pact helped contain sub-national expenditure. However, efficiency gains could be reaped by better aligning revenue-raising and spending competencies and by reducing the fragmentation of organisational tasks. The complexity of fiscal relations and government accounts pose challenges, including to the effectiveness of monitoring.
- **The 2016 tax relief on labour income is significant, but further potential exists.** Greater attention could be paid to reducing the tax burden on lower income earners, which would further strengthen work-incentives and consumption for these groups. This could be financed by shifting the tax burden to more growth-friendly sources of taxation, increasing recurrent property taxation on housing and applying higher environmental taxes, which would also help to achieve environmental targets.
- **Austria has one of the lowest activity rates for older people in the EU. Measures were taken to restrict access to early retirement and invalidity allowances for people under 50.** The government also committed itself to employment targets for older workers and intensified its active labour market policy for this group. Further measures would benefit the sustainability of the pension system. A debt sustainability analysis conducted by the Commission assessed Austria as facing medium fiscal sustainability risks, due to the still relatively high stock of debt at the end of the projection (2026).
- **Women are still disadvantaged in the labour market. The gender pay gap is well above the EU average and this has not changed substantially in the last decade.** Many Austrian women working part-time report the need to provide care to children or ailing relatives as the main reason. The current schedule of aligning women's statutory retirement age with that of men implies that in 2020, despite high life expectancy, Austria will have the lowest statutory retirement age for women in the EU.
- **The unprecedented inflow and transit of refugees and migrants will demand efforts from authorities and society to enable integration and social inclusion.** Language training is a necessity for integration and to help children participate in the education system. The current inflow adds to an earlier challenge of integrating people with a migrant background.

Disadvantaged young people, often with a migrant background, still tend to have poorer school results and a lower level of education.

- **Rigidities in the service markets and liberal professions are hampering competition and ultimately investment. Improving the business environment in the services sector is an area for further action, and would also benefit other parts of the economy.** A high administrative burden and restrictively regulated market access weigh on the starting of new businesses. Austria identified the potential for improvement in the services sector, but is yet to take action.

- **Regulatory barriers, the administrative burden and limited options to finance are still major obstacles to investment dynamics.** Low interest rates and low oil prices are providing a temporarily supportive investment climate. However, structural barriers are still restraining investment. Regulatory barriers, such as restrictive licensing and permitting systems or barriers to market access for service providers, discourage new investments. More diversified financing options especially for SMEs and start-ups would also provide better investment opportunities.

1.2. Research and Innovation

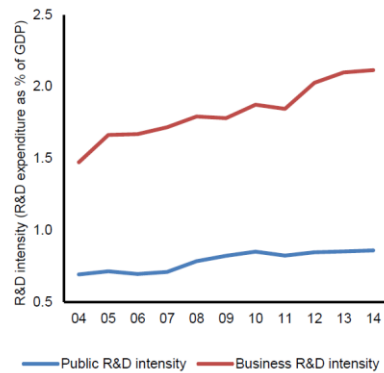
While Austria shows a high level of public and private R&D funding, there is scope for increasing its innovation performance. R&D spending as a percentage of GDP in Austria amounted to 2.99 % in 2014, the fourth highest level in the EU. Austria is also among the EU countries with the strongest increase in R&D intensity since 2000 (Graph 3.5.4), as a result of increases in both business and public R&D expenditure (though progress has decelerated in recent years, especially for public expenditure). Public spending on R&D cofinanced by private companies, an indicator for the level of public-private cooperation in R&D, accounted for 0.041 % of Austria's GDP in 2011, compared with an EU average of 0.051 %.

The growth of innovative firms in their start-up phase is below the EU average. According to Eurostat, fast growing firms represented only about 7.4 % of employment in the business economy in 2013, compared with an EU average of about 10.7 %. Although particularly important for innovative firms, the markets for small-scale equity finance and crowdfunding¹, are still underdeveloped by comparison with other Member States (see also section 2.4.).

Austria is addressing the need to boost the performance of its research and innovation system in a national research, technological development and innovation strategy adopted in 2011 ('Der Weg zum Innovation Leader'). In 2015, a research action plan was published and new guidelines for research, technology and innovation funding entered into force on 1 January 2015. In line with a shift from direct to indirect support such as tax incentives, the research premium was increased from 10 % to 12 % in January 2016. However, it is necessary to evaluate the effectiveness of these measures in comparison to direct support. In recent years, there have also been a growing number of initiatives focusing on improving knowledge transfer and cooperation between public research (including at universities) and business.

¹ According to the European Commission Crowdfunding study of September 2015 in 2014 there were 18 crowdfunding projects per million inhabitants in Austria, compared to 254 in the EU. The money raised amounted to 0.27 € per capita in Austria compared to 3.09 € in the EU.

Graph 3.5.4: Developments in business R&D intensity and public R&D intensity, 2000-2014



Notes: (1) Business R&D intensity: Business enterprise expenditure on R&D (BERD) as % of GDP.

(2) Public R&D intensity: Government intramural expenditure on R&D (GOVERD) plus higher education expenditure on R&D (HERD) as % of GDP.

Source: Directorate-General for Research and Innovation
Unit for the Analysis and Monitoring of National Research

In 2015, the Federal Ministry of Science, Research and Economy issued the ‘Land of Founders’ strategy with the ambitious goal of turning Austria into the most attractive location for start-ups in Europe. The new law on crowdfunding that was passed in 2015 has significantly liberalised the regulation of retail investment. In addition, the Austrian government provides direct support to boost venture capital. However, this has not yet translated into higher overall venture capital usage figures.

1.3. Additional references to R&I

[2.4. Trade Performance – p.42]

Austria’s innovation performance appears to be sound overall but there is scope for improvement. The World Economic Forum indicates that Austria’s innovative position is overall somewhat above the average for advanced economies. Furthermore, the European Commission’s *Innovation Union Scoreboard 2015*, which defines Austria as an ‘Innovation follower’, finds that there has been an upward trend in Austria’s innovation performance since 2007. However, the relative performance compared with its EU peers remained below pre-crises levels in 2014. In particular, a relatively poor performance in venture capital investments, patent revenues from abroad and exports of knowledge-intensive services stands out.

2. Belgium

2.1. Executive Summary

This country report assesses Belgium's economy in the light of the European Commission's Annual Growth Survey published on 26 November 2015. The survey recommends three priorities for the EU's economic and social policy in 2016: re-launching investment, pursuing structural reforms to modernise Member States' economies, and responsible fiscal policies. At the same time, the Commission published the Alert Mechanism Report that initiated the fifth annual round of the macroeconomic imbalance procedure. The Alert Mechanism Report identified Belgium as warranting a further in-depth review.

The Belgian economy has been recovering at a slow pace. After having settled at around 1.3 % in 2014 and 2015, real growth is forecast to rise to 1.7 % in 2017 as companies start reaping the benefits of improved competitiveness and employment growth provides broader support to household spending. At the same time, a less supportive external environment risks delaying the transmission of improving competitiveness into export, investment and job growth. Lower growth compared with pre-crisis performance is in line with lower estimates for potential growth as a result of weakened productivity growth. A fall in potential growth entails long-term risks, particularly in view of the challenges Belgium faces as regards the long-term sustainability of its public finances.

Belgian companies are deeply integrated in the global economy, trading actively in intermediate goods. Intermediates account for two thirds of domestically produced value added, among the highest in the EU, while the share of final products is among the lowest. Given the very open nature of the economy, losses in export market shares experienced since the turn of the century are particularly relevant. This trend was mainly driven by goods exports. Weakened external competitiveness was aggravated by exports being oriented mainly towards less dynamic markets. In addition, exported goods are concentrated in the lower half of the quality spectrum, with Belgium lagging behind its neighbours in terms of top quality products. The negative trend in market shares has been halted in recent years, though accumulated losses remain substantial. This stabilisation signals that efforts to improve competitiveness are starting to pay off.

Specialisation in market segments with a higher exposure to price competition is difficult to reconcile with the country's high labour costs. The latter reflect the economy's high productivity but also the fact that high overall taxes weigh especially heavily on labour. Labour costs, which have an important signal function for international companies, are relatively high in Belgium. Moreover, labour costs have risen rapidly in the past owing to certain features of the wage-setting system. Excessively high margins for real wage increases and the transmission of high inflation through the general practice of automatic cost-of-living adjustments drove these increases. The fact that underlying inflation is structurally higher than in neighbouring countries mainly reflects rises in service and retail prices. To halt the decline in competitiveness and its negative impact on export performance and employment, the Belgian authorities have intervened in the wage-setting process in recent years. Wage moderation measures have been imposed, including suspension of wage indexation schemes.

The Belgian labour market is characterised by a stagnating and comparatively low overall employment rate, with large differentials between regions and population categories. While the unemployment rate is expected to fall from 8.3 % in 2015 to 7.4 % in 2017, job creation has fallen short of past growth rates. At 67.3 %, the overall employment rate remains below the EU and euro area averages. As a result of rapid deindustrialisation, the share of manufacturing jobs has decreased,

while the share of employment in non-market services has risen steadily over the past 15 years. This change in the composition of employment partly accounts for the observed fall in productivity growth.

The transition towards a more knowledge-intensive and innovation-driven economy is advancing slowly. The strengths of Belgium's research and innovation system do not translate into general economic performance as effectively as they might. Business R&D is concentrated in a limited number of high-tech industries. Despite the low barriers to setting up a company, Belgium has a notably low start-up rate and performs poorly in terms of company dynamics. Certain service markets show unwarranted restrictions and rigidities, which helps explain for example the upward price pressures in the retail sector.

Public finances did not come out of the crisis unscathed. A prolonged debt reduction effort was aborted by the support provided to the financial sector and the accumulation of high deficits. The deficit reached a peak of more than 5 % of GDP in 2009 and the subsequent reduction of the deficit has been slow, with a deficit hovering around 3 % in recent years. Public debt is set to remain at around 107 % of GDP in 2016. In 2017, a lower deficit and higher nominal growth are projected to reduce the public debt.

Overall, Belgium has made some progress in addressing the 2015 country-specific recommendations. Over the past year, it has reformed its pension and old-age social security system to raise the effective retirement age. However, there has been limited progress towards an enforceable distribution of fiscal targets among the various levels of government. Some progress has been made in reforming the tax system, notably by shifting taxes from labour to other tax bases. Some progress has also been made on the overall functioning of the labour market. Incentives to work have been strengthened by measures to reduce the tax wedge — the difference between total labour costs and take-home pay — and changes in the unemployment benefit system. Nevertheless, specific population groups still face barriers to entering or re-entering the labour market. Finally, progress in making wage formation more responsive to the business cycle and changes in productivity has been limited.

Regarding the progress in reaching the national targets under the Europe 2020 Strategy, Belgium is performing well in R&D investment and reducing early school leaving, while more effort is needed as regards employment, greenhouse gas emissions, renewable energy, energy efficiency, tertiary education attainment and poverty.

The main findings of the in-depth review contained in this report, and the related policy challenges, are as follows:

- **Government measures to correct for the loss in competitiveness have been bearing fruit.** External cost competitiveness has been improving for several years, especially in the manufacturing sector, thanks to wage moderation efforts. The ongoing correction is reflected in favourable labour cost developments relative to peer countries, with wages advancing broadly in line with low productivity. This positive trend is expected to continue due to further cuts in employer social security contributions in the context of the tax shift. As a result, related macroeconomic risks should recede further.
- **Despite this positive trend, a number of deeply-rooted issues concerning wage formation and the build-up of inflationary pressure remain unaddressed.** These issues risk cancelling out the recent improvements in cost competitiveness. Ensuring a more formal link between wages and productivity would help to lock in recent gains and prevent recurrence of

past problems. Moreover, the comparatively high inflation risks triggering inflation-wage cycles, undermining the sustainability of automatic wage indexation. The inflation gap with the neighbouring countries is projected to widen again in 2016.

- **Low productivity growth is associated with a mediocre performance on a number of aspects that constrain the economy's long-term growth potential.** Despite its high-quality public research system, for example, Belgium has relatively few fast-growing firms in innovative sectors. Furthermore, the business climate is hampered by administrative and regulatory burdens which inhibit company expansion, while restrictions hold back market dynamics for business services. Moreover, there are shortcomings in the efficiency of the justice system, with a low penetration of information and communications technology. Together, these factors constitute significant barriers to private investment.
- **Substandard infrastructure and lasting bottlenecks undermine productivity growth and investment.** These factors also make the country less attractive to foreign investors and aggravate the congestion problem. Transport infrastructure and energy represent the country's most acute investment gaps. The absence of a long-term vision for the energy sector, may have created a climate unsupportive to investments in non-subsidised generation capacity.
- **Both non-financial corporations and the government have relatively high debts.** However, associated macroeconomic risks are found to be generally contained in the short term. First, risks are tempered by the private sector, with the economy's total financial assets exceeding total debt. Second, the indebtedness of non-financial corporations is explained by the presence of financial subsidiaries of international groups. Large financial flows within these groups distort the debt figures of non-financial corporations. Third, the resumption of primary surpluses, the relatively long average maturity of the debt stock, and low financing costs mitigate short-term sustainability risks.
- **Long-term debt reduction hinges on a further consolidation of public finances.** The existing budgetary coordination mechanisms do not appear sufficiently effective, given the decentralised government structure, the absence of hierarchy between different levels of government, and the fact that there is no commitment to predefined targets. Belgium has made progress in reforming its pension system. Still, safeguarding long-term sustainability depends on further adjustments and structural reforms in other areas to lift economic growth.

Other key economic issues analysed in this report which point to particular challenges for Belgium's economy are:

- **High labour costs hamper job creation while various entry and re-entry barriers for low-skilled young people, older people and people from migrant backgrounds result in underutilised labour potential.** Financial incentives, employment support and activation policies are not always fine-tuned to raise the employment rate of these people. The wage moderation policies enacted and the recent tax shift are likely to push up employment growth, provided they are not neutralised by nominal wage increases. Spikes in marginal tax rates upon entering or re-entering the labour market create inactivity and low wage traps for second income earners and specific household types such as singles and single parents, although measures to reduce the tax wedge are being phased in. Extending careers to further reduce

early labour market exit also remains a particular challenge. This highlights the importance of policies to promote active ageing and to support demand for older workers.

- **While the risk of poverty has decreased for older people during the crisis, it has increased for specific groups.** These include low-skilled people and very low-work-intensity households. People from migrant backgrounds are particularly exposed to poverty.
- **Educational inequality linked to socio-economic background is amongst the highest in the EU.** The disparity in learning outcomes already starts during early childhood education. The reforms currently being introduced are designed to tackle this, reduce early school leaving, and improve the quality and relevance of the vocational system. Completing these reforms could facilitate a smoother transition towards a knowledge-intensive and increasingly service-oriented economy and alleviate skills mismatches and persistent labour shortages in certain occupations.
- **The recently adopted tax shift will gradually reduce the tax wedge on labour. Reductions in personal income taxation and employers' social security contributions will help narrow the gap.** Nevertheless, the tax system remains complex, with tax bases eroded by specific exemptions, deductions and reduced rates. These imply revenue losses, economic distortions, and a heavy administrative burden. The tax shift also does not seem to be neutral from the budgetary point of view. There is still scope for improving the design of the tax system by further broadening tax bases, allowing both for lower statutory rates and fewer distortions. There is considerable potential for a green tax shift which stems, among others, from the favourable tax treatment of company cars and fuel cards, which contribute to pollution and congestion.
- **Belgium faces rising peak-hour traffic congestion around the main economic hubs.** Congestion has economic costs linked to delays and lost productivity, fuel consumption, and air pollution. Barring a change in policies, Belgium is expected to fall short of its greenhouse gas emission reduction target.

2.2. R&D and innovation

Investments in intangible assets such as R&D go to make up what is known as knowledge-based capital². Unlike physical capital investments, intangible investments benefit from positive knowledge spill-overs and economies of scale. Investments in knowledge-based capital drive innovation and facilitate production of sophisticated products and services which are hard to copy and which guarantee participation in global value chains. Moreover, investments in knowledge-based capital play an important role in spreading ideas from global frontier firms to domestic firms by encouraging take-up of new technologies.

² Three main categories of intangible assets are usually measured by: Computerised information (which includes software and databases), innovative property (covering R&D, design, mineral exploration, financial innovation and artistic originals) and economic competencies (including advertising, marketing research, own-account organisational capital and training). Corrado, C., Haskel J. and Jona-Lasino, C. (2014), Knowledge Spill-overs, ICT and Productivity Growth, IZA Discussion Paper n° 8274.

There is a consensus in Belgium about the critical importance of fostering the innovation-based competitiveness of Belgian businesses. This has been reflected by all political entities in the development of sophisticated and comprehensive policy mixes at national and regional levels and in significant budgetary efforts. At federal level, tax incentives for R&D are a major tool, which accounted in 2013 for two thirds of total public support to business R&D. However, public support policies remain fragmented, and lack of coordination between public authorities prevents trans-regional synergies from being fully exploited³.

Belgium appears to be broadly on track to meet the Europe 2020 R&D intensity target of 3 %. R&D expenditure as a percentage of GDP has been increasing continuously since 2005. It came to 2.5 % of GDP in 2014, which is above the EU average. Most R&D spending stems from the business sector (1.8 % of GDP in 2014) and is concentrated in a limited number of industries, particularly high-tech ones (mainly pharmaceuticals and electronics). This suggests that Belgian industries that are already R&D-intensive have more incentive to accumulate knowledge-based capital than other industries⁴.

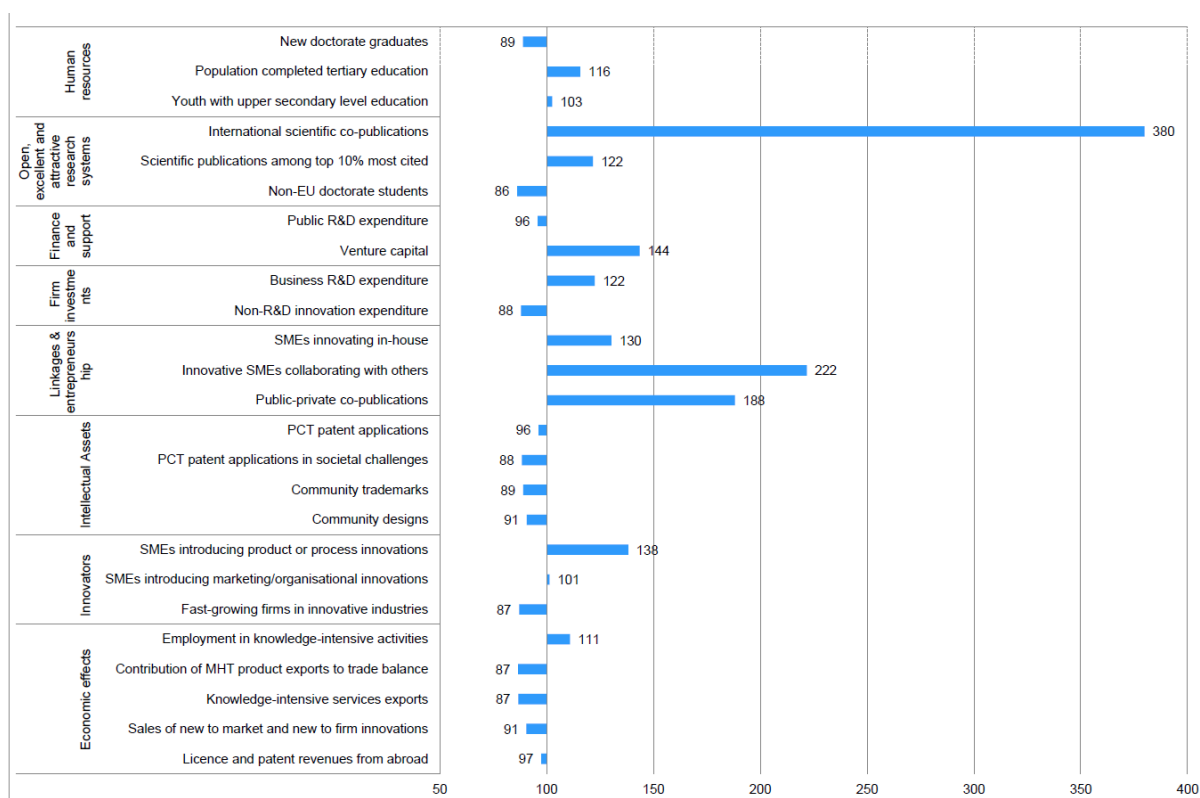
However, indicators for innovation output give a mixed picture. While Belgium's public research system is performing well (4th position in the EU for the percentage of highly cited publications and 6th for the number of international scientific co-publications in relation to the size of the population), it appears not to translate sufficiently into innovation output and economic performance (Graph 2.3.1). Belgium's shortcomings, both in terms of its performance within the EU and in terms of innovative development, lie in its limited capacity to generate intellectual property rights and in the indicators capturing the 'economic effects' of innovation activity. Of these, only 'employment in knowledge-intensive activities' is above the EU average⁵.

³ The main responsibility in Belgium for R&I policy and funding is with the regions and communities. The regions are the main source of innovation and business R&D support, while the communities are the main sources of scientific research support. The federal level does not function as an umbrella body above regional and community levels, but is an additional layer alongside the regions and communities. Taken together, there are five active levels of public governance for R&I policy (the Flemish government responsible for both community and regional policy).

⁴ Biatour, B. & Kegels, C. (2015), Labour productivity growth in Belgium Long-term trend decline and possible actions, Federal Planning Bureau Working Paper 06-15; Dumont, M. (2015), Evaluation of federal tax incentives for private R&D in Belgium: an update, Federal Planning Bureau Working Paper 05-15.

⁵ It must be noted that in this dimension, the below EU average performance in the share of medium to high technology exports and the share of knowledge-intensive services in services exports can be explained by the large volume of exports in some logistics, transport and trade-related services, which are linked to its geographical intermediation role and which are classified as non-knowledge-intensive.

Graph 2.3.1: **Innovation performance in Belgium relative to the EU (EU = 100)**



Source: European Commission (Innovation Union Scoreboard 2015)

A critical issue is the lack of fast-growing firms in innovative sectors. High-growth firms make a significant contribution to job creation. With a share of employment in high-growth enterprises of only 5.9 %, Belgium is well under the EU average of 9.1 % (Belgium ranks 23rd in the EU for this indicator). In addition, many fast-growing Belgian firms do not operate in innovative sectors, but in sectors such as construction and transport. On the sub-indicator of the innovation output indicator⁶ measuring the extent to which fast-growing enterprises operate in innovative sectors, Belgium therefore scores below the EU average (16.9 vs. 18.8).

As human capital is the main engine of knowledge-based capital, a specific issue to be watched is the percentage of new science and engineering graduates, which is particularly significant in innovative, knowledge-based economies. In Belgium, the rate of tertiary education graduates in science, technology, engineering and mathematics per thousand population aged 25-34 lies far below the EU average — and the figures for France and Germany — even though it has risen slightly since 2008. This result is particularly worrying because, with the increasing use of intangible assets in the economy and with demographic ageing, new graduates will play a critical role in maintaining the available stock of highly skilled workers.

At community and regional levels, various measures have been taken to tackle the low share of new science and engineering graduates. In Flanders joint efforts involving the policy domains of

⁶ The innovation output indicator measures the extent to which ideas stemming from innovative sectors are capable of reaching the market, providing better jobs and making Europe more competitive. The indicator is a composite of four sub-indicators and focusing on four policy axes: growth via technology (patents); jobs (knowledge intensive employment); long-term global competitiveness (trade in mid/high-tech commodities); and future business opportunities (jobs in innovative fast-growing firms).

science and innovation on the one hand, and education and training on the other, have been launched to increase the number of students in science, technology, engineering and mathematics (STEM subjects) and encourage them to opt for a career in exact sciences or technology (the STEM 2012-2020 Action Plan, see Section 3.1). The latest progress update shows some positive trends, notably with regard to the inflow and throughput rates in scientific and/or technology-oriented higher education. Progress is slow however among secondary school pupils and women⁷. Wallonia's Beware Fellowships support researcher mobility and promote awareness of science and technology among young people. The Marshall Plan 4.0 aims to align the supply of graduates in Wallonia better to business needs. One way it does this is to set up an inventory of 'professions of the future'. Policy attention has also increasingly turned towards attracting foreign researchers, in Flanders (Odysseus, Pegasus 2), Wallonia (Ulysse) and the Brussels Capital Region (Attract).

2.3. Additional references to R&I

[1. Scene Setter: Economic Situation and Outlook, p. 5]

Total factor productivity reflects an economy's efficiency in allocating the available labour and capital inputs and is considered to determine an advanced economy's long-term growth rate. Thus, low TFP gains show either that acquired productivity levels are already very high or that there are certain misallocations of resources within the economy. TFP is determined by the quality of inputs to human and physical capital, the general business climate, the allocative capacity of the economy through the labour and product markets, and innovation in its many aspects.

[2.1. Competitiveness: trends and performance, p.15]

This orientation towards below-average quality, lower value-added market segments makes Belgian export performance more dependent on cost factors, as these segments are subject to tough price competition. Developing the most specialised production stages along value chains helps to ease such pressure. Doing so depends on a broad range of conditions, linked to innovation and technology content, company creation and growth, product and process development, trade participation, and factors conducive to a supportive business environment. These are discussed in Section 2.3.

[2.3. Innovation and Business Environment, p.30-31 (Access to finance)]

While access to start-up phase funding seems adequate compared to other European countries, the financing of later growth phases is less successful. Overall, risk capital, including start-up capital, is still weakly developed in comparison with international leaders and relative to the available investment opportunities. This is especially striking in view of the vast financial assets of the Belgian private sector, which are predominantly channelled through the banking sector to a small set of mostly risk-averse saving tools. Mobilising some of these savings could help develop a deeper market for the financing of higher risk projects. It could, for instance, enable more use to be made within Belgium of basic research at Belgian research centres and universities.

⁷ STEM Monitor 2015

3. Bulgaria

3.1. Executive Summary

This report assesses Bulgaria's economy in the light of the European Commission's Annual Growth Survey published on 26 November 2015. The survey recommends three priorities for the EU's economic and social policy in 2016: re-launching investment, pursuing structural reforms to modernise Member States' economies, and responsible fiscal policies. At the same time, the European Commission published the Alert Mechanism Report that initiated the fifth annual round of the macroeconomic imbalance procedure. The Alert Mechanism Report identified Bulgaria as warranting a further in-depth review.

The Bulgarian economy has been gradually emerging from the crisis, but a broad-based recovery is not yet in sight. The necessary fiscal consolidation moderates domestic demand and still prevalent risks deter private investment despite healthy net export growth and positive labour market trends. Given the still weak potential growth, a decline in EU fund absorption temporarily lowers GDP growth to an estimated 1½ percent in 2016. Growth is expected to rebound to about 2% in 2017 as the implementation of EU projects gathers pace once more. The crisis has more than halved Bulgaria's rate of potential growth thus halting real income convergence with peer economies.

The resolution of outstanding labour market and education sector challenges would further underpin the recent improvement in potential growth. The gradual economic recovery has spurred job creation and decreased unemployment. Nonetheless, high long-term unemployment, low labour market participation and high skills mismatches point to considerable remaining challenges for labour market and education policies. Moreover, demographic issues, such as outward migration and shrinking working-age population, pose a risk to the long-term growth potential of the economy.

Despite its demonstrated resilience, the financial system still harbours risks. The banking sector withstood the first phase of the financial crisis without the need for additional capital support. Overall, the banking system has managed to accumulate considerable liquidity and capital buffers, benefitting also from large interest margins. Nevertheless, cases of imprudent business practices across the entire financial sector, coupled with inefficient supervision, have created an environment for imbalances to accumulate. The domestic banking crisis in June 2014 revealed vulnerabilities with potential implications for public finances and macro-financial stability. The remaining financial sector imbalances impede the efficiency of financial intermediation and capital allocation in the economy. The completion of the recently launched reviews of the banking, insurance and pension fund sectors will be a major step towards strengthening the financial system and positioning it to support the nascent recovery.

The gradual unwinding of imbalances has been insufficient to restore private investment. The external position is gradually improving but net external liabilities and gross external debt remain large, reflecting the very high external imbalances at the onset of the crisis. In addition, still high non-financial corporate debt, persistent negative inflation, an unsupportive business environment and serious concerns about corruption further weigh on investment and growth. Weaknesses in the insolvency framework are an obstacle to deleveraging and to new lending, further limiting the appetite for investment. These factors, coupled with the perceived risks relating to the financial sector keep the country risk premium and thus the cost of capital high in the economy. Bulgaria will require further sustained reform efforts to restore its growth potential in a way that contains macroeconomic imbalances.

Overall, Bulgaria has made some progress in addressing the 2015 country-specific recommendations. On the fiscal front, some measures have been taken to improve the cost effectiveness of health care, including the preparation of a National Health Map. Tangible beneficial effects of this reform are expected later this year. The authorities have embarked on a set of wide-ranging financial sector reforms, although challenges remain. They have amended banking sector legislation, initiated improvements in banking supervision and launched a comprehensive asset quality review and stress test of the entire banking sector. Work has also begun on strengthening non-banking financial sector supervision and reviewing the balance sheets of insurers and the quality of private pension fund assets. The legislative changes necessary to strengthen the supervision of pension funds have been initiated. The transposition of Solvency II regulation in the insurance sector was completed in late 2015 and thus will only be assessed by the European Commission this year. Labour market reforms have also progressed but an integrated approach for social groups that are marginalised in the labour market has yet to be developed. Moreover, a transparent mechanism for setting the minimum wage and minimum social security contributions still remains to be developed. The Pre-school and School Education Act was adopted by the Parliament in September 2015, introducing reforms in this area. However, the non-legislative barriers to increasing the participation of disadvantaged children, in particular Roma, in pre-school and primary education are not yet addressed in a consistent manner. Improving the efficiency of insolvency procedures remains a challenge hindering banking sector reforms and dampening private investment. While legislative proposals are advancing, further steps are needed to improve the efficiency of courts in this area.

Regarding the progress in reaching the national targets under the Europe 2020 Strategy, Bulgaria appears already to be well ahead of its targets in regard to reducing greenhouse gas emissions and increasing the share of renewable energy, and progressing well in regard to energy efficiency. More efforts will be needed to reach the targets on the employment rate, early school leaving, tertiary education, poverty, and R&D.

The main findings of the in-depth review contained in this report and the related policy challenges are as follows:

- **The performance of the financial sector as a whole has stabilised, but risks remain.** Banking sector liquidity and profitability has improved, but a more robust assessment of the resilience of the sector can only be made based on the results of the upcoming asset quality review and stress test, which are expected towards late summer. Vulnerabilities in the non-banking sector have been identified by the authorities but have yet to be addressed.
- **Risks stemming from high corporate debt and barriers to deleveraging remain.** The persistent negative inflation makes deleveraging more difficult and puts additional pressure on the profitability of non-financial corporations. Moreover, debt accumulated in some sectors could be difficult to recover. Given the limited progress with reforms so far, the insolvency framework provides little scope to reduce a still high level of corporate indebtedness, without which new lending and corporate investment are expected to remain constrained.
- **The external position of the country as a whole has improved further but risks remain.** The improvement in the net external position has been mainly driven by a structural improvement in the current account and has led to a reduction in gross external debt, mitigating risks. However, the negative level of the net external position remains rather high and the increasing financing needs of the government create some new risks.

- **Remaining weaknesses in the labour market continue to hinder growth and limit the adjustment capacity of the economy.** The structural nature of long-term unemployment, a shrinking and ageing labour force, low labour market participation and skills mismatches hamper labour market adjustment, with particular impact on youth and long-term unemployed. Moreover, the persistently high share of undeclared work distorts the labour market and also reduces fiscal revenue. Despite progress with reforms of active labour market policies, further improvement in matching people with vacancies is hindered by poor prioritisation, targeting and sustainability of measures in this area. More broadly, outstanding challenges related to integration of Roma into the labour force, school-to-work transitions and unemployment benefits coverage hinder progress in this area.

Other key structural issues analysed in this report and pointing to particular challenges for Bulgaria are the following:

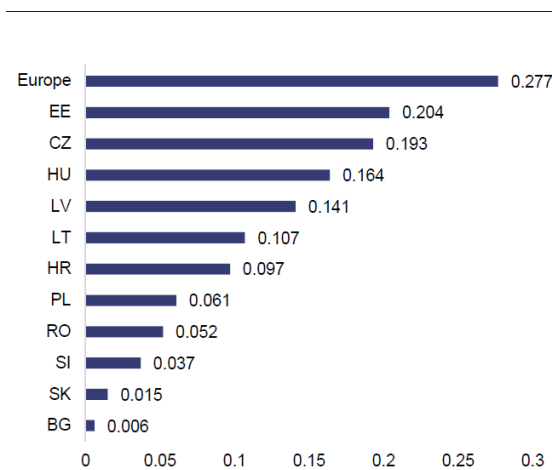
- **The pension system is estimated to be on a sustainable path but almost one-half of the elderly remain at-risk-of-poverty or social exclusion.** The various pension reforms have made old-age pensions more dependent on individual contribution records. This makes labour-market reforms to support longer working lives crucial for future pension adequacy. Moreover, the number of persons on invalidity pensions continues to grow adding to the future pool of potentially vulnerable.
 - **The healthcare system faces major challenges, including limited accessibility, low funding, and poor health outcomes.** Moreover, Bulgaria also faces the challenge of retaining qualified health professionals, who are enticed by more attractive alternative options. Long-term care services for the elderly and the disabled appear ill prepared for the rapid demographic change the country is currently undergoing.
 - **The education system has limited capacities to include vulnerable groups and equip learners with relevant skills.** Children from families with lower socio-economic status, particularly from Roma families, appear not to enjoy equal educational opportunities, including early childhood education. This has longer-term implications on their social inclusion and employability. Participation in vocational education remains high but quality and cooperation with business and social partners appear insufficient. Newly-adopted legislation and strategies in education and training have not yet been translated into concrete measures.
 - **The high share of people living at-risk-of-poverty or social exclusion remains a major economic and social challenge.** The high-risk groups include children, the Roma and people living in rural areas. The social protection system (including the general minimum income) does not seem to provide adequate levels of support and the activation of people on social benefits remains low. The fragmentation of the agencies that support these groups continue to hamper an effective co-ordinated response to this challenge.
- **Challenges persist regarding the business environment.** An unstable legal framework and low trust in the judicial system hinder private investment. Furthermore, corruption remains an important concern in Bulgaria and the response of the national authorities continues to be hampered by weak and fragmented institutions. The slow implementation of reforms in the areas of public administration and e-government prevents significant improvements in the

business environment. Furthermore, the outstanding weaknesses of the public procurement system limit the use of the European Structural and Investment Funds. Insufficient access to finance and lack of appropriate framework conditions for R&D investment hamper innovation and competitiveness. Delays with critical structural reforms in key sectors such as energy could further impede competitiveness.

3.2. Access to finance, SMEs, research and innovation

Access to finance remains a challenge for SMEs in Bulgaria. The combination of balance sheet repair, banking system reform, more efficient supervision and consolidation will give a much-needed boost to financial sector stability, contributing to better financing conditions in the longer term. Alternative financial instruments providing support to start-ups are developing, but still largely dependent on the public support (Graph 3.6.2). The first angel investment network was established in September 2015 and is expected to finance the first projects in 2016. In October 2015, the European Commission adopted an Operational Programme worth €102 million from the European Regional Development Fund to improve access to finance for small and medium-sized enterprises. Investments under this programme, in the form of bank guarantees, are expected to generate between €400 million and €600 million of fresh loans for SMEs, thanks to the leverage effect of private investment.

Graph 3.6.2: Private equity investments as a percentage of GDP, 2014



Source: European Venture Capital Association, (2015), Central and Eastern Europe Statistics 2014

The Points of Single Contact (PSC) in Bulgaria do not provide sufficient sector-specific information and do not present information in a user-friendly way. Due to the low availability of e-procedures, it is currently not possible for businesses to complete procedures online. E-signatures from other Member States are not always accepted and recognized by the competent authorities' websites. Technical issues limit the usability of the PSC portal.

The Bulgarian R&I system suffers from inefficient governance structures, fragmentation, weak long-term financial commitment, very deficient incentives for high quality research, absence of communication between public and private sector research, and a weak human resources base. It is also characterised by a lack of predictability and transparency, and is insufficiently relying on performance criteria to allocate its public R&I funding. Overall, this does not create the necessary framework conditions for stimulating investments in business R&D activities and for innovation to flourish. The Bulgarian economy is characterised by a low level of innovation and all indicators of

innovation output and commercialisation of innovations are well below the EU average⁸. Bulgaria also has low venture capital investments coupled with a recent decline in performance⁹. However, starting from the lowest level in the EU, the country's innovation performance seems to be improving, in particular regarding business R&D expenditures¹⁰.

Far reaching improvements of the current R&I system are required if performance is to be enhanced – from the level of research performers to that of funding bodies. This includes the need for independent, robust and coordinated management of national and European R&I funding programmes and instruments with enhanced leverage of business investments¹¹. Recent policy responses such as the newly established Council for Smart Growth and the government intention to create a professional agency for research and innovation are steps in the right direction and require swift and ambitious implementation.

⁸ According to the Innovation Union Scoreboard 2015, patent applications per billion GDP (in PPS €) in BG (0.50) is the sixth lowest in the EU (EU-28 average 3.78).

⁹ According to the Innovation Union Scoreboard 2015, venture capital investment in Bulgaria (0.002% of GDP) is the second lowest in the EU (EU-28 average 0.62% of GDP).

¹⁰ Innovation Union Scoreboard 2015

¹¹ The Bulgarian authorities requested in December 2014 an evaluation of their research and innovation (R&I) system using the Horizon 2020 Policy Support Facility (PSF). The PSF panel of high-level experts published in October 2015 a report with Policy Messages, supported by operational recommendations on how to improve the performance of Bulgarian R&I.

4. Croatia

4.1. Executive Summary

This country report assesses Croatia's economy in the light of the European Commission's Annual Growth Survey published on 26 November 2015. The survey recommends three priorities for the EU's economic and social policy in 2016: re-launching investment, pursuing structural reforms to modernise Member States' economies, and responsible fiscal policies. At the same time, the Commission published the Alert Mechanism Report that initiated the fifth annual round of the macroeconomic imbalance procedure. The Alert Mechanism Report identified Croatia as warranting a further in-depth review.

In 2015, Croatia finally came out of its six-years-long recession. The sustained growth in the pre-crisis years was based on unsustainable drivers. The credit-driven consumption and investment boom resulted in the accumulation of sizeable domestic and external liabilities – mostly foreign currency denominated, while public finances maintained a broadly pro-cyclical stance. Croatia therefore entered the crisis with little room for manoeuvre and adjustment mainly relied on internal devaluation. The benefits of increased competitiveness were hampered by Croatia's limited export base and the simultaneous economic slowdown in its main trading partners. Between 2008 and 2014, GDP shrunk by more than 12 % in real terms and unemployment surged from below 9 % to more than 17 %. The situation started to improve at the end of 2014, and in the course of 2015 real GDP growth surpassed expectations. Economic activity is currently expected to have expanded by 1.8 % in 2015. The external sector performed strongly, and Croatia recovered some of the lost market shares. Growth was however mainly driven by the rebound in consumption and — to some extent — investment.

The recovery is set to strengthen over the next couple of years, but risks remain. By 2017, GDP growth is forecast to attain 2.1 % and unemployment to contract to under 14 %, while the current account surplus should stabilise at around 3 % of GDP. The external sector is expected to continue to contribute to this positive performance, but the main driver of growth will be internal demand. Investments, in particular, are set to start growing more robustly, on the back of an increased absorption of EU structural and investment funds. Nevertheless, growth is projected to remain subdued for a catching up economy and it will take several years before output returns to pre-crisis levels. In a low inflation environment, high government and private debt, jointly representing more than 200 % of GDP in 2014, will continue to constrain public and private investment as well as household consumption. These growth projections do not factor in fiscal consolidation needs, and (on a no-policy-change basis) the government deficit is projected to remain above 3 % in both 2016 and 2017. The outlook may develop less positively in a context of increased volatility in the financial markets and a slowdown in global trade.

In the long-run, Croatia faces the challenge of lifting its low potential growth. Given the depth and length of the recession, Croatia is currently expected to grow above its potential over the next two years. Eventually, however, the economy is set to return to its long-term potential growth, currently estimated at below 1 %. This low rate weighs on the convergence process and slows down the unwinding of macroeconomic imbalances. Lifting potential growth requires sustained investments and deep structural reforms in labour and especially product markets in view of fostering full utilisation of the labour force, while ensuring robust productivity growth.

With the run-up to the parliamentary elections, the reform agenda has suffered from delays, resulting in limited progress in addressing the 2015 country-specific recommendations. During

the past year, Croatia has undertaken some reforms aimed at reducing the administrative burden on businesses and removing parafiscal charges. New and revised legislation in the field of personal and corporate insolvency is expected to speed up the deleveraging process and support the resolution of non-performing loans. Moreover, recent measures in support of youth employment are starting to show results. On the other hand, progress in several areas has been insufficient. Policy action aimed at encouraging some categories of workers to stay longer in employment has been put on hold. Limited progress was registered also in the area of fiscal governance, including the reform of the public administration and the adoption of a public debt management strategy. Some of the saving measures identified in the spending review are being implemented, notably in healthcare and the rationalisation of state agencies, but at a slow pace. In a few areas, preparatory work has not been followed by concrete measures: this includes the reform of wage-setting in the public sector and state-owned enterprises and the reform of the social protection system. The procedure for selecting board members of state-owned enterprises has been made more transparent. However, other measures in the field of the public corporate sector were put on hold in the run-up to the elections. Despite some improvements, lengthy court proceedings, sizeable backlogs and still limited use of information and communication technology still hamper the efficiency and quality of the justice system.

Under the Europe 2020 Strategy, Croatia is performing well relative to some of its national targets, while more effort is needed with others. Croatia is performing well on the employment rate, reducing greenhouse gas emissions, renewable energy except transport, early school leaving, tertiary education attainment, and reducing poverty and social exclusion, but more effort is needed in R&D investment, renewable energy in transport, and energy efficiency.

The main findings of the in-depth review contained in this country report, and the related policy challenges, are as follows:

- **The high and still rising public debt is a heavy burden for the economy and a source of vulnerability.** Government debt more than doubled during the 2008-2014 recession, from 38.9 % of GDP to 85.1 % of GDP. The increase was mainly driven by high deficits and costs induced by state-owned enterprises. A high debt ratio is a major burden for the economy, as the increasing cost of servicing it constrains the ability of fiscal policy to respond to cyclical downturns. Furthermore, the large stock of government debt increases the country's vulnerability to changes in markets' sentiment. While sustainability risks appear contained in the short run, in the medium term they remain high and are aggravated by weaknesses in fiscal governance including in target setting, strategic planning, the debt management framework and the limited autonomy of the Fiscal Policy Commission. Putting the public finances on a more sustainable path is a pre-condition for sustainable growth. The main policy challenge in this respect is to achieve a sustained improvement in the primary balance in order to stabilise the debt to GDP ratio, without harming growth.
- **Private sector debt is at a high level and is not declining and the high stock of non-performing loans remains a challenge for the financial sector.** So far, Croatia has experienced rather limited deleveraging and private debt has remained at high levels. This is especially true for the corporate sector, which in 2014 stood at around 80 % of GDP, while household debt represented some 40 % of GDP. High corporate debt is concentrated in sectors with low profitability and is reflected in the deterioration of banks' portfolio. Almost 31 % of total corporate outstanding loans in 2014 and 2015 were non-performing. Furthermore, the capacity of the banking sector to support the recovery may be constrained by the impact of the legislation adopted in September 2015 which allows for the conversion of household CHF

loans to EUR, as it implies losses for the banks. Finally, domestic borrowers remain exposed to currency risk, in turn implying high exposure of the financial sector to currency-induced credit risk. However, a high degree of euroisation in the economy, on both assets and liabilities, together with the tightly managed float of the domestic currency to EUR mitigates this risk.

- **The sizeable external debt is an additional constraint on the economy.** Net external liabilities amount to almost 80 % of GDP and are dominated by foreign-currency denominated debt, with only a small share of liabilities represented by equity. This implies a high repayment burden, irrespective of the business cycle, and exposure to currency risk. Moreover, almost one third of external debt is government debt, which implies sustainability risks. Since accession to the EU, Croatia has been recovering much of the losses in export market shares accumulated in the previous years. The manufacturing sector, however, still features limited integration in global supply chains, while the performance of the tourism sector appears to be excessively reliant on a low cost strategy. Moreover, the import content of exports, especially services, remains high, most likely on account of the high seasonality of tourism. The current account surplus appears nevertheless to be partially underpinned by structural improvements and external debt is projected to decrease in the medium-run.
- **The unemployment rate remains very high, especially for youth and the low skilled.** More responsive wage dynamics and flexible contracts contribute to labour market adjustment, but high unemployment and low activity rates weigh on the economy's potential. Long term unemployment rates are still about twice as high as the EU average. Labour utilisation remains low also due to a widespread use of early retirement, as financial incentives for longer working lives remain weak. The 2013 and 2014 labour market reforms have significantly reduced the gap with other EU economies in terms of employment protection legislation, with a positive impact on employment growth but also leading to a significant increase in the use of temporary contracts. Over recent years, wages have moderated and unit labour costs sharply decreased, but inefficient wage determination in the public sector still hampers government's control over the public wage bill and may hinder wage responsiveness.

Other key economic issues analysed in this report which point to particular challenges facing Croatia's economy are the following:

- **High corporate debt and a cumbersome business environment weigh on private investment, but public investment is set to grow as absorption of European structural and investment funds improves.** Both public and private investment experienced a sharp decline during the crisis. Investment started to recover in 2015, but bottlenecks to private investment persist mostly in the shape of administrative barriers to business activity, burdensome, complex and often changing regulation, and weaknesses in public administration (see below) Limited access to finance especially for small and medium enterprises, high interest rates and a legacy of excessive indebtedness further constrain firms' investment capacity. European structural and investment funds are set to contribute substantially to public investment as absorption capacity increases.
- **A weak and fragmented public administration weighs on service delivery and penalises business, while inefficiencies in state-owned enterprises slow down the adjustment process.** The high fragmentation of public administration translates into a multiplication of

functions and public bodies. The decentralisation of functions to sub-central levels of government in the 2000s went beyond their fiscal capacity, generating strong reliance on central government transfers. At the same time, disparities in the fiscal capacity of local units result in regional inequalities in the services provided. Moreover, Croatia administers a large portfolio of public enterprises which play an important role in the economy. Although the accountability and transparency in state-owned enterprises has improved, they markedly underperform private companies and continue to weigh on public finances. Despite some improvements, the business environment remains unfavourable to growth. Steps have been taken to reduce the high level of administrative burden and parafiscal charges, but they remain prominent. Furthermore, the regulatory environment for service providers and the regulated professions remains very restrictive. So far these restrictions have not been addressed; in some cases, even additional requirements are being imposed.

- **The education and social protection systems still suffer from structural weaknesses.** Although ambitious measures are being taken to improve the quality of education, shortcomings in the education system make it difficult for graduates to make the transition to the labour market and for adults to re-enter it. Enhancing the skills of adults and unemployed is not being prioritised, despite the direct link to productivity and employment. The active labour market policies targeting young people have started to show good results but activation of the long-term unemployed is still unsatisfactory. Inefficiencies in the design of the social protection system result in high levels of poverty and social exclusion, leaving the most vulnerable with inadequate protection. Both the current and future adequacy of pensions is low and creates high risks of poverty in old age, especially for those with short working lives.

4.2. Additional references to R&I

[3.1. Investments, pp. 66-67]

In 2014, Croatia had the fourth lowest R&D intensity level in the EU. At 0.8 % of GDP, it was well below the 2 % EU average and the 2020 target of 1.4 %. Public R&D spending has decreased from 0.44 % of GDP in 2008 to 0.33 % of GDP in 2014. This relative decrease is even more pronounced against the background of a shrinking GDP in that period. Private R&D intensity level has decreased somewhat since 2008, but bounced back to 0.34 % of GDP in 2014. Sub- critical scale, fragmentation, relative isolation and a mismatch between academic curricula and labour market needs continue to affect public research. Public-private cooperation remains at a relatively low level, as shown by the number of public-private co-publications or the share of public research financed by business. Croatia is classified as a moderate innovator and is performing below the EU average in most innovation dimensions¹². Research and innovation in Croatian enterprises is hindered by the structural orientation of the economy towards low and medium-tech sectors, the small size of knowledge intensive sectors, limited business R&D capacities, unfavourable incentive structures, lack of qualified personnel and limited internationalisation of companies pursuing innovation investments.

Policies in support of innovation are characterised by the lack of a coherent and integrated R&I policy framework and a lack of financing. There are weaknesses in the monitoring of research and innovation policies and the governance of public research and higher education institutions. The need to strengthen the private sector R&I capability is addressed by the Croatian Smart Specialisation Strategy (2015) and by the National Innovation Strategy (adopted December 2014).

¹² Cf. Innovation Union Scoreboard, 2015, European Commission.

5. Czech Republic

5.1. Executive Summary

This country report assesses the Czech Republic's economy in the light of the Commission's Annual Growth Survey published on 26 November 2015. The survey recommends three priorities for the EU's economic and social policy in 2016: re-launching investment, pursuing structural reforms to modernise Member States' economies, and responsible fiscal policies.

The Czech Republic has experienced a strong economic rebound over the last two years. In 2014, the economy emerged from a prolonged period of low growth in the aftermath of the global financial crisis, followed by two years of recession. The rebound has largely been driven by domestic demand. Real GDP growth is expected to have reached 4.5 % in 2015, according to the Commission 2016 winter forecast. This is partly due to strong growth in public investment, with the Czech authorities trying to catch up on their drawdown of EU funds from the 2007-2013 programming period. An expected fall in public investment should contribute to slower GDP growth in 2016 but a pickup is expected in 2017. Risks to this forecast are on the downside, however, with the highly-open Czech economy particularly vulnerable to lower than expected world or euro area demand. There has been a marked improvement in the government's finances, with the general government deficit expected to fall to 1.1 % in 2016 and government debt remaining well below 60 % of GDP.

The recovery has given rise to significant improvements in the labour market, while poverty and social exclusion remain among the lowest in the EU. Unemployment fell to 4.9 % in the third quarter of 2015, one of the lowest rates in the EU, and youth and long-term unemployment also fell. The employment rate reached 75.1 % in the third quarter of 2015, well above the EU average of 70.6 %, as more workers were drawn into the labour market. However, the population of working age is projected to fall in the coming years. Social transfers, excluding pensions, play an important role in reducing poverty and the pension system is relatively successful in preventing old-age poverty.

Higher GDP growth is leading to a resumption of the economic convergence process vis-à-vis the EU. The convergence of the Czech economy had stalled over the last decade, with relative GDP per capita remaining around 20 % below the average EU level. The pace of convergence in the coming years is expected to be slower than in the pre-crisis period, reflecting lower potential growth. Given the labour market constraints that are expected to emerge in the coming years, the Czech Republic faces a challenge in increasing its potential growth rate and accelerating the convergence process.

The Czech Republic is highly integrated into global value chains and evidence points to recent competitiveness gains. The real effective exchange rate has depreciated since 2008 and wage developments have been moderate. While the proportion of high-tech products in Czech exports is high, this is largely due to the presence of foreign-owned firms, particularly in the automotive sector. Evidence points to a weak integration of domestically-owned firms in global value chains.

Impediments in the research and innovation system act as a barrier against a transition towards a more diversified, innovation-driven economy. The research and innovation system generates weak outcomes. Links between research institutes and enterprises also remain weak, limiting the ability of the R&D system to respond to the needs of the economy. Inefficiencies in the business environment act as an impediment to innovation and private-sector investment, although the authorities have been taking measures to address this, such as by making it significantly easier to set up a business.

Overall, the Czech Republic has made some progress in addressing the 2015 country-specific recommendations. There are ongoing efforts to tackle VAT fraud and new measures are expected to be introduced in 2016. The Contract Register Act was adopted in 2015, representing an improvement in the transparency of public procurement. The long-delayed higher education reform was adopted by the Chamber of Deputies in January 2016. Elements of the government's anti-corruption plan have been adopted, although others remain at a preliminary stage. Some progress has also been made in improving the cost-effectiveness and governance of healthcare and in improving the availability of affordable childcare. However, limited progress has been made in other areas, such as ensuring adequate training for teachers or in increasing the participation of disadvantaged groups in mainstream education. No progress has been made in simplifying the tax system and there was limited progress in shifting taxation away from labour.

Regarding the progress in reaching the national targets under the Europe 2020 Strategy, the Czech Republic has either reached or is making good progress towards its targets on employment, R&D investment, tertiary education and reducing early school leaving, while more effort is needed on energy efficiency and on the reduction of its population at risk of poverty or social exclusion.

The main findings of the analysis in this report, and the related policy challenges, are as follows:

- **The rate of tax evasion is high and there are high costs associated with tax compliance.** Tackling the problem of tax evasion, particularly for VAT, is high on the policy agenda, but progress is slow. In contrast, no measures are planned to reduce the relatively high costs associated with paying taxes or to simplify the tax system. High employer social contributions contribute to an overall high level of taxation on labour and diversification into other areas, such as property taxes, is limited.
- **The fiscal framework is weak and the long-term sustainability of public finances remains a challenge.** The Czech Republic has one of the weakest fiscal frameworks in the EU. A long-delayed reform to address shortcomings is still awaiting ratification by parliament. The projected increase in public expenditure on healthcare and pensions poses a challenge to the long-term sustainability of public finances. Furthermore, recent proposals to amend provisions of the pension system would, if implemented, lead to a deterioration of public finances in the long term. In healthcare, indicators of inpatient and outpatient care utilisation point to unnecessary consumption of goods and services and inefficiencies in the allocation of resources in the hospital sector.
- **In the context of an ageing population and a contraction of the working age population, employment growth will increasingly depend on higher participation of under-represented groups. These include women with young children, low-skilled workers and members of the Roma community.** The labour market participation of women with young children is hampered by the limited use of flexible working-time arrangements and a persistent lack of affordable and quality childcare services, although some measures have been taken in recent years to address this shortage. Increasing the participation of vulnerable groups could contribute to further reductions in poverty and social exclusion.
- **While educational outcomes and skills levels are relatively strong, inequalities in the education system and the low attractiveness of the teaching profession represent a**

barrier to improving the quality of human capital. Inequalities also hamper labour market outcomes for disadvantaged groups, in particular members of the Roma community.

- **Cost competitiveness has improved in recent years but non-cost factors, such as inefficiencies in the business environment and weaknesses in public administration, weigh on the overall competitiveness of the Czech economy.** The Czech Republic currently has one of the lowest shares of e-government users in the EU. There is evidence of a high level of regulatory restrictiveness in certain professional services, which further weighs on the efficiency of the business environment. Many of the key elements of the 2015 anti-corruption plan have yet to be adopted.
- **Public procurement practices are not in line with EU best practice, partly due to a lack of sufficient training for procurement practitioners.** The public sector relies heavily on non-competitive procedures, with a limited ability to attract bidders and an excessive use of the 'lowest price' criterion for awarding contracts. There is also limited use of aggregated purchasing of goods across public sector institutions. While the adoption of the Contract Register Act improves the transparency of public procurement, further progress in this area would enhance the overall efficiency and transparency of public administration.
- **Reducing barriers to investment would contribute to closing the convergence gap at a faster pace.** Barriers include a high regulatory and administrative burden and bottlenecks in the implementation of transport infrastructure projects.
- **There has been a significant increase in R&D investment in recent years but outcomes remain weak and there are concerns about the sustainability of R&D infrastructure.** Reforms to the funding and evaluation systems in the R&D system have not progressed, undermining governance in this key sector.
- **The transport infrastructure and energy efficiency gaps vis-à-vis the EU remain wide.** The road network in particular underperforms compared with other EU countries, although higher investment in 2014 and 2015 is likely to have closed this gap somewhat. The energy and carbon intensity of the Czech economy remains high.

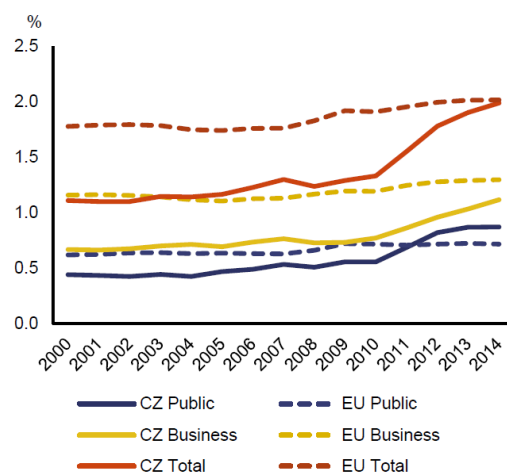
5.2. Research & Development

R&D intensity has significantly increased in recent years but there are concerns over the efficiency of public R&D spending. Total R&D intensity reached 2.0 % of GDP in 2014 (Graph 2.5.1), equal to the EU average. Based on the annual average growth rate between 2007 and 2014, the Commission projects total R&D intensity to reach 2.9 % of GDP in 2020¹³, only slightly below the EU target of 3.0 %. Public R&D intensity has increased strongly since 2010, with a significant contribution from EU funds, but has stagnated at 0.9 % in the last two years. The Europe 2020 target of increasing public R&D expenditure is set at 1 % of GDP for the Czech Republic and, despite the recent stagnation, this target is still achievable. At the same time, there are concerns over the sustainability of recent investments in R&D infrastructure. For instance, some infrastructure projects do not appear to be part of a well-designed strategy that ensures an effective R&D ecosystem. There

¹³ See "Research and Innovation performance in the EU: Innovation Union progress at country level 2014" http://ec.europa.eu/research/innovation-union/pdf/state-of-the-union/2014/iuc_progress_report_2014.pdf.

are risks that a number of these projects will not comply with the rules of sustainability, which could mean that they become ineligible for EU funding¹⁴. The sustainability of increasing R&D intensity will depend on the development and maintenance of a solid governance framework in the research and innovation system.

Graph 2.5.1: Trend in total, business and public R&D intensity (2000-2014)



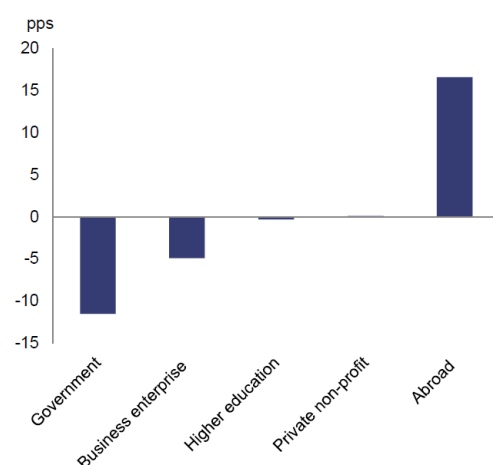
Source: Eurostat

The increase in R&D expenditure between 2010 and 2014 has largely been funded by foreign-owned firms and EU funds. Graph 2.5.2 shows the change in the proportion of funding of domestic R&D expenditure by source of funding. All domestic sources of funding have either decreased or maintained their share of funding of R&D expenditure over this period. However, the rate of funding sourced from abroad, which constitutes funding from foreign-owned firms and EU funds, has significantly increased (+16.6 pps.). Furthermore, the proportion of business enterprise expenditure on R&D by foreign-owned firms stood at 55% in 2013 and was concentrated in the automotive industry¹⁵. Enhancing the ability of domestically owned enterprises to benefit from technological spillovers from foreign owned companies remains a challenge for the national research and innovation system. As noted in Section 2.4, domestically-owned enterprises are currently not well integrated into global value chains.

¹⁴ Findings of the Supreme Audit office on this topic from January 2016, <http://www.nku.cz/cz/media/vybudovani-padesatky-vedeckych-center-stalo-36-miliard-korun--jen-v-prvnich-peti-letech-fungovani-prijdou-stat-na-dalsich-24-a-pul-miliardy-id8059/>.

¹⁵ According to Pavlínek, Ženka and Žižalová (2010), 80.8 % of the overall increase in R&D expenditures between 1995 and 2007 can be attributed to Škoda and four of its first-tier suppliers.

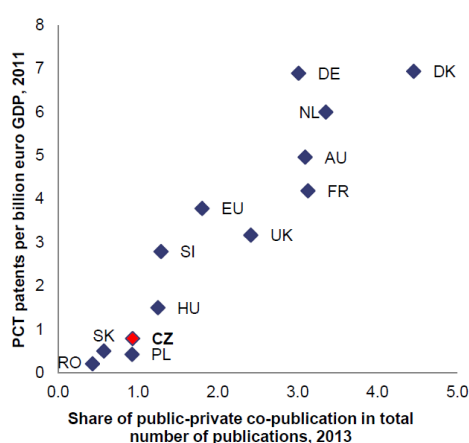
Graph 2.5.2: Gross domestic expenditure on R&D by source of funding — change in proportion (2010-2014)



Source: Eurostat

Despite the significant increase in investment in recent years, outcomes from the R&D system remain weak. While the Innovation Union Scoreboard 2015 ranks the Czech Republic as a moderate innovator, the assessment points to a number of weaknesses. These concern the capacity to generate intellectual property rights, the international competitiveness of the science base, and access to finance (venture capital in particular)¹⁶. The level of public-private co-publications remains low compared with the EU average, pointing to a low level of synergies between public and private R&D. A relatively low capacity for new product innovation, approximated by the number of patents filed¹⁷, also points to weak outcomes from the R&D system (Graph 2.5.3).

Graph 2.5.3: Proportion of public-private publications vs number of patents (selected EU Member States)



Source: European Commission, Innovation Scoreboard, 2015

The Czech research system is currently in the process of implementing long-delayed but substantial governance reforms, particularly with respect to evaluation and funding. The existing

¹⁶ In November 2015, the Czech Government approved the re-launch of a plan to establish the National Innovation Fund. This will be a seed fund to support start-ups and the commercialisation of R&D. It is expected to start operating in 2017.

¹⁷ This indicator measures the number of patent applications filed under the PCT, at international phase, designating the European Patent Office (EPO). Patent counts are based on the priority date and the inventor's country of origin.

funding mechanism is fragmented, with insufficient coordination between relevant bodies and an unclear division of responsibilities and priorities. A comprehensive evaluation framework, with links to funding, is being developed based on the IPN Metodika project¹⁸. As outlined in the National Strategy for R&D (2016-2020), adopted by the Governmental Council for R&D in November 2015, the envisaged system should bring the evaluation framework closer to international best practice, including factors such as the level of international cooperation and the relevance of research. The timeline for introducing the reformed evaluation and funding systems remains uncertain, however, and it will not occur before 2017. The European Structural and Investment Funds will finance a number of major projects to improve the overall environment for R&D, including the new system of evaluation and financing of research institutions and projects aimed at the strategic management of R&D institutions.

There have been limited efforts to increase links between academia and the business community. These links are weakened by an evaluation framework for public research institutions that does not take into account the level of cooperation with business and focuses only on research excellence. However, there are a number of initiatives to encourage such links, such as support from the European Structural and Investment Funds and from the competence centres programme, which are financed from domestic sources¹⁹. The Strategy for R&D Information Systems, adopted by the Government in January 2016, is a first step towards evaluating cooperation between academia and enterprises and to target funding²⁰. Such initiatives are expected to have a major impact on the research and innovation system in the Czech Republic.

5.3. Additional references to R&I

[Box 1.1: Investment challenges, p. 9]

Investment in R&D has increased substantially but outcomes from this sector remain weak (Section 2.5). The Czech research system is currently in the process of implementing long-delayed but substantial governance reforms. Links between research institutions and the private sector remain weak.

¹⁸ See: <http://metodika.reformy-msmt.cz/en/>

¹⁹ Running for the period 2012-2019, the Competence Centres Programme aims to support the establishment and operation of centres for research, development and innovation in fields that show potential for innovation and application.

²⁰ Strategy for R&D Information Systems is available at: <http://www.vyzkum.cz/FrontClanek.aspx?idsekce=766910>

6. Denmark

6.1. Executive Summary

This report assesses Denmark's economy in the light of the European Commission's Annual Growth Survey published on 26 November 2015. The survey recommends three priorities for the EU's economic and social policy in 2016: re-launching investment, pursuing structural reforms to modernise Member States' economies, and responsible fiscal policies.

The recovery of the Danish economy has been moderate, but is expected to pick up in 2016 and 2017. The economic recovery is currently being boosted by factors such as very low interest rates and low inflation. Labour market conditions have improved, real disposable income is growing and there is a high savings surplus in the private sector. These are all factors helping to underpin the continuing recovery. In eight of the nine latest quarters, GDP growth has been positive, and it is estimated to have reached 1.2% on an annual basis in 2015. According to the Commission 2016 winter forecast, GDP is projected to grow by 1.7% in 2016 and 1.9% in 2017. The economic recovery is expected to be driven by both domestic demand and exports.

Private consumption became an important driver of GDP growth in 2015. The growth in private consumption has been supported by rising real disposable incomes, due to the increase in employment, wage growth and low inflation. Growth in private consumption is expected to continue over the next two years, with estimated annual growth rates of close to 2.0% in 2016-2017. After reaching a historic high level last spring, consumer confidence has declined somewhat in the second half of 2015. However, the current level is still high by historical standards and consistent with continued growth in private consumption.

The investment level in Denmark remains low, but is expected to increase going forward. The overall investment level has been low after a sharp drop in private investments in Denmark during the economic crisis. This partly reflects low residential investment following the burst of the housing bubble and idle capacity in the corporate sector. Private investment stood at 14.8% of GDP in 2014, compared with a 2007 peak of 20.6% of GDP. Public investment, on the other hand, reached a historically high level in 2014 (3.9% of GDP). Over the forecast horizon, private investment is expected to pick up as the overall recovery becomes more firmly established and capacity utilisation improves. However, the public investment is expected to normalise.

Labour market conditions have improved over the last two years. Employment has been growing since mid-2013 and unemployment has remained relatively low during the crisis. Over the next years, the unemployment rate is expected to decline further as the economic recovery strengthens. Danish authorities have adopted a series of substantial labour market reforms over the last years that particularly aim at increasing work incentives and improving the efficiency of the active labour market policies. These would contribute to achieving the Europe 2020 employment target, and to the sustainability of the Danish welfare model.

Over the last three years the recovery of the housing market has gathered steam in certain segments of the market, but has slowed down somewhat in the second half of 2015. The strongest price increase was registered in the large cities, and especially in the capital region. However, on average, Danish house prices are still significantly lower than their peak in 2006. Property sales have picked up significantly since early 2013, and in the capital region sales of owner-occupied flats are currently close to the peak seen in 2005. This trend can be explained by low interest rates for

mortgages and improved labour market conditions, with an increase in both employment and real wages. Residential investments have, however, not yet picked up.

Overall, Denmark has made limited progress in addressing the 2015 country-specific recommendations. Limited progress was made with regard to easing restrictions on retail establishment and on removing remaining barriers posed by authorisation and certification schemes in the construction sector.

Regarding the progress in reaching the national targets under the Europe 2020 Strategy, Denmark has either reached or is making good progress towards its targets on employment, R&D, greenhouse gas emissions, renewable energy, early school leaving, tertiary education and energy efficiency. It, however, may face challenges in achieving its target on the reduction of its population at risk of poverty or social exclusion.

The main findings of the analysis in this report, and the related policy challenges, are as follows:

- **The domestic services sector faces barriers to entry and a regulatory burden which in turn affect productivity growth.** Strict rules and legislation that restrict competition prevail, including in areas such as authorisations and certifications in the construction sector and in retail. Initiatives launched in the 2014 strategy ‘Towards a stronger construction sector in Denmark’ could improve the situation in the construction sector. As for the retail sector, in its new Growth and Development Strategy proposed in November 2015, currently under negotiation, the government proposed to liberalise the planning framework. If adopted, the announced measures would go some way to addressing the problems.
- **The labour market in Denmark is flexible, employment rates are high and unemployment is low; however, certain groups remain on the margins.** This particularly applies to migrants from outside the EU, workers over 60 years, young people and people with disabilities. The 2014 reform of active labour market policies provided better and more individualised support for the unemployed. From 2016 the levels of reimbursement for active labour market measures (paid to municipalities) have been conditioned more on their efficacy. The 2015 reform of the unemployment benefit system is expected to improve the work incentives, in particular regarding short-term jobs. Other changes in 2015 included capping the social assistance, and reducing it for those who recently resided outside Denmark.
- **Labour market inclusion of people with migrant background is a challenge.** Despite their comparatively high employment, the activity and unemployment rates of people born outside the EU are much worse than of the rest of the population. Many of the non-EU born immigrants with a tertiary education are over-qualified for their job. The school performance of migrant children, including basic skills, is visibly lower than of the children of Danish parents. Moreover, with almost half a million people living in very low work intensity households, the Danish 2020 target for social inclusion is far from being reached.
- **Improving the quality and attractiveness of vocational education and training remains a key challenge.** The vocational education and training reform implemented from mid-2015 sets ambitious targets. Early reports are positive and indicate that drop-out rates have decreased. However, strengthening the supply of apprenticeships remains a crucial issue.

- **The risks stemming from high household indebtedness seem contained and the financial sector is solid.** High household debt is a structural feature of the Danish economy and is related to the specific mortgage system. Households in Denmark appear to be resilient to market shocks, i.e. their debt is backed up by a strong financial position, with assets exceeding gross debt. Furthermore, they were able to withstand the house price adjustment since 2007. The Danish authorities and mortgage banks have taken adequate measures to ensure the stability of the financial sector. In particular for the mortgage sector, recent measures address the risks stemming from a prolonged period of low interest rates and falling house prices. Finally, over the last two years, households seem to have turned to less risky loans.

- **The transfer of results from universities' research to businesses' innovation could be strengthened.** The high public investment in universities' R&D could be better translated into productivity, employment and economic growth. There are significant barriers to the utilisation of university research in Denmark due to suboptimal cooperation between universities and the business sector, which weigh on the return on private investments in research and innovation. To address this challenge, a report published by the government in 2014 made recommendations on how to enhance university-business collaboration and utilisation of university research. Furthermore, in its Growth and Development Strategy, the new government mentions as a strategic objective the strengthening of the interactions between higher education institutions and businesses. However, no further steps have been taken with regard to these proposals.
- **Barriers to investment have been identified in the services sector and research.** The retail and construction sectors are facing barriers to entry. The planning law, in particular provisions regarding the establishment of significantly larger stores, may constitute a market entry barrier for certain, particularly foreign, retail business models. Building regulations and certification schemes in the construction sector dampen also investment and reduce competition on this market. Furthermore, better cooperation between universities and the business sector may increase productivity and lead to higher return on private investments in research and innovation

6.2. Additional references to R&I

[Box 1.1: Investment challenges, p. 9]

Collaboration between public research and businesses could be further improved. Even though Denmark invests heavily in R&D, the public spending could be better translated into economic growth, employment and productivity. According to the Productivity Commission's 2014 report on Education and Innovation, cooperation between universities and the business sector seems to increase productivity and lead to a higher return on private investments in research and innovation. Furthermore, the report pointed out that significant barriers to the utilisation of university research exist in Denmark, such as excessive complexity in the regulatory system that regulates cooperation between the universities and the business sector, and opposing interests concerning pricing of intellectual property rights. The government published a report in October 2014² which contains several measures to better translate the significant public investment in research into productivity growth. Furthermore, the new government's Growth and Development Strategy sets as a strategic

objective the strengthening of interactions between higher education and institutions and businesses (See section 2.5). No further steps have yet been taken with regards to implementing measures.

[2.5. External competitiveness and domestic investment needs and obstacles, pp. 35-36]

Denmark's high investment in R&D could be better translated into productivity, economic growth and employment growth. Denmark's total investment in R&D reached 3.08% of GDP in 2014, above the national target of 3% of GDP. Business expenditure on R&D has increased from 1.76% of GDP in 2007 to 1.98% of GDP in 2014. Public expenditure on R&D as a percentage of GDP has increased to 1.10% of GDP in 2014, which is the highest in the EU. However, Denmark's ranking for the latter indicator could deteriorate in the future, due to public R&D budget reductions initiated in 2016.

The Danish public research base produces high quality scientific outputs; however this does not translate into equivalent innovations. Denmark ranks first in the EU in terms of scientific publications in relation to the size of the population and citations per publication. It ranks second in terms of the percentage of highly cited publications²¹. However, Denmark ranks only sixth in the European innovation output indicator. According to a government's analysis published in 2014, commercialisation of research results from public research institutions lags behind countries such as the UK and Ireland. Public expenditure on R&D financed by business as a percentage of GDP is below the EU average. The share of innovative firms in Denmark is only just above to the EU average.

The Productivity Commission highlighted the challenge of better translating the significant public investment in research into productivity. Following on from this, a government report published in October 2014 made several recommendations. These include adjusting the criteria for allocating basic research funding, setting goals for knowledge exchange in the triennial university-government contracts, improving recognition and promotion of researchers engaging in knowledge exchange, more student involvement in knowledge transfer activities, and an increasing 'proof of concept' funding (33). The new government's Growth and Development Strategy mentions the strengthening interactions between higher education institutions and businesses as a strategic objective. However, there is as yet no indication as to the implementation of the above-mentioned recommendations.

Denmark's Innovation Fund established in 2014 aims to provide efficient and effective funding for R&D. The focus is on strategic and challenge-driven research, technological development and innovation to boost growth and employment in Denmark.

²¹ Scientific publications within the 10% most cited publications worldwide as percentage of all scientific publications of the country.

7. Estonia

7.1. Executive Summary

This country report assesses Estonia's economy in the light of the European Commission's Annual Growth Survey published on 26 November 2015. The survey recommends three priorities for the EU economic and social policy in 2016: re-launching investment, pursuing structural reforms to modernise Member States' economies, and responsible fiscal policies. At the same time, the Commission published the Alert Mechanism Report that launched the fifth annual round of the macroeconomic imbalance procedure. The Alert Mechanism Report identified Estonia as warranting an in-depth review.

In 2015, growth slowed down as Estonia's economy suffered from weak external demand and investment, while strong wage growth supported private consumption. From a rate of 1% in 2015, growth is projected to accelerate to more than 2 % in the coming years, as external demand and investment are expected to recover gradually. At the same time, household consumption is projected to slow down due to a less dynamic wage growth, mainly linked to wage moderation in the public sector. The fiscal position remains strong, with a budget surplus and a negligible government debt.

Positive developments in the Estonian labour market have to be seen against the backdrop of a shrinking working age population. The Estonian labour market is characterised by its flexibility, participation and employment rates above EU average, and low unemployment. At the same time, low birth rates are forecast to shrink the working age population over the next ten years. This is expected to reduce the unemployment rate.

Estonia is generally performing well on education and training, but closing the gender gap and strengthening human capital will remain challenges in the quest for higher productivity and a high-value added economy. Estonia has high rates of tertiary education attainment and performs well in international skills surveys. Also, participation in lifelong learning is above the EU average. However, some challenges remain, such as early school leaving, gender gaps in educational participation and performance. Labour and skills shortages are considered a barrier to higher investment in high technology sectors.

The Estonian economy is well integrated with its Nordic neighbours and the euro area. The close relationship is characterised by a large share of intra-industry trade flows to and from its immediate neighbours and through relatively large foreign direct investments and credit inflows.

Despite a solid performance of services, Estonia's industry remains dominated by traditional sectors, contributing less to economic growth. Until recently, Estonia has gained in market share as it moved upwards in the global value chain. However, in manufacturing, Estonia's exports structure seems to have shifted towards lower-value goods. The capital stock per worker remains relatively low. Moreover, capital investment remains mostly directed towards low value added sectors such as housing and other buildings. Finally, Estonia's innovation performance has further deteriorated below the European Union average. Overall, this highlights the particular importance for Estonia of strategic investment in research and development, especially at a time when the country's shale oil sector faces serious sustainability risks.

The competition in Estonia's energy market has improved but energy efficiency remains lower than in most other EU Member States. The energy intensity rate in Estonia remains broadly stable

against a downward trend in most of the other Member States. Significant investments have been made in public buildings, and investment support has been introduced to improve the energy efficiency of apartment houses. However, there are still many areas in which investment opportunities exist to improve the energy efficiency of local public buildings and residential and industrial buildings. At the same time, given the relatively high share of transport services in GDP, high-quality infrastructure and effective transport systems are vital for Estonia's competitiveness and economic growth.

Overall, Estonia has made some progress in addressing the 2015 country-specific recommendations. On fiscal policy, action was taken to improve tax collection. On labour market, social and education policy issues, some progress was made in alleviating the tax burden on low-income earners, in improving the availability of childcare and, via the Work Ability reform, in reducing the number of health-related exits from the labour market. Similarly, some progress was made in ensuring the provision of high-quality social services at local level and increasing the labour market relevance of vocational education and training, in particular by improving the availability of apprenticeships. Limited progress was made on action to reduce the gender pay gap. In research, development and innovation, some progress was made in focusing public support on coordinated implementation of a limited number of smart specialisation areas.

Regarding the progress in reaching the national targets under the Europe 2020 Strategy, Estonia is performing well in employment rate, tertiary education attainment, reducing greenhouse gas emissions and renewable energy while more effort is needed in reducing early school leaving, increasing R&D investment, improving energy efficiency and reducing the at risk of poverty.

The main findings of the in-depth review in this country report, and the related policy challenges, are as follows:

- **Unit labour costs have increased rapidly in recent years, driven by strong wage growth and slowing productivity growth.** Estonia benefits from a very flexible labour market, with a decentralised wage setting system and no major matching problems currently. So far, the dynamic wage developments seem to have had a limited impact on net trade. Despite a fall in exports, the nominal trade surplus increased in 2015, with services playing a balancing role. There were specific circumstances that could explain this: the worsening economic difficulties of some of Estonia's main trading partners and falling international oil prices, which made the country's shale oil sector less competitive. Nevertheless, below-average productivity growth and the very slow adaptation to competing in high value added sectors for goods represent a risk if wage growth were to continue at its current pace. Close monitoring of future developments will be necessary.
- **While house price increases have been strong they are still in line with income developments.** This reflects the strong link between the housing demand and wage growth in recent years. The rapid rise in house prices is not driven by excessive lending, and the construction sector does not appear to have overheated. Compared to the boom years before 2008, lending policies have become more cautious and banks have introduced more restrictive macro-prudential measures. Also, macro-prudential regulations set by the Bank of Estonia have been tightened. House price growth is expected to moderate as supply adjusts to recovering demand. Spillover risks to economic and financial sector stability from the real-estate sector appear low.

Other key economic issues which point to particular challenges facing Estonia's economy are the following:

- **Overall, the tax system is growth-friendly, but categories of taxation that are considered least detrimental to growth are used only to a limited extent.** Tax collection is overall efficient and recent measures to increase tax compliance have been successful. At the same time, the positive impact of recent measures to alleviate the tax burden for low-income earners is expected to fade out relatively soon in a context of still relatively rapid wage increases.
- **Addressing the shrinking working age population will remain a challenge, as it may result in a tight labour market over the years.** This challenge raises the importance of integrating certain groups of the population in the labour market: low-income earners, people with disabilities and mothers with young children. The tax wedge of low-income earners remains relatively high compared with other EU countries despite the measures taken by the government. Also, 10 % of the total working age population are currently classified as partially or fully incapable for work. In parallel, insufficient social services at local government level have a direct negative impact on activation measures. Furthermore, the negative impact of parenthood on women's employment in Estonia is high. Reforms in these areas are currently being initiated to address the challenges: incentives to work are being introduced, together with a new Work Ability system so as to increase activity rates. In parallel, accessibility to childcare services is being improved. The gender pay gap remains a matter for concern as well as drop outs in vocational education and training and the gender gap in education.
- **As the Work Ability reform progresses, matching problems and higher unemployment will need to be addressed.** The Work Ability reform will increase the overall labour supply next year. This will entail significant matching problems and higher unemployment and raise the importance of effective employment measures, together with quality and independence of assessments. For the successful implementation of the Work Ability reform, the role of local governments will be crucial in applying minimum quality standards for social services regulated by the Social Welfare Act and in ensuring the re-entry of incapacity-for-work pensioners into the labour market.
- **Reversing the gradual increase of the population living in poverty or in social exclusion and access to health care are important challenges.** While the long-term unemployment rate, the youth unemployment rate and the severe material deprivation rate have markedly improved, the at-risk-of-poverty rate has increased and is now several points above the EU average due to an increase in the relative poverty threshold, as median equalised disposable household income is increasing rapidly. Also, life expectancy and healthy life expectancy remain low, while Estonia has a problem with health care accessibility.
- **The implementation of the planned local government reform is important.** Many local municipalities are small and population density is uneven across the country, which means that access to local services is not guaranteed in all municipalities and therefore the provision of quality services at local level remains a challenge.
- **Higher investment in technological development is needed to strengthen productivity growth, foster higher value added exports of goods and raise potential output.** Only a

limited number of companies collaborate with research institutions, resulting in a low level of patent applications. Also, early stage financing for high-tech projects could be further expanded. Labour and skills shortages may constitute a barrier to higher investment in high technology sectors. Finally, despite recent legislative changes, the lengthy insolvency procedures remain an institutional barrier to investment.

- **Estonia still has substantial work to do on reducing resource intensity.** In particular, limited progress has been registered on the draft regulation for providing district heating systems networks, households and owners of buildings with incentives to reduce losses and invest in energy efficiency. Also, the effectiveness of Estonia's transport infrastructure and passenger rail system has been improved, but transport taxes are almost inexistent, which does not support energy efficiency in road transport. Finally, sufficient future funding does not seem to be ensured for infrastructure maintenance and upgrades and to continue improving logistical services to ensure intermodal connections.

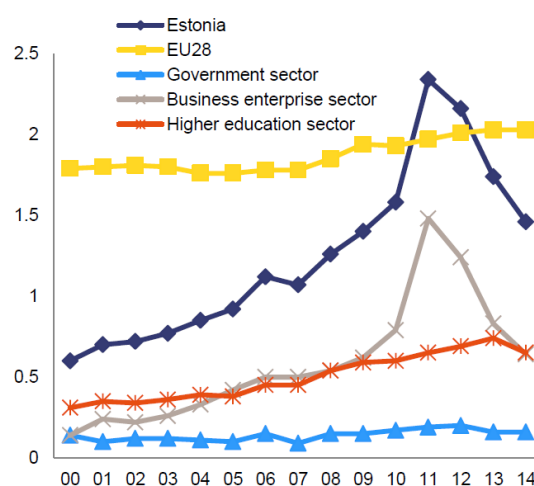
7.2. Technological Development

Estonia faces a number of R&D and innovation challenges, particularly in the sustainability of its funding streams, insufficient prioritisation and a lack of critical mass in support of the country's smart specialisation. This situation is compounded by the small number of companies investing in research and innovation, the low level of cooperation between science and business²² and the scarcity of human resources, together with low internationalisation. The 2014-2020 Operational Programme is set to address the challenges, but activity has only just or will shortly be started.

R&D and innovation

In 2014, the overall level of R&D investment in Estonia as a percentage of GDP (1.46 %) fell further below the EU average of 2 % (see Subsection 2.1) (see Graph 3.3.1).

Graph 3.3.1: Gross domestic expenditure on R&D (GERD)



Source: European Commission - Eurostat

²² As reflected by the still low level of privately funded public R&D (0.034 % of GDP in 2013) and the low level of public-private co-publications per million population (20 in 2012 compared with an average of 50 for the EU).

In addition, according to the Innovation Union Scoreboard 2015, Estonia moved down from the ‘innovation followers’ group to the ‘moderate innovators’ group. Its innovation performance increased at a steady rate until 2013, to decline in 2014. Estonia scores well below the EU average in most innovation indicators. These low levels are explained by the slowdown in public research, development and innovation funding, stemming mostly from the fact that Estonia is caught in between two EU programming periods (instruments from previous period have come to an end but new ones have not yet fully taken off). However, another major contributing factor is the clear underperformance of the business sector. Its past growth in investment (from 2009 to 2011) was due to some non-recurrent large-scale investments in one particular sector (oil shale).

Increasing R&D and innovation funding from the state and local budgets to 1 % of GDP in 2020 remains a crucial, yet ambitious goal. This is expected to ensure the longer-term sustainability of Structural Funds-related public investment.

Smart specialisation

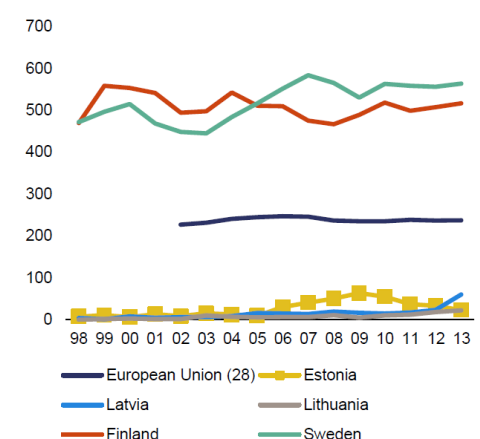
Estonia made some progress in 2015 by taking further measures to implement its research, development and innovation strategy ‘Knowledge-based Estonia’ and the Entrepreneurship Growth Strategy, which together comprise its framework for smart specialisation. However, using synergies in these strategies remain critical to boosting private research, development and innovation investment.

The smart specialisation areas could be narrowed down and their practicality increased for future international competitiveness. This could be done through a bottom-up process involving relevant stakeholders, in particular from the private sector. The Estonian Development Fund is tasked with surveillance and analysis of growth areas working with businesses, to find the narrower niches which show the greatest potential in selected areas. No outputs were reported in 2015, but the steering committee for cross-field management of smart specialisation, in which the fund also is represented, appears to have helped review the relevant draft conditions for support to implement the smart specialisation framework through the Operational Programme.

Cooperation between businesses and academia

Cooperation between businesses and academia is slowly improving but remains underdeveloped, resulting in a still low level of patent applications (see Graph 3.3.2). Also, the gap between the supply of knowledge from research-performing organisations and the demand from local industry is illustrated by the relatively low amount of funding universities receive from the business sector (less than 5 % in 2014). The Ministry of Education and Research took measures to support stronger science-business links, such as including contract research for the allocation of universities’ core funding and providing support for research infrastructure by fostering openness to businesses and industrial PhD schemes. The measures for developing technology transfer capacity in universities had positive results and units for intellectual property rights protection have become operational. However, in spite of the increase in the amount of intellectual property protected, marketing and commercialisation of intellectual property remain a challenge.

Graph 3.3.2: Patent applications to the European Patent Office (by priority year and per million people in the labour force)



Source: European Commission - Eurostat

The business sector is making progress in increasing its research, development and innovation investment, but these investments are concentrated in a limited number of companies, often in traditional low added-value sectors. Together with financial and non-financial measures to support companies with high growth potential, the government is amending the Public Procurement Law to foster innovation procurement. Enterprise Estonia supports the procurement of innovative solutions by providing financing for training and development of know-how and encouraging dialogue between contracting authorities and the private sector. There are some encouraging signs in manufacturing, where external expenditure on R&D (performed outside the business, e.g. in a scientific institution) increased in recent years.

Instruments to promote technological innovation have been put in place. This includes funding of six technology centres for seven years with the aim of making them sustainable without separate state support; it also includes an innovation voucher system enabling SMEs to cooperate with universities and competence centres, which is gaining popularity. The innovation voucher and the development voucher schemes are also intended to strengthen intellectual property protection. At the same time, the first calls under the Applied Research Programme are ready to be launched, with an injection of EUR 26.6 million (0.1 % of GDP) to support applied research between business and academia and increase private investment in research, development and innovation. The innovation voucher scheme will continue to be used as a support tool.

In addition, the launch of a high-growth business development programme was planned for January 2016. The programme aims to provide support for businesses with the potential to grow. It includes coaching, consultancy, mentoring, training, access to finance and export advice. Finally, the new calls for proposals under the 2014-2020 cluster development programme were open from June 2015.

Internationalisation of research

The ‘internationalisation of research’ programme was successful in the last programming period, with more than 30 top-level projects receiving support. A new programme will be launched in 2016. In addition, Estonia has a programme to help implement the research infrastructure roadmap (including the EU-level roadmap under the European strategy forum on research

infrastructure). Estonia's participation in EU-wide Horizon 2020 calls for proposals for R&D funding proved successful, particularly its SME participation.

7.3. Additional references to R&I

[2.1. *Competitiveness Developments*, pp.20, 24]

Technological development

At 70 % of the EU average in 2013, technological development (total factor productivity) was still the weakest component of GDP. While Latvia and Lithuania achieved the highest rates of technological development among Member States, over 1995-2014, Estonia's level was similar to that of the other transition Member States.

Beyond the progressive completion of the convergence process, the lower contribution of total factor productivity to growth points mainly to problems with capacity to produce innovation and efficiency gains. This is particularly the case in the manufacturing sector, where Estonia's productivity gap with the more advanced Member States seems to be the largest. Although public R&D investment remained relatively steady over time, business R&D investment continued its downward trend from 1.2 % of GDP in 2012 to 0.6 % in 2014. Further analysis is provided in section 3.3.

Outlook

The relatively slow productivity growth, and in particular the lack of investment in R&D, is a source of concern. This, together with the latest signs of a relative loss in quality in exports of manufactured products, highlights the need for swifter progress on productivity, in particular on investment in R&D, innovation and intellectual property products²³.

²³ See also: Staehr, K. (2015) 'Economic growth and convergence in the Baltic States: caught in a middle income trap?', Department of Finance and Economics, Tallinn University of Technology, Tallinn, July 2015.

8. Finland

8.1. Executive Summary

This country report assesses Finland's economy in the light of the Commission's 2016 Annual Growth Survey published on 26 November 2015. The survey recommends three priorities for the EU's economic and social policy in 2016: re-launching investment, pursuing structural reforms to modernise the economies and responsible fiscal policies. At the same time, the Commission published the Alert Mechanism Report that initiated the fifth annual round of the macroeconomic imbalance procedure. The Alert Mechanism Report identified Finland as warranting a further in-depth review.

Finland's real GDP still remains below the level achieved before the start of the crisis. After a sharp drop in 2009, the economy recovered in 2010 and 2011 but failed to make up for the losses in exports and investment. However, Finland's financial system was stable and the country was considered being a safe haven when the sovereign debt crisis started. Finland fell back into recession in 2012 which lasted until 2014. In 2015 real GDP is forecast to have bottomed out. A sluggish recovery is expected in 2016 and 2017, with unemployment staying above 9 % over the next years.

The low growth trajectory seems to be mainly driven by structural factors. Finland has been hit by a combination of adverse shocks. The electronics sector contracted significantly when Nokia's handset business failed to rise to the competitive challenge of smart phones and collapsed. In addition, the Finnish paper industry suffered from a secular decline in demand for paper products. From 2014 onwards, exports to Russia almost halved due to the Russian recession and the imposed sanction regime. Finally, a rapidly ageing workforce results in a decline of the working-age population by 0.5% every year which inevitably weighs on the growth potential in the long run.

As the electronics sector was highly productive, its decline resulted in a significant drop in overall productivity of the economy. Wages, however, did not adjust, but rather continued rising based on a long-term agreement struck between the social partners in 'good times'. Since productivity did not increase rapidly either, unit labour costs rose sharply (by 19.2 % over 2008-2013) and Finland lost competitiveness and export market shares. Overall, productivity increases in the tradable sector are now lower than before the crisis, while productivity growth in the non-tradable sector has turned negative.

Against this backdrop, a turnaround of the economy might take time and concerted efforts. The economy retains fundamental strengths to build on: the rule of law, low corruption, an excellent educational system and still high investments into research, development and innovation should provide the backbone for a sustainable recovery. However, some weaknesses cannot be easily changed: the domestic market is small and the country remote, making it difficult to attract foreign talent and direct investments. Competition in services where productivity is low appears insufficient. In parallel to the weak economic development, public finances have also deteriorated. The general government deficit has exceeded 3 % of GDP in 2014 and 2015, public debt increased above 60 % of GDP in 2015 and is forecast to continue growing in 2016 and 2017. The government programme foresees savings of around 2 % of GDP by 2019, mainly through spending cuts.

The need to restore cost-competitiveness is widely understood and negotiations to achieve this are ongoing. While it first seemed that improvement could be achieved by agreeing on low nominal wage growth, it is difficult to achieve this in the environment of low inflation. Additional measures are needed. 2015 was a year of change in Finnish industrial relations. The government wants to

considerably improve Finland's competitiveness. It is aiming for a 15 % reduction in unit labour costs in the medium term through continued wage-moderation, measures to improve productivity and a one-off reduction of labour costs. Negotiations have taken place involving the government and the social partners to improve competitiveness on the basis of lower unit labour costs and a revised approach to collective bargaining, towards a more decentralised form aimed at boosting employment and labour market flexibility.

Overall, Finland has made some progress in addressing the 2015 country-specific recommendations. Since the publication of the recommendations, Finland has undertaken reforms aimed at improving its cost competitiveness, liberalised retail opening hours and continued phasing out the deductibility of mortgage interest payments from personal income tax. The parliament has approved a pension reform, to be implemented from 2017, which links pension age with life expectancy. The government has announced a plan to reform the healthcare and social services in order to bring their expenditure growth under control, which is essential for the long-term sustainability of public finances. Following the centrally agreed wage deal in late 2013, the rise in wages slowed and the situation compared to peers has gradually improved, but the increase was slightly above the productivity increase. Some progress has been made in improving the labour market situation. Nevertheless, the current tax and benefits system provides only limited incentives for low-income earners to seek work as the net gain for them from taking up a job remains minimal. Elderly workers can still leave the labour market early, while the job prospects of the young, the elderly and the long-term unemployed have not improved. Apart from the liberalisation of opening hours, no steps have been taken to improve competition in the retail sector.

Regarding progress on reaching targets on the Europe 2020 Strategy, Finland is well on track to achieve and even exceed its environmental targets. While it may not reach its ambitious 4% R&D target, its R&D intensity is already the highest in Europe. Finland is also a very high performer in education, but recent trends have not consistently converged the indicators towards the targets set out in the Strategy. Reaching the employment target may require further efforts.

The main findings of the in-depth review contained in this country report and the related policy challenges are the following:

- **Overall, unit labour costs have recently grown at a slower pace, but the non-tradable sector seems to be a drag on aggregate cost-competitiveness.** Although the increase in unit labour costs has slowed, the economy has not yet overcome the cost competitiveness losses accumulated since 2007 because labour productivity has hardly increased. In particular, the non-tradable sector has not adjusted to the low growth environment. Continued wage moderation would help to restore cost competitiveness. In addition, increased competition in the non-tradable sector could help to lower the price of domestic intermediate inputs and thereby bolster the competitiveness of the tradable sector. This would restore profit margins in the tradable sector and reduce barriers to investments. At the same time, increased competition in the non-tradable sector would strengthen households' purchasing power, compensating for continued wage moderation.
- **The tradable sector is continuing to restructure and would benefit from developing new markets and products.** Helping companies to expand, become more international and foster innovation remains a policy challenge. Maintaining and further improving the positive business environment, public research and development and high quality education could encourage investment in tangible- and non-tangible assets alike.

- **Although private sector indebtedness remains high, the capacity to service the debt seems good and there is no evidence that the debt burden has become a drag on growth.** In 2014 private sector debt increased slightly as a proportion of GDP due to a decline in real GDP, low inflation and favourable lending conditions. Banks are well capitalised and the average quality of their assets is high. House prices are close to their long term averages.

Other key economic issues analysed in this report which point to particular challenges of Finland's economy are the following:

- **The sustainability of Finland's public finances is at high risk in the medium term.** The public debt-to-GDP ratio is above 60 % and is projected to grow further, driven up by the costs of an ageing population. Due to the decline in GDP, government spending and the ratio of collected taxes to GDP have risen above their long-term averages and are now among the highest in the EU.
 - **The main outline of healthcare and social services reform has been agreed but specific measures have not yet been drawn up.** The reform's main aims include improving access to healthcare and slowing cost increases to address the need for fiscal sustainability. More details need to be worked out before the reform can be implemented from 2019 as planned.
 - **The labour market situation has continued to worsen, contrary to developments in other EU countries.** The increase in unemployment suggests mismatches between labour supply and demand (for example, in terms of skills or between regions). A higher activity rate is required to counter the challenges posed by the ageing of the population. The complex benefit system, with its different types of allowances, can result in significant inactivity and low-wage traps. Effective policies to help people find work could require additional resources. In addition, helping refugees and migrants get into the labour market swiftly requires attention.
 - **Several social indicators have also started to worsen.** The rate of people at risk of poverty and the number of jobless households have increased, although the levels are still lower than in other Member States. The performance of the education system is high but deteriorating, and integrating foreign-born people into the education system has become more challenging.
 - **Fostering competition in the service sector — i.e. retail, transport and construction — would help to address some of the cost-competitiveness issues identified in the in-depth review.** Increased competition could lead to smaller price mark-ups, which would make the economy more competitive by lowering the cost of inputs to the tradable sector and also by creating the room for sustained wage moderation in the economy thanks to the increasing consumers' purchasing power.
- **The business environment still has some weak spots.** New companies are not as internationally oriented nor as innovative as their peers in other Member States. As a small, open economy, Finland's integration into global value chains is crucial and requires its companies to look outwards. In addition, better use could be made of research results to generate new products and services.

8.2. Additional references to R&I

[1. Scene Setter: Economic situation and outlook, p. 6]

At the same time, the tradable sector has to continue restructuring and identifying new markets and products. Finland's loss of export market share and productivity is largely the result of its initial product specialisation and the choice of countries targeted by its exporting industry. Taking greater advantage of the strong business environment by helping companies to grow, internationalise and foster innovation remains a policy challenge.

[3.5. Business Environment, pp. 51-52]

Finland's R&D intensity remains the highest in the EU, despite a continuous decline from 3.7 % of GDP in 2009 to 3.2 % in 2014. This is mainly due to the fall in business R&D intensity from 2.7 % of GDP in 2009 to 2.1 % in 2014, which reflects the decline of electronics (see section 2.1).

The share of public R&D expenditures remained fairly stable, at around 1 % of GDP. Although Finland has the third highest public R&D intensity in the EU, the indicators of scientific excellence (such as widely cited scientific publications²⁴) are close to the EU average. Moreover, a recent study by the Academy of Finland on scientific citation indicators shows that, compared to the situation in the early 2000s, Belgium, Germany, Ireland and Austria have overtaken Finland²⁵. This suggests that the efficiency of Finnish public research could be improved.

The results of research activity are not adequately transformed into new products and services. R&D expenditures in the higher education sector funded by businesses (reflecting cooperation between universities and businesses) decreased by 30 % in nominal terms between 2008 and 2014 and are now below the EU average. Improving the efficiency of the R&I system, and especially the capacity of universities to turn R&D into innovations, is therefore crucial for Finland.

The reform of research institutes and research funding launched by the government in 2013 is a first response. Research institutes were merged, by fields of research, into larger entities. VTT, an important actor in the Finnish R&D landscape receiving 65 % of its turnover from external revenues, changed its legal status from government entity to state-owned limited liability company on 1 January 2015. A Strategic Research Council has been established and currently funds challenge-oriented research. The funding model for universities has been recently revised to take better account of the quality of scientific production, among other things.

The Finnish Research and Innovation Council, chaired by the Prime Minister, advocated going further and faster in the reform of the R&I system. It made recommendations to improve the contribution of R&D activities to growth which included reforming the higher education system. In its Strategic Programme, adopted in May 2015, the government aims to strengthen cooperation between higher education institutions and companies, in order to bring more innovations to market. The focus is on the following reform axes:

- strengthening commercialisation of public research results;
- clarifying the responsibilities of higher education institutions and research institutes and increasing their cooperation; and

²⁴ Scientific publications within the 10% most cited publications worldwide as percentage of all scientific publications of the country.

²⁵ The State of Scientific Research in Finland, Academy of Finland, 2014.

- pooling knowledge and expertise in competitive centres of excellence.

The government has allocated funding to new actions to promote the commercialisation of public R&D. However, the government budget for 2016 significantly reduces the budget of Tekes, Finland's innovation agency. In particular, Tekes funding for the Strategic Centres for Science, Technology and Innovation (SHOK) programme, put in place in 2008 to support science-business cooperation in R&D²⁶, will be discontinued.

Overall, the strengths of Finland's business environment could be further developed and put to greater use in restoring growth and competitiveness. Additional policy measures could strengthen interest in creating new companies and further support their growth and internationalisation. Turning the results of public R&D into products and services also still appears to be a challenge.

²⁶ SHOKs implement long-term research programmes (5-10 years) based on collectively formulated research strategies. In 2014, Tekes funding for SHOKs was EUR 88m. In addition, the Academy of Finland funded basic research in SHOKs.

9. France

9.1. Executive Summary

This country report assesses France's economy in the light of the European Commission's Annual Growth Survey published on 26 November 2015. The survey recommends three priorities for the EU's economic and social policy in 2016: re-launching investment, pursuing structural reforms to modernise Member States' economies, and responsible fiscal policies. At the same time, the Commission published the Alert Mechanism Report that initiated the fifth annual round of the macroeconomic imbalance procedure. The Alert Mechanism Report identified France as warranting a further in-depth review.

In France, growth is expected to remain moderate, as investment is projected to pick up only gradually and net exports to remain a drag on growth. After three years of weak activity, GDP growth improved to 1.1 % in 2015, supported by favourable external factors. In particular, growth benefited from reduced oil prices, the euro's depreciation and policy measures to reduce the cost of labour and strengthen competitiveness. France's economy is expected to gradually further accelerate, driven by private consumption on the back of a dynamic households' purchasing power. However, France's growth rate remains below the euro-area average. In recent years, GDP growth has been held back by investment. The recovery in investment is expected to only take hold in 2017, as policy measures to reduce the cost of labour and strengthen competitiveness are expected to foster business confidence with a lag. Inflation has fallen to 0.1 % in 2015 and is expected to increase only moderately to 0.6 % in 2016. Moreover, the slowdown in emerging markets and the recent financial market turmoil might weigh on the economic outlook.

While France's current account balance has recently improved, its competitiveness remains a source of concern. The contribution of net exports to GDP has been negative in the past few years and is expected to remain so until 2017. External debt sustainability is less a concern for France. Weak competitiveness reflects both cost factors, in part due to accumulated real wage increases in a context of low productivity growth, and non-cost factors, in particular linked to past depressed profit margins and their effects on investment strategies.

Since the beginning of the crisis, France has reduced its deficit more slowly than the rest of the euro area which results in diverging debt developments. The general government deficit and debt, expected at 3.7 % and 96.2 % of GDP respectively in 2015, remain high. The public debt-to-GDP ratio continues increasing while it declines in the euro area. Moreover, the economic environment, characterised by a decline in potential growth and low inflation, complicates the reduction in public debt.

In the long term, growth is expected to remain weak, as French potential growth has slowed down since the 2008 financial crisis. While averaging 1.8 % from 2000 to 2008, French potential GDP growth is estimated at 1.0 % on average from 2009 to 2017. Labour and product market rigidities, slow resource reallocation and technology adoption limit total factor productivity growth. Productivity growth has also been hampered by the regulatory burden facing French firms and by size-related thresholds. The overall tax burden on the economy continues to increase and its composition is not growth-friendly. Potential growth also crucially depends on the labour force's skills and on the innovation capacity of the French economy, which is lower than that of some of its main competitors.

The unemployment rate, at 10.5 % in 2015, is not expected to decline in the short term. The high unemployment rate is an indirect result of France's imbalances. With the recovery underway still being gradual and a dynamic growth rate of the labour force, the measures to reduce the costs of labour are likely to have only a limited impact on employment up to 2017. Moreover, the structure of the labour market appears more and more segmented and educational inequalities are widening. Jobseekers have only limited access to training, the access of the low-qualified to apprenticeships is decreasing and the educational results of low achievers are dropping.

Overall, France has made some progress in addressing the 2015 country-specific recommendations. In the past year, an agreement among social partners has enhanced the long-term sustainability of complementary pension schemes and the fiscal framework for local authorities has been strengthened. The measures to reduce the cost of labour are ongoing as planned, although they may only have a one-off effect on the competitiveness of the French economy if not accompanied by a package of labour market measures aimed in particular at reforming the wage-setting process and containing minimum wage developments. Limited progress has been made in improving the tax system, alleviating size-related thresholds for firms, increasing incentives to hire on open-ended contracts, making the annual process of spending reviews linked to the budgetary procedure more effective and removing unjustified restrictions to the access to and exercise of regulated professions. The budgetary strategy has not been reinforced and the expenditure cuts planned until 2017 have not been fully specified yet. Finally, the adoption and implementation of the announced reform of the labour code remains key to facilitate the take-up of derogations from general legal provisions as well the planned reform of the unemployment benefit system to enhance its financial sustainability and to provide more incentives to reinsert unemployed workers back into the labour market.

Regarding the progress in reaching the national targets under the Europe 2020 Strategy, France is performing well in reducing greenhouse gas emissions, improving energy efficiency and decreasing early school leaving, while more effort is needed in increasing the employment rate, the R&D intensity, the use of renewable energy, the tertiary education and in reducing poverty.

The main findings of the in-depth review contained in this report, and the related policy challenges, are as follows:

- **France's potential GDP growth has declined since the onset of the crisis, despite having strong demographic dynamics.** Both capital accumulation and total factor productivity growth have declined significantly. The decline in productivity growth is contributing to a further deterioration in France's competitiveness and is exacerbating the challenges posed by the high public debt.
- **The recent improvement in French export performance is not a sign of structural improvement but mainly driven by the euro's depreciation.** Since the end of 2014, exports have accelerated sharply in France. However, this improvement is concentrated in a few key sectors, in particular transport equipment. The sum of the contributions from transport equipment and energy, whose improvement is mainly due to lower oil prices, is larger than the overall improvement of the French trade deficit since 2011.
- **The recent wage moderation, in a context of low inflation and high unemployment, remains insufficient to regain competitiveness given the slowdown in productivity growth.** Real wage growth was lower than productivity growth only in 2015. The minimum wage indexation mechanism is contributing to a delay in average wage adjustments. The

wage-setting process also contributes to the increase in wage pressures and the working time limits weigh on labour costs.

- **The improvement in profit margins observed since the end of 2014 is not projected to translate into a higher investment rate before 2017.** Profit margins have recently been supported by the depreciation of the euro, the decrease in the oil price and the measures to decrease the cost of labour. Despite this increase in profit margins, the investment growth rate declined in 2014 due to a lower growth of economic activity. Moreover, companies' expenditure remains targeted towards less productive investments. Specific challenges remain regarding private R&D activities and in the energy sector.
- **Barriers to private investment are moderate.** The high regulatory burden and high corporate tax rates are among the main obstacles to investment.
- **High and growing public debt coupled with deteriorated competitiveness and productivity growth could be a source of significant risks looking forward.** There are no immediate short-term risks, as interest rates are low and the management of public debt is sound. Nonetheless, there are significant consolidation needs in the coming years to bring down the deficit and the high public debt. In the long term, risks are more contained due to favourable demographic developments compared to the rest of the EU. However, under more adverse circumstances, such as a lower productivity growth than currently envisaged, fiscal risks would be increased. While the debt burden for the private sector is low and the profitability of companies has improved, the combination of high public and private debt is an additional risk factor.
- **The efficiency of public spending remains limited.** Public expenditure in France is one of the highest in the euro area and has decreased more slowly since 2010. Spending is high as is the level of services provided, e.g. for pensions and health care. Nonetheless, other Member States achieve the same or better outcomes with fewer resources.
- **The consolidation strategy is more focused on across-the-board than selective measures. France's consolidation strategy is expenditure-based.** However, the focus is more on across-the-board expenditure cuts and less on a selective strategy to reap efficiency gains, in particular on housing and local authorities spending.
- **Given its central position in the euro area, France is the source of potential spillovers to other Member States while external conditions affect its recovery.** Its modest recovery and structural weaknesses adversely impact the European recovery and growth potential. Conversely, the recovery of the French economy is dependent on favourable external conditions. The inflation environment in the euro area is also crucial to reducing the debt-to-GDP ratio and helping competitiveness recover.

Other key economic issues analysed in this report which point to particular challenges facing France's economy are the following:

- **The French business environment continues to be middle-ranking in comparison to major competitors.** Despite ongoing simplification efforts, a high regulatory burden and fast-changing legislation are an issue and size-related thresholds continue to weigh on firms'

growth. Competition in services has improved for some professions, but barriers remain in place, with a significant number of professions unaffected by recent reforms and bottlenecks are preventing the development of the digital economy.

- **The labour market performance remains unsatisfactory and educational inequalities have been widening during the last decade.** In 2015, the unemployment rate increased and the labour market remained segmented, in terms of both the education of the employed labour force and contract length. The deficit and the debt of the unemployment benefit system are planned to further increase. In addition the strict legislation of dismissal for open-ended contracts increases their complexity and uncertainty. Educational inequalities linked to the socio-economic background are among the highest in the OECD countries. The link between education and the labour market is still weak and the access to apprenticeships is decreasing, especially for the low-qualified. Although the social situation remained generally stable since 2008, some population groups are now more exposed to the risk of poverty, social exclusion and poor housing conditions.

- **Despite strong government support, innovation capacity is middle-ranking.** Private R&D remains relatively weak compared to the best innovation performers in Europe and structural changes in the French economy are weighing on its growth prospects. The proliferation of support schemes raises concerns about their overall coordination and consistency and may compromise their effective take-up by SMEs.

- **The overall tax burden continues to increase and its composition is not conducive to economic growth as it weighs significantly on production factors.** Taxes on corporations have started decreasing modestly in 2014 but taxes on consumption, including VAT, remain low as compared to the rest of the EU. The tax system remains very complex, with a limited tax base. Finally, the bias towards debt financing induced by the corporate tax system remains high.

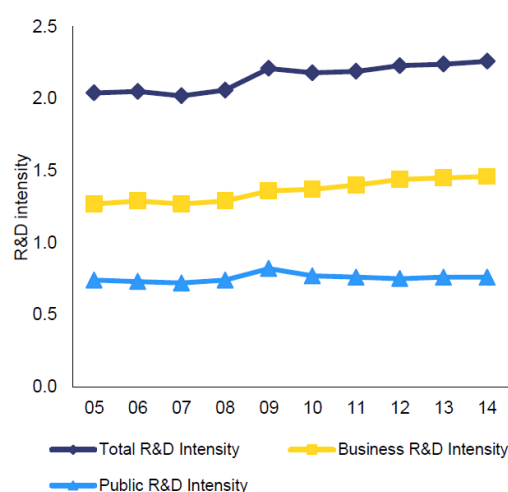
9.2. Innovation

Innovation capacity

According to the European Commission's Innovation Union Scoreboard (2015), France is an **innovation follower** and is ranked 10th, just above the EU average. Limited progress has been made over the past years and French innovation performance is still lower than the EU average in some indicators measuring firm's innovation activities and the economic impact of these activities (non-R&D innovation expenditure, Community designs and trademarks, exports of knowledge-intensive services)²⁷. In addition, the take-up of digital technologies by the overall economy, in particular businesses, is weak (see Section 3.2). France ranks 15th among Member States as regards the EU Digital Economy and Society Index and its performance is just above EU average.

²⁷ European Commission (2015), *Innovation Union Scoreboard 2015*.

Graph 3.3.1: French R&D intensity (% of GDP)

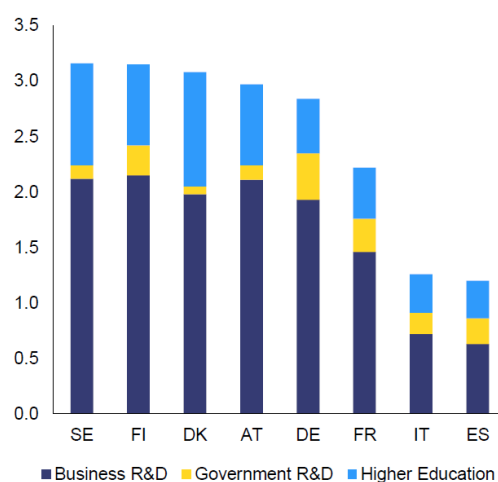


Source: Eurostat

R&D intensity, an important indicator of innovation efforts, has been on an increasing trend during the last decade. Total R&D intensity (R&D expenditure over GDP) of the French economy stood at 2.3 % of GDP in 2014, showing a steady but slow increase from its 2008 level (2.06 %), including throughout the crisis years. Business R&D expenditure has increased from the pre-crisis period and it stood at 1.5 % of GDP in 2014, compared to 1.3 % in 2008 and 2000. Public investment in R&D has been stable since 2009 and has amounted to 0.8 % of GDP in 2014 (Graph 3.3.1).

However, R&D intensity is lagging behind EU innovation leaders, in particular private R&D. France scores notably below Germany (2.8 %), and Austria and the Nordic countries (3 % and above) (Graph 3.3.2). The lower private R&D intensity in France compared with the four main leaders accounts for a large part of this gap. France is also lagging behind in terms of higher education expenditure on R&D. As a result, France is not on track to meet its national EU2020 target of 3 % of GDP devoted to R&D.

Graph 3.3.2: R&D intensity by source (2014) (% of GDP)



Source: European Commission

The structural evolution of the economy is not favourable to private R&D-intensive activities. R&D intensity is particularly high in the manufacturing sector (it amounted to 7.1 % in 2012), but the

share of this sector in the total business value added of the economy is shrinking (11.3 % in 2012, down from 12.7 % in 2007 for a negative average annual growth rate of -2.2 % over the period). This trend has been more significant in R&D intensive subsectors such as motor vehicles (-5.9 % per year), computers, electronics and optical (-5 %) and pharmaceuticals (-3.6 %). In addition, most of the R&D intensive manufacturing subsectors have been reducing R&D intensity on average, with the exception of machinery & equipment (+7.4 %).

Compared to other EU countries, the quality of France's public research is average. Several reforms have been introduced, such as the creation of the high council for evaluation of research and higher education in 2013, the higher education institutions and university communities (COMUE) aiming to improve the coordination of education offer and research strategies the same year, and the adoption of the national research strategy in 2015. However, France keeps lagging behind the EU best performers, as suggested by the average impact factor of scientific publications and their share in the most 10 % cited worldwide (France ranks 11th and 13th respectively).

Public support to innovation

Public support to innovation has increased twofold over the past 10 years to reach 0.5 % of GDP in 2014²⁸. Public support to private R&D activities enjoys the largest part of French innovation policy. It amounted to 0.4 % of GDP in 2011, making France the country with the third largest public transfers to business R&D worldwide²⁹. This support is primarily indirect through tax incentives (Graph 3.3.3). In particular, the research tax credit '*crédit d'impôt recherche*' (CIR) has increased massively since the 2008 reform and accounted for EUR 5.3 billion of foregone revenue (0.3 % of GDP) in 2015³⁰, making it the second largest tax expenditure after the CICE. In addition, the innovative start-ups scheme ('*jeunes entreprises innovantes*' (JEI)) reduces the cost of hiring R&D staff through tax incentives in SMEs less than 8 years of age. It represented a total amount of EUR 175 million in 2015³¹.

The CIR is effective in supporting private R&D, but its impact on innovation remains to be demonstrated. The results of a recent counterfactual evaluation show that firms which benefited from the CIR significantly increased their R&D expenditures after the 2008 reform of the instrument as compared to firms that did not apply for it. Overall, figures show a substantial increase of private R&D in 2009 (Graph 3.3.1) and a positive trend afterwards, reversing the negative path since 2002. However, the same study finds a very modest impact of the CIR in terms of innovation since the 2008 reform when comparing innovation outcome for similar firms which benefited from this instrument and for those which did not³². However, results need to be refined at a later stage, as data included in this study stops in 2010 and innovation is measured by the number of patents at firm level which may take time to materialise. In addition, the CIR has only been extended to non-R&D innovation expenditure in 2013, through the creation of the innovation tax credit ('*crédit d'impôt innovation*'), a tool dedicated to SMEs. Its scope remains modest in comparison to the R&D component of the CIR (EUR 190 million in 2015, as estimated by the 2015 National Reform Programme).

²⁸ Pisani-Ferry, J. et al., (2016), Quinze ans de politiques d'innovation en France, Rapport de la Commission nationale d'évaluation des politiques d'innovation, January.

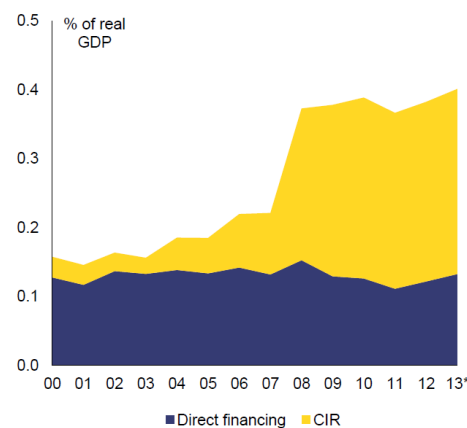
²⁹ OCED (2013), Science, technology and Industry Scoreboard.

³⁰ Annexes to the 2016 Draft Budgetary Plan.

³¹ 2015 National Reform Programme, estimation.

³² Bozio A., Irac D., Py L. (2014), Impact of research tax credit on R&D and innovation: evidence from the 2008 French reform, Banque de France, Document de travail n°532, December.

Graph 3.3.3: Public support to private R&D



Source: Ministry of higher education and research and Base GECIR juin 2015, MENESR-DGRI-C1
Note: *Data on public financing in 2013 is provisional, Data on CIR for 2013 includes CIR and CII (EUR 0.069 billion)

Stability of the CIR has been preferred over the correction of imperfections in its design. The instrument has been for the most part unchanged since the major 2008 reform, which increases its business friendliness. However, its design is not well suited to the needs and characteristics of digital SMEs and start-ups³³. In addition, uncertainties related to its scope create recovery risks, since the eligibility of expenditure is only established by the administration *ex post*, and recovery may take place up to three years following the tax statement. Recent clarification and simplification measures adopted in the context of the simplification shock (such as the ‘*rescrit roulant*’) are steps in addressing these issues.

There has been an inflation and instability of public schemes supporting innovation, raising concerns as regards overall coordination and consistency. The number of such schemes has increased from 30 in 2000 to 62 in 2015, as recently mapped out by the national commission for the assessment of innovation policies. The recently created public investment bank BPI France dedicated EUR 1.1 billion to financing innovation in 2014, 8 % of its total budget available for business support³⁴. Other recent initiatives include new industrial France (‘*nouvelle France industrielle*’) and ‘*French Tech*’ (introduced in 2013) or the second phase of the programme for future investment (‘*programme d’investissement d’avenir*’) launched in 2014 (EUR 12 billion over 10 years). As a result, the support system is complex, targets an overly ambitious number of policy goals, and lacks clarity for companies. In addition, the subnational level is playing an increasing role (5.4 % of total public support in 2014, and 15.2 % excluding tax incentives³⁵), but there is no sufficient confluence between R&D national policy and the regional specialisation strategies developed locally. There is also little involvement of private actors in the design of innovation policy and its governance.

Furthermore, innovation performance is hindered by the framework conditions and the business environment. High and complex corporate taxation (see Section 3.4), but also product market rigidities limit corporate capacity to finance investments and mobilise the human resources required

³³ Conseil d’Analyse Economique (2015), *Economie numérique*, November.

³⁴ BPI France (2015), *Bilan d’Activité 2014*.

³⁵ Pisani-Ferry, J. et al, (2016), *op. cit.*

for innovation³⁶. Finally, the small size of firms and lack of midcaps (see Section 3.2) may also be an obstacle to innovation.

9.3. Additional references to R&I

[1. Scene setter: economic situation and outlook, pp. 6-7]

Despite major public support, R&D intensity is not sufficient to keep up with best performers. It remains below the standards of EU innovation leaders, notably Germany, Austria and the Nordic European countries (see Section 3.3). This performance is modest given the massive public support to private R&D activities, mainly through the stabilisation of the research tax credit (*Credit d'Impôt Recherche*) that is relatively effective in providing incentives for companies to invest in R&D. However, the overall coordination and consistency of innovation policy tools remain weak and the evolution of the French economy is structurally unfavourable to R&D spending, as the share of the most R&D intensive sectors is shrinking in the total value added of the economy. As a consequence, the country is an innovation follower and it is ranked tenth, just above the EU average, according to the 2015 Commission's Innovation Union Scoreboard.

[2.2. Potential growth, p. 14]

Moreover, potential growth crucially depends on the innovation capacity of the French economy. Despite major government support, R&D intensity is not sufficient to keep up with best performers and structural changes in the French economy risk weighing on R&D spending in the long term (see Section 3.3). Also, France ranks average among European countries, despite a wealth of publicly funded instruments.

[Box 2.1.1: Macroeconomic impact of selected structural reforms, p. 16]

R&D subsidies and public investments have the potential to foster innovation and increase productivity. The authorities have launched the innovation tax credit for SMEs, exemptions for innovative start-ups to stimulate research and development activity, as well as the extension of the Investment for future programme (PIA2), which finances strategic projects in research, energy transition and manufacturing. These measures would increase GDP by 0.08 % in 2020 but have a negligible effect on employment.

[2.4. Profit margin, investment and non-cost competitiveness, p. 36]

Notwithstanding the aforementioned actions undertaken to stimulate investments, specific challenges remain regarding private research and development activities and in the energy sector. Private sector performance in terms of research and development (R&D) activities is modest compared with EU innovation leaders (see Section 3.3). Moreover, subdued investment in renewable energy put the country at risk of missing its EU2020 target (see Section 3.1).

³⁶ OECD (2014), OECD Reviews of Innovation Policy: France 2014, OECD Publishing, Paris.

10. Germany

10.1. Executive Summary

This country report assesses Germany's economy in light of the European Commission's Annual Growth Survey published on 26 November 2015. The survey recommends three priorities for the EU's economic and social policy in 2016: re-launching investment, pursuing structural reforms to modernise Member States' economies, and responsible fiscal policies. At the same time, the Commission published the Alert Mechanism Report that initiated the fifth round of the macroeconomic imbalance procedure. The Alert Mechanism Report identified Germany as warranting a further in-depth review.

Economic growth has been stable in recent years with domestic demand, notably private consumption, as the main growth driver. Real GDP growth stood at 1.6 % in 2014 and 1.7 % in 2015, according to first official results. The growth pattern has evolved with domestic demand having become a key growth driver. Notably, private consumption has strengthened, supported by the strong performance of the labour market and temporary factors such as low energy prices. The labour market weathered the crisis well and the unemployment rate has decreased to a post-reunification low.

By contrast, the recovery in private investment has been uneven and despite recent efforts, public investment remains low. Public investment has been falling and its share in GDP remains below the euro area average despite the large public investment backlog. Some areas of corporate investment, notably in machinery and equipment investment, still have not caught up with pre-crisis levels, in spite of the supportive financing conditions and strong corporate profits.

Going forward, growth is expected to strengthen slightly. Despite weaker export demand in emerging markets, real GDP is set to expand by 1.8 % in 2016 and 2017, respectively. Further growth in employment and wages should support private consumption. Public expenditure on refugees should provide further stimulus. Inflation is set to pick up slowly as the effect of low oil prices is dissipating only gradually. Risks include a weaker external environment, recent financial market volatility, and uncertainty surrounding the impact of the strong inflow of refugees.

Weak investment has contributed to the high and persistent current account surplus and poses risks for the future growth potential of the German economy. A number of factors play a role regarding weak investment such as still unused capacity and uncertainty. But there are also a number of bottlenecks including entry barriers in the services sector, some corporate taxation features and deficiencies in infrastructures including in the energy sector. The current design of fiscal relations may hamper especially municipalities' investment. Complex public infrastructure investment planning hinders both public and private investment. The venture capital is not well developed. Given the expected impact of the ageing society, strengthening the economy's longer-term production capacity and enhancing productivity is important to maintain Germany's high living standards and to cope with challenges such as increasing globalisation and digitisation.

Fiscal space exists for an increase in public investment as public finances remain in a sound position. General government budget surpluses have been recorded in 2014-2015. The budget is expected to remain balanced in headline and structural terms in 2016-2017, and the gross debt-to-GDP ratio is set to decrease. This means there continues to be fiscal space for higher public investment, while complying with the rules of the Stability and Growth Pact.

The ageing society will remain a key challenge. The resulting expected significant decline in the workforce is set to dampen potential growth. If the challenging integration of the refugees in the labour market succeeds, this could help to temporarily mitigate this development to some extent. However, shortcomings in the labour market preventing full utilisation of the existing labour force as well as barriers to competition in some sectors also remain obstacles to increasing potential growth.

Overall, Germany has made limited progress in addressing the 2015 country-specific recommendations (CSRs). As regards policies relevant to the macroeconomic imbalance procedure, the policy response so far is limited to address the investment backlog in infrastructure and establish a sustainable upward trend for public investment. Limited progress was made to ease restrictive regulation in the professional services, improve the efficiency of the tax system, and reduce high taxes and social contributions. As regards recommendations to address other policy challenges, no progress has been made in revising the fiscal treatment of mini-jobs and their overall number remains large, though it has fallen slightly after the introduction of the minimum wage. Moreover, no steps were taken to remove the barriers to competition in railway transport.

Regarding the progress in reaching the national targets under the Europe 2020 Strategy, Germany is performing well regarding the employment rate, reducing early school leaving and poverty, increasing tertiary education attainment, reducing greenhouse gas emissions and increasing the share of renewable energy sources. Slightly more effort is needed in R&D investment, while more needs to be done to reach the national energy efficiency goal.

The main findings of the in-depth review contained in this country report, and the related policy challenges, are the following:

- **The persistently high current account surplus widened further in 2015 and is projected to remain above 8 % of GDP in 2016-2017.** The German current account surplus accounts for three quarters of the euro area surplus. Though the recent oil price fall explains a significant part of its increase in 2015, the surplus and its persistence rather reflect structural features of the economy, including strong competitiveness in manufacturing and high revenues from private investment abroad. But it also reflects subdued investment and a high level of savings. Furthermore, inefficiencies in corporate taxation and the business environment weigh on private investment.
- **There appears to be further room for wage growth without endangering Germany's competitiveness.** Following a long period of wage moderation, wage growth has accelerated since 2008 as the labour market has tightened. However, the strong labour market situation, as well as wage benchmarks and unit labour costs in relation to the euro area average suggest scope for further sustained wage increases, which would further support private consumption.
- **The low interest rate environment has not translated into significant changes in savings patterns that would further strengthen households' consumption.** Households did barely adjust their asset allocation in response to the very low interest rates and are hence potentially foregoing higher returns on their savings. To preserve future consumption possibilities, they maintain savings at a very high level.
- **Despite being an important intermediary of household savings, the life insurance sector plays a mainly indirect role in financing public and private investment.** The fiscal treatment of third pillar retirement savings may limit the incentives for households to diversify

their investments and raise challenges for life insurers to shift from liquid assets to equity. Life insurers' solvency had been negatively affected by the significant decline in interest rates coupled with a large duration gap on their balance sheets, but safeguarding measures have been taken by authorities in recent years.

- **Public investment remains subdued. Efforts up to now did not lead to a sustainable upward trend.** Thus, a significant infrastructure investment gap remains. The design of federal fiscal relations may have contributed to persistent (especially municipal) underinvestment. In addition, overall public and private expenditure on education and research has only slightly increased in recent years and is likely not to have reached the national target for 2015. Regarding transport infrastructure investment, only limited use has been made of alternative funding instruments while complex planning procedures and administrative bottlenecks hinder invest.
- **Relatively restrictive regulation of professional services giving rise to high mark-ups constrains business dynamics and investment.** These barriers harm competitiveness and contribute to low productivity growth in this sector. In addition, the retail sector is characterised by overly strict regulation.
- **Given its central position in the euro area, Germany is a source of potential spillovers to other Member States.** The current account surplus has adverse implications for the economic performance of the euro area. Raising its growth potential would benefit Germany. Moreover, given strong trade and financial linkages, it would also help sustain the recovery in the euro area amid the current demand shortfall. Instead, the weak domestic investment and dependence on external conditions pose risks to Germany. While the inflow of refugees is set to support German GDP in the short term via increased domestic demand, the medium-term effect on employment and growth hinges on refugees' successful labour market integration. Germany's solid fundamentals, including the robust labour market and the sound public finance position, provide a solid underpinning to build on in tackling this challenge.
- Besides its impact on the domestic economy, the inflow of refugees via spillovers will also affect euro area growth.

Other key economic issues analysed in this country report which point to particular challenges facing Germany's economy are the following:

- **Regarding public finances,** corporate taxation continues to be high overall, while the efficiency of the tax administration could be further improved. Household income and consumption continue to be restrained by the high tax burden on labour, especially for low wage earners, despite steps having been taken to increase the income tax allowances and compensate for fiscal drag.
- **Regarding labour market and social policies,** the labour market performance is strong, with in particular unemployment at historically low levels. However, ageing-related labour and skills shortages are looming, calling for full use of the existing labour force. The labour market potential of certain groups remains underutilised and work disincentives remain in place (including for second earners). Extending working lives and long-term unemployment remain challenges. Moreover, although severe material deprivation has remained broadly

stable, relative poverty and social exclusion are increasing and the unemployed are particularly vulnerable, with a high at-risk of poverty rate.

- **Regarding education policy**, education is a crucial element for integrating the many (often young) refugees and so is fully mobilising the contribution of civil society. In addition, there appears to be room for further improving educational policies, while loosening the link between socioeconomic background and educational achievement.

- **Regarding network industries and policies for long-term growth and resource efficiency**, further progress is lacking in reducing the administrative burden, improving public procurement, and enhancing digital public services and sustaining investment in education, research and development and innovation. Competition in the railway sector has hardly increased. Further increases in the share of renewable electricity as a proportion of total energy consumption are being constrained by delays in infrastructure development. Progress towards high speed broadband networks and further investment in enhancing the digital infrastructure is slow. Continued investment in education, research and development and innovation is important in view of weakening innovation activities in small and medium-sized enterprises and skills shortages.

- **Regarding the financial sector**, the stability of the banking system has improved but sustaining profitability remains a key challenge, especially in the low interest rate environment. Financing conditions remain overall favourable despite the recent financial market developments, but the venture capital market remains underdeveloped.

10.2. Research, development and innovation

Germany is one of the EU's innovation leaders, but regional disparities remain and securing its competitive position in the future is challenging. The main challenges for Germany's R&I system include: counteracting the trend of weakening innovation activities in German SMEs; improving the framework conditions for and supply of venture capital; and counteracting adverse trends in human capital availability due to demographic developments³⁷. Germany has the largest research and innovation (R&I) system in Europe and the EU Innovation Union Scoreboard 2015 classifies Germany as an innovation leader. Germany is close to achieving its R&D expenditure target of 3% of GDP (see Section 2.5), although some other leading innovative economies such as Japan and South Korea are investing even more. Firms in medium-high-tech manufacturing sectors, such as the automotive industry, are the largest R&D investors. However, the R&D intensities³⁸ of high tech sectors such as ICT and pharmaceuticals are lagging behind those in the US. Considerable disparities remain at regional level. Regional clusters and smart specialisation strategies are the main tools to address such disparities. In recent years some indicators on SME innovation performance, such as the percentage of a company's turnover that is spent on innovation, seem to have deteriorated.

Continued investment in education, R&D, and innovation is essential to securing Germany's competitive position in the future. While much has been done to further strengthen Germany's R&I performance, through the update of the High-Tech Strategy for example, and to create innovation-friendly framework conditions, especially for SMEs, some experts (e.g. the Commission of Experts for

³⁷ Research and Innovation Observatory (2015), RIO Country Report 2015 (forthcoming).

³⁸ Business expenditure on R&D (BERD) as % of value added in the sector.

Research and Innovation³⁹) are calling for an even bolder innovation policy and for the R&D intensity target to be increased to 3.5 % of GDP.

10.3. Additional references to R&I

[Box 1.1: Investment challenges, p. 10]

Public sector investment has been low and declining while the pick-up in private sector investment has been uneven. Public sector investment fell significantly relative to GDP in the pre-crisis years (see Section 2.5). After a pick-up also reflecting the policy response in 2008-2009, this downward trend resumed in the post-crisis period. As shown in Graph 2.5.3 in Section 2.5, this resulted in a persistent and pronounced public sector investment gap in relation to the euro area. The low investment rate mainly reflects the gradual scaling back of public infrastructure investment, for both the maintenance and expansion of infrastructure, which has resulted in the accumulation of a significant backlog. Net public capital formation has in fact been negative in recent years driven in particular by developments in municipalities (see Graph 2.5.4 in Section 2.5). Private sector investment relative to GDP had also seen a trend decrease in the pre-crisis years, declining most markedly in the early 2000s. Following the pronounced crisis-related fall in 2009, it strengthened somewhat and has since 2011 exceeded the investment share recorded in the rest of the euro area. Regarding the main categories, investment in machinery and equipment showed not only a pronounced cyclical pattern in the pre-crisis years but also a pronounced weakness, in part reflecting weak domestic demand in the early 2000s. To some extent, subdued nominal developments reflected a strong trend decrease in equipment prices in Germany, which was not observed at the euro area level. While strengthening, investment has repeatedly disappointed in the post-crisis years, as a more forceful pick-up could have been expected amid the current favourable conditions, including historically low credit constraints on the back of solid balance sheets and the low interest environment (see Graph 1.2 in the main text). Further supported by these factors, the gradual recovery is set to continue in 2016-2017. Construction investment accounted for the bulk of the investment gap vis-à-vis the euro area which peaked in 2007 (Graph 1). Residential investment (dwellings) had declined significantly before the crisis, also reflecting the post-reunification boom. It accelerated significantly in the post-crisis years in the context of a considerable increase in net migration, low interest rates, favourable labour market developments and its status as a safe investment. Still, rising house prices signal that housing demand exceeds the supply of dwellings. Going forward, only a small moderation is forecast for 2016-2017 while the current strong migration inflow should support residential construction in the medium term. Finally, non-housing construction investment has shown some weakness in the pre- and post-crisis years, falling short consistently of the euro area average. This gap is forecast to remain stable in 2016-2017. As regards public and private expenditure on education and research, only a slight overall increase has been recorded in recent years; it may thus have fallen short of the national target of 10 % of GDP for 2015.

[2.5. Public investment and federal fiscal relations, p. 47]

Despite more spending at federal level, overall education and research expenditure has only slightly increased in recent years and may have fallen short of the national target of 10 % of GDP. Total consolidated public and private expenditure on education and research increased slightly

³⁹ Commission of Experts for Research and Innovation (2015), Report 2015.

from 9.1 % of GDP in 2012 to 9.2 % in 2013⁴⁰. Hence, there remains a gap to the national target of 10 % of GDP that the federal government and the federal state governments agreed to meet by 2015. Federal spending on education and research was planned to increase by 10.3 % in 2015 and is budgeted to rise by a further 5.8 % in 2016. General government expenditure on education as a proportion of GDP has remained stable at around 4.3 % since 2009 and therefore well below the EU average (5.0 % in 2013). An increase at federal level has been offset by slightly lower expenditure by the federal states that contribute the majority of education expenditure (Graph 2.5.7). The increase at federal level in recent years reflects the additional funds provided by the federal government to support the federal states in financing childcare facilities, schools and higher education institutions. Public expenditure on research and development has remained stable at around 0.8 % of GDP in recent years. Total gross domestic public and private expenditure on research and development accounted for around 2.8 % of GDP in 2013 and 2014. Therefore, the Europe 2020 target of 3 % research and development spending has almost but not fully been achieved. Germany's research and development intensity was the fifth highest in the EU and remained behind that of Japan and South Korea.

[3.5. Financial Sector, p. 86]

The venture capital market in Germany remains underdeveloped in international comparison.

Due to low unemployment, emerging skill shortages and demographic trends, the number of entrepreneurs is expected to decline further. Improving the access to venture capital is an important element in stimulating entrepreneurial activity in Germany. Venture capital is a subset of private equity and refers to investments made to support the pre-launch, launch and early-stage development phases of a business. It is of particular importance in innovative fields such as high-tech manufacturing and biotechnology. Yet the venture capital market in Germany appears to be performing below its potential and has consistently been significantly smaller than that of other Member States and international competitors, such as the US or Israel. In 2014, venture capital investments accounted for 0.023 % of GDP in Germany, compared with 0.038 % in the UK, 0.029 % in France, 0.38 % in Israel and 0.28 % in the US⁴¹. In Germany, the amount of venture capital investments has been stagnating since 2009 at about EUR 700 million per year (Graph 3.5.5). In 2014, venture capital investments in Germany were slightly higher than in France, yet well below the UK and Ireland. Within Germany, investments are particularly concentrated in the federal states of Berlin and Bavaria, while their sectoral focus is in particular on life sciences, communication technology and content, as well as computer and consumer electronics. Later-stage financing seems to be more problematic than early-stage (seed and start-up) financing. More firms in Germany receive seed financing compared with the EU average. Conversely, later stage venture capital financing is less pronounced in Germany (21 % of venture capital financed firms and 39 % of venture capital provided) when compared with Europe as a whole (29 % of venture capital financed firms and 43 % of venture capital provided)⁴².

Stepping up efforts in the field of growth financing is essential to improve conditions for entrepreneurship in high-tech sectors and knowledge-intensive services (see Section 3.4). In the current legislative period, the German government has already launched a range of measures to improve conditions for venture capital. These include the creation of the ERP/EIP growth fund equipped with EUR 500 million, a top-up for the ERP/EIF-Venture-Capital-*Dachfonds* (fund-of-funds) to EUR 1.7 billion (including EUR 300 million for business angels), and tax exemption for the

⁴⁰ Federal Statistical Office (2015), 'Bildungsfinanzbericht 2015'.

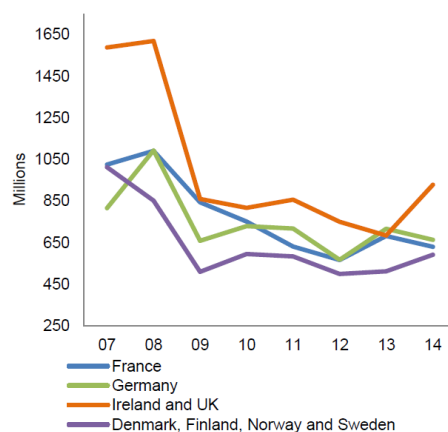
⁴¹ OECD (2014), Entrepreneurship Financing Database.

⁴² Research and Innovation Observatory (2015), RIO Country Report 2015 (forthcoming).

German government's INVEST grant for venture capital. The issue paper approved on 16 September 2015 covers a number of measures to further promote venture capital investment and to support new, innovative and fast-growing companies in particular. For example, the INVEST grant scheme is planned to be extended considerably from 2016 onwards⁴³.

A review of the regulatory framework for venture capital could contribute to stimulating private investment, also from foreign investors⁴⁴. Some tax-related framework conditions may limit the size of the market for venture capital in Germany, such as the rules on tax loss carryforwards (*Verlustvortrag*) or the value added tax on funds management services⁴⁵. Moreover, in contrast to many other countries, institutional investors, such as pension funds, which could serve to anchor investors in venture capital projects, are missing in Germany. To this end, the German government recently decided that KfW will again operate as an anchor investor, equipped with EUR 400 million. However, a holistic review of the regulatory framework for venture capital, as planned in the coalition agreement and the issue paper adopted in September 2015, would be a welcome step and could contribute to stimulating private investment and entrepreneurship and to increasing Germany's international competitiveness as a location for venture capital investments. One should, nevertheless acknowledge that there are other factors influencing entrepreneurial activity, such as market characteristics, and cultural and demographical aspects⁴⁶.

Graph 3.5.5: Venture capital investments compared with European peers (EUR millions)



Source: European Private Equity and Venture Capital Association

⁴³ The limit per investor on the amount of investment eligible for the grant will be doubled to EUR 0.5 million annually. Additionally, a tax refund will be granted on capital gains from INVEST financing.

⁴⁴ There is a home bias of venture capital investments in Germany: 77 % of venture capital comes from German private equity funds. German Council of Economic Experts (2015), Annual Economic Report 2015-2016.

⁴⁵ Commission of Experts for Research and Innovation, Report 2015, <http://www.e-fi.de>.

⁴⁶ German Council of Economic Experts (2015), Annual Economic Report 2015-2016.

11. Hungary

11.1. Executive Summary

This country report assesses Hungary's economy in light of the European Commission's Annual Growth Survey published on 26 November 2015. The survey recommends three priorities for the EU's economic and social policy in 2016: re-launching investment, pursuing structural reforms to modernise Member States' economies, and responsible fiscal policies. At the same time, the Commission published the Alert Mechanism Report that initiated the fifth annual round of the macroeconomic imbalance procedure. The Alert Mechanism Report identified Hungary as warranting an in-depth review.

Hungary is on a balanced, albeit still relatively moderate growth path, gradually reducing its macroeconomic imbalances. Real GDP has surpassed its pre-crisis peak and the growth potential has been gradually recovering. Nevertheless, Hungary's rate of potential growth remains a full percentage point lower than before the crisis, which was already comparatively low. In 2015, GDP is estimated to have increased by 2¾%, supported by strengthening private consumption and healthy export growth. A decline in EU-funded investment is projected to slow growth in 2016, but continuing support from private consumption and a gradual recovery in EU-funded investment will see growth returning to levels slightly above potential in 2017. As the impact of lower energy prices fades, inflation is projected to revert to the central bank's target rate by the end of 2017.

Labour market developments have been favourable, recently also in the private sector. This drove the unemployment rate below its pre-crisis level despite a rapidly increasing activity rate. The long-term unemployment rate followed a similarly favourable path. Stricter policies on social transfers, early retirement and increasing statutory retirement age strengthened labour supply. On the demand side, job creation in the private sector picked up starting late 2013, although emigration and the rapid increase in the public works scheme have also significantly contributed to the fall in unemployment. Because of the increasing activity rate, labour becomes a positive contributor to the potential growth rate despite population ageing. Looking forward, the private sector is expected to increase its share in job creation, helping to lift productivity growth.

An initially strong pickup in investment, however, proved temporary. The considerable investment growth experienced in 2013-2014 came to a halt last year and is projected to turn into a slight decline this year as EU-funded investment temporarily subsides. Corporate lending continued to decline despite several policy initiatives of the central bank to promote SME lending, and the trend of private investment recently turned negative again. Private investment is hampered by a still cautious credit environment, a relatively high country risk premium that keeps funding costs high, and an unstable regulatory and tax environment. These factors particularly hinder foreign direct investment. Without a healthy growth of market-driven private sector investment, the contribution of capital accumulation to potential growth and productivity growth is expected to remain moderate, in particular as EU-funded investment gradually subsides.

The budget deficit has been contained, keeping the public debt ratio on a gradually declining path. The budget deficit declined significantly in 2015, and is expected to decrease further in 2016-2017, albeit the latter is mostly due to the improving economic situation. Since its peak in 2011 following the crisis, the public debt ratio has declined moderately. Sizeable capital transactions and valuation changes have also contributed to this decline.

Overall, Hungary has made some progress in addressing the 2015 country-specific recommendations. It has achieved some progress in the field of taxation by significantly reducing the levy on credit institutions. Substantial progress has been made in putting in place policy measures to combat tax evasion. At the same time, limited progress has been made to reduce the high labour tax burden on low-income earners and to improve the efficiency of the tax administration. However, no progress has been made to reorient budgetary resources from public works to other active labour market policies and to improve the adequacy and coverage of social assistance and unemployment benefits. Moreover, limited progress has been made to improve the employability of disadvantaged groups, in particular to increase their participation in inclusive mainstream education. Overall, the quality of economic policies has improved but important challenges remain in this regard.

Regarding the progress in reaching the national targets under the Europe 2020 Strategy, Hungary is performing well in reducing the greenhouse gases, increasing renewable energy and tertiary education, while more effort is needed to increase the employment rate, R&D expenditure, reduce early school leaving and poverty.

The main findings of the in-depth review contained in this country report, and the related policy challenges, are the following:

- **External imbalances have been significantly reduced but several risks remain.** Net external liabilities declined from 116% of GDP in 2009 to 73% by 2014. This is still high by international comparison but it is closer to levels of other converging economies, and the rapid pace of decline is projected to continue. The rebalancing of the economy has been achieved through maintaining large current and capital account surpluses, which reflect private sector deleveraging and a sizeable inflow of EU funds. The improvement in the external balance continued despite a pick-up in domestic demand. This was facilitated by a partial reversal of previous market share losses due to the rapid expansion of the automobile industry and an export-oriented service sector, benefitting from improved cost competitiveness. Moreover, recent policy measures, including the conversion of foreign exchange-denominated household loans and the central bank's self-financing programme, have contributed to a further reduction and better distribution of foreign exchange risks. Nevertheless, the still rather high gross external debt and short-term rollover needs continue to pose risks to the economy. Hungary's limited capacity to attract new foreign direct investment also remains a challenge.
- **Internal financial imbalances have been reduced but challenges remain.** Hungary entered the crisis burdened with a relatively high level of private sector debt, mostly denominated in foreign currencies, but it has made considerable progress in this area as well. Private sector debt was reduced from its peak of 117% of GDP in 2009 to 91% by 2014, albeit at the inevitable price of a continuous decline in private sector lending that hindered investment. In 2015, however, lending to households showed signs of recovery, albeit a similar turnaround in corporate lending has yet to take place. The conversion of household foreign currency-denominated loans eliminated one of the largest systemic risks. The profitability of the banking sector is recovering helped by the improving economic environment and by a moderation in the previous policies towards taxes on banks. Nevertheless, banks remain cautious in their lending even though they are well capitalized and highly liquid. Going forward, the main challenges are to reduce the high share of non-performing loans and promote healthy growth of market-based private sector lending.

- **Enhancing the growth potential is crucial to further reduce the share of external and internal debt in GDP and avoid depressing domestic demand.** While labour market policies helped in this regard, at this juncture the key challenge facing Hungary is to find new ways to accelerate total factor productivity and promote higher investment in productive assets. Improving financial intermediation and nurturing innovation will assist in addressing this issue.

Other key economic issues analysed in this report which point to particular challenges facing Hungary's economy are the following:

- **The public debt ratio has been declining since the beginning of the decade, but its level remains high, making public finances vulnerable.** Medium-term debt sustainability simulations indicate a steadily declining trajectory reducing public debt towards 60% of GDP. Sustained high primary surpluses and savings from recent pension reforms are the key factors driving this trend. However, the debt-reduction path remains fragile. Hence, maintaining fiscal discipline remains essential in order to mitigate potential risks.
- **Despite considerable recent improvements in tax policies and tax administration, Hungary's reliance on sector-specific taxes remains a potential barrier to investment.** These sector specific taxes pose additional financial and administrative burdens on the sectors concerned. While new sector-specific taxes were introduced in 2015, the levy on credit institutions has been significantly reduced. On the negative side, several indicators point to potential weaknesses of the tax administration. The labour tax wedge for low-income earners is still high, which may affect their employability.
- **The public works scheme has contributed to a fall in unemployment, but it does not seem to sufficiently improve the employability of the participants.** Active labour market policies rely excessively on the public works scheme, but the programme does not sufficiently help participants acquire necessary new skills and find jobs in the open labour market. This risks locking participants into the scheme, particularly low-skilled workers and people in disadvantaged regions.
- **The labour market is steadily improving, but labour, social and education policies face several challenges.** The duration of unemployment benefits is the lowest in the EU and significantly shorter than the average time necessary to find a job. Social and poverty indicators have not improved in line with the economic recovery. Moreover, the social protection system does not seem to provide adequate support to the most vulnerable. The health system also faces major challenges. The main challenge of the education system is to reduce socio-economic differences and provide all pupils with adequate basic skills and key competences.
- **Competition in public procurement remains limited while unpredictable regulatory changes and administrative burden hamper private business and investment.** A comprehensive e-procurement strategy has not yet been developed and corruption risks remain high. While the government took steps to reduce administrative burdens, Hungary's restrictive regulations in services sectors, such as retail, and a volatile regulatory environment remain concerns for businesses.

11.2. Research, development and innovation

Significant bottlenecks remain in the Hungarian Research and Innovation (R&I) system including the instability of the public R&I funding and of the R&I institutional framework⁴⁷, as well as skills shortages⁴⁸. Foreign owned business enterprises continue to drive progress towards the Hungarian R&D intensity target⁴⁹. At the same time, low expenditure on the public research system put the sustainability of this trend at risk. Public R&D intensity in Hungary has been persistently low and has been even declining over the last ten years, decreasing to only 0.4% of GDP in 2014 (Graph 3.4.1). This decreasing trend undermines the capacity of the public science base in providing both skilled human resources and high quality research, which constitute the basis for increased cooperation with the business sector. The availability of highly-skilled professionals particularly in science and engineering has become a major issue in recent years.

Greater exploitation of the presence of multinational companies for the development of an effective national R&I ecosystem and an improvement of the overall innovation performance of the Hungarian economy remain key challenges. Partnerships between Higher Education Institutions, Public Research Organisations and business play an essential role in anchoring multinational companies in the national R&I ecosystem. This also requires addressing the low level of innovation among domestic enterprises and the lack of entrepreneurial culture. The National Research, Development and Innovation Strategy (2013-2020) defines measures explicitly targeting innovative SMEs. Yet mismatches between these measures and the situation of SMEs hamper their effectiveness. While the ongoing restructuring of the Hungarian research and innovation system aims to address system fragmentation, it has often led to delays in the implementation of the various strategies, such as the National Research, Development and Innovation Strategy as well as the Smart Specialisation Strategy Action Plan⁵⁰.

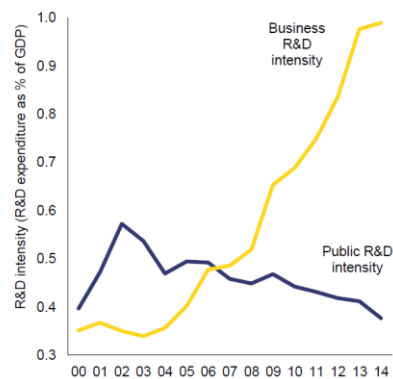
⁴⁷ Only 10.6% of Hungarian SMEs (EU-28 average 28.7%) carries out innovation activities. http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards/index_en.htm

⁴⁸ New graduates in science and engineering graduates (ISCED 5 and 6) per thousand population aged 25-34 was 9.6% in 2013 which is well below the EU average of 16.3% and places Hungary in the 26th position in the EU.

⁴⁹ Looking at Hungary's economic structure, the country is one of the top performers in terms of value added in high-tech and in medium high-tech manufacturing as % of total value added in the EU.

⁵⁰ To support the ongoing restructuring process of the national R&I system the Hungarian authorities requested in December 2014 a pre-peer review and subsequent in depth evaluation under the Horizon 2020 Policy Support Facility (PSF). The pre-Peer review was carried out by a high-level independent expert panel between May and October 2015 and identified the scope of the future in-depth Peer Review started in January 2016. The report is available at: <https://rio.jrc.ec.europa.eu/en/library/horizon-2020-policy-support-facility-pre-peer-review-hungarian-research-and-innovation>

Graph 3.4.1: Hungary - evolution of business R&D intensity and public R&D intensity, 2000-2014



(1) Business R&D intensity: Business enterprise expenditure on R&D (BERD) as % of GDP.
 (2) Public R&D intensity: Government intramural expenditure on R&D (GOVERD) plus higher education expenditure on R&D (HERD) as % of GDP.
 (3) Public R&D intensity: Break in series between 2004 and the previous years.
Source: Eurostat

11.3. Additional references to R&I

[Box 1.1: Investment Challenges, p. 9]

Other areas where challenges for investment can be identified include research, development and innovation and sector specific regulation (sections 3.4 and 3.5). The resources devoted to science and technology are comparatively low. In addition, there is a lack of spill-over effects from multinational companies. Financing of new innovative companies through venture/seed capital and newer initiatives such as crowdfunding remains marginal. High administrative and tax burden as well as entry barriers the retail sector, hamper investment. Below-cost regulated end-user prices for household consumers in the retail electricity and gas utility sector brought rates of return in the electricity and gas regulated business segments to zero during the past few years, leaving limited funds for investment.

[3.3. Education and skills, p. 50]

Current admission measures can narrow access to higher education and limit the pool of future innovators and researchers. This may have a negative impact on Hungary's attractiveness to investments in knowledge intensive sectors. The higher education strategy has been approved and an action plan adopted. The strategy aims to achieve a 35% tertiary attainment rate by 2023. At the same time, national studies suggest that the annually increasing admission requirements to higher education risk further narrowing the chances of upper secondary vocational graduates and disadvantaged pupils to access higher education. Upper secondary VET students apply to higher education to lesser extent and fewer of them pass advanced upper secondary exams that increase chances of admission. Disadvantaged pupils apply to programmes and institutions with lower admission requirements and thus higher admission chances. While science, technology, engineering and mathematics programmes are a priority the increasing admission requirements result in a decreasing number of entrants⁵¹. The community higher education centres are envisaged to be financed by local economic or social actors, which may prove to be challenging in disadvantaged regions where these centres are planned to be located.

⁵¹ Szemerszki Marianna (2014) A középiskolából a felsőoktatásba. In. Felsőoktatási Műhely. http://www.felvi.hu/pub_bin/dload/FeMu/2014_1/femu_2014_1_47-63.pdf

12.Ireland

12.1. Executive Summary

This country report assesses Ireland's economy in the light of the European Commission's Annual Growth Survey published on 26 November 2015. The survey recommends three priorities for EU economic and social policy in 2016: re-launching investment; pursuing structural reforms to modernise Member States' economies; and responsible fiscal policies. At the same time, the Commission published the Alert Mechanism Report that initiated the fifth annual round of the macroeconomic imbalance procedure. The Alert Mechanism Report identified Ireland as warranting a further in-depth review.

Ireland has experienced a remarkable economic rebound over the past two years. Ireland was among the European countries most severely affected by the economic crisis when the real estate bubble burst in 2008 and domestic banks required government support. Output contracted by almost 8 % between 2007 and 2009. A wide-ranging and ambitious series of reforms was started in late 2010 with the support of the EU-IMF programme of financial assistance. The strong ownership of the reforms by the Irish authorities and their successful implementation laid the ground for the ongoing recovery. They helped turn Ireland into the fastest growing economy in the European Union in 2014 and 2015. The reforms under the EU-IMF programme focused principally on financial sector repair and restoring fiscal sustainability, but also included a structural and competitiveness component.

The strong rebound of the Irish economy that started in 2014 has broadened and gained further momentum. While Ireland's quarterly national accounts are volatile, the recorded strength of the rebound has exceeded even the most optimistic expectations. Real GDP growth is projected at close to 7 % in 2015. Initially driven by exports, the recovery has become broad-based and is now fuelled by private investment and consumption, in addition to being spread across most sectors.

The recovery has been job-rich and has supported the economic rebalancing process. Full-time job creation has been sustained across sectors and regions. This has led to a fall in the unemployment rate to less than 9 % and a reduction in long-term and youth unemployment. Rising output and corporate profits have translated into stronger than expected tax revenues, mainly through surging corporate income tax receipts, and have helped overachieve nominal fiscal targets. Regained competitiveness and strong export growth have turned the current account into significant surplus. Finally, the strong macroeconomic environment facilitated the deleveraging process and helped banks return to profitability.

The main challenge for Ireland is to ensure durable and balanced growth in the future. The high headline real GDP growth figures of the past two years probably overestimate the underlying strength of the recovery. The very large share of multinational companies in value-addition, employment and exports exposes the Irish economy to significant cyclical swings and to various types of external shocks. It also makes international cost and non-cost competitiveness a critical issue for the economy. In turn, small and medium-sized enterprises (SMEs) continue to face development challenges, even though they are now also benefiting from and driving the recovery. Given the currently very high growth context, the main challenge consists in promoting durable and balanced growth in the future. This encompasses better managing the volatility inherent to a small open economy through appropriate and prudent macroeconomic policies. It also comprises fostering sustained tangible and intangible investment by the private sector, both SMEs and multinational companies. The extent to which public investment in infrastructure is adequate to support private investment and the delivery of

services has also returned to the forefront of policy issues after years of contracting government investment.

Remaining legacy issues nevertheless continue to attract policy attention. Ireland experienced three years of reforms under the EU-IMF programme and two years of very high real GDP growth. Yet, this has not been sufficient to address all the legacy issues from the crisis, including in particular in terms of private and public debt, and financial sector repair. These issues continue to represent vulnerabilities and imbalances that affect the economy, hinder Ireland's investment potential and pose challenges to macroeconomic policy making.

Overall, Ireland has made some progress in addressing the 2015 country-specific recommendations. In the fiscal area, the general government deficit is expected to be well below 3% of GDP in 2015 and to reduce further in 2016 and 2017. Domestic expenditure ceilings continue to be revised and efforts to broaden the tax base have been limited. Some progress has been made in the healthcare area, but cost-effectiveness remains an issue. Some progress has been made in labour market and social policies, including through measures adopted in the 2016 budget. Some progress has been achieved in the financial sector area as sustainable solutions to mortgage arrears are implemented, but the establishment of a central credit register has been pushed back further.

Regarding progress in reaching the national targets under the Europe 2020 strategy, Ireland is performing well in relation to the employment rate and early school leaving targets. More effort is needed in R&D investment, reducing greenhouse gas emissions, increasing the share of renewable energy, improving energy efficiency, reducing poverty and attaining the extremely ambitious tertiary education goal.

The main findings of the in-depth review contained in this report, and the related policy challenges, are the following:

- **Active deleveraging by companies has continued during the past year.** The process has been aided by the economic recovery, which has resulted in increased earnings and corporate profits. The fall in debt ratios has also benefited from the surge in nominal GDP. Overall, corporate indebtedness remains high, but this is partly driven by the large multinational corporate sector, whose debt entail lower risks to the domestic economy. Irish firms have entered a recovery phase even though some companies continue to face deleveraging needs.
- **Households have also reduced their debt, though many still face further deleveraging needs.** Households are typically even more advanced than firms in the deleveraging process. However, those that borrowed heavily during the housing market bubble need to deleverage further. While the balance of mortgage accounts in arrears has declined, long-term arrears account for almost two thirds of the total balance. Access to collateral is still difficult while personal insolvency and bankruptcy schemes are relatively little used. Overall, the private sector debt ratio – including companies and households – has declined significantly.
- **The gross government debt ratio has fallen markedly.** The ratio is projected to be below 100% of GDP in 2015. While technical factors underpinned the fall in the ratio in 2014, the surge in nominal GDP and its budgetary impact provided the main push in 2015. Government debt has an average maturity of about 13 years and carries low interest rates. In addition, plans to sell government-owned shares in domestic banks should further reduce debt.

- **Vulnerabilities persist as the debt ratio remains high.** The baseline scenario of the debt sustainability analysis points to a persistent decline in the debt ratio until the projected effects of ageing kick in in the second half of the next decade. However, Ireland's debt projections are sensitive to external and internal shocks and to possible deviations from the fiscal adjustment path.
- **Financial sector vulnerabilities continue to decline.** The restructuring of domestic banks is nearing completion and significant reductions in government ownership in the sector are imminent. Profitability continues to recover but remains weak. Capital positions are sound but challenges remain as banks adapt to the gradual phase-in of prudential requirements.
- **Non-performing loans fell further with the recovery, but the ratio remains among the highest in the euro area.** Resolution mechanisms for mortgage and commercial loan arrears remain lengthy and complex. The high rate of long-term mortgage arrears points to remaining difficulties in dealing with the most distressed debtors. The establishment of a functional central credit registry to support prudent lending practices in the future has been a difficult process and has been pushed back again.
- **External accounts have strengthened further.** While the headline figure is inflated by specific factors, the current account is firmly in surplus. Net external liabilities have fallen by 60 percentage points from their peak in 2012 to about 80 % of forecast GDP by Q3-2015.
- **Demand for new housing exceeds supply by a wide margin in main urban areas.** As a result, residential property prices and rents in urban areas increased sharply in 2014, before slowing again in 2015. There is currently no evidence of overvaluation, but constraints limiting the construction sector and the supply of housing could generate risks of imbalances if they are not resolved. These constraints are indeed being addressed but the extent to which announced measures will be effective and free of adverse unintended effects will need to be monitored.

Other key economic issues analysed in this report that point to particular challenges for Ireland are the following:

- **Conditions for SMEs are improving, though access to finance remains challenging for some.** SMEs report higher investment, turnover, profits and job creation. In turn, domestic banks report a modest pick-up in credit demand and lending. However, internal sources of finance remain heavily used. The concentrated lending market, coupled with higher credit risk, also results in higher interest rates than the euro area average. In addition, SMEs still rely heavily on bank loans and have limited access to non-bank financing sources. Meanwhile the use of public financing initiatives for SMEs is improving, but remains suboptimal.
- **Unemployment has fallen below the EU average but long-term unemployment and the low work intensity of households remain of concern.** Skills mismatches remain and skills shortages have intensified in certain areas. Upskilling and reskilling opportunities remain insufficient. Overall, the welfare system has worked well to contain the effects of the crisis on poverty and inequality, but barriers to inclusive growth remain. In particular, concerns persist about inactivity traps for certain households, the high proportion of people living in

households with very low work intensity, child poverty and the lack of access to affordable, full time and quality childcare.

12.2. R&D and SMEs development

R&D activities are dominated by multinational companies. The technology divide between SMEs and multinational companies is very clear. The latter account for about 70 % of private R&D, with activities focused in IT services and pharmaceuticals. In addition, multinational corporations not only conduct R&D in Ireland, but also lodge intellectual property applications in Ireland for research conducted abroad, which increases their intangible capital. In contrast, while Irish SMEs introduce more product, process, marketing and organisational innovations than the EU average, evidence does not seem to show major market benefits from such R&D investments. The percentage of sales of new-to-market or new-to-firm innovations is lower in Ireland than in the rest of the EU (9.3 % versus 12.4 %). Overall, R&D spillovers between SMEs and multinational corporations are relatively limited.

SMEs are highly dependent on public R&D support for their own innovation prospects. This makes them vulnerable to the significant reduction in public R&D spending that occurred during the crisis. While such spending stabilised in 2013 and increased slightly in 2015, the Infrastructure and Capital Investment plan (section 3.4) does not envisage significant increases in public R&D spending. In addition, R&D expenditure by higher education institutions was also cut considerably during the crisis and the level of industry-academia collaboration — as measured by the amount of public research financed by the business sector — is relatively low⁵². Improving this type of cooperation remains a key challenge for Ireland.

A number of policy initiatives seek to foster R&D and its business impact. Enterprise Ireland and the Science Foundation Ireland recently introduced new cooperation agreements for SMEs and an SME-specific scheme to foster R&D has been operational since 2014. The Action Plan for Jobs 2015 provided for five new calls for this scheme during the year⁵³. The creation of Knowledge Transfer Ireland as a central technology transfer office aims to accelerate the commercial exploitation of research knowledge. Innovation 2020, a five year strategy for R&D, science and technology was released in December 2015 and reflects the need for funding to be more effective in priority areas. In addition, the 2016 budget introduces an entrepreneurial package with an extension of the start-up corporation tax exemption, enhancements to tax incentives for investing in businesses and a reduction of capital gains tax for entrepreneurs. New tax credits for the self-employed are also to be introduced, but will remain less favourable than those for employees. These initiatives contribute to advancing the Recommendation on the economic policy of the euro area, in particular in terms of productivity, job creation and competitiveness.

⁵² Public expenditure in R&D financed by business enterprises was 0.007 % of GDP in 2013 vs 0.051 % for the EU average.

⁵³ The Action Plan for Jobs has been at the core of government efforts to foster job creation and improve the business environment and competitiveness since its first iteration in 2012. It establishes a series of concrete actions to be adopted throughout government every year and is revised annually. The Action Plan for Jobs 2016 was adopted in January and envisages a large number of new actions (section 3.2).

13. Italy

13.1. Executive Summary

This country report assesses Italy's economy in the light of the Commission's Annual Growth Survey published on 26 November 2015. The survey recommends three priorities for the EU's economic and social policy in 2016: re-launching investment, pursuing structural reforms to modernise Member States' economies, and responsible fiscal policies. At the same time, the Commission published the Alert Mechanism Report that initiated the fifth annual round of the macroeconomic imbalance procedure. The Alert Mechanism Report identified Italy as warranting a further in-depth review.

Italy entered the crisis with long-standing structural weaknesses. During the decade leading up to the crisis, deeply rooted structural weaknesses significantly constrained Italy's growth potential; Italy's annual real GDP growth averaged 1.5 %, around 2/3 percentage points below the euro area average, due primarily to sluggish total factor productivity. The high public debt ratio and the negative and worsening current account balance further limited the Italian economy's capacity to withstand the negative economic shock.

The legacy of the crisis constitutes a challenging starting point. Despite significant measures taken at the national and European level, the economy continued to contract until 2014. In 2015, Italy's real GDP had fallen back to the early 2000s levels, while the euro area GDP was more than 10 % higher. Investment fell sharply and more deeply than in the rest of the euro area on average. Unemployment and long-term unemployment increased substantially, while total factor productivity continued to decline and the participation rate remained among the lowest in the EU. As a result, Italy's gap in potential growth vis-à-vis the rest of the euro area widened. The public debt ratio increased to over 130 % of GDP in 2014 from around 100 % in 2007. Export market shares fell significantly until 2009 and competitiveness has not improved thereafter, also due to the slow responsiveness of wages and prices to the economic shock. While the financial sector proved to be relatively resilient during the global financial crisis, the prolonged recession led to the accumulation of a substantial stock of non-performing loans, weakening the banks' capacity to support the recovery.

A gradual recovery started in 2015 but risks persist. Economic activity expanded slightly in 2015 and is set to strengthen in 2016 and 2017. The positive outlook is backed by improving financing conditions and confidence, a supportive fiscal stance, better labour market prospects, and low oil prices. However, the recovery is weaker than in the euro area as a whole and subject to downside risks. In particular, the slowdown in emerging markets and the recent financial market turmoil weigh on the outlook. Employment, both in headcount and hours worked, started to increase already in mid-2014 and the unemployment rate has been declining since end-2014.

Structural weaknesses still hold back Italy's capacity to grow and adjust to economic shocks. Productivity growth remains sluggish, mainly due to the continued presence of structural obstacles to the efficient allocation of resources within the economy. The resulting low growth makes the reduction of the high public debt and the recovery of competitiveness more challenging. In turn, the high public indebtedness continues to weigh on Italy's economic performance and to expose the country to external shocks.

Overall, Italy has made some progress in addressing the 2015 country-specific recommendations. A comprehensive reform of the labour market was undertaken in 2015. Important measures were adopted to reform the governance of the banking sector and to address the stock of

non-performing loans. The education sector was reformed with a view to better rewarding merit and strengthening work-based learning and vocational training. Measures to reduce the administrative burden for citizens and businesses were taken. Furthermore, the parliament is discussing a law on competition and has passed an enabling law for the reform of the public administration. While implementation of some reforms is still ongoing, these are important steps to address Italy's long-standing weaknesses. The full impact of these reforms may materialise only over time but early signs are positive. In some key areas there is scope for further action. Targets for spending review savings have been further reduced. The cut to property taxes on first residences from 2016 is not consistent with repeated Council recommendations to shift taxation away from productive factors onto property and consumption, while key elements of the country-specific recommendations, such as the revision of cadastral values and of tax expenditures have not been implemented. Social partners have not yet found an agreement on the delayed reform of collective bargaining. Regarding the statute of limitations, the legislative process on the long-awaited systematic revision is not completed.

Regarding the progress in reaching the national targets under the Europe 2020 Strategy, Italy has either reached or is making progress towards its targets on reducing greenhouse gas emissions, increasing the share of renewable energy, improving energy efficiency, reducing early school leaving and increasing the tertiary education attainment. More effort is needed regarding increasing the employment rate, investment in research and development and the fight against poverty and social exclusion.

The main findings of the in-depth review contained in this country report and the related policy challenges are:

- **Stronger productivity growth is the key factor for the correction of Italy's macroeconomic imbalances.** Important steps have been taken to improve the functioning of the economy. However, productivity developments remain sluggish, as total factor productivity is stagnant and investment has not yet recovered after the sharp fall experienced during the crisis. This hampers the recovery of competitiveness and makes the reduction of the high public debt ratio more difficult. Ongoing and scheduled structural reforms are expected to address barriers to investment and to have a positive impact on productivity and GDP growth over time.
- **Italy's high public debt ratio, coupled with deteriorated competitiveness and productivity growth, remains a source of vulnerability for the economy.** The debt ratio is set to peak at around 133 % of GDP in 2015 and to decline in 2016 and 2017 thanks to the expected recovery combined with a further decline in the interest rate paid on debt. However, the structural primary surplus is expected to worsen, slowing down the underlying pace of debt reduction. Furthermore, the privatisation plans might be delayed.
- **The low growth - low inflation environment slows down the recovery of cost competitiveness.** Since 2010, Italy has recorded a broad stabilisation in its export market shares, after large losses recorded in previous years. Wage growth has moderated but the current context of very low inflation and Italy's persistent sluggish labour productivity growth holds back the adjustment in unit labour costs relative to other euro area countries. Italy's product specialisation and the high share of small firms with a weak position on international markets further weigh on competitiveness.

- **Italy's labour market institutions have been deeply reformed and preliminary evidence indicates a positive impact on the economy, which would be amplified by a reform of collective bargaining.** The new legislation on open-ended contracts and the tax relief for new hires are having an initial positive impact on job creation and duality. Long-term unemployment and the risk of labour market exclusion for young people, as well as the low labour market participation of women, remain causes for concern. The reform of active labour market policies may prove challenging to implement. Furthermore, the progress in reforming the bargaining framework is slow and the diffusion of firm-level negotiations remains limited.
- **In the banking sector, important reforms are ongoing but pockets of vulnerability remain.** Long-standing weaknesses in banks' corporate governance are being tackled, supporting the capacity of the banking sector to allocate resources more efficiently. Measures have recently been announced to support the development of a private market for non-performing loan transactions, thereby helping to reduce their high stock over time and increasing the capacity of Italian banks to support the economy. The recent resolution of four small banks in Italy whereby subordinated bondholders incurred losses shows that some vulnerabilities persist.
- **Given its central position in the euro area, Italy is the source of potential spillovers to other Member States while external conditions affect its recovery.** Its modest recovery and structural weaknesses adversely impact the European recovery and growth potential. Italy's size and dense trade and financial links imply that the state of the Italian economy may have important consequences for the other EU economies. At the same time, external demand and the inflation environment are paramount to Italy's recovery, debt-to-GDP reduction efforts and to recovering competitiveness.

Other key economic issues analysed in this report that point to particular challenges for Italy are the following:

- **The taxation system hinders economic efficiency and growth.** Partly due to the costs of servicing the public debt, Italy's tax-to-GDP ratio in 2014 was among the highest in the EU. Relative to other Member States, the tax burden weighs more on the factors of production, which may have a negative impact on growth. The abolition of the property tax on primary residences further aggravates this problem. The long awaited revisions of tax expenditures and cadastral values have been further postponed and the frequent changes in tax policy increase uncertainty for economic operators. The tax system is complex and tax compliance is low, raising further the burden on compliant firms and households.
- **The public sector is being reformed to tackle its long standing inefficiencies.** Awaiting the implementation of the enabling law for the reform of public administration, its structural inefficiencies continue to slow implementation of reforms, deter investment, and open opportunities for rent-seeking, for instance in public procurement. In the justice system, lengthy court proceedings and a high number of pending civil and commercial cases remain major challenges, also after recent measures. Corruption is still a major problem and the statute of limitations remains an obstacle to the fight against it.
- **Remaining barriers to competition and the high administrative burden weigh on the business environment.** The parliament is expected to pass market-opening measures soon but

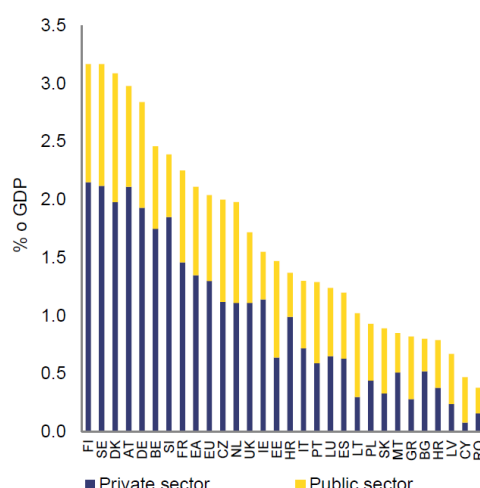
significant barriers to competition will remain in important sectors, including in retail, professional services, local public services and the transport sectors. Doing business in Italy is significantly more difficult than in the other major EU economies and only modest progress has been achieved in recent years.

- **A reform of the school system is ongoing but investment in tertiary education, R&D and broadband communications remains relatively low.** The tertiary education attainment rate for 30-34 year-olds is one of the lowest in the EU as is basic skills proficiency in the adult population. The low rate of human capital reflects the low returns to education and skills in the labour market, particularly for the young. By improving school quality, the school reform aims at complementing the labour market reform in improving the chances for the educated young. Italy's spending in tertiary education as well as in research and innovation, particularly in the private sector, is low and collaboration between academia and business is suboptimal. Despite efforts in 2015, the coverage of new generation broadband communications infrastructure is among the lowest in the Union.
- **Social services are too fragmented to tackle effectively the social consequences of the crisis.** The share of persons at risk of poverty or social exclusion was 28.3 % in 2014, slightly down from 28.5 % in 2013. The rate is still higher than pre-crisis levels (25.5% in 2008) and showing no progress towards the Europe 2020 target on poverty reduction. The provision of social services is fragmented with deep regional disparities and there is no minimum income scheme. Some measures in the pipeline, such as the foreseen national antipoverty strategy, may set the basis for an integrated social policies framework.

13.2. R&D and innovation

Italy is still characterised by low R&D investment compared to other EU countries. In 2014, Italy's overall R&D intensity – defined as total R&D expenditure as a share of GDP – amounted to 1.29 %, compared to an EU average of 2.03 %. The gap with the EU average is higher for R&D expenditure by private businesses (0.72 % of GDP in Italy compared to an EU average of 1.3 %) than by the public sector (0.53 % of GDP in Italy compared to an EU average of 0.72 %) (Graph 3.4.2). As in many other countries, growth in Italy's R&D intensity has slowed down since the start of the protracted crisis in 2009. The fiscal consolidation strategy of the last few years did not protect R&D: the share of research and innovation in government expenditure decreased from 1.32 % in 2007 to 0.99 % in 2014.

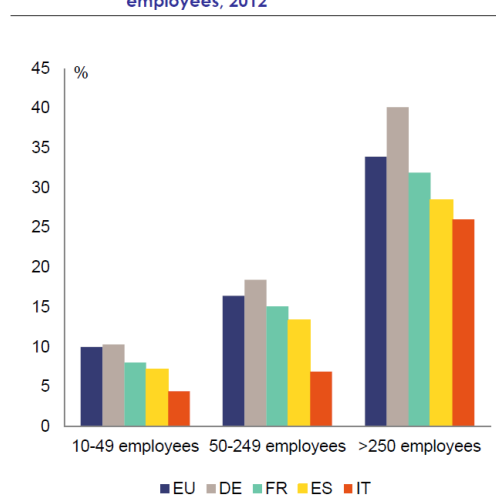
Graph 3.4.2: R&D intensity, 2014



Source: European Commission (Eurostat)

Structural weaknesses affect Italy's R&D system. Italy scores low on several specific aspects relevant to foster R&D and innovative activity. First, R&D funding gaps continue to exist, especially for young and small innovative firms which do not have sufficient internal resources to fund their projects. While bank lending tends to be a less suitable source of external funding for R&D projects, more appropriate funding channels tend to be underdeveloped in Italy (see Section 3.3). Second, the relative scarcity of highly-skilled human resources in Italy holds back Italy's innovative performance. Moreover, many Italian researchers have left the country in recent years owing to lack of career prospects and competitive salaries (Box 2.4.1). Third, Italy's research and innovation system is characterised by weak cooperation between academia and business (Graph 3.4.3). In 2012, the share of public R&D financed by businesses was only 0.014 % of GDP, well below the EU average of 0.051 %. This holds back the transfer of knowledge from universities and other public research to firms and the spreading of the risks related to R&D activities. Fourth, the low share of high-tech knowledge-intensive services and of high-tech manufacturing activities, and the significant share of low-tech and medium-low-tech manufacturing activities (see Section 2.3) is both a cause and a consequence of Italy's weak innovative performance. Finally, Italy's unfavourable general business environment, its many small and family-owned firms and relatively low inward foreign direct investment also explain why Italy exhibits less innovative activity than its peers (see Sections 2.3 and 3.3).

Graph 3.4.3: Share of innovative firms cooperating with higher education institutions, by number of employees, 2012



Source: European Commission (Eurostat)

Italy has taken a number of policy initiatives to support its research and innovation system, but their fragmentation remains a concern. First, the renewal of the tax credit for firms' R&D activity for the period 2015-2019 took effect. The tax credit amounts to 25 % of incremental R&D investment, subject to a ceiling of EUR 5 million per beneficiary, and it rises to 50 % for research carried out with public research centres and universities. However, its effectiveness may be limited by its temporary nature and lack of predictability given frequent changes in the past. Second, in the beginning of 2015, the privileges that were already in place for so-called 'innovative start-ups' were extended to 'innovative SMEs'. These privileges include inter alia simplified access to the Central Guarantee Fund for SMEs, tax incentives for investment in young innovative SMEs, flexible remuneration schemes and deferred deduction of losses from capital and other waivers. Third, implementing rules for the so-called 'patent box' regime that allows for the partial exclusion (up to 50 % in 2017) of revenues from intangible assets (e.g. patents, trademarks, industrial designs and models) were adopted in July 2015. Fourth, a revision of the regulatory framework on equity crowdfunding has taken place and further public consultations have been organised to support the development of this financing channel. Fifth, the government set up a EUR 50 million fund managed by Invitalia for privately co-financed venture capital investments. Sixth, the 2016 Stability Law sets aside funds for the hiring of new professors and researchers (see "Education" in this Section). Seventh, Italy has decided to join the enhanced cooperation at EU level on unitary patent protection. Once in place, the unitary patent will make it easier, faster and cheaper for Italian innovative firms to obtain patent protection in all 26 participating Member States. Finally, several measures have been taken in recent years to foster non-bank funding channels for firms (see Section 3.3). In spite of these initiatives, the effectiveness of the above-mentioned measures may be limited due to the lack of an overarching innovation strategy. At the same time, the National Research Programme 2014-2020, which was presented for the first time in February 2014, has not been approved yet and is therefore still not operational.

13.3. Additional references to R&I

[Box 1.1: Investment challenges, p. 9]

The tax burden on productive factors remains high (see Section 3.1). Italy's taxes on capital as a share of GDP are relatively high (10.6 % vs. 8.2 % in the EU in 2014). Similarly, the implicit tax rate on labour stood at 44 % in 2014, 7.6 percentage points higher than the EU average. The government

has started to take action to reduce the tax burden on labour and the 2016 Stability Law provides for a reduction in the corporate income tax from 2017. The law also provides for tax incentives on new investments for 2016. However, the fragmentation and uncertainty of R&D tax incentives are affecting private investment in innovation. In addition to the recent measures taken by the government, at end-2015 Italy's Cassa Depositi e Prestiti approved a business plan for 2016-2020 to boost investment by mobilising fresh resources especially for venture capital, innovation and development (see Section 3.1).

[2.1. Productivity, p. 15]

The underlying causes of misallocation and sluggish total factor productivity growth are multi-layered and deep-rooted. Econometric analysis at the firm level confirms that certain characteristics of Italian firms, such as family ownership, the recourse to relational banking (i.e. the choice of a bank on the basis of personal relationships) and the low level of education among white-collar workers are associated with lower firm-level total factor productivity growth⁵⁴. It also shows that state-ownership and the recourse to the wage supplementation schemes (see Section 2.3) are associated with higher misallocation. The broader literature highlights the role of the competition framework, as well as public administration and justice in fostering or hampering reallocation and productivity⁵⁵. These factors are discussed in Sections 3.2, 3.3 and 3.6. Total factor productivity growth also crucially depends on human capital and innovation capacity. These factors are discussed in Section 3.4. Enhancing productivity through structural reforms in the above-mentioned policy areas is also one of the 2016 Council recommendations for the euro area.

[Box 2.2.1: Structure and evolution of public expenditure in Italy, p. 20]

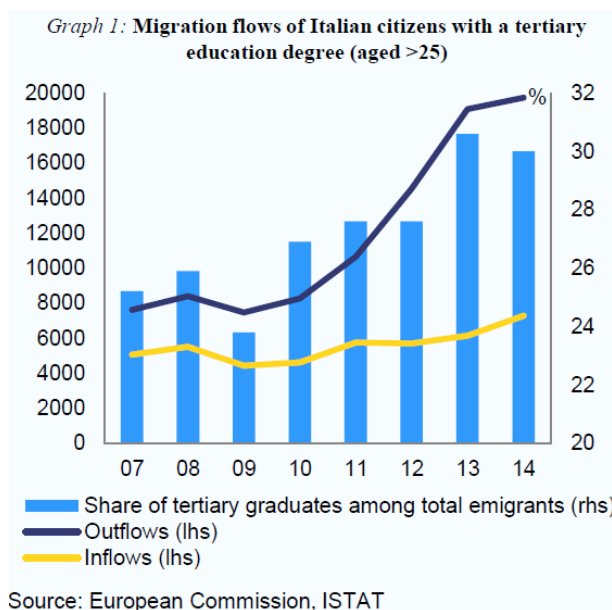
Italy's total public expenditure also appears increasingly biased towards the elderly, while growth-enhancing spending items have been severely restrained during the crisis. In particular, Italy's pension expenditure as a share of potential GDP is the second highest in the EU/OECD after Greece, while investment in infrastructure, education, and innovation has been particularly affected by the crisis. These developments, adding to long-standing inefficiencies, are likely to weigh on the country's anaemic potential growth. At the same time, past pension reforms, particularly the one in force since 2012 require full implementation to continue to contribute to the sustainability of the system, increase Italy's very low labour market participation, and underpin the adequacy of future entitlements.

[Box 2.4.2: Italy's brain drain, p. 41]

High-skilled young Italian residents are increasingly emigrating abroad. The emigration of highly qualified people increased during the crisis, causing a serious brain drain. The number of Italian citizens with a tertiary education degree leaving the country has been rapidly increasing since 2010 and has not been compensated by inflows of equally-qualified Italians returning to the country (Graph 1). Indeed, official statistics underestimate emigration flows because not all citizens leaving Italy register with the Italian consular authorities in the destination country.

⁵⁴ LSE Enterprise (2016), Study on capital and labour misallocation in Italy: the productivity conundrum, ECFIN contract 2014 017/H.

⁵⁵ European Commission (2015), Macroeconomic Imbalances. Country Report – Italy 2015, European Economy – Occasional Papers, no. 219.



The increasing emigration reflects better job opportunities and conditions abroad. Survey data show that, compared with their peers working in Italy, young Italian graduates working abroad earn higher and more rapidly increasing salaries. They also work more frequently under open-ended contracts and consider their formal qualification more appropriate for their job⁵⁶. Focusing on Italians with a doctoral degree (PhDs), those working abroad report having both better job opportunities and significantly higher earnings⁵⁷. This may explain why high-qualified Italian workers show a very low propensity to return to their home country⁵⁸. Consequently, the emigration of highly qualified Italian workers does not qualify as ‘brain circulation’ (i.e. when people temporarily go abroad to study or work, but then go back to their home country).

The increasing emigration is not matched by an increasing inflow of high-skilled young foreigners. The emigration of qualified young Italians cannot be considered a ‘brain exchange’ either: many Italian workers leave the country, but few highly qualified individuals from other countries choose Italy as a destination. The proportion of foreign citizens living in Italy aged 25-64 with a tertiary education degree is much lower than that of Italian citizens (11.5 % compared with 17.5 % in 2014). In the EU as a whole the proportions of EU citizens and non-EU citizens with high qualifications are similar (29.4 % and 28.1 % respectively).

Risks to the quality of the labour supply and potential growth are mounting. The brain drain can thus result in a permanent net loss of highly qualified human capital, which would harm Italy's competitiveness. In the medium to long term, the brain drain may affect not only Italy's economic growth prospects, but also its public finances. The brain drain entails a dual financial cost: firstly, in terms of public expenditure on education for students who then permanently leave the country and secondly, in foregone future public revenue from taxes and social contributions that highly qualified emigrants would pay if they worked in Italy.

⁵⁶ Consorzio Interuniversitario AlmaLaurea (2015), Condizione occupazionale dei laureati. XVII Indagine 2014, available at https://www.alma laurea.it/sites/alma laurea.it/files/docs/universita/occupazione/occupazione13/alma laurea_condizione_occupazionale_indagine-2014.pdf

⁵⁷ Istat (2015), L'inserimento professionale dei dottori di ricerca. Anno 2014, available at <http://www.istat.it/it/archivio/145861>

⁵⁸ Biondo A.E., Monteleone S., Skonieczny G., Torrisi B. (2012), The propensity to return: Theory and evidence for the Italian brain drain, *Economics Letters*, no. 115, pp. 359-62.

The quality of higher education is receiving more attention, but attracting young researchers remains a challenge. More attention is being paid to the quality of higher education and to the framework for allocating public funding. In 2015, the share of performance-related funding to tertiary education institutions rose to 20 % of total funding and is set to gradually increase to 30 %. Standard costs were established and are being rolled out gradually until 2018 as a criterion for allocating the remaining share of public funding. The ministry also started the third round of evaluation of research results (*valutazione della qualità dei prodotti della ricerca*) for the period 2011-2014 to monitor the results achieved by universities and public research institutes under the control of the Ministry of Education since 2011. The 2016 Stability Law provides funding for hiring up to 650 new full and associate professors through a simplified procedure, as well as 850 young researchers on ‘tenure-track’ positions; it also makes it easier to hire young researchers on fixed-term contracts, not leading to a tenure track. These one-off measures are a first positive step, although rather limited in scope and not sufficient to address the issue of the ageing teaching staff.

14.Latvia

14.1. Executive Summary

This report assesses Latvia's economy in the light of the European Commission's Annual Growth Survey published on 26 November 2015. The survey recommends three priorities for the EU's economic and social policy in 2016: re-launching investment, pursuing structural reforms to modernise Member States' economies, and responsible fiscal policies.

Latvia recovered from the economic crisis by taking decisive measures and is set to grow by round 3% in the short run. Caught up in the economic crisis, Latvia embarked on a rigorous reform programme supported by the EU-IMF financial assistance, which led to a swift rebalancing of the economy and return to economic growth in 2011. After some moderation in 2014 and 2015 due to external factors, Latvia's economy is set to grow by around 3 % in 2016-2017. Government debt was estimated at 36.7 % of GDP at the end of 2015. The government's budgetary position is under control with a fiscal deficit of 1 % of GDP projected for 2016.

Consumption and investment are expected to be the main drivers of the economy in the medium term. Private consumption and investment were restrained by external uncertainty from 2014, but are projected to recover gradually. As regards the private sector, household income growth is dynamic and new credit is bottoming out. As for public investment, absorption of EU funds is expected to accelerate during the new programming period. Latvia is a major beneficiary of the European Structural and Investment Funds (ESIF) and can receive up to EUR 5.6 billion for the period 2014-2020. Such investments will cover a broad spectrum of areas, in particular infrastructure, environment, education innovation and healthcare.

Latvia is an open economy with close links to trading partners in the region. Export performance and investor confidence wavered in the wake of tensions with Russia, outweighing the relief provided by lower oil prices and the weaker euro. With some adjustment costs, the export sector has managed to find new markets. Moreover, an increase in product quality explains Latvia's export performance amid adverse cost competitiveness developments.

Major challenges relate to the demographic situation. The labour market is tightening due to net emigration and negative natural growth. Working age population could drop by 20 % by 2030. This puts a strain on the social and health systems, as age dependency increase, and can aggravate already high rates of poverty and social exclusion.

The decline in the population of working age contributes to wages increasing faster than productivity. If continued, this may pose a threat to the competitiveness of the tradable sector and the long-term growth potential of the economy as a whole. In the meantime, qualified labour force is lacking in some sectors.

Overall, Latvia has made limited progress in addressing the 2015 country-specific recommendations. Some progress has been made in improving vocational education, setting up quality-based financing for higher education and research, increasing the employability of social assistance recipients, improving the efficiency of the judicial system and tackling the shadow economy. However, limited progress has been made in shifting the tax burden away from low-wage earners, improving the adequacy of social assistance benefits and the accessibility and cost-effectiveness of healthcare services, and increasing the accountability of insolvency administrators. No

progress has been made in improving public service legislation as the draft Public Service Law has not passed through the Parliament.

Regarding the progress in reaching national targets under the Europe 2020 strategy, Latvia is performing well in employment rate, renewable energy, energy efficiency, reducing greenhouse gas emissions, reducing early school leaving and tertiary education attainment, while more effort is needed in R&D investments and reducing poverty.

The main findings of the analysis of this report, and the related policy challenges, are as follows:

- **The structure of tax revenue is limiting economic growth and supply of public services.** A high tax burden on low-wage earners creates disincentives to formal employment. Only marginal use is being made of the scope for a growth-friendly tax shift from labour to consumption, environmental and property taxation. Tax evasion, which is falling but remains high, is limiting the availability of adequate public financing for education, social and healthcare services.
 - **The minimum income reform is expected to improve the adequacy of social benefits.** The nationwide minimum income threshold is to be rolled-out from 2017, but budget financing has not yet been decided. Once implemented, this measure should partially address poverty and social exclusion issues. The reform will necessitate long-term financial planning to ensure fiscal sustainability.
 - **Ensuring a well-qualified labour force is critical for sustainable economic growth.** Demand for labour in a situation of declining population of working age is driving down unemployment, but wage growth is higher than that of productivity. This could be counteracted by productivity-boosting reforms particularly in education, labour market activation and healthcare.
- **A framework for market-relevant education, research and innovation has been established, but not fully implemented yet.** The higher education attainment rate is above the EU average in Latvia, but providing sufficient graduates for knowledge-intensive sectors and attracting international students remain challenging. Quality-rewarding incentives are being introduced into the financing of higher education and research, and Latvia is moving towards an independent accreditation of higher education establishments. Science, technology, engineering and mathematics are being promoted in school education and prioritised in the public financing of study places. However, work-based learning and innovation are insufficient and the coverage of active labour market measures is low. The consolidation of research institutions and targeted innovation support are expected to stimulate Latvia's currently low innovation performance.
- **Latvia lags well behind other Member States in terms of general health of the population**
Access to healthcare remains a major concern due to low public financing and high out-of-pocket payments. Underfunding is driving up waiting lists and Latvia's unmet health needs are the highest in the EU. Efficiency and preventive measures are being implemented gradually, but a comprehensive vision especially with regard to appropriate financing is lacking.

- **Investment is being held back by the uncertain external environment, and deficiencies in investment protection. Investments in businesses linked to Russia have been put on hold.** The shrinking labour pool is lessening Latvia's investment attractiveness. Moreover, the weak supervision of insolvency administrators, low recovery rates in insolvency cases and inefficiencies in public administration discourage investment in Latvia. In addition, the size of the shadow economy, although declining, is distorting competition and is not conducive to investment or innovation.
- **Energy security relies on investment in interconnections and the efficient use of resources.** The electricity market has been fully liberated since 2015, but the full benefits of this will be reaped only once sufficient regional interconnections are established. The gas market liberalisation, to be completed by April 2017, is progressing. The support framework for renewable and fossil fuel based co-generation has become increasingly complex and costly. Meanwhile new projects are on hold until the future framework conditions have been clarified. There is room for improving the energy efficiency through heat-insulating apartment buildings.
- **Inefficiencies in the public administration and inadequate public infrastructure are weighing on the business environment.** Remuneration in the public sector is poorly linked to results. In such conditions, attracting and retaining talent are difficult. Latvia relies on EU financing to upgrade its public infrastructure, but a number of projects have run into difficulties due to poor project management. More efficient project management and public procurement could bring greater benefits for both the public administration and businesses.

14.2. Research and innovation

R&D intensity has slightly increased, but both public and business investments remain very low (Graph 2.4.2). R&D intensity marginally increased from 0.56 % of GDP in 2007 to 0.68 % in 2014, but remains well below the EU average of 2.03 % of GDP. The severe reduction in national public R&D budgets since 2009 has been more than compensated by the substantial use of EU Structural funds for R&D from 2010-2011. Public R&D intensity has increased, but is dependent on EU funds. Business expenditure on R&D is very low, but appears to be on a slow upward trend in recent years (from 0.17 % in 2013 to 0.24 % of GDP in 2014).

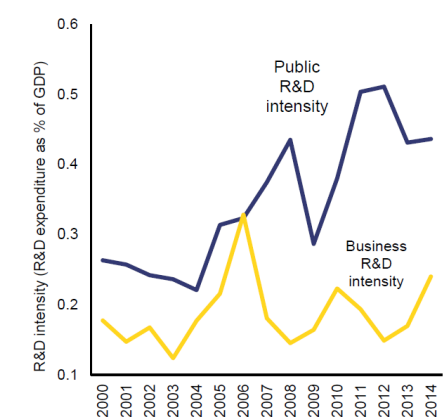
The structure of the Latvian economy implies low drive for innovations. The low share of medium and high-tech companies in value added⁵⁹, the prevalence of the shadow economy and the large share of state-owned companies leaves little room for private innovative capacity, as confirmed by the low number of researchers employed in the private sector. The lack of collaboration with research institutes and universities is reflected in the low number of public-private co-publications – 1.5 per million inhabitants, the lowest in the EU.

Uptake of R&D tax incentives is increasing, following the 2014 reform of their scope and generosity. Until recently Latvia has been a marginal user of R&D-related tax incentives, mainly targeting the acquisition of technology from outside the country and/or foreign investors and entrepreneurs. As of July 2014, a new general tax allowance for R&D expenditure is offered. The

⁵⁹ Value added of high-tech manufacturing, medium /high-tech manufacturing and high-tech knowledge-intensive services amount in total to only 7.1% of GDP (ranking 24th in the EU).

uptake of this incentive is increasing and more companies are reporting their innovative activities, which were previously accounted for in operational expenditure.

Graph 2.4.2: R&D intensity



Source: Eurostat

Note: (1) Business R&D intensity: Business enterprise expenditure on R&D (BERD) as % of GDP.
(2) Public R&D intensity: Government intramural expenditure on R&D (GOVERD) plus higher education expenditure on R&D (HERD) as % of GDP

The Latvian public R&D system is fragmented, with efforts dispersed across many areas of research⁶⁰. The combination of limited and inefficient funding leads to very low scientific performance⁶¹, lack of skilled human resources in both public and private sectors⁶² and low levels of public-private cooperation. Low levels of internationalisation worsen the situation. Improving the quality of the scientific base is a necessary precondition for the public research to have an impact on Latvia's further economic development.

Large-scale reforms of higher education and research introduced a consolidation of research structures, quality-based financing model and incentives to foster innovation in academia. Consolidation of research institutions is ongoing to improve the quality and relevance of their outputs. Linked to the higher education reform, public R&D institutions in similar research areas are encouraged to merge. Public financing is gradually being limited to institutions that have achieved a certain critical mass and performance thresholds. Moreover, the best performing research institutions are rewarded by a 10 % increase in their basic infrastructure grant. Further support is also provided for institutional improvements assisting the consolidation process.

A range of policy tools have already been used to increase innovation capacity such as innovation vouchers, an entrepreneurial motivation programme, a cluster programme and programmes for conquering external markets and attracting venture capital to companies with high growth potential. The ongoing Technology Transfer Programme consists of local support programmes in the main universities alongside centralised support for commercialisation in international markets.

⁶⁰ Latvia until recently had 150 registered research units located in 29 research institutions.

⁶¹ This is evidenced by various bibliometric indicators. For instance, the average of relative impact factors of scientific publications (ARIF), at 0.68 in 2013, is the lowest in the EU.

⁶² The number of new doctoral graduates per thousand population aged 25–34 in Latvia is among the lowest in the EU - 0.95 in 2012, EU average: 1.81 (Eurostat)

The Smart Specialisation Framework⁶³ has been established, but implementation has only just started. Latvia has identified seven priorities for R&D support across five smart specialisation areas (Table 2.4.1). The definitions of the specialisation areas are relatively broad, but during implementation the entrepreneurial discovery process⁶⁴ should help narrowing down the areas, where Latvia has competitive advantages. The process can be assisted through close monitoring and sufficiently resourced analytical support. A monitoring mechanism was adopted in September 2015. The first analytical report is scheduled in 2017, measuring progress towards the national policy objectives, including R&D to GDP spending ratio.

14.3. Additional references to R&I

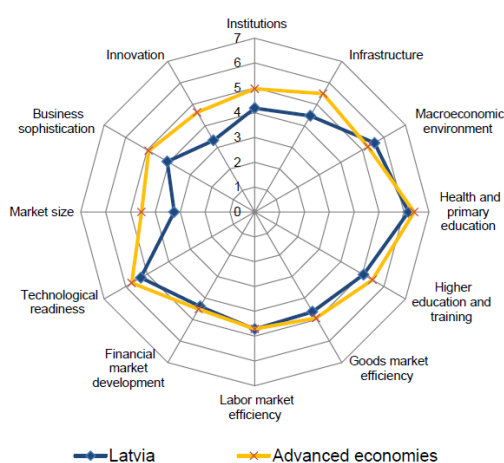
[1. Scene setter: Economic situation and outlook, pp. 6-7]

Latvia's labour productivity is among the lowest in the EU. This is related to the prevalence of low-tech and medium-low-tech industries. However, Latvian productivity is catching up with other EU Member States, as productivity per employed person increased from 57 % of the EU average in 2008 to 64 % in 2014. Growth in real labour productivity per employed person in the last 5 years is among the highest in the EU (together with Bulgaria, Romania and Lithuania). Nevertheless, there are limitations to the convergence of the productivity with other Member States such as the severe weaknesses of the research and innovation system, which are discussed in Section 2.4.

[...]

Competitiveness of the private sector is hampered by weak knowledge transfer. The World Economic Forum's Global Competitiveness Report 2015-2016 ranks the country 44th place⁶⁵ with innovation its weakest point (Graph 1.10). Business R&D intensity is among the lowest in the EU and there is insufficient cooperation between research institutions and business (see Section 2.4).

Graph 1.10: Global competitiveness index



Source: 2015 World Economic Forum

⁶³ The Smart Specialisation is a strategic approach to economic development through targeted support for research and innovation.

⁶⁴ The entrepreneurial discovery process is a learning process to select R&D and non-technological activities in which a region can hope to excel.

⁶⁵ Two places lower compared to 2014-2015

Competitiveness gains could be achieved through further improvements in the business environment. The most problematic factors for doing business are identified as instability and complexity of tax regulations, inefficiency of public administration, access to financing and adequacy of education and innovation capacity. These topics are discussed in Sections 2.1, 2.4 and 2.6. Businesses would also benefit from more risk taking and proactive entrepreneurship⁶⁶.

[Box 1.1: Investment challenges, p. 13]

Latvia's business R&D intensity is one of the lowest in the EU with insufficient cooperation between business and science. Research units receiving public funds have been grouped together and further efforts in this direction are planned. A smart specialization monitoring system has been created (see Section 2.4). It is now necessary to allocate sufficient resources so that the system can produce results i.e. data that can be further used in analysis of the situation.

[2.6. Governance and business environment, pp. 42-43]

The use of central purchasing for local authorities and innovation-oriented procurement are low. The amendments to the national public procurement rules in 2013 aimed at expanding central purchasing for local authorities by making it compulsory, among other things, but results are limited. Public procurement for innovation and other demand-led policy instruments are largely absent in Latvia. According to the results of the Global Competitiveness Report 2014-2015, with the evaluation of 3.2 points, government procurement of advanced technology products in Latvia takes 92nd place in the total evaluation of 144 countries. Further changes to the public procurement law are envisaged for 2016, with a view to transpose the 2014 package of EU public procurement directives.

⁶⁶ Arnis Sauka (2014) Measuring the competitiveness of Latvian companies, *Baltic Journal of Economics*, 14:1-2, 140-158, DOI: 10.1080/1406099X.2014.995421

15.Lithuania

15.1. Executive Summary

This report assesses Lithuania's economy in the light of the European Commission's Annual Growth Survey published on 26 November 2015. The survey recommends three priorities for the EU's economic and social policy in 2016: re-launching investment, pursuing structural reforms to modernise Member States' economies, and responsible fiscal policies.

After a major recession, with one of the sharpest declines in real GDP across the EU in 2009, the Lithuanian economy showed a remarkable recovery. On average, real GDP grew at 4.1 % of GDP over the period 2011-2014. Initially driven by rapid export growth, the recovery increasingly relied on domestic demand. Since 2013 private consumption has taken over as the main growth engine, supported by rising wages, falling unemployment and subdued inflation. Real GDP has surpassed its previous peak and the current account balance has moved from a deficit to a surplus.

The recovery strengthened Lithuania's overall economic convergence, allowing the country to join the euro area on 1 January 2015. However, previous growth rates cannot be taken for granted, and in 2015, overall growth took a significant hit from declining exports to Russia. For 2015, Lithuania's real GDP grew by 1.7 %, but is set to rebound to 2.9 % in 2016 and 3.4 % in 2017, according to the Commission 2016 winter economic forecast. Strong household consumption, supported by robust real wage growth, investment and increasing exports are expected to be the main growth drivers. Risks to the forecast are tilted slightly to the downside as the recession in Russia could turn out to be more severe than expected, further hampering Lithuania's exports.

The Lithuanian labour market is characterised by falling unemployment and growing wages. The unemployment rate fell to 9.1 % in 2015 and is set to continue its downward trend to 8.1 % in 2016. Two factors – a growing economy supporting job creation and a shrinking labour force – are behind this positive trend. Nominal wages increased by 5.1 % in 2015 and are expected to remain robust in 2016 and 2017. However, the proportion of very long-term and youth unemployment remains high, and high inequality and poverty rates give rise to some concerns.

Recently, potential growth has declined due to unfavourable demographics and sluggish investment. Total factor productivity growth and increasing capital growth rates allowed Lithuania to grow strongly before the start of the crisis in 2009. Since then, these growth rates have fallen. A declining working population has dampened growth. The main drivers of the country's population decline are low fertility rates, overall poor health outcomes, and significant net emigration. Average net emigration in Lithuania during the last 5 years amounted to 22 000 people per year, often young and well-educated. For a country with roughly 2.9 million people, this represents a sizable proportion of its population. In addition, private investment as a share of GDP has not recovered to its pre-crisis level. While public investment held up well, supported by EU structural funds, private investment is roughly 3 % of GDP below its historical average. Unless these trends were to change, the shrinking population and low investments may harm Lithuania's growth potential and ultimately its future convergence path, while putting at risk the sustainability of the pension and long-term care systems.

Going forward, the country has untapped potential, in particular in its labour force and in research and innovation. While the overall business environment is sound and education levels are high, available skills do not always match the requirements of employers. Adoption and absorption of new technology has not spread across the economy and innovation is low, hampering productivity

growth. However, as the country's labour productivity represents just two-thirds of the OECD average, there is ample room for sustained convergence in the future.

Overall, Lithuania has made limited progress in addressing the 2015 country-specific recommendations. Some progress was made to reduce the relatively high taxes for low-income earners, but limited efforts have been made to shift taxation towards more growth-friendly taxes. However, some measures have been taken to improve tax compliance. Limited progress has been made in undertaking a comprehensive pension reform to address the sustainability of the pension system. Some steps have been taken to increase the labour market relevance of education, but progress has been limited to better attainment of basic skills. Limited progress has been made on improving the performance of the healthcare system. On social protection and labour market policy, including the coverage and adequacy of unemployment benefits and cash social assistance, the government is considering a number of reforms. However, these have not yet been adopted and are currently being debated in parliament. Therefore, progress has been limited.

Regarding progress in reaching the national targets under the Europe 2020 strategy, Lithuania is performing well on reducing greenhouse gas emissions, the overall share of renewable energy, energy efficiency, tertiary education attainment, early school leaving and reducing poverty. More effort is needed on the employment rate, renewable energy in transport and R&D investment.

The main findings of the analysis in this report, and the related policy challenges, are as follows:

- **Shifting taxation towards more growth-friendly taxes and increasing tax compliance remain key policy challenges.** The tax burden on low-income earners is relatively high, while environmental and recurrent property taxation is at low levels. Moreover, improving value added tax enforcement and collection remain important.
- **The shrinking working age population constrains future growth potential.** Negative demographic developments, high mortality rates at working age and persistent net emigration, in particular among the young, are causing a population decline. The old age dependency ratio is expected to increase strongly, putting future pension system sustainability at risk.
- **The transition towards a more value-added economy is moving more slowly than expected.** Labour productivity growth is currently outpaced by the rise in wages. Innovation outcomes and the capacity to absorb existing technical knowledge appear quite limited. The institutional framework and the overall strategy to support innovation remain fragmented.
- **A broad-based strengthening of investment in human capital is important to counteract the shrinking working age population.** This would also support Lithuania's transition towards a more value-added economy. Educational attainment has increased strongly, but the proportion of pupils with insufficient basic skills is high. Moreover, there are weaknesses in the quality of teaching in higher education and its ability to foster innovation. In certain sectors, skills shortages have been reported and are expected to become more acute in the future. Improving the labour market relevance of education remains important. The challenges are to streamline the funding and structure of the educational system, develop life-long learning and improve targeting and effectiveness of active labour market policies.

- **Poverty and social exclusion are a challenge as income inequalities are among the highest in the EU.** Despite a strong decrease in the number of people receiving cash social assistance, the risk of becoming poor is increasing for the unemployed, the elderly, disabled people, and single parents. Although planned social and labour market policies reforms cover the pension system, and include improving the unemployment benefit system, the reforms do not yet address the coverage and adequacy of the social assistance scheme.
- **Social dialogue mechanisms remain weak.** Collective agreements hardly play a role and only a minority of employees are covered by such agreements. Trade unions and employer organisations have low coverage across Lithuania. The current discussion on a draft regulation on labour relations is a good opportunity to address these weaknesses and to improve the dialogue between social partners.
- **While the business environment has improved, some investment bottlenecks are still in place.** The labour legislation is outdated and considered restrictive at some levels, which could discourage foreign investment. Capital markets are not fully developed and alternative financing sources are limited. As a result, start-ups and small and medium sized businesses could face financing constraints. Private investment in R&D is being held back by the lack of a sound legal framework for commercialising research outcomes.
- **The economy is dependent on energy imports and energy efficiency is low.** Lithuania has recently commissioned projects enabling it to diversify its electricity and gas sources, suppliers and routes but still imports considerable amounts of energy from a single supplier. Decoupling the electricity grid from the Russian and Belorussian networks remains a challenge. Moreover, levels of energy intensity are high, in particular in housing, transport and industry.

15.2. Innovation and absorptive capacity

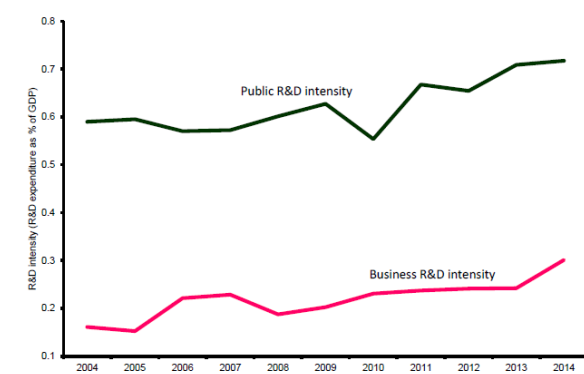
Research and innovation

Lithuania's transition to a more value-added economy continues to be impeded by an inadequate and fragmented research and innovation (R&I) policy, and by weak governance systems. While public funding for R&D has reached the EU average, business R&D intensity is still lagging behind (Graph 2.6.1)⁶⁷. The overall cooperation between businesses and universities or public research organisations remains below the EU average. In 2012, public-private co-publications accounted for 7.2 per million inhabitants, placing Lithuania well below the EU average of 50.3. Only 21 % of Lithuanian researchers were employed in private business, which is far off the EU average of 48 %⁶⁸.

⁶⁷ In 2014, public expenditure on R&D expressed was 0.72 % of GDP, while business enterprise expenditure on R&D (BERD) was 0.3 % of GDP, with Lithuania ranking 24th in the EU (EU average is 1.3 %).

⁶⁸ Total R&D personnel and researchers by sector as a share in total employment, based on Eurostat data.

Graph 2.6.1: **Change in public and private business R&D intensity**



(1) Business R&D intensity: Business enterprise expenditure on R&D (BERD) as % of GDP.

(2) Public R&D intensity: Government expenditure on R&D (GOVERD) plus higher education.

Source: European Commission

While some companies in Lithuania are at the technological cutting edge, overall the high-tech sector tends to be small and underdeveloped. This limits Lithuania's capacity for sizeable R&I investments. The high-tech sector mainly consists of a limited number of top-tier private research teams, and knowledge-based (spin-off) companies mostly in industries such as bio-pharmaceuticals and laser technologies. Moreover, high-tech firms tend to be small in size and value added, which further limits the scope for R&I investments⁶⁹. In addition, unlike other Member States, Lithuania lacks a network of specialised research institutes to provide technological services to SMEs for industrial research and product development.

Lithuania's public R&D infrastructure is fragmented. Moreover, the tools currently in place to support R&I investments are not sufficiently targeted at companies' needs. The R&D infrastructure is scattered across different universities, institutes, innovation clusters and science and technology parks. It also lacks clear coordination and strategic planning as responsibility is divided between two ministries. Existing company-level support-schemes are either not well known or not transparent enough. In addition, complicated application procedures, long implementation periods and insufficient flexibility limit the attractiveness of these schemes to industry.

To date, government support has mainly targeted the creation of public 'hard' research infrastructure⁷⁰. Only a marginal share of public investments have a focus on strengthening companies' innovation capabilities by using 'soft' research infrastructure such as innovation vouchers, cluster-based knowledge sharing and connecting relevant research partners⁷¹. Limited support for soft innovation capital comes from the country's tertiary education system. It lacks research focus and

⁶⁹ Lithuanian value added in high-tech manufacturing as % of total value added was 0.68 % (ranked 23rd, EU-average 1.75 %) (2013). For high-tech knowledge-intensive services the respective share was 3.10 % (ranked 27th, EU-average 5.05 %). See also JRC Science and Policy Report, 2015, Stairways to Excellence – Country Report: Lithuania (http://publications.jrc.ec.europa.eu/repository/handle/JRC_97303).

⁷⁰ Some changes are envisaged in the new EU structural funds period to strengthen the ties between science and industry, for example using the concept of industrial doctorate programmes or "joint initiatives", i.e. two or more complementary collaboration projects which involve R&D activities and aim to create market-oriented commercially viable prototypes of technologies and products with high value added.

⁷¹ Innovation vouchers are financial cheques that are given to SMEs to enable them to buy services from scientists – this usually includes some development/improvement of an existing technology. There is no follow up on the precise impact of these vouchers on firms' performance.

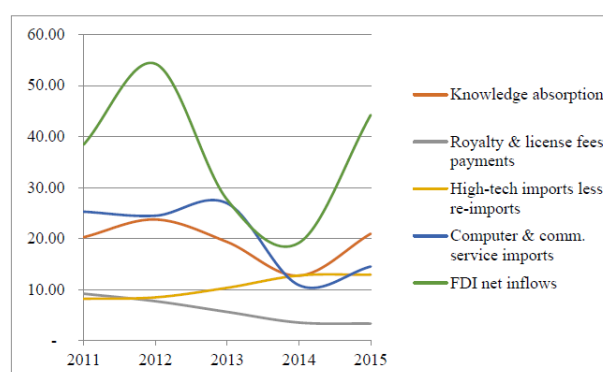
internationalisation and tends to be inward-looking. This results in low scientific production and, in some places, in insufficient quality in human resources (see section 2.5).

Lithuanian companies face a shortage of sustainable and well-functioning financing alternatives for R&D. A major obstacle to increasing business R&D and innovation activity is the limited availability of access to finance with which to fund R&D activities, especially risky ones. Alternatives to bank financing are few (see section 2.2). Capital markets are shallow and lending institutions do not have dedicated financing instruments to support R&D activities. Funding from European structural and investment funds is one of the main financing sources for R&I projects, which raises sustainability concerns since this source is limited in time.

Absorptive capacity

Absorptive capacity, i.e. the ability of a company to identify new, external knowledge, assimilate it, and apply it to commercial ends is essential for innovation. The absorption of existing knowledge and its adaptation to production processes may already account for important innovations at firm level. These efficiency gains may not be well captured when looking at patent counts or R&I investments.

Graph 2.6.2: **Absorptive capacity index and sub-components, Global Innovation Index (GII) scores**



(1) The times series above were normalised to a range of 0 to 100, with the best performing country showing values close to the upper ceiling.

Source: WIPO, INSEAD, Johnson Cornell University

Recognising the value of foreign technical knowledge and assimilating existing technologies may be even more important for low- to medium-value added economies, such as Lithuania. As Lithuania is not among the technological leaders in many markets, its companies may benefit relatively more from efficiency gains stemming from, for instance, the licensing of existing technologies or improving business processes than from spending sizeable funds on R&D activities, and/or developing new patents.

R&D innovation is mostly pursued by firms in those industries or market niches where technological opportunities are larger and the knowledge base is more closely linked to natural or engineering sciences. In Lithuania, this is only the case in a small number of niche industries (e.g. biopharmaceuticals, lasers). In other areas, firms are less likely to invest in research than in the modification of products or processes.

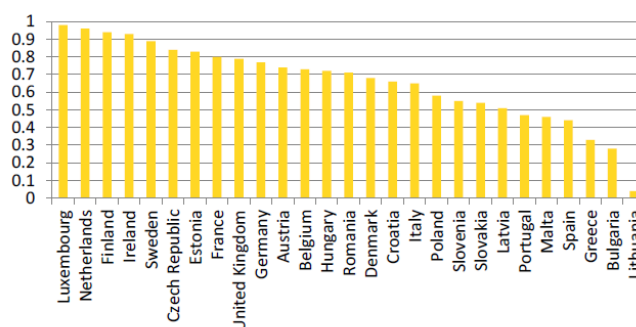
Considering the limited R&D capacity of most Lithuanian companies, demand for technology upgrading and the acquisition of competences to move up the value chain should be high. From this perspective, technology upgrading can be viewed as a first step towards innovation.

The ability to absorb and adapt external technical knowledge can indirectly be measured by using four standard components, which all refer to an inflow of foreign knowledge, in the form of intellectual property rights, technology or investment⁷²:

- royalty and licence fees payments (including franchises and similar rights) expressed as a percentage of total trade;
- high-technology imports minus reimports (% of total trade);
- communication, computer and information services imports (% of total trade);
- foreign direct investment (FDI), net inflows (in % of GDP)⁷³.

Based on these indicators, Lithuania's ability to absorb and assimilate external information appears very limited. In 2015, Lithuania scored 7th lowest on overall knowledge absorption out of the 141 countries analysed. Royalties and licence fee payments, and also high-tech imports seem to persistently remain at very low levels. Examining Lithuania's ability to absorb external knowledge in a European context provides similar results: again the country is ranked in last place (Graph 2.6.3)⁷⁴.

Graph 2.6.3: Absorptive capacity index, percentage rank.



(1) Percentage ranks evaluate the relative standing of a value within a given data set. The percentage ranks are based on a sample of 36 European countries, only the values for the EU are shown.

(2) There is no data available for Cyprus.

Source: WIPO, INSEAD, Johnson Cornell University

In light of Lithuania's poor innovation performance and limited absorptive capacity, its current research and innovation policy set-up appears to have room for significant improvements. Further strengthening human capital development (see section 2.5) and innovation/industrial policies

⁷² This is based on data collected from World Intellectual Property Organisation (WIPO), INSEAD Business School, and Cornell University, which regularly publish a global innovation index (GII). See <https://www.globalinnovationindex.org/content/page/GII-Home>. In 2015, the indicator was built for 141 economies, which were selected on the basis of data availability. The indicators for the global innovation index (GII) were determined jointly with the Joint Research Centre (JRC). The JRC audit unit also assessed the robustness of the GII modelling choices.

⁷³ For more details on the calculation of sub-components see <https://www.globalinnovationindex.org/content/page/gii-full-report-2015/>.

⁷⁴ A recent report highlights that about 80 % of Lithuanian SMEs have low absorptive capacity (Leichteris, E., M. Jonauskis, M. Petraite, M. Vilys, A. Jakubavicius and G. Stumbryte (2015), 'Initial Assessment of Lithuanian Innovation Policy', Knowledge Economy Forum).

in certain fields of science, in particular in high-tech sectors (e.g. bio-tech, laser), need attention. In terms of organisational setup, Lithuania could benefit from having a single ministry or body to coordinate and assume full responsibility and ownership, since the fragmentation of key innovation and research responsibilities often hinders effectiveness. Although a lot of resources have been devoted to planning the use of EU funds during the current programming period, no initiatives have been taken to address the fragmented distribution of innovation responsibilities.

There is a strong emphasis on science-driven innovation and hard infrastructure, mostly targeting a limited number of current R&D performers. By contrast, there is a lack of demand side policies strengthening 'soft' capacity building for all companies (not only those already involved in R&I activities).

Lithuania has the potential to achieve the following:

- a better targeted production of skills and educational outcomes;
- easier access to international product markets;
- support for FDI;
- strengthening international networking for industry and science;
- using external innovation services to greater effect;
- encouraging internal knowledge transfer, especially between high-tech and low-tech industries, and coordinating existing efforts resulting in a clear long term strategy.

15.3. Additional references to R&I

[1. Scene setter: Economic situation and outlook, p. 7]

Innovation outcomes are poor and absorptive capacity to recognise and assimilate new external knowledge is limited. While public funding for research and development (R&D) reached the EU average in 2014, business R&D intensity is still lagging behind, and research outcomes such as patents remain meagre.

[Box 1.1: Investment challenges, p. 9]

Private investment into research and innovation (R&I) has been low, which could be related to insufficient incentives for business R&I and public-private cooperation. This is mainly due to the lack of a proper legal base for the commercialisation of research outcomes, and the quality of the science base. Further reforms may be needed to facilitate access to and increase the awareness of existing support schemes (see section 2.6).

[2.5. Education and skills, p. 29]

Higher education and research institutions are characterised by an inefficient use of resources, leaving room for streamlining and consolidation. A recent research assessment exercise ordered by the government concluded that although Lithuania has good research infrastructure, promising PhD students and some pockets of excellence, its research system is plagued by fragmentation, overlap and duplication⁷⁵. This may contribute to an inefficient allocation of human and physical resources and prevents Lithuania from reaching the critical mass of R&D capacity needed to boost the country's innovative knowledge niches. In addition, the university and research system remain largely closed to

⁷⁵ MOSTA (2015) Research Assessment Exercise.

talent from abroad, which deprives Lithuania of a potentially important resource that would improve its research and innovation performance⁷⁶.

Universities and research institutes are mostly dedicated to teaching and basic research, and lack clear incentives for innovation and cooperation with business. The low commercialisation rate of public research results⁷⁷ is influenced by a lack of entrepreneurial endeavour and insufficient technology transfers to the real economy. The university sector lacks an adequate incentive system. Such a system would include

- performance based research funding (e.g. more focus on the research outcomes);
- the inclusion of science-business mobility as a criterion in researchers' career plans;
- a more systematic approach to developing university intellectual property rights policies;
- easier access to public research funding, and entrepreneurial training.

Amendments to the law on higher education and research are currently being discussed in the parliament. The aim of the law is to boost the quality and labour market relevance of higher education. The draft law envisages minimum admission standards for all universities and compulsory pre-entry career guidance. Furthermore, the draft law provides for more cooperation on curriculum development with social partners, and the expansion of work-based learning opportunities in tertiary education. New pathways will be opened up from professionally-oriented programmes towards traditional master's programmes. However, the draft law does not address the overall poor research outcomes, and in particular does not make provision for any consolidation of the highly scattered university landscape.

A graduate tracking system to observe the labour market outcomes of higher education graduates is under development and could be used for higher education planning in the future.

⁷⁶ As a possible measurement for internationalisation, Lithuania's connection to global R&D and innovation networks remains below the OECD median (International co-authorship and co-invention, OECD, 2014).

⁷⁷ In the Innovation Union Scoreboard 2015 Lithuania has a low score in Patent Cooperation Treaty patent applications: 0.34 (the EU average is 3.78).

16. Luxembourg

16.1. Executive Summary

This report assesses Luxembourg's economy in the light of the European Commission's Annual Growth Survey published on 26 November 2015. The survey recommends three priorities for the EU's economic and social policy in 2016: re-launching investment, pursuing structural reforms to modernise Member States' economies, and responsible fiscal policies.

Economic activity has gained strong momentum in recent years approaching the growth rates of the period before the crisis. GDP is expected to increase by 4.7 % in 2015 after 4.1 % in 2014. According to the Commission 2016 winter forecast, economic activity is projected to continue expanding in 2016 and in 2017 at a rate around 4 %. Growth is expected to be driven mainly by the contribution of net exports and especially financial services.

Investment growth has been lagging behind that of the overall economy in recent years. In the aftermath of the financial crisis, low capacity utilisation has pushed corporations to delay new investment plans. Overall, private investment growth is skewed by large transactions by the satellite and freight enterprises. Public investment, slowed down in the context of government consolidation efforts in recent years, is however expected to rebound sharply, supported by the realization of sizeable infrastructure projects.

The financial sector remains the main economic engine of the country. The recent sharp increase in economic output is mostly explained by the recovery of its profitability. In particular, the investment fund industry has gained momentum, also boosted by the European Central Bank's non-conventional monetary policy measures. At the same time, the low interest rates environment is limiting the performance of the banking sector and of the life branch of the insurance industry.

Subdued inflation has contributed to moderate wage developments. In line with the absence of price pressure and the sustained weakening of commodities prices, in particular oil, inflation is set to remain subdued. The protracted low inflation environment has delayed the triggering of the automatic wage adjustment that is now expected only in the second half of this year. The last automatic wage adjustment took effect in October 2013. In parallel with weak wage developments and the surge in output, cost-competitiveness losses have abated.

Employment growth remains robust. As in previous episodes of economic upswing, it has favoured more cross-border workers than resident workers. As a consequence, the unemployment rate did not fall and it is expected to decrease only slightly in 2016. At 6.1 %, unemployment remains however markedly low compared with the EU average.

Public finances remain overall sound. However the general government surplus is estimated to have declined in 2015 to 0.2 % of GDP from 1.4 % in 2014. The fiscal consolidation and expenditure savings measures adopted by the government are expected to only partially compensate the significant VAT revenue decline that has followed the 2015 change in the regulation related to e-commerce.

Overall, Luxembourg has made limited progress in addressing the three country-specific recommendations issued by the Council in 2015. First, there has been no progress in relation to the broadening of the tax base for consumption, recurrent property and environmental taxation. In particular, concerning the broadening of the consumption tax base, Luxembourg continues to have a high number of reduced VAT rates that are not fully conducive to achieving redistribution objectives.

However, Luxembourg is currently working on an overall tax reform that is expected to take effect in 2017. Second, limited progress has been made to reduce early retirement possibilities. However, age-related liabilities remain a risk in the long-term, in particular as regards pension costs. Luxembourg stands out as the only EU country where no further raising of the statutory retirement age has been laid down by law. Third, no progress has been made as regards a reform of the wage setting system to ensure that wages evolve in line with productivity.

Regarding the progress in reaching the national targets under the Europe 2020 Strategy, Luxembourg is performing well in employment rate, energy efficiency, reducing early school leaving and tertiary education attainment, while more effort is needed in R&D investment, reducing greenhouse gas emissions, renewable energy and reducing poverty.

The main findings of the analysis in this report and the related policy challenges are as follows:

- **The rise of age-related expenditure still poses a threat to the long-term sustainability of public finances.** At the same time, new demographic projections indicate a strong downward revision of expenditure estimations, compared to the 2012 Ageing Report. According to the 2015 Ageing Report, Luxembourg's public pension expenditure will represent four additional percentage points of GDP by 2040, one of the highest increases amongst EU Member States. This result is driven by a large increase in the number of pensioners relative to the number of contributors. The above-mentioned downward revision is explained almost exclusively by more favourable old-age dependency ratio projections, and the underlying assumption of strong population growth. In addition, the revised demographic assumptions point to an increased pressure on demand for infrastructures, including those related to transport, education and health care.
 - **House prices have been constantly increasing, with the risk of discouraging people from moving to Luxembourg, undermining its ability to attract and retain a high-skilled labour force, of which non-nationals represent a large share.** House price pressures emerge from both the supply and demand side. On the supply side, land availability and administrative procedures seem to represent a bottleneck to the creation of new housing units. On the demand side, high population and employment growth, as well as, to a lesser extent, tax policies encouraging ownership push up prices. This, in turn, can exacerbate traffic congestion in the country, given that commuters live relatively far away from their workplace.
 - **Luxembourg presents a healthy financial sector, for which risks can be assessed as contained.** Luxembourg's economy as a whole has benefited from the presence of a large financial sector and in the near term, developments in the financial sector will still continue to have a strong impact on country's economic performance. The fund investment management sector has been constantly growing and Luxembourg has become a world centre for this branch of financial services. Domestic banks display strong capital ratios, and fulfil their intermediary role as credit providers to the economy.
- **At the same time, the heavy reliance on the financial sector, which is a structural feature of Luxembourg's economy, represents a risk factor.** The authorities have long shown awareness of the need to diversify the economy and have taken a number of steps in that direction. Tangible results have been achieved in areas such as the information and communication technology sector. In other areas such as biotechnology results have been less

encouraging. The high level of restrictiveness of legislation in the services sector also appears to be negatively affecting the business environment. Achievement of diversification is however potentially constrained by a number of factors such as innovation and entrepreneurship, as well as the fact that wage developments in some sectors may not be in line with productivity developments, which limits the sectors that can be targeted mainly to those with high added value.

- **Maintaining a high level of investment is essential to preserve growth prospects.** While public investment is above average compared with the euro area, private investment is underperforming. A reduction or removal of existing barriers to investment and innovation that limit economic development, especially in the business services and retail trade sectors, would contribute to fully unleashing the potential for innovation and, help diversification. Furthermore, Luxembourg performance in the area of entrepreneurship is below the EU average. Finally, as mentioned above, the new demographic projections add pressure to enhance public investment in infrastructures.
- **Job creation continues to be dynamic, but unlocking the full employment potential of the resident population is still a challenge.** Employment rates are low at both ends of the age spectrum. Financial disincentives to work are widespread, which can be partly linked to the design of the social benefit system and to the joint taxation system. Moreover, in light of the strategy to pursue diversification efforts in high value added sectors, education outcomes are a source of concern. In addition, socioeconomic status seems to have a significant influence on education outcomes, which can be particularly unfavourable for people with a migrant background. Adapting vocational education and training to labour market needs remains challenging. Poverty and social exclusion risks in Luxembourg are still among the lowest in the EU. Nevertheless, social transfers remain essential in lifting people out of poverty, also considering that income inequalities have increased (although from moderate levels).
- **Public finances are underpinned by a strong policy framework.** In view of the estimated deterioration of the fiscal balance in 2015, the government embarked on a series of corrective measures. They target both the expenditure and revenue side and aim at ensuring continued respect of the country's medium-term objective of a structural surplus of 0.5 % of GDP. The fiscal consolidation plan, including VAT rate increases, the introduction of a new temporary levy of 0.5 % on personal income and expenditure savings, is expected to help improve the nominal balance over the period 2016-18.
- **Dynamic revenues, such as VAT from e-commerce activities, have contributed to sound public finances, while keeping public debt at a low level.** Nevertheless, some features of the Luxembourg taxation system are threatened by international developments, beyond the control of the authorities. The announced overhaul of the taxation system could integrate these external factors into the design of the tax system. A well-designed tax reform would also contribute to addressing environmental challenges. These relate especially to transforming Luxembourg's economy into a low-carbon and resource-efficient one.
- **Fulfilling its commitments concerning the objectives set out under the Europe 2020 strategy in the field of non-ETS greenhouse gas emissions remains a challenge.** Reasons

behind would be related to current policy design: on the one hand, relatively low excise duties on fuels attract demand from neighbouring countries. On the other hand, company cars, an important element of in-kind payments in the wage bill, encourage the use of private cars instead of public transport. In addition, constantly increasing housing prices deter households from establishing their residence in Luxembourg, therefore exacerbating the problem of traffic congestion and pollution.

16.2. Diversification through innovation

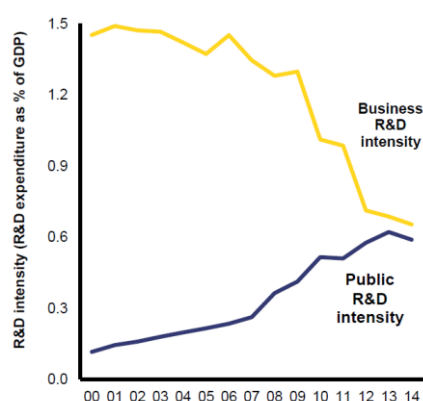
The Luxembourg authorities have sought to diversify the economy, acknowledging the risks associated with heavy dependence on the financial sector. Given the high level of labour costs in the country, activities with higher added value offer potential for unlocking alternative sources of growth. The successful diversification of Luxembourg's economy therefore depends to a large extent on those sectors which are less sensitive to labour cost levels. They are largely based on research and innovation, which tend to be technology and knowledge-intensive. Further expansion of the already successful non-financial service sector could also support the diversification of the economy.

Progress towards a more diversified, knowledge-intensive economy is a political priority. This is reflected in a fivefold increase in public R&D intensity between 2000 and 2014 (Graph 2.4.1). Because excellent foreign researchers have been attracted, the scientific performance of the public research system has progressed very rapidly and is now above the EU average⁷⁸. However, this stands in stark contrast to the sharp drop in business R&D intensity (from 1.5 % of GDP in 2000 to 0.7 % in 2014 — see Graph 2.4.1). This is partly related to the continued dwindling of an already narrow industrial base and the low investment intensity that is associated with the financial sector. However, it points also to a lack of leverage effects of public efforts on business investment in research and innovation. The relatively low level of cooperation between public research institutions and firms is another symptom of the overall weakness of Luxembourg's research and innovation ecosystem⁷⁹.

⁷⁸ For instance, the share of Luxembourg scientific publications that are among the top 10% most cited publications worldwide rose from 5.5% in 2000 to 13.7% in 2010 compared with an EU average of 11.3%.

⁷⁹ For instance, the volume of public sector research and innovation financed by businesses represents only 0.017% of GDP compared with an EU average of 0.051%.

Graph 2.4.1: Luxembourg – Trend in business R&D intensity and public R&D intensity, 2000-2014



(1) Business R&D intensity: Business enterprise expenditure on R&D as % of GDP. (2) Public R&D intensity: Government and higher education expenditure on R&D.; break in series between 2009 and the previous years.

Source: European Commission

The reform of the National Research Fund and of the public research centres carried out in 2014 and 2015 should help to ensure a better economic return from the public research efforts. In particular, the merger of the public research centres *Tudor* and *Lippmann* into the Luxembourg Institute of Science and Technology is intended to build critical mass in areas with major prospects of cooperation with industry, such as materials, environment and information and communication technology, with less promising research subjects being discontinued. Moreover, a new funding tool for public-private partnerships has been recently set up.

However, reversing the declining trend in business research and innovation investment could require additional measures, particularly in relation to public support for business research and innovation. A first step in this direction is the revision of the law on public support, which will mean extending the range of instruments that can be used for such public support, strengthening the evaluation of the system and reducing the administrative obstacles to accessing it.

Information and communication technology is one of the priority sectors selected in the context of the economic diversification strategy where significant improvements have been achieved. Between 2008 and 2012, the sector recorded the fourth highest growth in the EU, representing 7.3 % of GDP in 2012. The strong technological infrastructure underpins this good performance. In 2015, two additional measures were taken specifically to foster the development of young innovative firms in this sector: the establishment of a seed fund type of financing structure and the launch of the Fit4start programme, which will help a selection of start-ups through a combination of financial support for prototype development and coaching.

Building on the excellent performance of information and communication technology activities, the government intends to deploy the sector's knowhow to create renewable energy and transport solutions. To this end, a 'third industrial revolution strategy' is being designed, which should provide a roadmap on how to develop intelligent systems covering the entire country. It is expected to be presented in summer 2016.

By contrast, the development of the biotech sector, another priority, remains very limited. It represents less than 0.1 % of gross value. The build-up of strong public research capacities in this field has not been enough to foster the development of the sector. Ensuring that the substantial public

investments made in this area can still contribute to the economic diversification objective could require a more comprehensive strategy.

16.3. Additional references to R&I

[Box 1.1: Investment challenges, p. 11]

A low and decreasing level of private investment in R&D is explained by the lack of attractiveness of the R&D environment (including the disconnection between private sector R&D and the public research system), see Section 2.4. To reverse the trend in business R&D investment new measures are needed. A first step in this direction is the revision of the law on public support to business R&D. This revision will allow, among else, extending the range of instruments that can be used for that support.

17. Malta

17.1. Executive Summary

This country report assesses Malta's economy in light of the Commission's Annual Growth Survey published on 26 November 2015. The survey recommends three priorities for the EU's economic and social policy in 2016: re-launching investment, pursuing structural reforms to modernise Member States' economies, and responsible fiscal policies.

Economic performance has been robust over the recent years. The economy has demonstrated notable resilience in a challenging macroeconomic environment over the past several years. Real GDP growth recovered relatively quickly following the 2009 recession and in 2015 it exceeded the pre-crisis peak. Household consumption and net exports have been the main engines of growth. One-off large-scale projects in the energy sector and the finalisation of EU-funded projects boosted investment in 2014-2015, thus also contributing strongly to the expansion of the economy. Real GDP growth is projected to moderate somewhat after 2015, but to remain higher than the long-term average. As a result of the robust economic performance, Malta's GDP per capita is projected to reach 97% of the EU average in 2017. Risks to the medium-term macroeconomic outlook are broadly balanced. Downside risks related to trade shocks are mitigated by competitiveness gains from the successful completion of ongoing structural reforms.

Growth has been job-rich and broad-based. Economic growth has been underpinned by the improved competitiveness of some traditional sectors as well as the emergence of new labour-intensive, export-oriented activities. As a result, the amount of new jobs generated in the post-crisis period is significantly higher than during the boom until 2008. This has been supported by policies targeted in particular towards attracting more women to the labour market. The process of diversification of the economy has reduced its capital and import intensity, contributing to a significant improvement in the external trade balance.

The favourable macroeconomic conditions have contributed to an improvement in public finances, although faster correction would reduce risks from the inherent vulnerabilities. The general government budget deficit has decreased in recent years thanks to strong revenue growth. However, current expenditure has been growing faster than potential growth, which could create problems in case of shocks to tax revenues. Primary budgetary surpluses and strong economic growth helped the general government debt-to-GDP ratio to fall. However, moderation in economic growth would make further debt reduction more challenging. Sustainability challenges remain in view of the projected increase in age-related budgetary costs. The limited investor base for the government somehow shields it from volatility on international financial markets. However it also implies a lack of diversification and significant spillover risks between different domestic sectors.

Maintaining competitiveness to support the current growth momentum is a continuous challenge. The potential of human capital to contribute to economic growth remains to be fully tapped. Notwithstanding significant progress in recent years, labour market activity remains low, in particular among women. Education and training outcomes are still below targets, affecting the quality of labour supply. Furthermore, inefficiencies in network industries, the public administration and the judicial system hinder the business environment. Declining investment reflects the changing structure of the economy but also a still nascent research and innovation framework as well as limited access to finance for some parts of the economy.

Overall, some progress has been made in addressing the 2015 country-specific recommendations. The authorities have taken steps to improve the professional development of teachers. This is expected to contribute to raising basic skills levels and to reducing early-school leaving in the long-run, but it is too early to assess the results. A number of initiatives for access to finance have been offered to small and medium-sized enterprises, but access to non-bank instruments generally remains limited. While the authorities have recognised the need to ensure the long-term sustainability of the pensions system and indicated intentions to introduce measures to that effect, concrete steps have not yet been proposed.

Regarding the progress in reaching the national targets under the Europe 2020 Strategy, Malta has made good progress towards its targets on employment, reducing greenhouse gases, while more effort is needed on R&D expenditure, increasing renewable energy, improve energy efficiency, reduce early school leaving, increasing the tertiary education, and reducing poverty.

The main findings of the analysis in this report, and the related policy challenges, are as follows:

- **External sustainability has improved benefitting from the restructuring of the economy.** The emergence of export-oriented services has boosted net external trade, resulting in a surplus in the current account balance. The net international investment position remains positive. Cost competitiveness developments have also been favourable on the back of growing productivity and moderate wage growth.
- **The public debt ratio is lower than the euro area average and it is approaching the 60 %-of-GDP threshold, but the sustainability of public finances remains a challenge in the long run.** The public debt ratio has been on a decreasing path since 2011 on the back of fiscal consolidation and high nominal GDP growth. There appear to be no significant risks in the short and medium term. Yet, long-term sustainability remains a challenge reflecting the budgetary impact of ageing costs, in particular pensions. The efforts by the authorities in containing the long-term expenditure growth in the pension and healthcare systems so far do not appear sufficient to address this risk. The growth of primary current expenditure, exceeding the increases in potential GDP, and the still high level of contingent liabilities present additional challenges to the sustainability of public finances.
- **There is still untapped potential in the labour market to foster economic growth.** With one of the lowest unemployment rates in Europe, the Maltese labour market continues to perform strongly. However, in spite of the gains over the past years, activity rates continue to be among the lowest in the EU, particularly among women. The supply of skills has not fully adjusted to labour market requirements. To offset this, reliance on supply of skills through foreign labour has increased in recent years. The authorities have been investing significantly in the education and training system in recent years. This notwithstanding, education and training outcomes are still below targets, perpetuating the low skills levels in the population.
- **Malta is still away from its 2020 poverty-reduction target.** The risk of poverty and social exclusion increased from 2008 to 2013, most notably for children and the low skilled. Material deprivation has been on the rise and has contributed to the poverty and exclusion risks. New measures have been introduced in recent years to correct these trends.

- **Access to alternative sources of finance for SMEs is still limited.** SMEs rely heavily on debt financing, with implications for the firm indebtedness in the economy. The availability of alternative sources of finance such as crowdfunding, venture capital, business angels is not developed. Since the beginning of 2014, the government put forward policies geared to the provision of equity and venture capital, but these measures appear to be relatively limited, concentrating on tax credits and small amounts for seed funding. Nevertheless, on the whole, SMEs benefit from a better financing environment than many EU peers.

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| <ul style="list-style-type: none"> • Competitiveness could further benefit from the removal of structural bottlenecks in network industries and the public administration. The authorities aim to diversify the energy mix and bring an end to oil dependency in electricity generation. The reform, however, has yet to be finalised. Import dependency will remain a challenge in the absence of more focused efforts on boosting domestic production of renewable energy and raising energy efficiency. The transport system continues to be characterised by high economic costs caused by significant road traffic congestion. The authorities have yet to present their strategy to tackle the issue. The low efficiency of government administration and of the judicial system continues to pose challenges to Malta's attractiveness to investors. A relatively young and underdeveloped framework for research and innovation constrains the potential for knowledge-driven growth. |
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- **Apart from one-off projects, investment has been muted reflecting structural changes in the economy and bottlenecks.** Ongoing large-scale projects result in a significant boost to investment over the underlying trend. The increasing importance of less capital-intensive services sectors, however, lowers the investment needs of the economy going forward. Nevertheless, bottlenecks in the public administration, insufficient capacity to innovate and skills mismatches lower Malta's attractiveness to foreign investors and hamper the ability of businesses to investment.

17.2. Research and innovation

Several structural challenges continue to hamper the country's growth potential as a very small open economy. Malta made some progress over the period 2007-2014 in terms of research and development (R&D) intensity, which increased from 0.55 % GDP in 2007 to 0.85 % of GDP in 2014, although the level remains rather low in EU terms and is still far away from its national target (2 %). Several bottlenecks continue to hamper the country's knowledge-driven growth potential, such as meagre public spending (0.34 % GDP in 2014 versus an EU average of 0.72 %), a low level of scientific excellence (linked to a lack of critical mass in specific research areas), a weak human resources base in sciences and technology, and the declining innovation performance of the private sector⁸⁰, with the strongest relative weakness in patent applications. Declining performance is also observed for licence and patent revenues from abroad and the sales share of new innovations. Still, performance on some indicators has improved, in particular in non-R&D innovation expenditures; community designs and trademarks; linkages and entrepreneurship; and open, excellent and attractive research systems. In addition, business enterprise expenditure on research and development, at 0.51 % of GDP, constitutes more than half of Malta's R&D intensity. Finally, establishing adequate framework conditions for firms remains a key challenge for competitiveness as shown by the

⁸⁰ Innovation Union Scoreboard 2015.

performance in the overall ease of doing business indicator⁸¹, where Malta is ranked in the lowest EU performers with Greece and Luxembourg. Moreover, Malta remains in the ‘moderate innovator’ group⁸², although its ranking has improved (from 22nd in 2014 to 18th in 2015) and overall innovation performance has recovered strongly, reaching 71 % of the EU average and up from 57 % in 2012.

Several instruments are in place to stimulate research and development and innovation projects.

The National R&I Strategy for 2020 (adopted in February 2014) set the goal to stimulate knowledge-driven growth. This strategy complements the Smart Specialisation Strategy, which will help to guide investments to be made through the European Structural and Investment Funds, and the Innovation Strategy for Smart Specialisation (adopted in 2014) which contains tailor-made measures (i.e. actions, tools, platforms, incentives) in seven selected areas in order to develop the research and innovation ecosystem⁸³. Furthermore, Malta offers R&D tax incentives, targeting industrial projects aimed at developing innovative products and solutions, which have become an important tool for supporting private R&D. Evidence from a recent study⁸⁴ suggests that there is some scope for Malta to reduce the fragmentation and overlap of instruments. In addition, the evaluation of the impact of these measures could be usefully enhanced. Intellectual Property Right incentives in the form of tax exemptions on income from patents are also available⁸⁵ and, in the 2016 budget the government announced a tax credit to facilitate research and innovation for enterprises. A new scheme was launched in 2015 to improve the quality of the science base. Furthermore, several infrastructural projects are expected to have a positive impact on the science base as well as to support research and development in health (pharmaceuticals) and information and communication technologies. A number of new initiatives to improve access to finance by leveraging private sector investments in start-ups and SMEs were introduced in 2015. These aim to complement several existing, albeit not very successful, ones. Finally, in March 2015, the Operational Programme I (2014-2020) under European Regional Development Fund and the Operational Programme II (2014-2015) under European Social Fund, which contains relevant measures to support research and innovation, were officially launched.

17.3. Additional references to R&I

[Box 1.1: Investment challenges, pp. 9-10]

Despite improvements in recent years, certain barriers to investment persist⁸⁶. The friendliness of the business environment receives a mediocre score in the World Bank's Doing Business indicators, particularly in the areas of starting a business, registering property, resolving insolvency and dealing with construction permits. Additional problems include difficulties in obtaining financing for research, development and innovation as well as skills bottlenecks. These barriers are explored in more detail in sections 2.2 and 2.3.

[...]

⁸¹ Doing Business Report, World Bank, June 2015.

⁸² Innovation Union Scoreboard 2015.

⁸³ Notably, tourism, maritime services, aviation & aero-space, healthy living & active ageing & e-health, resource-efficient buildings, high value-added manufacturing and aquaculture.

⁸⁴ CPB (2014) A Study on R&D Tax Incentives, Taxation Papers, Working Paper No 52 - 2014 European Commission

⁸⁵ Although there is evidence that such measures may prompt or facilitate aggressive tax planning in the absence of sufficient safeguards (see Ramboll Management Consulting and Corit Advisory (2016), Study on Structures of Aggressive Tax Planning and Indicators, European Commission Taxation Paper n°61).

⁸⁶ http://ec.europa.eu/europe2020/pdf/2016/ags2016_challenges_malta_en.pdf

The insufficient capacity to innovate is seen as one of the most problematic factors in doing business and attracting investment. Key challenges to be tackled include a weak human resources base in science and technologies and the lack of critical mass in specific research areas. Strengthening linkages between the academic and the private sector for effective knowledge transfer is essential, as well as investing more in academic research. Another challenge is the lack of research and innovation investments to develop marketable products and services, and the need to improve the product market regulation⁸⁷. Intellectual property is recognised as key to innovation and reforms are currently ongoing in this area. The government has also approved amendments to patent legislation. Evidence from a recent study⁸⁸ suggests that there is some scope to reduce the fragmentation and overlap of R&D tax instruments. The capacity to innovate is hindered by lack of alternative forms of financing.

⁸⁷ Doing business. Measuring Regulatory Quality and Efficiency 2016, World Bank

⁸⁸ CPB (2014) A Study on R&D Tax Incentives, Taxation Papers, Working Paper No 52 – 2014 European Commission

18. The Netherlands

18.1. Executive Summary

This country report assesses the economy of the Netherlands in the light of the European Commission's Annual Growth Survey published on 26 November 2015. The survey recommends three priorities for the EU's economic and social policy in 2016: re-launching investment, pursuing structural reforms to modernise Member States' economies, and responsible fiscal policies. At the same time, the Commission published the Alert Mechanism Report that launched the fifth annual round of the macroeconomic imbalance procedure. The Alert Mechanism Report identified the Netherlands as warranting a further in-depth review.

The economy of the Netherlands still bears the hallmarks of its post-crisis experience. While the initial fall in economic output in 2009 was sharp and driven by a collapse in foreign trade and fixed investment, a short-lived recovery set in from 2010 onwards that was punctuated by a renewed decline in GDP in 2012 and 2013. Private consumption declined alongside fixed investment, aggravated by the pronounced downturn in the housing market from 2010 onwards and by rising uncertainty regarding pension benefits and contribution levels in the country's large second pillar pension system. The scars of the recent crisis still remain visible in households spending and fixed investment levels, which in the fourth quarter of 2015 remained 3 % and 5.5 % below their respective pre-crisis peaks.

The economic recovery is firming thanks to stronger domestic demand growth. Following the contraction in real GDP in 2012 and 2013, positive growth of 1.0 % was recorded in 2014 and is projected to have accelerated to 2.0 % in 2015; this growth rate is expected to be maintained in 2016 and 2017. Rising economic confidence, faster wage growth and a housing market recovery are expected to boost domestic demand growth via private consumption and investment. While the labour market continued to improve in 2015, inflation remained very low, but is expected to pick up in the medium term.

The housing market has contributed to a range of macroeconomic imbalances. Owner-occupancy rates have tended to be high in the Netherlands, and this tenure type has long been encouraged by the full tax deductibility of mortgage interest payments. This resulted in a proliferation of interest-only mortgages in the pre-crisis years, granted to borrowers at very high loan-to-value ratios, creating a strong debt bias that drove up household indebtedness to around 120 % in 2009; although receding gradually, the debt legacy persists. The protracted downturn in house prices also affected household spending and wealth and amplified macroeconomic volatility during the crisis. As households resorted to greater precautionary saving and scaled back residential investment activity, the household became a growing source of net saving between 2009 and 2014. In turn, this form of household deleveraging is the principal reason for the rise in the current account surplus in recent years.

The outlook for the housing market is positive, which may reduce macroeconomic vulnerabilities. A broad improving trend is visible in house prices, transaction volumes and housing investment. Rising house prices may cause positive wealth effects for household spending and investment, and will progressively lift affected households out of negative housing equity ('underwater mortgages'), thereby reducing their financial loss in case of a forced home sale. Although a housing market recovery is also likely to be accompanied by rising mortgage lending, stricter mortgage lending rules are likely to curb the potential for renewed excesses.

Public finances weathered the crisis comparatively well, but face new challenges. Multi-annual budgetary planning permitted fiscal policy to take a medium-term view on fiscal consolidation needs, and ensured a correction of the previously excessive government deficit by 2013; in the following two years, the government deficit is estimated to have remained broadly stable at around -2.25 % of GDP. However, public investment levels fell by almost 1 pp. of GDP between 2009 and 2014, and have not arrested their decline yet. While plans for an ambitious reform of the Netherlands' tax system have not been put into action, the gradual economic recovery prompted the government in 2015 to adopt measures to boost disposable income from employment via a EUR 5 billion (0.7 % of GDP) package of unfinanced tax reductions. The Netherlands' position as the largest natural gas producer in the EU has kept foreign energy dependency low and boosted public finances, but safety concerns in extraction regions have caused production to be progressively scaled back in 2015. In combination with currently low energy prices, this is likely to reduce fiscal revenues from gas production in the medium term.

Overall, the Netherlands has made limited progress in addressing the 2015 country-specific recommendations. Limited progress has been made in raising public and private R&D expenditure, while some progress has been made in reforming housing market rules. In particular, some progress has been made in ensuring a more market-based pricing mechanism in the rental market, and substantial progress in relating income to social rent payments in the social housing sector. By contrast, the gradual phasing out of mortgage interest deductibility has not been speeded up. Limited progress has been made on the recommendation concerning the pension system, as the government has committed to reforms and initiated consultations, but has not presented concrete reform proposals or legislative plans. Regarding the progress in reaching the national targets under the Europe 2020 Strategy (see also Annex A), the Netherlands is performing well in employment rate, reducing greenhouse gas emissions, energy efficiency, reducing early school leaving and tertiary education attainment, while more effort is needed in R&D investment, renewable energy, and reducing poverty.

The main findings of the in-depth review in this country report, and the related policy challenges, are as follows:

- **The current account continues to show a marked surplus.** The Netherlands has a prominent role as a transit point and re-exporter and the positive trade balance in goods, which rose to 12 % of GDP in 2014, accounts for the entirety of the current account surplus. The steady rise in the current account surplus since 2009 was mainly driven by the fall in domestic investment, particularly in construction, and rising household savings following the financial crisis. Furthermore, a falling fiscal deficit also contributed to pushing the current account surplus to well above its long-term average in recent years.
- **Surpluses in the non-financial corporate sector explain the high level of the current account surplus, but not its increase.** Rising saving levels in the corporate sector played only a minor role in driving up the current account in recent years, while corporate investment has not had a significant influence on the external surplus. High corporate savings are rooted in low levels of profit distribution, and are typically channelled into share buybacks and the acquisition of equity assets. The low levels of corporate profit distribution appear linked to the location of many large multinational enterprises in the Netherlands; the quantitative impact of the 'headquarters effect' on the current account surplus is likely to be considerable. The attractiveness of the Netherlands for corporate head offices stems not only from favourable structural factors, such as proximity to large markets, the quality of the labour force and a supportive business environment, but also from favourable legal and taxation frameworks.

- **Investment declined strongly during the crisis and has recovered only partially since.** The weakness in economy wide-investment appears to have a strong cyclical character, and was driven by a downturn in the housing market as well as fiscal consolidation choices. While barriers to investment seem to be minor, low investment in the construction sector and in renewable energy appears linked to market uncertainty and regulatory factors. In spite of improving credit conditions, risks to credit creation are heightened in the current financial environment.
- **The large second pillar of the pension system plays a central role in shaping household finances and the household saving rate.** The rise in recent years in the household saving rate was partly due to higher saving in the second pillar of the pension system (mandatory supplementary private schemes), to which the regulatory environment contributed. Overall, the pension system performs well in terms of quality and adequacy, but has drawbacks in terms of intergenerational fairness, transparency and flexibility. As second pillar pension contributions are high but tend to fluctuate in line with financial market performance, they may affect households' spending decisions in a pro-cyclical manner.
- **Levels of private sector debt remain high. High household debt levels have been driven by the build-up of mortgage debt favoured by tax incentives, but household debt ratios are showing signs of decline.** A large number of households, especially younger ones, are still in negative housing equity. High mortgage loan-to-value and loan-to-income ratios persist, but are likely to fall gradually due to regulatory action and the rising share of amortising mortgages. In addition to a high financial burden from taxation and mortgage debt, households face relatively high pension contributions. Although households' financial distress has risen in recent years, it remains limited and has begun to stabilise. Corporate debt indicators suggest falling leverage ratios.
- **The tax treatment of owner-occupied housing remains generous and encourages mortgage borrowing.** Although rules on mortgage interest deductibility have been revised to make them progressively less favourable, the reform reduces the effective subsidy to debt-financed home ownership only to a limited extent. In conjunction with more stringent mortgage lending guidelines, the reforms may nonetheless slow further mortgage debt build-up as the housing market recovers.
- **Inefficiencies remain in the social housing sector.** The social housing sector is relatively large compared to other EU Member States. The joint problems of social tenants whose income exceeds the qualifying threshold (scheefhuurders) and scarcity of social housing are causing long waiting lists and are being tackled only slowly. Moreover, the financial attractiveness of owner-occupancy and social housing partly accounts for the underdeveloped private rental market.
- **Demand spillovers to other euro area Member States are likely to be moderate.** This is primarily due to the small size of the economy relative to the euro area, which also limits its contribution to the aggregate euro area current account surplus to 0.6 pp. of euro area GDP. However, economic developments in Germany affect the Netherlands, given their strong trade ties. External financial exposure remains relatively large, but has been decreasing substantially since the crisis.

Other key economic issues, which point to particular challenges facing the economy are the following:

- **The total tax burden on labour is high, but is being addressed by policy measures.** A high tax burden on labour can create disincentives to work, especially for the low-skilled and second earners. The authorities have introduced a large package of tax cuts in 2016 (0.7 % of GDP) to lower the tax burden on labour; its impact on growth and employment is expected to be positive.
- **Rising long-term unemployment and potential segmentation of the labour market are of concern.** Total employment rose steadily and the unemployment rate continued to decline in 2015. However, long-term unemployment was still rising in 2015, and employment gains were concentrated in temporary contracts and self-employment. Low transition rates from temporary to permanent contracts pose a risk of labour market segmentation. Self-employed workers are more often under-insured against disability, unemployment and old age, which could affect the sustainability of the social security system in the long run. Age, skill levels and migration background are found to be important determinants of labour market outcomes. In this context, the labour market integration of refugees and migrants poses a challenge.
- **In spite of the strong scientific base, research and development (R&D) spending is lower than that of top performers.** The strong education system and scientific base of the Netherlands provides a sound basis for boosting innovation and growth capacity via education and R&D activities. Private investment in R&D remains fairly low, while public investment in R&D is set to decline. Shifting public expenditure towards growth-friendly areas such as R&D and improving conditions to unlock private R&D investment has the potential to improve the Netherlands' long-term growth potential.

18.2. Innovation policy challenges

The Netherlands is developing less favourably than the Nordic countries and the US in a number of key drivers of competitiveness, including productivity growth, innovation and R&D, development of ICT skills and integration of digital technologies, notably by SMEs⁸⁹. This raises a number of longer-term challenges to the productivity and competitiveness of the economy and shows the need to further enhance framework conditions, encourage technology adoption and boost innovation. Framework conditions, such as a high-quality educational system and well-functioning product and labour markets, are key for productivity growth. Although the Netherlands scores well on bankruptcy procedures and product market regulation, there are signs that the relatively stringent employment protection legislation for permanent contracts having reached a certain seniority may

⁸⁹ For example, only 17 % of SMEs sell online and only 15 % of enterprises send e-invoices, even though 76 % of consumers use the internet for shopping and 91 % for banking. <http://ec.europa.eu/digital-agenda/en/desi>.

hinder productivity growth via its impact on labour turnover rates⁹⁰. The Netherlands is one of the few Member States where labour reallocation contributes negatively to productivity growth⁹¹.

The Netherlands' public research base is of global-level quality but its research and innovation (R&I) system is still endeavouring to leverage additional business investment. The Netherlands is a global player in terms of the quality of its public research base, with 16.4 % of its scientific publications among the 10 % most cited worldwide. The efficiency and high quality of the R&I system has the potential to leverage additional business R&I investment⁹². The 'top sectors' approach, implemented in 2011, addresses this challenge by enhancing science-business cooperation. This approach is complemented by support for R&D activities via tax incentives⁹³, an innovation fund⁹⁴ and the 'national science agenda', via which the government aims to improve cooperation between universities and the corporate sector. In 2016 two existing tax facilities, the WBSO and the RDA, are being merged, which is expected to lead to improved access for SMEs and new entrants to support for R&D activities.

R&D intensity is below the EU average and below Europe 2020 targets. Despite the effort put into introducing the integrated innovation policy, total R&D intensity has stabilised at around 2 % of GDP, markedly below the Europe 2020 target of 2.5 % of GDP and below the EU average⁹⁵. At 0.86 % of GDP in 2014, public R&D spending is lower than in other Member States with similar levels of educational attainment and economic development (Denmark, Sweden, Germany). Moreover, the overall level of public support to R&D and innovation is expected to decline from 0.94 % of GDP in 2014 to 0.77 % by 2019, both in terms of direct support and fiscal incentives⁹⁶. In 2014 business enterprise expenditure on R&D stabilised at a level of 1.11 % of GDP compared to the EU average of 1.30 %. This is a reason for concern as at the 'knowledge frontier' productivity improvements are typically made through R&D and innovation.

⁹⁰ Andrews, Criscuolo and Gal (2015). 'Frontier firms, technology diffusion and public policy: micro-evidence from OECD countries' *OECD future of productivity main background papers*. The authors use a harmonised firm-level productivity database covering the top performing enterprises in 23 OECD Member States, and isolate the productivity growth at the frontier from the productivity growth in non-frontier firms and all firms, based on the OECD Stan database. They show that potential labour productivity in the Netherlands could be increased by ten percent by reducing the stringency of employment protection.

⁹¹ This follows from a shift-share analysis on Ameco-data over the period 2000-2014 and has also been documented by the OECD, see Molnar and Chalaux (2015) 'Recent trends in productivity in China: shift-share analysis of labour productivity growth and the evolution of the productivity gap' *OECD Economics Department Working Papers No 122*. Figure 1, p.8 at <http://www.oecd-ilibrary.org/docserver/download/5js1j15rj5zt.pdf?expires=1454064978&id=id&accname=guest&checksum=31F5211ED3F8C215B6C91F57C685361B>.

⁹² Public-private cooperation in R&D is relatively well positioned in an EU comparison (3rd position) with 0.083 % of public expenditure financed by the private sector, compared to the EU average of 0.051 %.

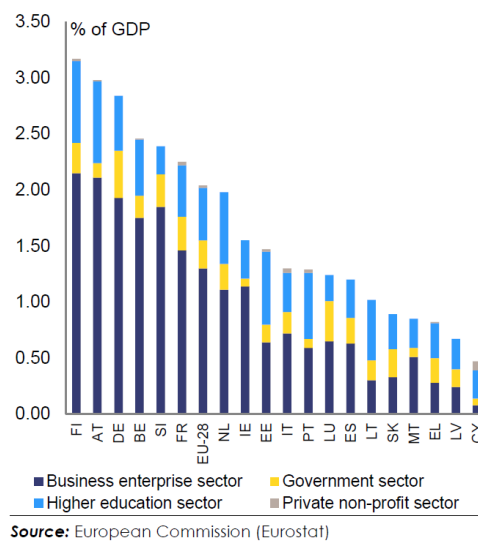
⁹³ The tax credit for R&D labour costs ('WBSO'), the Research & Development Allowance ('RDA') and the tax relief for innovation ('Innovation box').

⁹⁴ The MBK+ innovation fund will continue as a part of the new 'Future Fund'.

⁹⁵ The country-specific Europe 2020 R&D target of 2.5 % of GDP takes the services-oriented economic structure of the Netherlands into account.

⁹⁶ Rathenau Instituut (2015), 'Total Investment in Research and Innovation (TWIN) 2013-2019' <https://www.rathenau.nl/en/node/98>.

Graph 3.3.4: R&D expenditure by sector (2014)



Patent applications have declined significantly from their average level before the crisis, in contrast to trends in some other countries. Although patent applications per million inhabitants are relatively high, the number of patent applications has slightly declined. The share of patents relating to key enabling technologies (KETs) for the Netherlands has been slowly declining, from close to 3 % of all patents in the early 2000s to below 2 % in 2011⁹⁷.

18.3. Additional references to R&I

[1. Scene setter: Economic situation and outlook, p. 7]

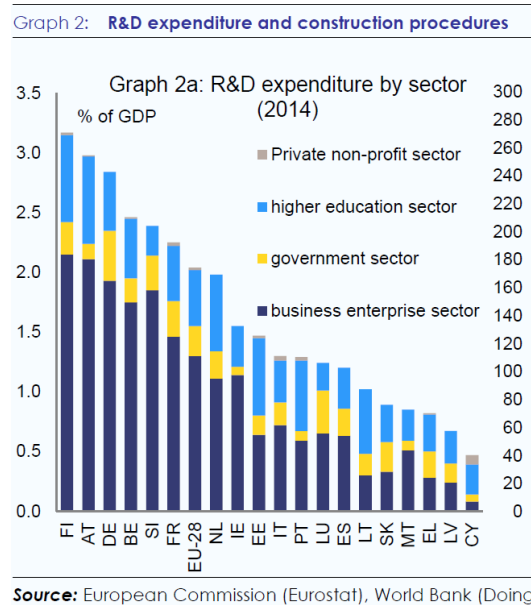
The Netherlands scores below potential with regard to some drivers of productivity growth such as R&D investment. Subsection 3.3 assesses structural economic policy settings and analyses productivity developments. The Netherlands combines a relatively high level of productivity with very low post-crisis productivity growth. GDP per hour worked increased by only 0.2 % on average between 2008 and 2014. Although trade integration is high and the business environment is generally supportive, investment in R&D is relatively low. Total R&D intensity currently stands at 2 % of GDP, below the Europe 2020 target and below top performers, which are countries with a similar level of development. The Netherlands has a high-quality scientific base and research infrastructure, and operates at the ‘productivity frontier’ in many sectors. As productivity improvements at the knowledge frontier are typically being made through innovation, boosting investment in R&D has the potential to pay off in terms of productivity growth.

[Box 1.1: Investment challenges, pp. 8-9]

Private and public investment in R&D is relatively low [see section 3.3]. Graph 2a shows that R&D intensity in NL is only around the EU average, well below countries with a comparable level of development in terms of quality of the labour force or productivity. As R&D expenditure bears a close relationship with the innovative capacity of a country, investment in R&D has the potential to increase productivity growth, in particular if it is accompanied with general improvements in framework

⁹⁷ For further detail, see European Commission (2015), ‘Key Enabling Technologies (KETs) Observatory, First annual report’ May 2015. The six KETs analysed include: advanced materials, nano-technology, micro- and nano-electronics, industrial biotechnology, photonics and advanced manufacturing technology.

conditions for productivity growth. It remains to be seen how effective the ‘top sector’ approach is in increasing private sector R&D efforts. The announced integration of the Research and Development Allowance (RDA, R&D aftrek) into the relevant law (WBSO, Wet bevordering speur- en ontwikkelingswerk) has the potential to improve the policy intervention as the RDA becomes more accessible for young innovative companies, and it reduces the dead-weight loss of the policy instrument.



[3.2. Labour market, social policies, skills and education, p. 50]

A lack of engineers and information and communication technology (ICT) professionals may hamper job matching and innovation performance. In 2015, more than half (53 %) of the companies in the Netherlands trying to recruit ICT specialists found it hard to fill their vacancies⁹⁸. This challenge is in part because science and technology graduate numbers have failed to rise, as not enough young people, including women, are being attracted to careers in ICT. This is part of a broader issue touching many science and engineering studies, as reflected by the position of the Netherlands (25th among the EU Member States) on the indicator 'new graduates in science and engineering per thousand population 24-34'. The Netherlands has been seeking to address actual and potential technological and digital skills shortages with a range of programmes, and recently launched the Human Capital Agenda ICT-Innovation to link demand and supply of ICT professionals in the ‘top sectors’ and to stimulate lifelong learning. It is too early yet to assess this measure.

⁹⁸ Digital Agenda Scoreboard, based on Eurostat

19. Poland

19.1. Executive Summary

This country report assesses Poland's economy in the light of the European Commission's Annual Growth Survey published on 26 November 2015. The survey recommends three pillars for EU economic and social policy in 2016: re-launching investment, pursuing structural reforms to modernise Member State economies, and responsible fiscal policies.

The Polish economy continues to experience a stable economic expansion. Driven by domestic demand, real GDP is expected to grow at robust rates of 3 ½ % per year in 2016 and 2017, well above the EU average. These growth rates will add to a long period of uninterrupted economic expansion, stretching as far back as 1992 — with Poland being the only EU country that weathered the post-2007 global financial and economic crises without undergoing any recession.

The gap in living standards and employment between Poland and the EU average has narrowed significantly, but challenges remain. In 2014, Poland's GDP per capita expressed in purchasing power standards reached 68 % of the EU average, up from 53 % in 2007. Total employment has been picking up since 2013, reaching all-time highs and pushing down unemployment. Despite this significant progress, the employment rate is still below the EU average. This gap is mostly explained by significantly lower participation rates of women and the low skilled. At the same time, the weight of the agricultural sector in total employment remains high and declines only slowly. The unemployment rate has also been decreasing and was back to pre-crisis levels. Yet, long-term unemployment accounts for about 40 % of the total. The country continues to experience rapid ageing and strong outward migration.

The overall economic outlook remains positive, while domestic risks are emerging. Private consumption is set to remain the dominant growth driver, given rising wages, employment and fiscal transfers. Private investment is expected to grow strongly as a result of an already high degree of capacity utilisation. Profit margins are set to remain strong but certain policy decisions taken or announced after the last general election may affect business confidence and investment. A new tax on the assets of financial institutions is likely to weigh on investment if banks respond by adjusting their lending rates to compensate for the impact on their profitability. Public investment is expected to remain strong, partly due to the government's objective to increase the investment rate. How this objective will be reconciled with higher current expenditure and domestic and EU fiscal rules still needs to be detailed. Deflation is forecast to end in 2016 but price pressures are expected to remain limited until 2017. After several years of adjustment, the current account deficit is expected to have almost closed in 2015, thanks to the strong performance of merchandise exports driven by the country's cost-competitiveness, in spite of negative developments in neighbouring markets.

Overall, Poland has made limited progress in addressing the 2015 country-specific recommendations. No significant progress was made in broadening the tax base and in addressing extensive recourse to reduced VAT rates. No steps were taken to establish an independent fiscal council. No progress was made in creating a system to record farmers' incomes and no action was taken to align special pension regimes for farmers and miners with the universal system. Some progress was made in relation to the segmentation of the Polish labour market. Progress is deemed to be limited in removing obstacles to investment in the railways.

Regarding the progress in reaching the national targets under the Europe 2020 Strategy, Poland is performing well in reducing the greenhouse gases, energy efficiency and tertiary education, while more effort is needed increasing the employment rate, R&D investment, renewable energy, and reducing early school leaving and poverty.

The main findings of the analysis in this report, and the related policy challenges, are as follows:

- **Robust and steady growth provides an opportunity to safeguard and improve the sustainability of public finances.** While the excessive deficit procedure was closed based on 2014 data, recent budgetary decisions affect the fiscal outlook, with the structural deficit expected to widen despite robust economic growth. Unless corrective measures are taken, the general government deficit is projected to increase above 3 % of GDP in 2017. Combatting tax evasion, in particular as regards value added tax (VAT), remains a major challenge. The relatively large tax gap — the difference between what is collected and what is theoretically due — is also related to the low efficiency of the Polish tax administration. Adding to this, the extensive use of reduced VAT rates narrows the tax base and is not effective instrument for income redistribution. Recent amendments to the still new domestic expenditure rule affect its credibility and effectiveness. The amendments also serve to emphasise the potential benefits of establishing an independent fiscal council. In the long-term, Poland faces medium risks to the sustainability of its public finances — which are mainly related to the projected increase in healthcare and long-term care spending.

- **Poland has reached a stage of economic development where efficiency gains and sustained growth are more difficult to achieve.** While the Polish economy has made steady progress over the last two decades, continuing to close the income gap with the EU average is becoming more difficult. Efficiency gains are now harder to achieve, as evidenced by decelerating total factor productivity. Moreover, the unfavourable demographic outlook is reducing the contribution of employment to Poland's growth potential. As a result, Poland's medium to long-term economic prospects depend on the capacity of its economy to move from the production of relatively low-technology goods to more advanced products and services. Remaining structural issues in the labour market, education and innovation systems continue to hinder investment, productivity growth, income levels and living standards. In effect, Polish science, higher education, research, development and innovation score low by international standards. Recent strategic plans to improve this situation have not yet been implemented.

- **Safeguarding the stability of the financial sector is crucial going forward.** The 2015 EU-wide transparency exercise, carried out by the European Banking Authority, confirmed the overall healthy state of the Polish banking sector. Profitability among banks — as an indicator of the viability of their business and ability to lend to households and corporations — decreased in 2015. At the same time, the share of non-performing loans is close to the EU average and has recently been declining. The sector faces however a number of market and regulatory challenges. The new tax on the assets of banks and insurance companies and the costs of a potential conversion of foreign-denominated loans into zloty could have a significant impact on profitability and lending rates. These are coupled with existing cost pressures from record low market interest rates, the reduction in transaction fees for payment cards and contributions to restock the Bank Guarantee Fund following payments of guaranteed deposits of resolved credit unions.

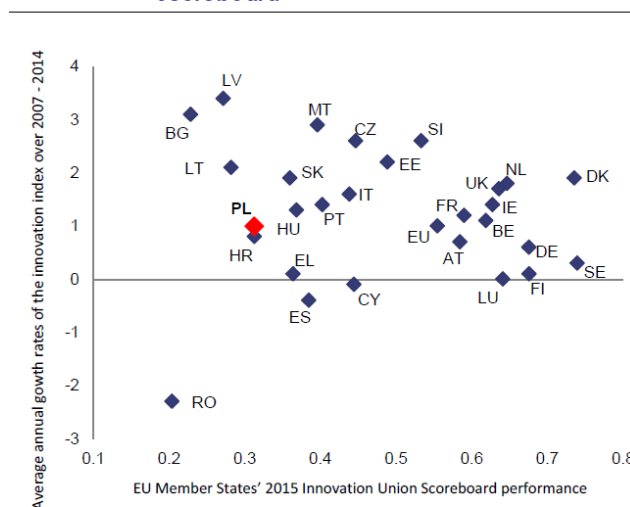
- **Despite its current strong performance, the Polish labour market faces significant challenges.** The unfavourable demographic outlook has already translated into a declining working age population. Preserving the positive trend in employment, especially of older workers, is therefore essential. The current segmentation of the Polish labour market affects productivity and the accumulation of human capital in the longer term. Shortcomings in the education system and in the design of active labour market policies lead to mismatches between labour demand and supply. Moreover, geographic and occupational labour mobility is hampered by factors such as housing policies, transport infrastructure, access to childcare and skills mismatches. Preferential sector-specific social security arrangements — in particular the highly subsidised pension systems for farmers and miners — also reduce labour mobility and have high budgetary costs. At the same time, the overall size of the Polish system of social protection remains relatively small compared to most European Union Member States and it underperforms in terms of poverty reduction.
 - **While access to professional services has improved, weaknesses in the regulatory framework and public administration remain.** The business and investment environments in Poland remain burdensome and complex in a number of areas, including tax compliance, construction permits and contract enforcement. Limited progress in digitalising the public administration also acts as a bottleneck. By contrast, Poland has been determined in fostering competition in professional services.
- **Investment in high quality infrastructure, including for transport, communications and energy, is critical to sustaining Poland's growth potential.** Despite sizeable investment in recent years, bottlenecks and deficiencies in transport, energy and communication networks persist. Investment activity is negatively affected by barriers related to the functioning of the public administration, taxation, and the environment for research, development and innovation activities. Weaknesses in the managerial and administrative capacity negatively affect the timely implementation of much needed investment projects in the railway sector and other transport, energy and telecommunication infrastructure. The Polish economy remains energy and carbon intensive; therefore potential gains from improving energy efficiency are significant. Electricity generation facilities are ageing and remain heavily dependent on coal. The power network is not sufficiently connected to neighbouring countries.

19.2. R&D and innovation

Despite the steady increase in R&D spending, progress towards higher innovation output is limited. Gross domestic R&D expenditure (GERD) has been increasing steadily in recent years, but at 0.9 % of GDP in 2014 it is still one of the lowest in Europe and well below the EU average of slightly above 2 %. R&D in Poland still relies predominantly on the public sector supported mainly by EU Structural Funds. However, an important development is the increase in business enterprise expenditure, which in 2014 reached 0.4 % of GDP, up from 0.2 % five years earlier. Despite recent efforts, Poland performs below the EU average on all dimensions of the 2015 Innovation Union Scoreboard (IUS) (Graph 2.3.1). There is a fairly strong deterioration in innovation activities by SMEs, while weak performance in patents and other innovation indicators persists. The quality of scientific activities in Poland is not improving, as evidenced by the low score in the Research Excellence Indicator of the 2015. 4.2 % of Polish scientific publications among the 10 % most-cited

worldwide (2010), ranking Poland 24th in the EU (ahead of only four countries: Romania, Bulgaria, Croatia and Latvia).

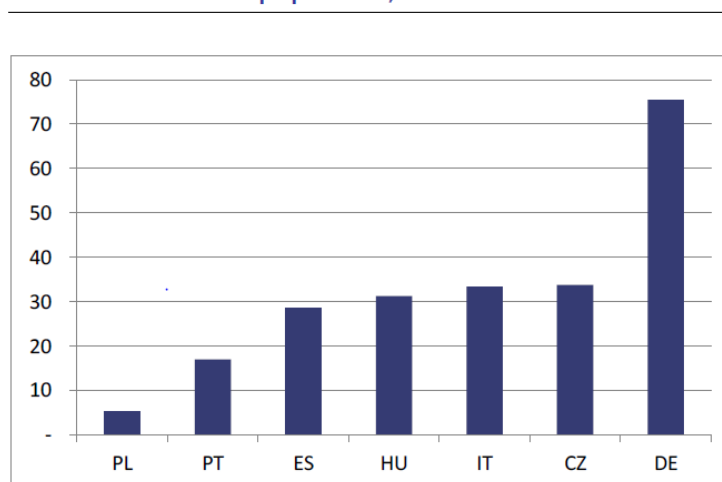
Graph 2.3.1: Poland's ranking in the Innovation Union Scoreboard



Source: European Commission

Weak linkages between the business sector and academia persist. Only around 10 % of innovative companies cooperate with universities and higher education institutions. In terms of public-private scientific co-publications, which can be used as a measure for the link between business and academia, Poland trails behind regional peers such as the Czech Republic or Hungary (Graph 2.3.2). In order to improve the collaboration between science and industry, a number of policy initiatives were introduced in recent years, but the results still remain to be seen. Apart from the 2014 amendments to higher education laws, affecting the system of intellectual property rights, work is still ongoing to amend industrial property law more broadly. This work aims at simplifying procedures, notably before the Patent Office, including through the use of electronic tools.

Graph 2.3.2: Public-private scientific co-publications per million population, 2012



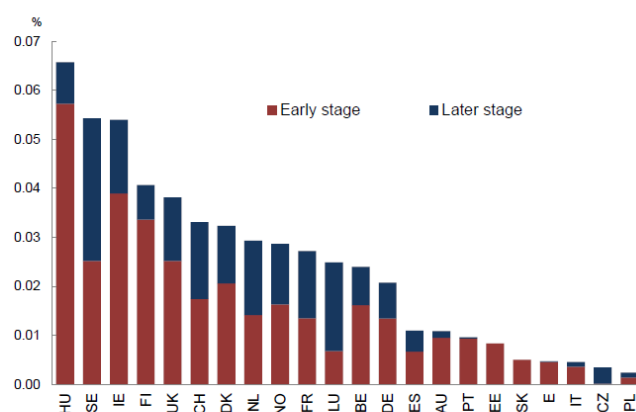
Source: European Commission

Strengthening the quality and internationalisation of science in Poland is proving challenging. Deficiencies in human resources management result in a lack of mobility and a limited influx of young researchers to both academia and the corporate sector. The average age of academic teachers is

increasing and the impact of scientific output in Poland is well below the OECD average⁹⁹. Moreover, the quality and organisation of doctoral study programmes is lacking. Doctoral curricula are often overly theoretical, while issues such as research methodology are not adequately addressed. A recently approved government document on open access to scientific information lacks some important provisions¹⁰⁰. With a view to tackling the quality and internationalisation of science, a dedicated 'Programme for the development of higher education and science 2015-2030' was proposed in 2015. It aims at improving the quality of public research and higher education through changes in their governance, management and funding. Nevertheless, it neither includes specific financial commitments nor an action plan for implementation.

The sources of financing firms' R&D activity remain limited. While access to bank loans is easier in Poland than in many other EU countries, the covering of alternative financing is limited, particularly among SMEs. The use of venture capital and private equity instruments to innovative projects is particularly low (Graph 2.3.3). In 2014, these sources of financing amounted to EUR 251 million, or 0.06 % of Polish GDP, well below levels in more advanced EU economies and less than in countries such as the Czech Republic and Hungary¹⁰¹. The limited availability of venture capital, which plays a more prominent role at a later stage of the innovation cycle, is especially problematic for young firms that intend to commercialise their products and roll them out to the market. Nevertheless, multiple measures have been introduced recently under the European Regional Development Fund's (ERDF) 'Smart Growth' Operational Programme to provide alternative financing to companies wishing to engage in R&D. This includes the '4Stock' instrument aimed at assisting SMEs wishing to raise equity or debt finance in capital markets. Another instrument, 'Biznest', is expected to help bring together private investors and entrepreneurs interested in syndicated private investment for start-ups based in Poland¹⁰².

Graph 2.3.3: Venture capital investment in selected OECD countries as % of GDP, 2012



Source: OECD

⁹⁹ Measured by the normalised impact of scientific production (OECD Science, technology and industry scoreboard 2013 based on Scopus Custom Data)

¹⁰⁰ E.g. it does not include the requirement of providing open access to Ph.D. dissertations repositories. "Kierunki rozwoju otwartego dostępu do publikacji i wyników badań naukowych w Polsce", Ministry of Science and Higher Education, 2015

¹⁰¹ 2015 European Private Equity Activity, European Private Equity and Venture Capital Association, May 2015

¹⁰² 2015 SBA Fact Sheet

Recent initiatives set out a comprehensive medium-term agenda for R&D, but their roll-out remains challenging. The Polish research and innovation system has been significantly restructured in recent years. The most important changes include the 2013 Strategy for Innovation and Effectiveness of the Economy 2020 (SIEG) that defines research and innovation policy priorities, and the 2014 Enterprise Development Programme (PRP) that proposes a wide range of measures to improve the support system for innovative activities of enterprises. The strategic framework is strengthened by operating programs under the ERDF. In addition, support to Polish innovative companies is envisaged under the new EU flagship initiative — the European Fund for Strategic Investments (EFSI), within the so-called ‘SME window’. The EFSI offers guarantees and counter-guarantees, aimed specifically at the high-risk, innovative or research-oriented companies’ needs¹⁰³. Currently, the key challenge is to implement the strategic policy framework effectively, also taking on board lessons learnt from the previous EU programming period (2007-2013). In particular, multiple dedicated government agencies face the challenge of creating operational synergies in order to better integrate the research and innovation policies that support, among other things, applied research and the commercialisation of innovative ideas. The new government reinforced this framework by creating an Innovation Council in January 2016 to coordinate the innovation policies of the government. It comprises, inter alia, three deputy prime ministers (Development, Culture and National Heritage, and Science and Higher Education). The main policy initiatives of the Council will aim at building on the competitive advantages of the Polish economy and include the introduction of fast-track funding for innovation.

The system of R&D tax incentives has been overhauled to better stimulate innovation. In the past, R&D tax incentives in Poland were not effective in stimulating private R&D due to their design and implementation, but a new law on supporting innovativeness introduces new R&D tax incentives from the beginning of 2016¹⁰⁴. The definition of qualifying R&D costs is now broader and has been extended to internal R&D. The new R&D tax incentives consist of a 30 % deduction in the wages of R&D personnel and 10 % in qualifying R&D costs (20 % for SMEs). However, the effectiveness of new R&D tax incentives will depend on the way they are implemented; much depends on how easy it will be for young and small companies to apply for the new R&D tax solutions. For example, a short carry forward of unused deductions and lack of cash refunds may limit the attractiveness of tax incentives for young innovative companies. The new law also creates tax exemptions for funds on the sale of stocks of qualifying companies in which funds hold at least 10 % of capital. This aims at stimulating equity financing for innovative businesses. The Innovation Council has underlined the need for further changes in R&D tax incentives, including introducing tax breaks stimulating science-to-business collaboration.

19.3. Additional references to R&I

[Box 1.1: Investment challenges, p. 11]

Research, development and innovation (R&D) investment expenditure is one area where investment barriers appear to play an important role. Such expenditure has been particularly low in Poland in comparison to other EU economies (see Section 2.3). Only since 2012 has there been a

¹⁰³ The first facilities under the “SME window” are already operational in Poland. For example, in July 2015, the European Investment Fund (EIF) and Bank Gospodarstwa Krajowego (BGK) — the Polish national promotional bank — signed an agreement for EUR 250 million to reach SMEs over the next two years under the COSME Loan Guarantee Facility.

¹⁰⁴ Ustawa z dnia 25 września 2015 r. o zmianie niektórych ustaw w związku ze wspieraniem innowacyjności <http://isap.sejm.gov.pl/DetailsServlet?id=WDU20150001767>.

gradual uptake. Low R&D investment in Poland accounts for more than half of the gap in total private investment-to-GDP ratio vis-à-vis the EU average.

20. Portugal

20.1. Executive Summary

This country report assesses Portugal's economy in light of the Commission's Annual Growth Survey published on 26 November 2015. The survey recommends three priorities for the EU's economic and social policy in 2016: re-launching investment, pursuing structural reforms to modernise Member States' economies, and responsible fiscal policies. At the same time, the Commission published the Alert Mechanism Report that initiated the fifth annual round of the macroeconomic imbalance procedure. The Alert Mechanism Report identified Portugal as warranting a further in-depth review (IDR).

Portugal's economy has been on a moderate recovery path since mid-2013 amid rising business and consumer confidence and improving financing conditions. The recovery was initially led by exports but has increasingly become broad-based as private consumption, in particular, has picked up. Labour-market conditions have been improving, with employment increasing and the unemployment rate falling, but the absorption of the large pool of long-term unemployed remains a challenge. Recent labour market improvements are largely the result of a reduced rate of job destruction, while the rate of job creation has increased more moderately.

The moderate recovery is set to continue, while risks stem from high fiscal imbalances and financial market volatility. In 2015, the economy continued its gradual recovery on the back of strong domestic demand, while weaker external demand has been weighing on growth. Real GDP is forecast to accelerate slightly in 2016 and 2017 but employment creation is expected to slow down over the forecast horizon, thereby becoming more aligned with GDP growth. Still, the unemployment rate is projected to gradually fall to below 11% in 2017. Low external price pressures and persistent slack in the economy are expected to constrain consumer price inflation in the short-term.

The level of external debt remains very high. High external debt is the consequence of the significant debt accumulated in the non-financial private and public sectors. Corporate deleveraging continued in 2015, but indebtedness remains elevated. High and rising levels of non-performing loans in the business sector are weighing on balance sheets of both the non-financial and the financial sector and are an important obstacle to investment.

During the crisis, high fiscal deficits and significant assumption of liabilities of public enterprises have resulted in a sharp increase in public debt. In recent years, fiscal consolidation has been predominantly based on revenue-increasing measures rather than permanent expenditure reductions, also benefitting from the cyclical recovery of the economy and favourable financing conditions. However, in absence of further structural consolidation measures, the very high level of public debt is set to come down only slowly in the near term due to elevated general government deficits and subdued growth. Risks to public debt sustainability are aggravated by interest rate volatility, shortcomings in the management of public finances and a high share of public expenditure.

A low growth potential is limiting the economy's capacity to grow out of debt. Rigidities in product and labour markets may act as barriers to investment, and emigration entails long-term risks for Portugal's growth potential. Weaknesses in the business environment are a main bottleneck to growth and to a more efficient allocation of resources. The rigidities in product, factor and service markets and an inefficient judicial system pose powerful barriers to the development of economic activity.

Even though overall wage developments have been moderate and supportive of rebalancing, the characteristics of the collective bargaining system limit the scope of firm level adjustment. Wages have decreased in nominal terms in 2014 and have remained stable in 2015. However, existing provisions for firms to temporarily derogate from sectoral collective agreements under specific circumstances have proven largely ineffective. Recent and planned increases in the minimum wage could result in a further compression of the wage structure, posing upward pressure on the overall wage structure and, if not matched by productivity increases, risking affecting employment perspectives and competitiveness of labour-intensive industries.

Overall, Portugal has made some progress in addressing the 2015 country-specific recommendations. As regards public finances, there has been some progress in enforcing the commitment control law, improving tax compliance and enhancing the medium and long-term sustainability of the pension system. Wage developments have been moderate, and in line with productivity over a medium-term horizon; collective bargaining at sectoral level has been supportive of the process. Measures have been taken to improve the efficiency of Public Employment Services and there was some progress in ensuring adequate coverage of social assistance. Some progress has also been made in reducing the corporate debt overhang and allowing the private sector to deleverage. Limited progress has been made in improving transparency as regards concessions and public-private partnerships at local and regional level.

Regarding the progress in reaching the national targets under the Europe 2020 Strategy, Portugal is on track in reducing greenhouse gas emissions, the overall renewable energy target and energy efficiency. More effort is needed regarding the employment rate, R&D investment, reducing early school leaving, tertiary education attainment and reducing poverty.

The main findings of the in-depth review contained in this country report and the related policy challenges are:

- **Even though Portugal has managed to improve the current account balance and external competitiveness, large net external liabilities still constitute vulnerabilities.** Previously high current account deficits have been turned into surpluses. Nevertheless, the external indebtedness of the Portuguese economy remains high. Continued improvements in productivity and external competitiveness could contribute to accelerate the reduction of external debt.
- **High indebtedness of the private sector remains a major vulnerability of the Portuguese economy. Non-financial corporations are adjusting their balance sheets, but to a lesser extent than households.** The high level of corporate debt weighs on firms' performance and investment and the large level of non-performing loans continues to pose risks to financial stability while hampering the productive allocation of credit. The policy response to high corporate indebtedness has been appropriate, but results are slow to come. Ensuring the continuation of the gradual deleveraging in the current context of low interest rates could help to restore a more balanced financial position of the private sector. At the same time, high levels of non-performing loans in the corporate segment are weighing on the balance sheets of banks and constrain their capacity to support the recovery through adequate credit supply. Start-ups and small and medium-sized enterprises have only limited access to finance via the capital market.

- **General government debt remains at a very high level.** The gross public debt-to-GDP ratio is expected to decline moderately in the short term and stabilise in the medium term. While public debt is considered sustainable under plausible scenarios, debt dynamics are vulnerable to adverse economic developments. Budgetary discipline and growth-enhancing structural reforms would support fiscal sustainability and the achievement of a significant reduction of debt.
- **The recovery of the Portuguese labour market continued in 2014 and 2015, but the absorption of the large pool of long-term unemployed remains a challenge.** The latter weighs heavily on both economic growth and the social situation. Firm-level bargaining is not picking up, which might hinder an effective wage adjustment that takes into account differences across firms. Increases of the minimum wage, while potentially reducing the intensity of in-work poverty, could also result in a further compression of the wage structure and put upward pressure on wages at all levels. If not matched by productivity increases, this could worsen employment prospects of the low-skilled, result in a deterioration of competitiveness and affect firms' capacity for deleveraging.

Other key economic issues analysed in this report which point to particular challenges of the Portuguese economy are the following:

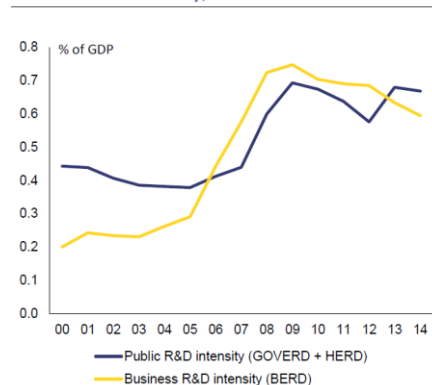
- **Indicators of poverty and social exclusion have deteriorated since the onset of the crisis.** Households with children have been particularly concerned. The risk of poverty affects also those at work through a combination of increased incidence of low wage earners and low work intensity. The severe material deprivation rate remains high despite a recent drop.
- **The low average skill level of the labour force is holding back productivity and competitiveness.** Weak cooperation between universities and business remains a challenge as it is detrimental to the employability of graduates and innovation. Portugal's innovation performance remains below the EU average, hampering the transition to a more knowledge-intensive economy.
- **Recent reforms have made the pension system financially more sustainable by reducing coverage and benefit levels in the longer term.** However, pension payments are not fully covered by contributions to the pension system. Future adequacy will depend heavily on increased labour force participation, longer working lives and efforts to improve the demographic outlook.
 - **Portugal has made efforts to ensure access to quality healthcare in a sustainable manner, but spending is projected to increase in the long term.** Portugal faces the double challenge of achieving long-term fiscal sustainability in the healthcare sector while at the same time maintaining the level of access to healthcare by improving efficiency in the system. The projected increase of public healthcare expenditure as a proportion of GDP by 2060 is the highest in the EU.
 - **Portugal has undertaken a comprehensive overhaul of its corporate and personal income tax systems, but the debt bias in corporate taxation remains relatively high and tax compliance low.** The perceived high level of uncertainty in the tax system may weigh on Portugal's attractiveness as a destination of foreign investment.

- **Despite progress, regulatory barriers and weak institutional capacity are still hampering business' growth and competitiveness.** Portuguese businesses are smaller than in other European Member States, weighing on their productivity. Regulatory barriers and weak institutional capacity seem to be hampering the process of resource reallocation towards more productive firms, weighing on overall firms' size and productivity. There are still restrictions to the access to a number of highly regulated professions. Also, access to finance remains a major concern for SMEs. Registering a business has become easier, but licensing remains cumbersome. Furthermore, low efficiency of the judicial system, for example in relation to tax litigation, and a lack of transparency in public procurement are detrimental to business dynamics and FDI attraction. Transparency remains a challenge for public-private partnerships (PPPs), particularly at the local and regional level, and concession contracts.
- **Re-launching investment in Portugal is key after the strong decline experienced during the economic crisis.** Investment used to be concentrated in non-tradable sectors such as construction. Since 2009, investment in Portugal has declined by more than the European average, mainly due to a drop in dwellings and equipment investment. The high level of corporate debt is a major impediment for investment. Other investment barriers include complex and unpredictable administrative procedures as well as the inefficiency of the judicial system, licensing procedures and administrative burden to comply with taxes.

20.2. The research and innovation system

While the overall Research and Innovation system is expanding, investment in R&D has been falling mostly affected by a decline in business R&D. Portugal has strongly expanded its research and innovation system (R&I) from a very low base. For example, R&D investments increased from 0.72% of GDP in 2000 to 1.58 in 2009 and highly cited publications (publications in the 10% most-cited scientific publications worldwide) rose from 6.3 in 2000 to 9.37 in 2010. However, R&D intensity has been decreasing since 2009, moving away from the EU average (PT: 1.29%, EU: 2.03% in 2014). Due to the need for public deleveraging, public R&D investments started to fall in 2010: the trend in business R&D has also been downward since then. This trend is largely driven by a lack of innovation-friendly framework conditions for business R&I investment in Portugal and by weak and fragmented incentives for cooperation between science and business.

Graph 3.7.1: Trends in business R&D intensity and public R&D intensity, 2000-2014



(1) Business R&D intensity: Business enterprise expenditure on R&D (BERD) as % of GDP.
 (2) Public R&D intensity: Government intramural expenditure on R&D (GOVERD) plus higher education.
 (3) Public R&D intensity: Break in series between 2008 and the previous years.
 Note: The soft recovery (from 0.58% in 2012 to 0.67% in 2014) showed on the graph is due to a break in series.
 Source: European Commission

Leveraging business R&I through science-business cooperation remains a key challenge. Portugal has shown significant progress over time in building its R&I capacity in terms of its human resource base. The country has significantly increased both the number of people with tertiary education and the number of science and engineering graduates. The share of the population aged 30-34 who have completed tertiary education increased from 11.3% in 2000 to 31.3% in 2014. The percentage of new graduates in science and engineering per 1 000 population aged 25-34 were 6.5% in 2000 and 18.7% in 2013. This development has had a positive impact on Portugal's scientific production and level of scientific excellence. However, the country remains well below the EU average in science-business cooperation and in the commercialisation of knowledge¹⁰⁵. It ranks low in public-private scientific co-publications per million population (PT: 15; EU: 50). The low level of public R&I financed by the private sector in relation to Portugal's overall level of business R&I investment is an indication that if the country wishes to foster science-business links, far-reaching reforms would still be necessary. At the same time, the institutional framework does not include incentives to foster cooperation between academia and industry. As private sector experience is not valued, academics have low incentives to follow dual careers or to engage in cooperation with industry. Moreover, companies remain focused on low knowledge-intensive activities and the absorption rate of knowledge produced in universities and public research organisations is very low. These factors limit the contribution of the science base to economic growth.

Innovation performance remains below the EU average hampering the transition to a more knowledge-intensive economy. According to the Innovation Union Scoreboard 2015, Portugal is a 'moderate innovator'. It performs below the EU average for most indicators of innovation and business involvement in innovation¹⁰⁶, which suggests a lack of innovation-friendly framework conditions. Furthermore, Portugal lags significantly behind in taking advantage of the opportunities of the digital economy with low broadband adoption, low internet use and low numbers of consumers

¹⁰⁵ Portugal ranks low in public-private scientific co-publications per million population (PT: 15; EU: 50). Portugal also has 0.67 PCT patents per billion GDP, well below the EU average (3.78) (Innovation Union Scoreboard 2015).

¹⁰⁶ License and patent revenues, SMEs product/ process innovations, exports in medium and high-tech products, exports in knowledge intensive services, R&D business expenditure, non-R&D innovation expenditures, and innovative SMEs collaborating with others.

shopping online or using online banking¹⁰⁷. This significantly hampers the country's ability to fully derive value from online transactions. The structure of the economy, in particular the predominance of low- and medium-technology production sectors, means that medium- to high-tech goods contribute less to the trade balance and that knowledge intensive activities and fast-growing innovative firms account for a smaller share of employment¹⁰⁸. Furthermore, 52% of the population and 45% of the labour force have low digital skills or none at all¹⁰⁹, which underlines the importance of encouraging the development the competences for needed for the digital economy and promoting digital inclusion and regular internet use. One specific important policy challenge for Portugal is therefore to ensure that the business environment is investment-friendly and capable of supporting the creation and scaling-up of fast-growing firms in innovative sectors so as to enable structural change towards a more innovation-driven economy.

Policy incentives for cooperation between public research and businesses remain weak and scattered. Portugal has relatively few PhDs employed in the business sector. Public support to R&I can come from reinforcing existing tools, such as the recent Innovation Agency (AdI) and the scheme for PhDs studentships in industry. A partnership between AdI and the business association for innovation (COTEC) was launched to encourage cooperation between research, academia and business, but no tangible results are visible so far. Besides this initiative, the country does not have a comprehensive strategy in place to address the economic and institutional barriers to science business cooperation. Initiatives such as the system of tax incentives for companies investment in R&D (SIFIDE II) and the new role of Portugal Ventures, the public venture capital organisation, are also expected to help improve Portugal's productivity, competitiveness, and structural change towards a more knowledge-based economy.

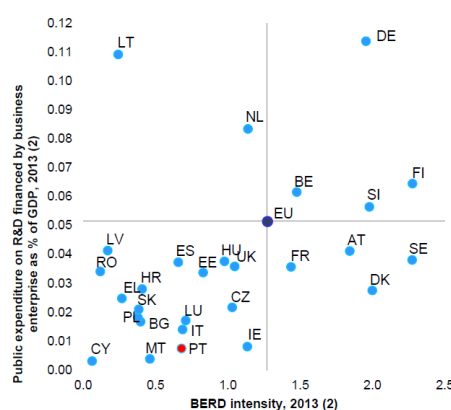
Portugal has allocated 32.4% of its structural funds for core R&D activities and assistance to R&I. This is a significant change if compared with 11.4% in the previous programming period. Adequate roll out of its smart specialisation strategy will be instrumental in addressing these challenges, since the strategy focuses resources on areas in which Portugal has relative economic strengths. Portugal approved the conditions and requirements for the recognitions of competitiveness clusters in March 2015. This follows a recent evaluation on the effectiveness of cluster policy which concluded that the policy is still too dependent on European support programmes and lacks a systemic approach and clear definition of the governance model.

¹⁰⁷ In Portugal in 2015, only 61% of households subscribed to fixed broadband (EU: 72%) and there were only 46 mobile broadband subscription per 100 people (EU: 75). (c.f. DESI 2016). In 2015, 28% of the Portuguese population had never used the internet (EU: 16%), and only 65% of the population used the internet at least once per week (EU: 76%). (c.f. DESI 2016). In 2015, 44% of Portuguese internet users shopped online (EU: 65%) and 41% used online banking (EU: 57%). (c.f. DESI 2016).

¹⁰⁸ The value added in high-tech manufacturing as % of total value added for Portugal is 0.6 while for the EU is 1.75. The share of employment in high-growth enterprises for Portugal is 7.55% while for the EU is 9.14%.

¹⁰⁹ Digital Economy and Society Index – DESI 2016, Digital Agenda Scoreboard.

Graph 3.7.2: Public expenditure on R&D financed by business enterprise as % of GDP versus BERD intensity



(1) Public expenditure on R&D financed by business enterprise does not include financing from abroad.
(2) BE, AT: 2011; DE, IE, FR, IT, CY, PT, EU: 2012.

Source: European Commission

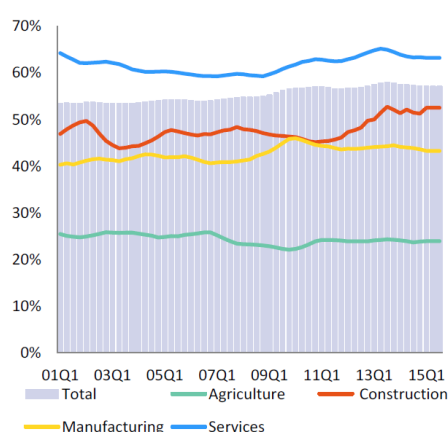
Portugal is expanding its R&I system and improving education outcomes, but innovation performance and the skills of the workforce remain low. Enrolment in vocational and education training has been increasing and monitoring of school outcomes is improving. However, the low skill level of the labour force and the weak links between universities and businesses remain a barrier to improvements in the country's innovation performance and competitiveness.

20.3. Additional references to R&I

[1. Scene setter: Economic situation and outlook, pp. 6-7]

Portugal shows a persistent productivity gap with the euro area. Total labour productivity in Portugal remained at around 60% of the euro area levels in 2013-2014, although it varies considerably across sectors (Graph 1.8). Portugal's persistent productivity gap relative to average euro area levels is partly due to differences in the level of R&D spending and innovation. Both are still relatively low, as is also evidenced by the low share of exports of high-tech products (Graph 1.9). The low average skill level of the Portuguese labour force, including company management, is holding back investment activity and innovation (see Section 3.7). However, Portugal has retained its comparative advantage in the production of labour-intensive and low to medium value added activities such as the processing of beverages, mineral products, paper and wood. Improvements in the business environment could yield significant gains in productivity and competitiveness (see Box 1.2).

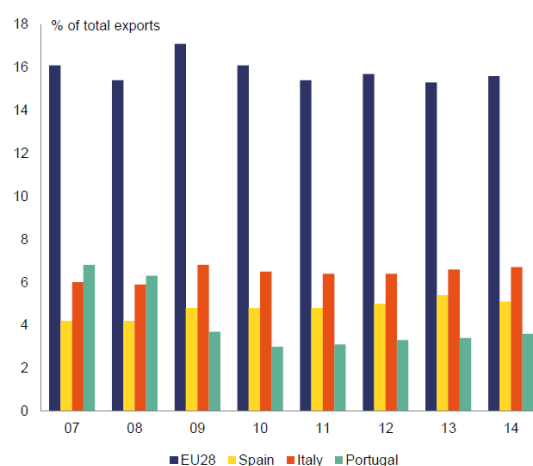
Graph 1.8: Labour productivity relative to the EA-19



Source: European Commission

Graph 1.9: Exports of high technology products as a share of total exports

Graph 1.9: Exports of high technology products as a share of total exports



Source: European Commission

[Box 1.2: Investment challenges, p. 14]

Innovation-friendly framework conditions could help increase R&I investment (Section 3.4).

Portugal has made significant progress in building its R&I capacities, significantly increasing the number of persons with tertiary education and science and engineering graduates. However, the country is underperforming in science-business cooperation and in the commercialisation of knowledge and incentives to improve cooperation between public research organisations and the business sector remain weak and fragmented.

[3.6. The role of structural funds, p.60]

Quality management and efficient use of EU funds in Portugal are important to improve the country's investment environment. EU structural funds account for a significant share of public

investment¹¹⁰ during the 2014-2020 programming period. Portugal could use this funding to SMEs in their investments to modernise, expand their portfolio of products and services and gain new markets, especially internationally if the right support mechanisms (in particular financial) are fully implemented. Closer links between research, innovation and businesses, together with training policies, could also play an important role in responding better to labour market needs.

[3.7. Education, Research and Innovation, pp. 61-62]

Education system and policy reforms

Stronger cooperation between universities and businesses remains a challenge to increase the employability of graduates in all sectors and foster innovation. The Portuguese academic and university representatives assess the barriers to university–business cooperation as being some of the highest in Europe. The biggest barriers identified are the lack of either public or private funding and excessive red-tape. University governance and finance systems and the academics career path do not provide a favourable environment to foster university-business cooperation. Academics claim a lack of awareness about the different cooperation modalities and universities consider that businesses are the only beneficiaries of these efforts. On the other hand, businesses often lack absorption capacity and perceive universities as being too bureaucratic to invest in. Portugal does not count on a comprehensive strategy to address those economic and institutional barriers and no measures have been taken, or are anticipated, to provide incentives for academics engaged in cooperation with industry¹¹¹.

¹¹⁰ The contribution made by cohesion funds amounted to 1.75% of GDP in 2014, almost equalling total public investment (2% of GDP in 2014).

¹¹¹ The State of University-Business Cooperation in Portugal (2013), European Commission, DG EAC and Research and Innovation Observatory Country Report Portugal 2014, JRC Science and Policy Report.

21. Romania

21.1. Executive Summary

This report assesses Romania's economy in the light of the European Commission's 2016 Annual Growth Survey published on 26 November 2015. The survey recommends three priorities for the EU's economic and social policy 2016: re-launching investment, pursuing structural reforms to modernise Member States' economies and responsible fiscal policies. At the same time, the Commission published the Alert Mechanism Report that initiated the fifth annual round of the macroeconomic imbalance procedure. The Alert Mechanism Report identified Romania as warranting a further in-depth review.

Economic growth has been strong over the last three years, gradually broadening its base. In the wake of the 2009 crisis the Romanian economy stabilised with the support of EU-IMF financial assistance programmes. It has been expanding strongly since 2013, the drivers of growth switching gradually from net exports to domestic demand. Private consumption recovered to its post-2008 peak on the back of higher household disposable income boosted by strong wage growth and negative inflation. Investment was slower to recover but has returned to near pre-crisis growth rates. Conversely, imports are being fostered by robust domestic demand, but the current account deficit expanded only marginally last year as export market shares continued to grow, especially in the services sector. Fiscal stimuli are expected to boost real GDP growth above potential in 2016-2017. These measures combined with accelerating wage growth will add further pressure on already robust domestic demand. At the same time, policy measures on the supply side of the economy, such as investment in innovation and infrastructure or improvements to the business environment and public administration, remain limited. The main challenge will be to ensure balanced and durable growth in the future.

The labour market is tightening on the back of robust economic growth. The unemployment rate has been broadly stable below 7 % and is expected to decrease somewhat in the coming two years. Employment has been increasing and is forecast to sustain its upward trend and growth has been concentrated in high value-added sectors. However, strong outward migration, including of the highly-skilled workers, coupled with an ageing population represent a challenge to support a competitive economy. The 2014 reduction of the social security contribution has helped contain unit labour costs so far but they may outpace labour productivity in the future as the labour market tightens.

Public finances were stable in 2015 but they are set to deteriorate following expenditure increases and cuts in the VAT and other taxes. Romania reached in 2014 its medium-term objective of a deficit of 1 % of GDP in structural terms. In 2015, improved tax collection enabled Romania to remain at its medium-term objective despite slippages in expenditures. However, new tax cuts in 2016 and 2017 and increases of public wages are forecast to raise the deficit to 3¾ % of GDP by 2017. The public debt is expected to rise above 40 % in the same period.

With the financial assistance programme over, market confidence will rest on preserving financial sector stability and implementing sustainable fiscal policy and structural reforms. The third consecutive balance-of-payments assistance programme for Romania (2013-2015) ended in September. Given the disbursements made under the first programme (2009-2011), Romania will be under post-programme surveillance until spring 2018, when 70 % of the loan from the European Union is expected to be repaid. Preserving favourable market conditions and balanced growth

prospects as well as promoting positive social and labour market outcomes are linked to the implementation of structural reforms to improve competitiveness, employment and social cohesion.

Romania has made limited progress in addressing the 2015 country-specific recommendations.

The third balance-of-payments financial assistance programme (2013-2015) ended in September 2015 without any completed review. Romania remained at its medium-term objective in 2015, but is forecast to deviate significantly from it in 2016 and 2017. Limited progress was made in tax compliance. No progress was made on equalising the pensionable age for men and women. Limited progress was made in adequately staffing the National Employment Agency, strengthening active labour market measures, and reducing early school leaving. Some progress was made as regards the provision and quality of early childhood education and care, especially for children above three years old. There was limited progress on improving the minimum-wage setting and on introducing the minimum inclusion income. Progress in pursuing the 2014-2020 national health strategy was mixed. Amendments to the draft law reforming corporate governance of state-owned enterprises were submitted to Parliament but have yet to be discussed.

Regarding the progress in reaching the national targets under the Europe 2020 Strategy, Romania is performing well in national greenhouse gas emission, renewable energy, energy efficiency, tertiary education, and reduction of population at risk of poverty or social exclusion, while more effort is needed in employment rate, R&D intensity, and early school leaving.

The main findings of the in-depth review contained in this report and the related policy challenges are as follows:

- **Vulnerabilities related to the external position have been reduced against the background of strong economic growth, and Romania's economy is becoming more resilient.** This is borne out by the significant improvement of the net international investment position since 2012, the sustained rebalancing of the current account, and gains in export market share.
- **The net international investment position is set to improve further.** Challenges may arise in 2016 and 2017 with the acceleration of import growth due to surging domestic demand in response to the fiscal stimulus. Even in this case, however, the current account deficit is forecast to remain contained below 3 % of GDP. Cost competitiveness has been re-established in the post-2010 period, but pressures may resurface if the current acceleration of wage growth is sustained and outpaces productivity gains. Strengthening non-cost competitiveness to support the transition to a higher value added economy is another challenge.
- **Risks from domestic legal initiatives threatening the stability of the financial sector have increased.** A balance sheet assessment and stress test in the insurance sector were completed in July 2015. An asset quality review and stress test have been launched in the banking sector. Effective measures were implemented to reduce non-performing loans, among other efforts to strengthen market confidence. Despite these positive developments and the presence of overall reassuring capital and liquidity buffers, some domestic legal initiatives could increase the vulnerability of the banking sector. Of particular relevance here are court rulings in the implementation of the law concerning unfair contract terms ('abusive clauses') and the law on debt discharge. The retroactive application of the law on debt discharge on the existing stock of loans, as laid down in the current form of this law, may constitute a challenge for several credit institutions and lead to weaker credit activity going forward. The law is still in draft, as

it was sent back by the President to Parliament for re-examination. If passed by Parliament in its original form again, the law on debt discharge may generate a systemic risk for the entire banking sector, with risks for financial sector stability and implications for the whole economy.

- **An expansionary fiscal policy in a strong growth environment is a source of concern.** Strong economic growth in 2015 was reinforced by tax cuts and public wage increases. These were decided in an ad hoc manner and approved outside the budget process without provision for their financing as laid down in national legislation. Further expansionary fiscal measures became effective from January 2016 and more are planned for 2017. The fiscal deficit is expected to more than triple as a percentage of GDP in only two years. This undermines the budgetary consolidation gradually achieved over the last years and indicates that the fiscal framework has not been applied effectively to ensure fiscal sustainability. At the same time, potential growth is constrained by inefficient public investment planning and coordination, the lowest EU funds absorption rate, an unfavourable business environment, low research and development intensity and protracted structural reforms, including of state-owned enterprises. Fiscal expansion, stimulating primarily domestic consumption, in the context of an already robust economic growth without supplementary supply-side measures could lead to new internal and external imbalances.

Other key economic issues analysed in this report which point to particular challenges for Romania's economy are the following:

- **The effectiveness and efficiency of the public administration are limited and the business environment has hardly improved.** Inconsistent human and financial resources management weakens the capacity of the public administration to develop and implement policies in a strategic and coordinated manner. Despite important steps to tackle corruption, this persists as a systemic problem. Judicial independence and respect for court decisions continue to face challenges. The complexity of administrative procedures, the volatility of fiscal and tax policies and the extensive use of government emergency ordinances create uncertainty and weigh on investment decisions. Access to financing for small and medium sized enterprises remains limited. High tax evasion and undeclared work reduce tax revenue and distort the economy. Despite some progress, the public procurement system is still inefficient.
- **Labour market conditions have been favourable but structural problems persist.** Unemployment is low and the employment rate has been increasing but is still below the EU average. Labour market institutions, including social dialogue and the public employment service, are not functioning properly. The National Employment Agency has yet to offer tailored and personalised services, either to jobseekers or to employers. Access to the labour market for vulnerable groups is limited. The percentage of young people not in employment, education or training is above the EU average and outreach tailor-made to activate them remain limited. The early school leaving rate is high, in particular for the Roma and the rural population. Prevention and remedial programs are limited. For vocational education and training, quality issues persist and participation in adult education is very low.
- **The effectiveness of social protection and the health system is limited.** Poverty and social exclusion are among the highest in the European Union, particularly for children and Roma. Social transfers have a limited impact on reducing poverty and the provision of social services

is insufficient. The low adequacy of social benefits is further hampered by the lack of a coherent adjustment mechanism. Progress with activation and labour market integration of social assistance beneficiaries has been limited. The equalisation of the pensionable age for men and women is still pending. Health outcomes remain poor due to limited access to healthcare, inefficient use of public resources and widespread corruption. Informal payments are prevalent and there is an overreliance on hospital care.

- **Rural areas face particular challenges such as severe under-utilisation of human capital and deeply embedded pockets of poverty and social exclusion.** Agriculture, the typical occupation in rural areas, accounts for 29 % of total employment in Romania, but only 5 % of GDP. A high proportion of the rural labour force works in subsistence or semi-subsistence agriculture, associated with informal work or non-remunerated family work, low productivity and poverty. Rural areas face a multitude of challenges related to education, health, social inclusion, basic infrastructure, diversification of employment, outwards migration, and population ageing.

21.2. Additional references to R&I

[2.1. External balance and competitiveness, p. 22]

Insufficient investment in R&D, the unfavourable business environment and the limited number of highly qualified workers are some of the factors contributing to the low share of high-tech exports. The importance of high-tech products has been decreasing since 2011, when it reached a peak at 10 % of exports (Graph 2.1.21). Romania lags considerably behind other EU Member States in the resources it invests in research and development (see section 2.3). Insufficient funding and a fragmented institutional setting affect public policies for innovation and R&D. Underdeveloped basic transport infrastructure, unfavourable business environment, an unstable regulatory framework, inefficient public administration and the scarcity of highly qualified workers play a significant role in this context (see sections 3.1 and 3.2).

[2.3. Medium-term risks of imbalances, p. 32, 40-41]

Increasing investment is paramount to raising potential output to counterbalance the fiscal expansion and generate sustainable non-inflationary growth in the medium term¹¹². Enhancing public investment, especially in infrastructure, inter alia by increasing EU funds absorption, improving total factor productivity by investing in research and innovation, and increasing energy efficiency are decisive for boosting potential growth, which would bring about a more balanced economic expansion.

[...]

Despite these positive developments, numerous barriers to investment are still present and are restraining potential growth (see Box 1.1 and section 3.1). Research and innovation activities are hampered by insufficient funding, weak public-private collaboration and fragmented institutional setting¹¹³. The process of restructuring of state-owned enterprises is ongoing, but the limited efficiency of such enterprises has hindered the development of infrastructure (see section 3.1). Regulated energy

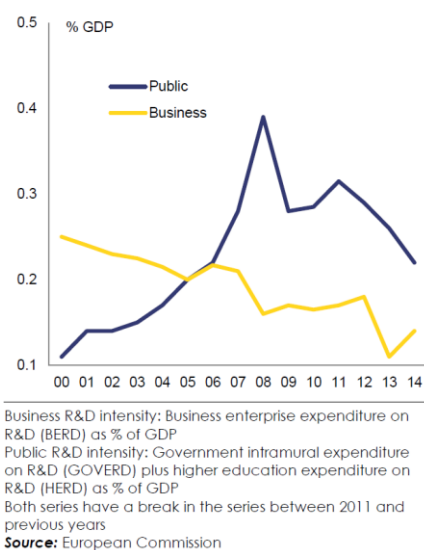
¹¹² For additional measures and structural reforms which could boost potential growth see sections 3.1, 3.2 and 3.3.

¹¹³ European Commission (2015), *Country Report Romania 2015*, Commission Staff Working Document, p. 31

prices and related domestic supply obligations limit investment incentives. All these factors suppress potential growth.

R&D and innovation expenditure is low and inefficient. R&D intensity has been continuously falling since 2011, reaching 0.38 % of GDP in 2014. This is the lowest level in the EU and far away from the Europe2020 target of 2 %. Public R&D expenditure fell to 0.22 % of GDP in 2014, placing Romania last in the EU. Structural funds in the 2007-2013 period of EU funding accounted for merely 20 % of public R&D expenditure. For the 2014-2020 programming period only 15 % of the funds available to Romania are allocated to R&D. A more positive development is the higher allocation of funds to R&D in the 2016 budget, which would increase the public R&D expenditure to 0.29 % of GDP in 2016.

Graph 2.3.13: Developments in R&D intensity



Business investment in R&D is still under-developed in spite of new incentives. Romania has one of the lowest values of business R&D expenditure in the EU (0.16 % of GDP in 2014, 27th in the EU). Low business sophistication and the overall low quality of the science base¹¹⁴ hamper Romania's capacity to attract business R&D investment and to foster public-private cooperation in research and innovation. In recent years, technology start-ups have gained ground around some entrepreneurial hubs in ICT, but the phenomenon remains limited. Tax incentives for R&D expenditures were adopted in 2010 with the aim to provide incentives for increasing business investment in R&D, but they are not yet operational. The adoption in 2014 of a law on inventions by employees is also expected to encourage multinationals to locate more of their R&D activities in Romania and to invest in innovation activities with a higher added value to the economy.

[...]

Access to credit for SMEs is difficult and support for knowledge-based start-ups and product development is still at an early stage. A Business Angels Law was adopted in 2015 and support for other new forms of financing is being exploited. The creation of two investment funds is envisaged — one with opening and seed capital for entrepreneurs with innovative ideas and one with venture and growth capital for innovative start-ups. The success of all these measures will depend on the

¹¹⁴ The low quality of the Romanian science base is evidenced by the share of Romanian scientific publications among the 10 % of the most-cited worldwide publications, where Romania ranks 25th among all EU Member States.

development and maintenance of solid innovation governance, combined with a coordinated and integrated perspective of the research, development and innovation system in a context of a smart specialisation approach, and supported by resource stability and predictability and better public-private partnership.

22.Slovakia

22.1. Executive Summary

This country report assesses Slovakia's economy in the light of the European Commission's Annual Growth Survey published on 26 November 2015. The survey recommends three priorities for the EU's economic and social policy in 2016: re-launching investment, pursuing structural reforms to modernise Member States' economies, and responsible fiscal policies.

Slovakia's recovery from the crisis was one of the fastest in the EU. According to the Commission 2016 winter forecast, real GDP is expected to have increased by 3.5 % in 2015 due to solid household spending and surging investment activity. Investment benefited from intensified drawing of EU funds, as the possibility to make use of funding available under the 2007-2013 programming period came to an end. Household consumption was supported by an improvement in labour market conditions, solid wage growth, falling prices and favourable credit conditions.

Slovakia's economic expansion is set to continue, driven by the household sector. Real GDP growth is expected to exceed 3% in both 2016 and 2017. Accelerating private consumption is set to become the strongest driver of growth in 2016 and thereafter, buttressed by steady gains in employment, robust real wage growth, low credit costs and the continued fall in energy prices. Public investment expenditure is expected to moderate as the drawing of EU funds returns to more normal levels, but the impact on overall investment is likely to be offset by stronger private investment activity, mainly from abroad. Subdued external demand, including for the output of Slovakia's large automotive sector, represents the main downward risk to the medium-term outlook.

The labour market has witnessed a cyclical improvement. The unemployment rate fell to 11.5 % in 2015 and is expected to further decline below 10% in 2017 on the back of robust economic expansion. However, structural unemployment continues to represent a key challenge, reflecting pronounced geographical differences in labour market conditions, accompanied by low labour mobility. Low educational outcomes and inequalities linked to socio-economic background represent major obstacles to the improvement of human capital with potential knock-on effects for skill levels and growth potential.

While the Slovak economy is highly integrated into global value chains, production is concentrated in few sectors and regions. Slovakia is an internationally integrated economy, especially in the lower parts of value chains, as a large share of the car and electronics production is carried out by foreign-owned firms and exported. These sectors constitute a non-negligible part of domestic output and are concentrated mainly in the Western region. Lack of appropriate infrastructure restrains investment in other regions, which prevents their integration into global value chains and contributes to regional divergences. Although Slovakia has succeeded in attracting new investment from foreign companies, long-standing concerns about the quality of the business environment, public administration and judicial system have dented its non-price competitiveness. This deterioration is reflected especially in a low participation of the domestically-owned companies in the global supply

chain. There have been no major efforts so far to diversify the economy into other industrial sectors and this exposes it to external demand volatility. Low innovation performance and business spending on R&D inhibit long-term growth prospects.

Slovakia has made limited progress in addressing the 2015 country specific recommendations (CSRs). Slovakia received recommendations in the areas of healthcare cost-effectiveness, tax collection, long-term unemployment, availability of childcare, attractiveness of the teaching profession, participation of Roma in mainstream education, issuance of land-use and building permits, and public procurement performance. There has been partial progress on several fronts. Measures to fight tax fraud have contributed to better collection of taxes, in particular of value added tax (VAT). The lowering in recent years of the tax wedge for the low-paid, in combination with the granting of in-work benefits for the long-term unemployed, could contribute to a reduction in long-term unemployment. The capacity of early childhood education and care facilities, in particular for children aged three years and above, is being expanded. Legislation aimed at reducing the proportion of Roma pupils in special schools with limited curricula was adopted in mid-2015. The length of building permit procedures for large-scale investment and infrastructure projects has been reduced. Transparency of public procurement has improved somewhat through the introduction of the Electronic Contracting System and the mandatory use of the contract registry. Nevertheless, a number of areas have not been sufficiently addressed. Measures aiming to improve cost-effectiveness in healthcare have been taken but have not led to tangible improvements. Access to training for the jobseekers has improved, but individualised measures for long-term unemployed in this respect are still lacking. Teachers' education remains inadequate. Despite the efforts undertaken, competition in public procurement remains limited.

Regarding the progress in reaching the national targets under the Europe 2020 Strategy, Slovakia has made good progress towards its targets reducing greenhouse gases, increasing renewable energy, and reducing poverty, while more effort is needed to increase employment, R&D spending, improving energy efficiency, preventing early school leaving and increasing tertiary education.

The main findings of the analysis in this report, and the related policy challenges, are as follows:

- **The reduction in tax avoidance has been substantial, but an overall tax compliance strategy is still missing.** Measures to fight tax fraud have contributed to an increase in tax collection, but the VAT gap remains high, indicating an ongoing compliance challenge. This is mainly because improvements in collection have not been accompanied by an overall tax compliance strategy. A strong emphasis on VAT collection in recent years has lessened attention to other key functions of the tax administration, indicating scope to improve resource allocation.
- **The healthcare sector continues to face long-term sustainability challenges.** Healthcare expenditure is comparatively low, but will be the main driver of the projected increase in ageing-related costs. Although (non-binding) measures have been taken in the area of budgeting and process management, several public hospitals continue to be in poor financial shape, which may reflect continued weaknesses in healthcare procurement. Government efforts to better integrate healthcare services have continued, and forthcoming plans should be judged by their ability to safeguard accessibility and deliver efficiency gains. Progress on e-health and the introduction of the diagnosis-related group (DRG) system of payments has been slow. While Slovakia has recorded a substantial improvement in health status indicators, it still ranks low compared to other EU countries.

- **The improving labour market has not translated into significantly lower levels of long-term unemployed.** High and persistent long-term unemployment represents a policy challenge, particularly affecting the low-skilled and young, while large regional disparities persist. Roma participation in the Slovak labour market remains very low and progress in increasing their employment is slow. The employment of women is also below potential. The Central Labour Office has been reorganised, but the potential for individualised support to the long-term unemployed and vulnerable groups has not been realised yet. Although the risk of poverty or social exclusion has decreased, social safety nets remain relatively weak, in particular for the unemployed and families with children.

- | |
|--|
| <ul style="list-style-type: none"> • The education system is insufficiently geared towards increasing Slovakia's economic potential. Educational outcomes are weak and inequalities appear high in an international comparison. The low attractiveness of the teaching profession is not supportive towards improvements in teaching quality. Recently adopted legislation aims at reducing the proportion of Roma pupils in special schools with limited curricula and the discrimination against Roma. Tertiary education attainment has stagnated at a low level and measures to improve quality are proving insufficient. Research & development (R&D) and innovation performance is hindered by a fragmented governing framework. Participants' demand for a newly introduced dual vocational training system is still limited. |
|--|

- **The level of publication of contract notices is high, but the public procurement system still shows weaknesses.** Competition remains limited because of frequent use of exceptional procedures without calls for tender or of tenders with tailor-made technical specifications. Insufficient focus on quality, as well as the frequent use of 'price-only' criteria, are common features of the system. Overall, implementation of strategic solutions seems to be hampered by fragmented policy design.
- **Despite policy efforts, administrative and regulatory barriers continue to harm the business environment.** The efficiency and effectiveness of public administration is limited by a lack of strategic planning, problems in human resources management and insufficient uptake of e-solutions. The enforcement of contracts and the use of insolvency procedures are hampered by lengthy and complicated judicial processes. Surveys consistently report grievances among Slovak and foreign companies about frequently changing and opaque legislation and complex administrative procedures, which may deter investment. However, tax compliance costs for businesses have declined and measures are being taken to improve the business environment and foster entrepreneurship.
- **The attractiveness of Slovakia's Central and Eastern regions for private investment is hampered by problems in the physical infrastructure.** A fragmented road transport network harms investment, especially in the Central and Eastern regions, and aggravates the regional economic divide. Foreign direct investment inflows tend to concentrate around Bratislava, while Central and Eastern regions do not attract even home-grown private investment.
- **Low energy efficiency and under-pricing of environmental resources constitute a challenge.** Slovakia remains a highly energy-intensive economy. The waste management

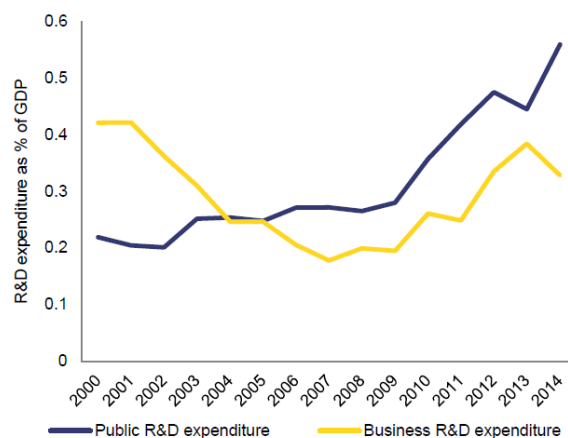
framework has a poor track record, in part due to under-pricing of landfilling, while water charges do not sufficiently reflect environmental costs. High electricity prices, which incorporate several subsidies, represent an important challenge to the Slovak industry.

22.2. Research and innovation

A stronger capacity to innovate can facilitate Slovakia's move up the value chain. Slovakia ranks well below the EU average in terms of innovation performance, a key determinant of growth potential. Research & development (R&D) is hampered by low public and private resources, a fragmented policy framework and inefficient public spending. Expenditure on R&D has gradually increased in recent years, albeit from a very low level, and is highly reliant on EU funds¹¹⁵. Total R&D intensity rose to 0.89 % of GDP in 2014, almost double the level of 2008. This ratio, however, remains well below the EU average of 2 % (2014). The increase in public R&D expenditure has been more pronounced than that of the private sector (Graph 2.6.3), mainly due to the support received from EU Funds. Fifteen EU-funded strategic projects to create university parks and research centres were almost completed in 2015 and will help to fill the gap in R&D infrastructure.

The innovation policy framework is highly fragmented. Cooperation between competent ministries is not optimal, and strategic quality control for R&D projects is encumbered by eight different government agencies being responsible for supporting R&D and innovation. The fragmented administrative framework and the lack of coordination and thematic concentration may partly explain the low levels of research performance¹¹⁶ and the low participation of domestic firms in R&D.

Graph 2.6.4: Public and private R&D expenditure in Slovakia (% of GDP)



Source: European Commission

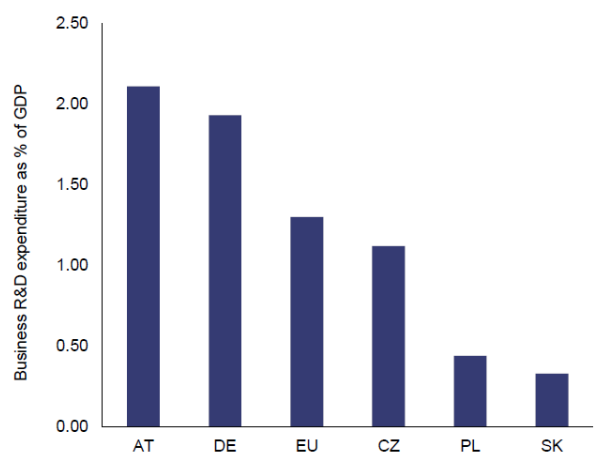
Private R&D spending is comparatively low, which partly reflects Slovakia's business model. Private expenditure on R&D in the business sector was 0.33 % of GDP in 2014, compared to an EU average of 1.3 % of GDP (Graph 2.6.4). The Slovak economy is characterised by a high share of manufacturing output, which is usually R&D-intensive. However, low expenditure on R&D by the business sector reflects the fact that the manufacturing sector is dominated by a few large

¹¹⁵ This refers to project finance only, the institutional finance is provided by the Slovak Government.

¹¹⁶ This performance is reflected in indicators such as the proportion of Slovak scientific articles among the 10 % most-cited articles worldwide. This share reached 4.4 % in 2010, which is well below the EU average of 11.4 %. Slovakia ranks in 23rd place among EU Member States according to this indicator.

multinational companies, which tend to import most of their technology. Slovakia has so far not succeeded in attracting a sizeable volume of R&D investment from these companies. Furthermore, the overall share of high-tech products in exports remains relatively low compared to Slovakia's main competitors, even if the share has been increasing in recent years. There is only a very low number of Slovak SMEs innovating in-house (15 % in Slovakia against 28.7 % in the EU), and few of them collaborate with others (6.7 % in Slovakia against 10.3 % in EU)¹¹⁷.

Graph 2.6.5: Private R&D expenditure in selected Member States in 2014 (% of GDP)



Source: European Commission

Policy efforts to bolster private R&D are underway. A law introducing tax deductions (25 %) for private companies investing in R&D entered into force in January 2015. An assessment will be available in March 2016 but discussion is already taking place to raise the ceiling. In addition, in June 2015 the government approved a 'concept paper' on support for start-ups and the development of the start-up 'ecosystem'.

Implementation of research and innovation framework initiatives is slow. There have been significant delays in implementing the complex strategic framework for research and innovation¹¹⁸, which proposes a better governance structure, a set of policy measures and areas of specialisation. An action plan to implement this strategy is still pending, delaying effective implementation of some measures under the Operational programme Research and Innovation (2014-2020). The foreseen transformation of numerous funding agencies has been slow. The Research Agency and the Technology Agency were created in 2015 through transformation of two existing institutions. The planned transformation of the Slovak Academy of Sciences from a state organisation into a public research institution to facilitate cooperation with the business sector has been postponed to 2016.

A low level of cooperation between academia and industry hinders the commercialisation of research outputs. However, the innovation vouchers system, launched in 2013, has shown some promise. In 2015, under the third call, 70 applicants received financial support totalling EUR 365 000. While the country has implemented a number of additional policy measures to stimulate knowledge transfers, these have mainly been focused on physical infrastructure. There has been less emphasis on

¹¹⁷ Innovation Union Scoreboard 2015.

¹¹⁸ Research and Innovation Strategy for Smart Specialisation for the Slovak Republic was adopted in November 2013 with the objective to stimulate a structural change in Slovakia towards a growth based on increasing ability and excellence in research and innovation.

improving framework conditions to create incentives for, and reward academics engaging in, cooperation with industry, or on providing support for the creation and development of spin-off companies. A National Office for Technology Transfer was established and will now work more intensively with offices located within universities. So far, researchers are predominantly evaluated on their publication record and teaching achievements, with the commercialisation of research outputs playing little role in their career advancement.

23.Slovenia

23.1. Executive Summary

This country report assesses Slovenia's economy in light of the Commission's 2016 Annual Growth Survey published on 26 November 2015. The survey recommends three priorities for the EU's economic and social policy in 2016: re-launching investment, pursuing structural reforms to modernise Member States' economies and responsible fiscal policies. At the same time, the Commission published the Alert Mechanism Report that initiated the fifth annual round of the macroeconomic imbalance procedure. The Alert Mechanism Report identified Slovenia as warranting a further in-depth review.

The Slovenian economy continued to grow strongly in 2015. Economic output is estimated to have expanded by 2.5 % in 2015, following 3 % in 2014. The rebound, which commenced in 2014, was initially driven by strong export performance supported by improved cost competitiveness. Subsequently, the recovery has become broader-based as private consumption growth has accelerated boosted by an improving labour market, rising consumer confidence and continued low energy prices. Investment in infrastructure projects co-funded by the EU also helped boost growth, while private investment began to show initial signs of recovery. The general government deficit is estimated to have decreased to 2.9 % of GDP in 2015, while the debt-to-GDP ratio is estimated to have increased to 83.5 %.

The rebound has been accompanied by job-creation. After five years of rising unemployment, the trend reversed in 2014, and the labour market conditions improved further in 2015. Nevertheless, structural challenges in the labour market remain. Long-term unemployment decreased but still accounts for over half of the total unemployed. Despite recent improvements, employment rates of low-skilled and older workers remain low. The youth unemployment rate stabilised marginally below the EU average.

Slovenia's economic growth is expected to broaden and maintain momentum. Even though growth is expected to moderate slightly in 2016, it is forecast to accelerate again in 2017. Private consumption is forecast to overtake net exports as the main growth driver and the general government deficit is projected to gradually decline due to positive cyclical conditions.

Overall, Slovenia has made some progress in addressing the 2015 country-specific recommendations. Several policy measures have been implemented to improve the long-term sustainability of the banking sector. These include reinforcing the banks' capacity to work out non-performing loans and introducing action plans with specific targets for the reduction of non-performing loans. Vulnerabilities in the corporate sector are being addressed through the operational and financial restructuring of several major corporates. Furthermore, the restructuring of several small

and medium-sized enterprises is ongoing. Revisions to the legislative framework further reinforced the corporate restructuring capacity of the Bank Asset Management Company. With respect to state ownership, new supervisory and management boards of the Slovenian Sovereign Holding have been appointed. A strategy and annual management plan including performance criteria for the management of state assets have been adopted. Positive trends in the efficiency of civil justice have been maintained but this has mainly been due to reduced workload. Some measures to increase the employability of vulnerable groups and to address long-term unemployment have been adopted. The composition of the minimum wage has been reformed, despite opposition from the employers' organisations. However, less progress has been made in ensuring the long-term sustainability of public finances. The Fiscal Rules Act was passed, but an independent Fiscal Council, which will oversee the implementation of the rules, has yet to be appointed. Furthermore, progress in reforming the pension, healthcare and long-term care systems has been limited.

Slovenia is making progress towards its national target under the Europe 2020 Strategy for employment and has already achieved its national targets to reduce early school leaving and to increase tertiary education. Poverty and social exclusion rates stabilised in 2014 and the country appears to be on track to achieve its national target for renewable energy by 2020. However, additional efforts would be needed to reach the national target on energy-efficiency and Slovenia has reversed in 2014 its hitherto positive trend in R&D intensity now widening the gap towards its national target.

The main findings of the in-depth review contained in this report and the related policy challenges, are as follows:

- **External sustainability continued to improve and risks have subsided.** Gains in price and cost competitiveness as well as export market shares have further improved Slovenia's external performance in terms of flows and stocks. The current-account surplus reached historically high levels and net external liabilities continued to decrease. The current account balance is projected to remain in considerable surplus in the short term, as long as deleveraging in the corporate sector continues. The correction in the net international investment position is expected to continue in the coming years, thus further reducing risks to Slovenia's external position.
- **Confidence has returned in the Slovenian banking sector.** However, credit growth remains negative and the long-term profitability of the banks can be further improved. The level of non-performing loans remains relatively high, but is decreasing. This, together with low credit demand from the real economy, deleveraging pressures and credit risk, continue to exert pressure on the profitability of the banking sector. Furthermore, increased levels of cross-border competition are posing new challenges to the business models of domestic banks.
- **Deleveraging pressures are easing but continue to dampen investment and economic growth.** Private sector indebtedness is below the euro area average, reflecting one of the lowest levels of household debt in the EU, but notably higher corporate debt. The corporate sector has considerably reduced debt levels since the indebtedness ratio peaked in 2010 and is expected to continue to do so in 2016. This will continue to weigh on the private sector's investment and growth capacity. However, the lending to the real economy is expected to start recovering soon. Lending to the household sector has already shows tentative signs of improvement due to favourable market conditions and the rapidly increasing confidence. Currently, SMEs are overly dependent on bank lending. However, new debt and equity

instruments are becoming increasingly available. This could help to diversify SMEs funding sources and reduce their vulnerability to credit market developments.

- **Slovenia's business environment is hindered by a high level of administrative burden, which poses an obstacle to the inflow of productive investment.** Barriers to doing business are mainly linked to the inefficiencies of the public administration and lengthy administrative procedures. Private investment declined sharply during the crisis and its share in GDP has been decreasing since then; this has limited Slovenia's economic output and future growth prospects. With public investment being strongly dependent on EU funds dynamics, more private productive investment is needed to stimulate and sustain economic growth. Foreign direct investment in Slovenia has grown markedly in the last two years, mainly due to stepped-up privatisation efforts. However, continued effort in terms of political support and structural reforms are necessary in order to sustain the inflows.
- **The full implementation of the Slovenian Sovereign Holding's framework will promote more efficient management of state assets.** The privatisation programme initiated in 2013 is progressing. This coupled with the new strategy and performance indicators for all state-owned enterprises should reduce contingent liabilities to the general government budget from this area.
- **The deleveraging and corporate restructuring still ongoing in the Slovenian economy requires continued prudent management and monitoring.** This is essential in order to preserve the credibility of the ongoing restructuring and privatisation the transparency and legal robustness of the processes.
- **The large increase in public debt in recent years creates additional policy challenges.** A prolonged recession coupled with significant bank recapitalisations resulted in a sharp rise in public debt levels. The excessive deficit has been reduced. However, fiscal consolidation measures in recent years, particularly on the expenditure side, have been of a temporary nature. Furthermore, the fiscal framework reform, which provides an important anchor for sustainable public finances, has yet to be fully implemented.
- **Slovenia's ageing population is a key risk to fiscal sustainability, particularly in the long term.** Slovenia's population is ageing faster than most Member States with the old age dependency ratio projected to more than double between 2013 and 2060. The Commission estimates Slovenia is facing the highest fiscal sustainability risk of all Member States in the long term.
- **This ageing population puts considerable pressure on the sustainability of the pension, health care and long-term care systems.** The 2012 pension reform stabilised pension-related expenditure but only in the short term. In the long term, Slovenia is projected to experience one of the largest increases in public pension expenditure in the EU. In health care, more efficient use of resources could contain expenditure in the long run without compromising access to quality care. In addition, the health care system is characterised by a lack of sufficient in-built automatic stabilisers schemes, which would cushion revenue fluctuations over the economic cycle. Furthermore, there is no integrated long-term care in Slovenia. The focus remains on institutional care, while community care is not well coordinated.

Other key economic issues which pose particular challenges to Slovenia's economy are the following:

- **The labour market performance is gradually improving.** However, long-term unemployment and the employment situation for low-skilled and older workers remains a challenge. Job creation has picked up considerably and unemployment is decreasing. The labour market situation for young people has improved substantially. However, participation rates of older and low-skilled workers and the level of long-term unemployment remain a challenge. Better targeted active labour-market policy and lifelong learning measures could further boost labour market participation.
- **The Slovenian education system performs well overall, but several inefficiencies exist in the higher education sector.** Intergenerational comparison shows that labour market advantages of the high skilled have decreased while the labour market value of undergraduate programmes has diminished.
- **Social conditions stabilised in 2014 for the first time after the crisis, despite a small increase in the poverty threshold.** Despite lowering per capita social protection expenditure in most categories, the social protection system performs relatively well.
- **The current structure and functioning of the public administration poses a barrier to the business environment and to effective policy implementation.** Recent analysis has identified that substantial savings and efficiency gains could be achieved if the recently adopted strategy for the development of the public administration is fully implemented. A reform of the current organisation and culture of the public administration would help to realise the full potential savings.
- **The functioning of the justice system has improved but challenges remain.** The length of trials has been further shortened and the number of pending cases has been reduced. However, this is partly due to fewer incoming cases. Ambitious case management and digitalisation projects are planned, while at the same time emphasis is put on the quality of justice. Ongoing monitoring of the insolvency system reaffirms the effectiveness of the framework, but there are still delays in liquidation procedures.

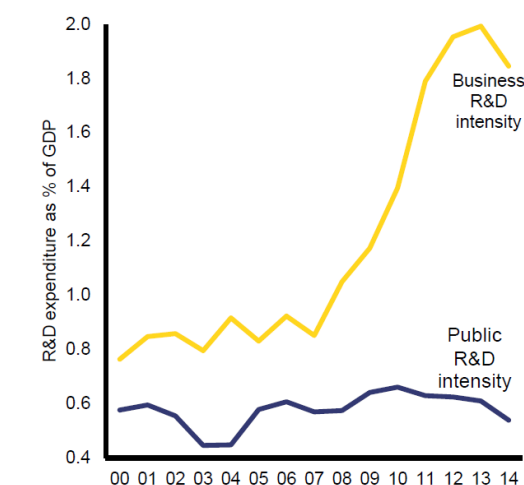
23.2. Research and development

After several years of growth, the level of research and development (R&D) intensity in Slovenia dropped in 2014. The level of R&D intensity in Slovenia (Graph 3.4.1) increased from 1.36 % of GDP in 2000 to 2.6 % of GDP in 2013 (EU average: 2.03 %), making Slovenia one of the EU leaders. This stemmed from a generous R&D tax incentive system and a set of ambitious innovation measures co-financed from the Structural Funds¹¹⁹. However, provisional Eurostat figures show a drop in R&D investments to 2.39 % of GDP in 2014. Fiscal consolidation efforts meant that public R&D expenditure decreased from 0.61 % of GDP in 2013 to 0.54 % of GDP in 2014. This downward trend in public R&D expenditure undermines the potential of the science base to spur economic activity and

¹¹⁹ In November 2015 the government proposed changes to decrease the tax incentive for R&D from 100 % to 50 % of the amount invested, which might have a negative impact on investments. However the Finance Minister later announced that the proposed tax changes will not go ahead.

hinders business R&D investments. The national target of 3 % of GDP by 2020 can still be reached but requires policies supporting the longer-term sustainability of R&D investments.

Graph 3.4.1: **Business and public R&D intensity**



Source: European Commission.

The performance of research and innovation outputs remains low, which calls into question the quality of the R&D investments. The relatively low level of highly cited publications in relation to the level of public investment in Slovenia underlines the need to put in place reforms to increase the efficiency and quality of the R&D system. These reforms will require changes such as more flexible rules for the remuneration of researchers, and allowing a performance-related differentiation of salaries.

The new smart specialisation strategy, if properly implemented, could help to prioritise investments (Section 2.2.). Streamlining and better implementing R&D policies is crucial, as one major challenge is to build a critical mass of R&D activities. Currently the efforts to maximise R&D investments are somewhat hindered by the fragmentation of activities across public research organisations. The policy reforms planned in the 2011 Research and Innovation Strategy (RISS) have suffered substantial delays in implementation, mostly due to frequent changes in the governance structure and fragmentation. This in turn jeopardises the effective and efficient use of public resources.

Effective policy responses to these challenges are not yet in place. The full implementation of RISS depends on the approval of the Law on Research and Innovation. However, the law has not yet been presented by the government. A key pending issue is to link the provision of institutional funding of universities and public research institutes to an assessment of their performance.

The lack of openness of the R&D system may affect sustainability in the long term. The share of business enterprise research and development financed from abroad was at 8.6 % in 2014 (EU average: 10.2 %). The R&D system would benefit from further internationalisation. Improving the business environment for innovative SMEs to carry out R&D and innovation activities is a crucial factor to supporting Slovenia's competitiveness. Developing a venture capital market for SMEs would be an important step¹²⁰.

¹²⁰ Venture capital in Slovenia was 0.0067 % of GDP in 2014 (source: EVCA/PEREP Analytics), well below EU level of 0.062 % of GDP in the same year (source: Innovation Union Scoreboard).

24.Spain

24.1. Executive Summary

The Spanish economy has experienced a significant turnaround in recent years, also thanks to reforms undertaken in response to the crisis. Structural reforms helped ease existing rigidities in labour and product markets. The successful completion of the financial assistance programme facilitated the repair of the banking sector. Helped by monetary policy and a reinforced euro area governance framework, this broke the link between the financial sector and the sovereign debt and paved the way for a return of capital inflows and improved financial conditions. Substantial external adjustment also took place, also supported by cost-competitiveness gains. All these elements underpinned an increase in confidence in the Spanish economy, and growth resumed in 2013. Since then, internal and external rebalancing has advanced, and the current account has moved into surplus and Spain has been able to achieve, for the first time in almost 30 years, a current account surplus in a period of positive growth.

The recovery strengthened in 2015, with growth well above the euro-area average. GDP is expected to have expanded by a robust 3.2% in 2015 as a whole. Growth was driven by domestic demand, boosted by improved access to credit for firms and households and increased confidence, together with declining oil prices. The recovery was accompanied by strong job creation in a context of continued wage moderation. Growth is expected to ease going forward, but remain robust. However, there are downward risks to this growth outlook mainly stemming from the external sector. Specifically, growth could be negatively affected by a more pronounced slowdown than expected in some main emerging economies and a deceleration in the reform agenda in 2015.

The current account balance continued to improve. Favourable external developments and enhanced competitiveness sustained exports. However, the high responsiveness of imports to increases in final demand still implied a negative contribution of the external sector to growth. Furthermore, the current account surplus is largely due to the fall in oil prices that helped reduce the import bill. A return of oil prices to higher levels would slow down the progress in reducing net external liabilities.

Labour market reforms have increased the responsiveness of employment to growth. Compared to previous upturns, job creation has resumed at an earlier phase of the recovery, when GDP growth was still modest. Employment in full time equivalent terms is expected to have expanded by 3 % in 2015, helped by wage moderation and the increased flexibility introduced by labour market reforms in previous years. Although unemployment decreased at a record pace in 2015, at above 20% of the labour force it remains among the highest in the EU.

The adjustment of the identified imbalances is advancing, but ensuring a balanced, durable and inclusive growth path over the long term remains a challenge. Although the return to growth reduces risks, Spain has not left the crisis unscathed. The stock of imbalances remains high and their nature, magnitude and interrelations still make Spain vulnerable to shocks. In particular, high private and public debt, reflected in the very high level of net external liabilities, exposes the country to risks stemming from shifts in market sentiment and is a burden for the economy. While the still negative inflation environment supports households' real disposable incomes and domestic demand, it also hinders faster deleveraging. Moreover, still high unemployment and the risk of labour market exclusion, affecting in particular young and low skilled people, hampers adjustment and implies high social costs. Furthermore, low productivity growth makes competitiveness gains hinge upon cost advantages, also affecting working conditions and social cohesion. If protracted, it hampers the transition of the economy to a more knowledge-intensive growth model.

Overall, Spain has made some progress in addressing the 2015 country-specific recommendations. During the past year, Spain has made substantial progress to finalise the reform of its financial sector. The implementing legislation of the savings bank reform has been adopted and insolvency reforms recently introduced in Spain should support an improvement in the quality of bank assets. Spain has also made some progress in the labour market area. The latest framework for collective bargaining agreements has been a step forward in wage setting. Also some positive steps have been taken in the area of active labour market policies. However, no decisive measures have been taken to promote labour market participation, regional mobility, or to streamline minimum income schemes. Spain has also made some progress to improve the business environment. In particular, some measures have been adopted to remove barriers preventing companies from growing, and has accelerated the implementation of the law on market unity. However, the planned reform of professional services has not yet been adopted. Finally, progress in the area of public finances has been limited. Although some measures have been taken to increase transparency in regions' finances, there has been only limited policy action to improve the cost-effectiveness of the healthcare sector and rationalise hospital pharmaceutical spending.

Regarding the progress in reaching the national targets under the Europe 2020 Strategy, Spain is performing well in tertiary education attainment and reducing greenhouse gas emissions, while more effort is needed in employment rate, reducing early school leaving, R&D investment, renewable energy, energy efficiency and reducing poverty.

The main findings of the in-depth review contained in this country report and the related policy challenges are as follows:

- **The sizeable current account adjustment experienced in recent years has not yet translated into a significant reduction in Spain's external liabilities.** Spain's net external liabilities still stand at over 90% of GDP, and are mostly made up of debt instruments. This implies a high repayment burden for the economy, irrespective of the business cycle. Reducing the vulnerabilities associated with the large stock of external liabilities requires a combination of high nominal growth rates and high current account surpluses over a protracted period of time. Higher inflows of foreign direct investment would also help. The large size of the Spanish economy and its intense trade and financial links with other euro area Member States makes it a potentially important source of spill-overs to these countries; at the same time, a sustained recovery of the Spanish economy hinges upon external demand.
- **The high government debt remains a burden for the economy and a source of vulnerability.** The general government deficit is falling mainly against the backdrop of dynamic growth, as recent windfall gains have not been used to accelerate its reduction. At a projected 4.8% of GDP in 2015, it remains among the highest in the euro area. The general government debt is projected to have reached over 100% of GDP in 2015, and is forecast to peak in 2016, before decreasing in 2017.
- **Private sector debt continues to decline but remains high, making the country vulnerable to shocks.** Deleveraging needs are estimated to be still large for both households and non-financial corporations. While in recent years debt reduction took place mainly through negative credit flows, it is now mainly driven by nominal GDP growth, as credit has started flowing again. Accordingly, the negative impact of debt reduction on growth has eased significantly. However, the low inflation environment remains an obstacle to debt reduction.

- **Banking sector stabilisation is progressing well, strengthening the resilience of the economy.** The outstanding volume of credit is still decreasing, also reflecting ongoing debt reduction by households and enterprises. However, new bank lending to less indebted firms and households is picking up. While access to alternative forms of financing is improving slowly, SMEs remain largely dependent on bank funding.
- **Job creation was strong during 2015.** However, unemployment remains very high, in particular for youth. Long-term unemployment is also very high and risks becoming entrenched, leading to an increase in poverty and/or social exclusion. Moreover, labour market duality between permanent and temporary contracts remains high, negatively affecting working conditions and social cohesion.

- **Low potential growth amplifies the risks related to macroeconomic imbalances.** Weak productivity dynamics have been at the root of Spain's low growth potential. Raising Spain's growth potential requires reducing the rate of structural unemployment, but the chief factor constraining potential growth remains productivity, which ultimately depends on the economy's ability to boost its innovation capacity and reallocate resources efficiently across sectors and firms.

Other key economic issues analysed in this report which point to particular challenges facing Spain's economy are the following:

- **Spain's R&D intensity and innovation performance keeps declining,** against the backdrop of a relatively low number of innovative firms, limited incentives for university-business cooperation and institutional weaknesses leading to overlapping bodies and programmes to foster innovation activities. Moreover, Spain's science funding is not based on performance, which reduces the incentives to improve the quality and relevance of scientific outputs.

- **In spite of significant improvements, the early school-leaving rate remains high and restrains the reduction of the country's educational gaps.** Tertiary attainment is high, but there are skills mismatches in the labour market. The average low skills' level of the labour force hampers the transition of the Spanish economy towards higher-value activities. This in turn limits the capacity of the labour market to provide opportunities for the high number of tertiary education graduates in knowledge-intensive sectors.
- **Despite improvements in the labour market, poverty is still a major concern.** Indicators measuring poverty and social exclusion are very high compared to the EU average, and deteriorated further in 2014. This suggests that despite improvements in the labour market, the social impact of the crisis may take time to revert. In addition to the still difficult labour market conditions, the poverty reduction impact of social transfers remains low, especially for children. Furthermore, there remain wide regional disparities in delivery arrangements, eligibility requirements and adequacy of minimum income support schemes.

- **Spain's fragmented internal market regulations and obstacles to access to regulated professions contribute to low productivity.** The small average size of Spanish firms also helps explain the economy's persistently low productivity. Spain's highly decentralised administration creates coordination challenges, in various policy areas such as active labour

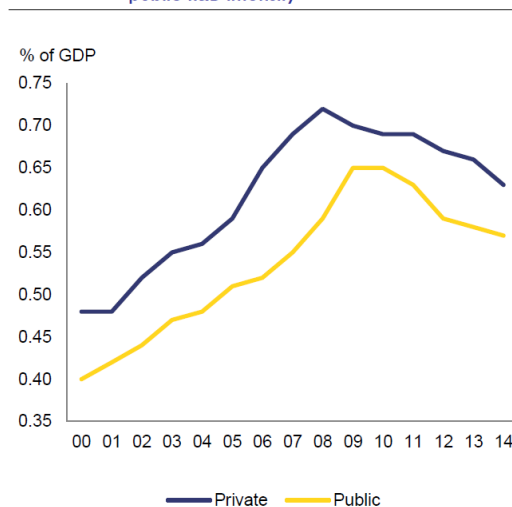
market policies, research and innovation, retail trade, business licensing, etc. Moreover, there is no horizontal and coherent nation-wide public procurement policy, neither are there sufficient controls on the proper implementation of public procurement rules, especially at sub-central government level.

- **Despite a rebound in business investment, structural barriers to investment remain.** In 2015, business investment strengthened, underpinned by dynamic demand conditions, low borrowing costs, and ongoing balance sheet repair by the corporate sector and households. However, structural barriers to investment remain in the form of regulatory barriers and administrative burden, corporate taxation and access to finance, framework conditions for research and innovation, and in the area of labour market legislation.

24.2. Research and innovation

Spain's Research and Development intensity is losing ground. Spain's spending on R&D relative to its GDP (i.e. R&D intensity), by both the private and public sectors, continued declining in 2014 (Graph 3.1.1) and stood at 1.2 % of GDP (2 % in the EU). The gap vis-à-vis the EU is particularly visible in investment on R&D by the private sector (0.6 % in Spain vs 1.3 % in the EU). Against this backdrop, reaching the 2 % national R&D intensity target by 2020 will be a challenge.

Graph 3.1.1: Spain. Evolution of business R&D intensity and public R&D intensity



Source: Eurostat

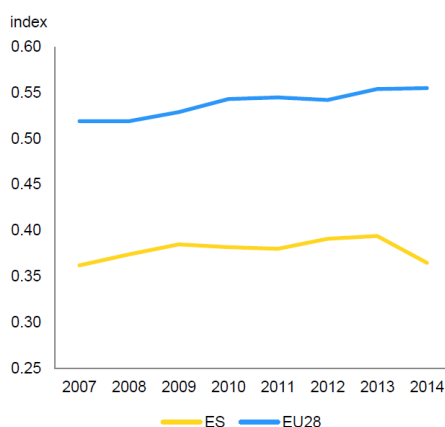
Spain's innovation performance is also falling, with the country's gap with the EU average increasing (Graph 3.1.2). The 2015 EU Innovation Scoreboard classifies Spain and most of its regions in the group of 'moderate' innovators (i.e. category 3 of 4, four being the worst performers)¹²¹. Specifically, Spain is ranked 19 (of 28 countries) in innovation performance, two rank positions less than in 2014. The scoreboard shows that Spain's gap vis-à-vis the EU average is particularly visible with respect to i) firms' investment in R&D and innovation, ii) the number of SMEs introducing product / process / marketing innovations and iii) the number of SMEs cooperating with other

¹²¹ Eleven regions are moderate innovators, four fall within the worst performing category (i.e. modest innovators) and the remaining two (i.e. Basque county and Navarre) are innovation followers (i.e. category 2 of 4). Regional R&D investment ranges from 0.06 % to 2 % of regional GDP. 4 regions invest over Spain's average (1.2 % of GDP).

enterprises or institutions on innovation. Performance has also decreased most in the first two areas with respect to the 2014 scoreboard. It should be noted, however, that Spain comes close to the EU average on the dimension of ‘open, excellent and attractive research systems,’ thanks to its score on international scientific co-publications¹²².

Research and innovation policy faces several challenges. Research and innovation policy is shared with regions so, as in any other decentralised country, coordination of central and regional government policies is needed for those policies to achieve greater economic impact. Weak coordination in Spain has led to a fragmented regional landscape of bodies and programmes to foster innovation activities, which is not easy for innovative firms to navigate, especially for the smallest ones. The complementarity with national programmes and organisations is not always clear for beneficiaries either¹²³. Nonetheless, positive recent developments in coordination include an agreement between the central and regional administrations on the Map of Scientific and Technological Infrastructures (ICTS). Also, since 2015, national calls for proposals allow regional governments to fund projects that received a positive assessment in those calls and that failed to get funding at the national level due to budgetary constraints.

Graph 3.1.2: Summary innovation index



(1) The summary innovation index, ranging from 0 (worst) to 1 (best), is a composite indicator obtained by an aggregation of 25 indicators grouped into 8 innovation dimensions.

Source: Innovation Union Scoreboard 2015

The interaction between public and private research is weak. By way of illustration, the number of public-private scientific co-publications in Spain is below the EU average¹²⁴. In 2013, public R&D financed by private firms kept declining and stood at 0.037 % of GDP, compared with the EU average of 0.052 %. Against this backdrop, reinforced incentives for public sector researchers to work in the business sector and for the exploitation of public research results in the private sector could enhance public-private cooperation.

Incentives for research performance are also weak. Generally speaking, Spain’s science funding is not reliant on international peer review and funding to universities and public research organisations is not based on performance. This hinders quality and impact of scientific outputs.

¹²² http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards/files/ius-2015_en.pdf

¹²³ Cf. ERAC Peer Review of Spanish Research and Innovation System Final Report, 2014.

¹²⁴ In 2013 Spain had 24.6 public-private co-publications per million of population compared to 29 for the EU. (Source: RIO report on knowledge transfer and public-private cooperation in Spain, 2015, European Commission Joint Research Centre).

Recent policies take on board some recommendations of the 2014 independent review of Spain's research and innovation system. These include a recruitment policy to fill all vacancies for civil servants in public research organisations (up from a 50 % replacement rate in 2014), new programmes to support mobility of talent across sectors — such as the Spanish 'Industrial PhD' scheme — and a decision to prioritise available public funding towards global societal challenges in the calls for proposals to roll out the national plan for research and innovation. Moreover, the central government's budget law for 2016 has increased slightly funding for the implementation of the national strategy for science, technology and innovation and the national plan for research and innovation, although overall investment remains below pre-crisis levels. In addition, in November 2015, the State Agency for Research was legally incorporated¹²⁵, to among other things, ensure an efficient management of public R&I funding. Once created, the focus is on making it operational.

However, other recommendations of the independent review have not been followed up specifically. These concern changes to the structure and management of research careers to attract and retain talent and foster mobility between research institutions and between these and the private sector. They also relate to linking resource allocation for research institutes and universities to results and to increase the proportion of competitive funding.

24.3. Additional references to R&I

[Box 1.1: Investment challenges, p. 9]

Poor framework conditions for research and innovation also hamper investment over the long term and the transition of the Spanish economy towards higher value added activities (See Section 3.1). Weak cooperation between the public and business sectors, and low efficiency of public sector expenditure in R&D hampers full leveraging of private R&D investment.

[2.1. External sustainability and competitiveness, pp. 21-22]

Deepening of export base, the quality thereof and faster productivity growth would underpin further non-cost competitiveness gains and contribute to the external rebalancing by improving future current account balances. The external adjustment would mainly benefit from higher productivity and ongoing moderate labour cost dynamics. In particular, the currently moderate labour cost dynamics in the current setting of very low or even negative inflation, allows preserving price/cost competitiveness gains alongside increases in real disposable incomes. Safeguarding cost competitiveness is key in that Spain is specialised in market segments where price competition is determinant. Faster productivity growth accompanied by moderate production costs could also allow for some import substitution. Moreover, promoting innovation and enhancing R&D further would pave the way for moving towards higher quality segments along with increasing the technological content of Spanish manufacturing, for which improving labour skills is essential. This could downplay the relevance of cost competitiveness. Furthermore, removing legal and economic barriers to company growth along with promoting more active penetration of foreign markets is essential to enhancing Spain's export capacity, both in terms of volumes and unit values. Finally, policies aimed at replacing debt with foreign direct investment would contribute to reducing the vulnerabilities associated with the large negative NIIP.

[2.5. Potential growth, pp. 49-50]

¹²⁵ Royal Decree 1067/2015 of 27 November 2015.

Improving allocative efficiency can yield substantial productivity gains. Although input allocation only explains a part of the measured TFP gap of Spain vis-à-vis other advanced economies¹²⁶, it has been estimated that eliminating allocative distortions could boost growth by about 1 % a year over the next ten years¹²⁷. The rest of the TFP gap arises from knowledge capital and innovation (labour skills development, information and communication technology capital, and research and development).

Regulation can improve allocative efficiency by removing impediments to the movement of factors between firms and sectors. TFP growth is also driven by firms' ability to innovate and reap economies of scale. In this regard, a high degree of regulation in specific sectors (e.g. professional services), regulatory fragmentation at the regional level, and barriers to company growth pose an obstacle to productivity and innovation in Spain, and at the same time inhibit entry and competition. Despite recent improvements, Spain performs poorly in some areas that refer to framework conditions for doing businesses, as explained in Section 3.4 of this report.

Competition-enhancing reforms in the service sector can result in particularly large productivity gains. Spain's TFP growth during the pre-crisis period was very negative in some subsectors, such as personal services (e.g. hospitality), or business services (e.g. professional services). However, Spain remained at the technological frontier in other subsectors belonging to business services such as "financial services"¹²⁸. Such a disparate performance across subsectors which otherwise require similar physical inputs and human capital inputs (e.g. accounting and financial services), suggests that policy-induced distortions are hampering the efficient allocation of resources. In this regard, firm-level econometric estimates confirm that anti-competitive service sector regulations hamper productivity growth in ICT-using sectors with a particularly pronounced effect on firms that are catching up to the technology frontier, as insufficient competition reduces the incentives to generate and adopt new innovations¹²⁹. Tackling these distortions can result in substantial productivity growth. For instance, there is empirical evidence that a reduction in professional services regulation leads to an increase in the allocative efficiency of the sector¹³⁰. Given the size of the services' sector, and the forward linkages of services to other sectors of the economy, productivity improvements in the service sectors are likely to trigger productivity improvements in other sectors of the economy (see Section 3.4).

Spain's limited innovation capacity hinders both the generation of new technologies and the absorption of existing ones. Spain performs badly in innovation capacity compared to its peers (see Section 3.1). The Spanish innovation system could be paying a double toll for this deficit in terms of private sector R&D spending: the lack of independent R&D effort not only affects directly the capacity of private firms to innovate, but it also diminishes their capability to benefit from spillovers generated by knowledge produced elsewhere, that is, it affects firms' absorptive capacity. In the case of Spain, Lopez-Garcia et al. (2010) find that the probability of knowledge spillovers increases six-fold when a firm carries out its own R&D, as compared to a firm with no R&D spending. Therefore, the observed private R&D underinvestment could be undermining Spain's innovative capabilities more than previously believed, as well as decreasing the return on public R&D investment. Policies to boost the innovation performance of the Spanish economy are discussed in Section 3.1 of this report.

¹²⁶ "The New Normal", IMF Discussion Note SDN/15/03, March 2015; Dabla-Norris, E; Guo, S.; Haksar, V.; Kim, M.; Kochnar, K; Wiseman, K. and Zdizenka, A

¹²⁷ *ibid.*

¹²⁸ Dabla-Norris et al. (2015), *op. cit.*

¹²⁹ Arnold, J., G. Nicoletti and S. Scarpetta (2008), "Regulation, Allocative Efficiency and Productivity in OECD Countries: Industry and Firm-Level Evidence", OECD Economics Department Working Papers, No. 616, OECD Publishing.

¹³⁰ Canton, E.; Ciriaci, D; and Solera, I (2014); "The Economic Impact of Professional Services Liberalisation"; Economic Papers 533; European Commission

The strategy for the internationalisation and modernisation of university education intends to make the study programmes and funding system more flexible. It also fosters teachers' mobility, to promote quality of teaching and support more competitive research and innovation activities. However, the variation in tuition fees across the regions and universities increases the risk of greater inequality in tertiary attainment, since the economic capacity of the students' family will become critical when applying to a given university. The OECD skills diagnosis also reports shortages in the information and guidance system about labour market forecasts, necessary to ensure quality and alignment between skills supply and demand.

Stronger cooperation between universities and the business sector remains also a challenge, to increase the employability of graduates in all sectors and foster innovation as a driver for sustainable growth. Cooperation between businesses and universities has slightly improved over the past five years, partly supported by the legal framework approved in 2011¹³¹. However, budget constraints have imposed restrictions in public funding for research and development activities and the economic crisis has limited the funding capacity of the business sector. Mobility between universities and the private sector is not well developed, to the detriment of the quality and of the relevance of skills developed in tertiary education¹³². In September 2015 the Government approved a decree to increase business representation in university governing boards, but fostering cooperation between universities and the business sector remains a challenge. On the one hand, the reduced mobility of academics and the rigidity of the university governance system are obstacles to closer cooperation, together with the excessive bureaucracy that guides the activity of the Offices for the Transfer of Research outcomes (*Oficinas de transferencia de resultados de investigación - OTRIS*). On the other hand, businesses require incentives to overcome their financial limitations and expand their limited absorption capacity to take on internships or new projects. The recent legislative reform of the university system is a step forward, but financial support and better awareness among the business sector, as well as the education community, is still lacking.

¹³¹ The Law on Sustainable Economy and the Law on Science, Technology and Innovation

¹³² 2015 OECD Skills Diagnosis Report

25.Sweden

25.1. Executive Summary

This country report assesses Sweden's economy in the light of the Commission's Annual Growth Survey published on 26 November 2015. The survey recommends three priorities for the EU's economic and social policy in 2016: re-launching investment, pursuing structural reforms to modernise Member States' economies, and responsible fiscal policies. At the same time, the European Commission published the Alert Mechanism Report that initiated the fifth annual round of the macroeconomic imbalance procedure. The Alert Mechanism Report identified Sweden as warranting a further in-depth review.

Sweden's economic growth has been accelerating gradually since 2012, expanding at a rate of 3.6 % in 2015. Growth was amongst the highest in the EU and is forecast to remain robust in the coming years according to the Commission's 2016 winter forecast. Steadily increasing household consumption, solid investment growth and increasing government consumption are expected to support strong growth in the coming years.

While domestic demand has been the main engine of economic growth during the last years, Sweden's export sector has been struggling. Nevertheless, as Swedish import growth slowed down at the same time, the current account surplus remained high at around 6 % of GDP compared with its peak of 9 % in 2008. As a result of sluggish trade performance, the export-oriented industrial sectors have been rather weak, while domestically oriented service sectors have been growing at a strong pace. A gradual recovery in Sweden's main trading partners and a relatively weak krona has been positively impacting Swedish export performance since 2015. This is projected to improve the outlook for export-oriented industrial production and manufacturing investment.

Investment levels in Sweden are higher than the EU average and above the country's pre-crisis level. After expanding at a rate of above 7 % in 2014 and 2015, investment is expected to keep increasing at a solid pace of around 4 % in the coming years. In particular housing investment has rebounded strongly since mid-2013 from relatively low levels. Nevertheless, the level of housing investment remains insufficient to meet existing housing demand as it is held back by structural inefficiencies on the housing market.

Structural inefficiencies on the housing market not only impact investment negatively but contribute to an increase in house prices and could hamper labour market mobility. Surging house prices are further increasing private indebtedness from already record high levels making the economy more vulnerable to shocks. Lack of available housing could prevent people from finding gainful employment in geographical areas with high labour demand thereby creating inefficiencies in the labour market.

The Swedish labour market has shown resilience during the crisis and employment recovered more quickly in Sweden than in other Member States. Sweden has the highest employment rate in the EU at 80.4 %, while overall unemployment is below the EU average at 7.4 % in 2015. Despite high employment growth, unemployment has only decreased at a slow pace during the last years because of the dynamically rising labour force. The main challenge for the Swedish labour market is to integrate the increasing number of economically and socially vulnerable people.

Fiscal policies remain broadly stable. Despite expansionary fiscal policy over the last couple of years to support economic growth and a significant increase of expenditure related to migration and

integration, the general government deficit is expected to stay around a deficit of 1 % of GDP in the coming years.

Inflation has been subdued for a prolonged period of time and has only gradually picked up to 0.7 % in 2015. The Riksbank has been pursuing an expansionary monetary policy to support the gradual rise of inflation. Historically low repo rates have translated into continuously decreasing mortgage interest rates, which further supported the increase in house prices and private indebtedness.

Overall, Sweden has made limited progress in addressing the 2015 country-specific recommendation. As regards policies relevant to macroeconomic imbalances, steps have been taken to stem household indebtedness. These include the forthcoming introduction of compulsory amortisation on new mortgage loans. Additional steps have been taken to improve the planning and appeals procedure for new construction projects. The Government proposed in the Budget Bill for 2016 public funding to increase investments in the housing sector and commissioned an inquiry on how to increase competition in the construction sector. However, no action has been taken to adjust fiscal incentives for instance to reduce tax deductibility of mortgage interest or to revise property taxation. No action has been taken to reform the rental market either.

Regarding the progress in reaching the national targets under the Europe 2020 Strategy, Sweden is performing well in employment rate, reducing greenhouse gas emissions, increasing the share of renewable energy, reducing early school leaving, improving tertiary education attainment and reducing the poverty while more effort is needed to reach energy efficiency and R&D targets.

The main findings of the in-depth Review contained in this report and the related policy challenges, are as follows:

- **Sweden has been continuously losing export market shares faster than the EU average since 2008, possibly indicating deteriorating Swedish competitiveness.** Nevertheless, the relatively slow recovery of exports of goods predominantly seems to be a cyclical rather than a structural phenomenon. It can be attributed to the specialisation of the Swedish economy in durable and investment goods for which demand recovers only slowly, together with weak demand in the country's traditional export markets.
- **The high level of household indebtedness in Sweden has been identified as posing an ongoing risk for macroeconomic stability.** Household debt, notably in the form of mortgages, remains at very high levels (roughly 87.2 % of GDP in 2015) and has continued increasing. Although Swedish households have significant assets as well, they are generally illiquid and exposed to market risks. In addition, the assets and liabilities are distributed unevenly across income levels and generations, in particular low-income and young borrowers have substantially higher levels of indebtedness and lower assets. High private indebtedness makes the Swedish economy vulnerable to macroeconomic shocks, as large deleveraging needs may potentially lead to a harmful correction in consumption, investment and credit flows.
- **Sweden is one of the EU countries most exposed to vulnerabilities on the housing market.** Persistent overvaluation and surging house prices coupled with high and rising household indebtedness, essentially driven by credit for house purchases, increasing debt-to-income ratios and high leverage in banks reflect elevated risks in this respect. Swedish house prices are above their fundamental levels, due to supportive taxation policy and structural

inefficiencies in the housing market. Sweden has one of the highest tax incentives for home ownership in the EU due to relatively low property taxes and high mortgage interest rate deductibility, while the design of capital gains tax limits more efficient use of the existing housing stock. The current drivers of house prices growth are projected to remain in place in the short and medium term in the absence of a policy intervention. Overvalued house prices entail risks of a disorderly and harmful correction, with a potential impact on the banking sector and the real economy. The overall shortage of housing supply can hamper labour mobility and is further exacerbated by the large inflow of refugees in need of affordable housing.

- **Mortgages constitute a substantial and increasing part of the Swedish banks' assets.** The impact of a possible house price correction in the context of high household indebtedness is a growing concern. The regulatory capital adequacy ratios for Swedish banks are high, but the actual share of capital in banks' balance sheet remained at a relatively low level in recent years. The Swedish authorities have taken some relevant macroprudential measures but they have not been able to rein in the strong demand for housing loans. Any shock to the Swedish banking sector could have a wider impact on neighbouring countries. The Swedish banking groups are of systemic importance for all countries in the Nordic-Baltic financial market.

Other key economic issues analysed in this report which point to particular challenges facing Sweden's economy are the following:

- **In the short and medium term, Sweden faces no major risks in terms of fiscal sustainability.** The government debt stood at 44 % of GDP in 2015, well below the 60 % of GDP Treaty reference value. Nevertheless, the surge in the number of refugees and their integration puts short term pressure on public finances and public services (notably through education or social services including housing).
 - **The Swedish labour market is functioning well, as reflected for instance by the high employment rate.** However, low-educated and low-skilled young people and people with a migrant background face relatively high unemployment. This challenge is likely to remain in the coming years also in light of the large number of refugees arriving in Sweden. Developing the human capital of the low-skilled could contribute to higher employment of vulnerable persons and positively contribute to economic growth.
 - **Income inequality has continued to increase, although from very low levels.** At-risk-of-poverty rates are relatively high among older women, while the social situation of the increasing number of migrants deserves close monitoring, given the extent of the integration challenge.
- **Deteriorating outcomes of school education risk putting pressure on Sweden's competitiveness and innovation capacity in the long run.** School education results in Sweden have weakened significantly over the past decade (the country now, for instance, is performing below both the EU and OECD averages according to PISA surveys) and equity in education has been declining. A comprehensive approach appears to be important to establish conditions that promote the quality and improve the accountability of the education system. The integration of newly arrived migrant pupils warrants close monitoring.

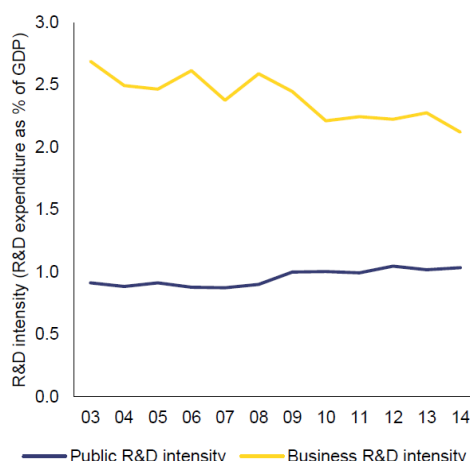
- **The Swedish economy benefits from a favourable administrative environment.** On the other hand, the new National Agency for Public Procurement can help to address existing deficiencies in public procurement procedures. Despite the overall high performance of Sweden in digitisation as well as research and innovation, some indicators point to a slowdown in recent years. This development has been recognised by the Swedish government and has led to the formation of the Innovation Council.
- **Barriers to investment and long-term growth potential remain.** In particular, structural inefficiencies on the housing market hamper investment in this area. Investment in infrastructure to improve connectivity within and between urban areas is not sufficient in view of the constraints caused by the housing shortage. Moreover, a lack of cooperation between academia, research and business, and of exploitation of the potential of Swedish innovative SMEs and start-ups contribute to the declining trend in R&D investment.
- **Sweden has ambitious environmental objectives and is generally on track to meet them.** Sweden has already exceeded its renewable energy target and there is additional potential in focusing more on alternative generation technologies. In addition to the national action plan to increase the competitiveness of its shipping industry, the Swedish railway system would benefit from further investment in order to improve the performance and cross-border connection.

25.2. Research and Innovation

The Swedish research and innovation system is characterised by highly qualified human resources, a strong science base and good research infrastructures. These are all important preconditions for the production, dissemination and exploitation of knowledge. However, Sweden's strong position as innovation leader in the Innovation Union Scoreboard is challenged by a few structural weaknesses that hinder R&D investments and, therefore, the overall competitiveness of the economy in the long term. As a result, Sweden's R&D intensity has been in relative decline since 2008.

Sweden's R&D intensity was 3.16% in 2014, the second highest level of R&D expenditure as a percentage of GDP recorded in the EU. Nevertheless, this intensity has been in relative decline since 2008, when R&D expenditure represented 3.5% of GDP. This reduction stems from the negative evolution of the private component of this indicator. Indeed, while the public R&D intensity has been continuously growing in recent years (from 0.90% in 2008 to 1.04% in 2014), the business R&D intensity has registered an important downward trend (from 2.59% in 2008 to 2.12% in 2014), as presented in Graph 3.3.1 below.

Graph 3.3.1: Sweden - evolution of business R&D intensity and public R&D intensity, 2000-2014



Source: European Commission (Eurostat)

Sweden faces difficulties in retaining, leveraging or attracting business R&D investment despite the high quality of its research and innovation system and the considerable support provided by the public sector. Although proximity to first-class universities or access to a highly-qualified work force are factors which influence enterprises' localisation and investment decision, the way the transfer of knowledge takes place is fundamental. The collaboration between universities and businesses (in particular SMEs) is still suboptimal and represents an obstacle to investments. In 2013, public R&D financed by business enterprises represented only 0.04 % of GDP, lower than the EU average of 0.05 %.

Business R&D in Sweden is mainly performed by a few large multinational enterprises, which have been increasingly offshoring their R&D facilities. In view of this, reducing the strong dependence of the Swedish economy on a few multinational enterprises is key ensuring that any relocation decisions do not have unpredictable consequences on the national innovation system. Nevertheless, the potential of Swedish innovative SMEs and start-ups has not been fully exploited yet. Better framework conditions to improve the flexibility of product and services markets could help capitalise on that potential. Indeed, Sweden's performance in the barriers to entrepreneurship¹³³ sub-indicator of the OECD's product market regulation indicator is not outstanding (ranking 16th in the EU), due the complexity of its regulatory procedures, and Sweden only ranks 19th at EU level on the product market regulation composite indicator. Improvements in this area may further reduce the obstacles innovative firms encounter when starting and developing their activities.

Many initiatives have been launched in recent years in Sweden to support innovative SMEs. However, those initiatives do not seem to generate the desired effects at macroeconomic level either because they suffer from limited resources or because complementarities between programmes have not been explored yet. Moreover, the Swedish research and innovation system would benefit from stronger incentives to enhance academia-business collaboration and promote the commercialisation of innovative products.

A new Innovation Council chaired by the Swedish Prime Minister was established in February 2015 to respond these challenges and guarantee an overall coordination of research and

¹³³ This indicator measures obstacles faced by entrepreneurs, including complex regulations, the administrative burden on start-ups and regulatory protection of existing operators

innovation policies and programmes. It is made up of representatives from five different ministries as well as ten elected external members from business, academia and employers' unions. The Innovation Council would focus exclusively on innovation issues to boost and promote the long-term competitiveness of the Swedish economy.

25.3. Additional references to R&I

[Box 1.1: Investment challenges, p. 9]

Although R&D investment in Sweden is higher than the EU average, it has been on a relative decline since 2008 when it reached a peak of 3.5% of GDP and is currently falling short of Sweden's Europe 2020 target of 4%. Increased cooperation between academia, research and business, and measures to increase the efficiency of the venture capital market could help to reverse the declining R&D investment trend and to boost the long-term competitiveness of the country. The Swedish authorities have established a new Innovation Council in February 2015 with the task to create strategies to boost Sweden's long-term innovation performance and competitiveness (see Section 3.3).

[2.1. External competitiveness, p. 17]

Sweden's performance in R&D and innovation is particularly strong. At 3.16 % in 2014, Sweden displays the second highest R&D intensity in the EU—even if there are some risks associated with offshoring, as discussed in section 3.3 below. Sweden ranks first among Member States in the Commission's composite indicator of innovation output, showing a strong performance in three of the four indicator components (namely, in patents, employment in knowledge-intensive activities and employment in fast-growing firms of innovative sectors). The share of high-tech products in exports, a factor which is also considered in the composite indicator, has been broadly stable at 14 % since 2001. This figure is similar to that of the largest EU economies (Germany, France and the UK) and higher than that of the other EU Nordics (Denmark and Finland). Sweden is, likewise, the highest ranking member state in the Commission's Innovation Union scoreboard, heading a group of four Member States deemed as innovation leaders.

[3.2. Labour market, education, and social policies, pp. 49-50]

Maintaining a high level of skills and further developing human capital are essential for sustaining growth and maintaining the competitiveness of the Swedish economy. Sweden has one of the highest educational attainment levels in the EU, with 41.4 % of its prime age (aged 25-54) population having high qualifications. However, the declining educational outcomes in terms of basic skills proficiency is concerning, as Sweden's competitiveness depends heavily on high skills¹³⁴. If skills acquisition were to slow down or even decline in the future, as recent international surveys suggest, productivity growth and the competitiveness of knowledge-intensive industries could be at risk. Assuring a proper supply of highly skilled human capital, in particular in science and engineering, is vital to boosting the innovation performance of the Swedish economy and to attracting business investments. Educational outcomes started to deteriorate in the 1980s, and continued to decline in the 1990s, a period marked by numerous reforms. In addition, the equity of educational achievement has worsened, with newly arrived migrant pupils being the most disadvantaged in the education system. The high number of pupils that arrived in 2014 and in 2015 has created new

¹³⁴ SOU (2015:90) Utbildning för framtidens arbetsmarknad.

challenges for the school system, if it is to provide all students with the necessary skills for a successful transition into the labour market.

[...]

Furthermore, the number of new graduates in science and engineering (per thousand 25-34 year olds) fell from 16.8 in 2012 to 15.6 in 2013, placing Sweden below the EU average (16.3). This negative trend is particularly concerning when taking into consideration the high level of business R&D investment in the country, which presumes the availability of highly-skilled human resources able to carry out breakthrough research and innovation. If this trend is not reversed, Sweden may suffer from a shortage of human resources in science and technology in the future. This could negatively affect the productivity and innovation performance of the country and could also become a barrier to R&D investments.

26. United Kingdom

26.1. Executive Summary

This country report assesses the United Kingdom's economy in the light of the European Commission's Annual Growth Survey published on 26 November 2015. The survey recommends three priorities for the European Union's economic and social policy in 2016: re-launching investment, pursuing structural reforms to modernise Member States' economies, and responsible fiscal policies. At the same time, the Commission published the Alert Mechanism Report that initiated the fifth annual round of the macroeconomic imbalance procedure. The Alert Mechanism Report identified the United Kingdom as warranting a further in-depth review.

Economic growth has been strong in recent years as the United Kingdom emerged from recession to grow above long-run averages. Robust growth was accompanied by low inflation and a robust labour market as employment increased rapidly while price and wage pressures were subdued. However, the external position deteriorated. The strong performance was driven by a number of internal factors. Accommodative monetary policy, increased resilience of the banking sector, an efficient and competitive labour market, increased corporate profitability and growing confidence among households and firms supported growth. Economic growth is now on a firm trajectory. After peaking in 2014 at 2.9 %, growth moderated to 2.3 % in 2015 and is expected to settle at rates of 2.1 % in 2016 and 2017. Domestic demand, in particular private consumption, is projected to continue to drive growth. Business investment has been strong and is expected to continue growing solidly. However, net exports are expected to still detract from growth.

Inflation was zero in 2015. It is projected to rise modestly in 2016 and 2017 to approach the Bank of England's inflation target of 2 %.

The labour market should remain firm as the unemployment rate remains low, and falls further. Employment is still expected to increase although at somewhat more moderate rates; labour force participation is forecast to remain high.

Addressing low labour productivity remains a challenge for the United Kingdom. Despite a recent modest rise, labour productivity remains low and only slightly above its level in 2008. The strength of the labour market has been a notable feature of economic performance in the past few years. Strikingly, employment growth has rebounded more quickly and strongly than was the case after earlier recessions. Strength in employment has been assisted by a flexible labour market. However, expansion in output and employment mainly occurred against a background of low productivity growth.

The rise in the current account deficit has been a notable development. The current account deficit is at record highs and has increased sharply since 2011, although some improvement is projected in 2016 and 2017. The trade balance has remained stable since 2011 but the deficit in primary income flows between the United Kingdom and the rest of the world has risen. The rise reflects changes in patterns of foreign and United Kingdom investment and income generated by that investment. The United Kingdom is an attractive destination for international investors and the rise in external financing requirements has been increasingly met by stable flows of foreign direct investment to the United Kingdom.

Developments in the housing market have posed challenges but more recently housing market indicators have varied. Activity continues to rise gently as mortgage approvals and starts and

completions of new houses increase. However, the gap between supply and demand persists. Despite moderating in the first half of 2015, house price growth gained renewed momentum in the second half of 2015. Growth in house prices significantly outstripped growth in nominal household disposable income and secured credit. Secured credit growth has been muted, however, in contrast to the rapid build-up in the previous decade. Household indebtedness has been declining since 2009 but remains high. The cost of borrowing remains low; as a consequence, mortgage interest payments as a proportion of household disposable income remain below previous peaks.

Overall, the United Kingdom has made some progress in addressing the 2015 country-specific recommendations. The United Kingdom is taking further steps to boost supply in the housing sector and has adjusted its national planning policy framework. Furthermore, numerous policies have been announced to raise supply and housing starts and completions rose in 2015. However, supply still falls short of projected demand. As regards the labour market, the United Kingdom has announced various policies to address skills mismatches by increasing the engagement of employers in the delivery of apprenticeships. This includes increasing the role of employers in the allocation of funding for apprenticeships and introducing reform of qualifications.

Regarding the progress in reaching the national targets under the Europe 2020 Strategy, the United Kingdom is performing well on greenhouse gas emissions and renewable energy but faces challenges with regard to energy efficiency.

The main findings of the in-depth review contained in this country report and the related policy challenges are as follows:

- **Household indebtedness remains relatively high, but has fallen from its peak in 2009.** At the same time, household balance sheets are relatively strong. Levels of household assets exceed financial liabilities and the net household position is among the strongest in the EU. The resilience of the banking sector continues to improve as indicated by the results of recent 'stress tests' conducted by the Bank of England. Secured credit growth is muted although unsecured credit is rising more rapidly. The risk profile of secured lending has increased in some areas such as an increase in lending to 'buy-to-let' investors.
- **House price levels remain high, and affordability has deteriorated as growth in house prices exceeds that in nominal disposable income.** The rate of growth of house prices moderated in the first half of 2015 to more sustainable rates, but picked up again in the second half of 2015 exceeding 7 % on an annual basis. House price growth in London is a little under 10 % while house price levels in London are the highest in the UK.
- **In the short-term, the household sector and wider economy seem robust enough to handle risks such as an interest rate shock or a shock to employment and/or disposable income.** This resilience is supported by a healthy economy and firm labour market, including rising household disposable income. These trends are projected to continue in 2016 and 2017. Housing starts and completions are rising.
- **However, over the medium term, demand continues to outstrip supply in the housing market.** As a result, house prices are likely to continue to increase, as is household indebtedness. This leaves the household sector and the wider economy more exposed to risks over a longer period of time than would otherwise be the case.

- **The risks related to the high current account deficit and the external sector more generally are assessed as low.** The current account deficit has risen sharply since 2011 and now stands at a record high. However, the trade balance is in line with recent historic averages and has not contributed to the increase in the current account deficit. The appreciation of the exchange rate has affected external competitiveness.
- **The rise in the current account deficit has been driven by the upward movement in the deficit on primary income.** The latter reflects movements in the stock of foreign assets and liabilities and relative rates of return on those stocks. In particular, there has been a reduction in income received from investments abroad, notably in income from foreign direct investment. In addition, there has been an increase in payments on foreign investors' direct investment in the United Kingdom. Nevertheless, to some extent, recent trends may be cyclical and are expected to reverse in 2016 and 2017 leading to a fall in the primary income deficit and current account deficit.
- **The net international investment position, which is the difference between foreign assets and liabilities, has deteriorated over the past decade.** It is moderately negative although it is not especially negative by European Union standards. A negative net international investment position coupled with a large current account deficit may leave the United Kingdom vulnerable to changes in the sentiment of foreign investors. However, a favourable institutional framework and low foreign currency liabilities mitigate these risks.

Other key economic issues analysed in this report which point to particular challenges for the United Kingdom's economy are the following:

- **The labour market continues to perform strongly and is projected to remain firm.** Employment continues to rise, although growth is expected to moderate, while the unemployment rate remains low and is expected to fall further, albeit slightly. Participation rates remain high and youth and long-term unemployment rates are decreasing. Labour productivity has been weak but is picking up and accompanied by modest increases in earnings. However, some challenges remain. An improvement in the availability and affordability of childcare could further assist women's return to work. It would also ensure that the female participation rate remains high;. Furthermore, there are challenges relating to the provision of vocational education and in basic skills, which may be responsible for certain skills shortages. Investment in skills can help raise productivity. There is scope to improve social policy outcomes, in particular as regards material deprivation rates and rates of poverty in households with children.
- **The high general government debt level represents a source of vulnerability.** While no substantial short-term fiscal risks exist, some variables point to possible short-term challenges. Moreover, there are medium-term risks. The debt ratio poses risks; in particular, it could exceed 90 % of GDP should shocks such as an interest rate shock or a shock to GDP materialise and if the budget deficit persisted.
- **The economy is competitive and open, but labour productivity is weak.** The UK is open and competitive and ranks highly as a country in which to do business, and for businesses to invest. The overall tax system is relatively growth friendly. However, although it has picked up a little recently, labour productivity has been weak, relative to trend, since the beginning of

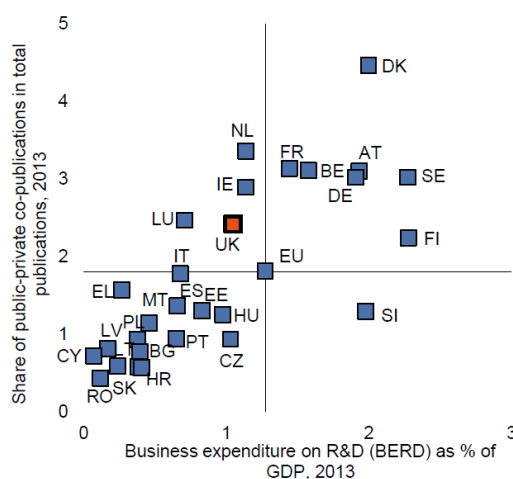
the international economic and financial crisis in 2008. The government has set out a wide-ranging plan including a number of specific actions to raise productivity.

- **Investment in public infrastructure is critical in addressing challenges relating to low productivity and investment gaps in key sectors such as: transport, energy and digital communication.** The government has in place a National Infrastructure Plan that sets out its ambitions to increase investment in infrastructure including a pipeline of projects. The plan is reliant on private finance for much of the investment. Delivery and monitoring are crucial and transparency and accountability are key. The provision of regular reports showing progress made on delivery should provide certainty as to whether the infrastructure projects are delivered on time, and on budget, and whether the private components of finance will fully materialise.

26.2. Research and innovation

The UK has a relatively low level of investment, (as a share of GDP) in R&D. R&D intensity currently stands at 1.7 % GDP, compared with an European Union average of 2.0 % of GDP, and has been stagnant since 2000. Recent decreases in public investment in R&D risk undermining the high quality output of the research base and its potential leverage effect on business R&D investment. Cooperation between the public and private sector is a key aspect in gearing the economy towards more high-tech and medium high-tech activities. However, the UK does not perform to the standards of the European Union innovation leaders in this area (graph 3.3.4). While there are policy responses, in particular through *Innovate UK*, and notably the formation of catapult centres, the funding allocated to these (GBP 153 million in 2013-2014 and 136 million in 2014-2015) is relatively low, for instance, in comparison to the size of the R&D tax credit.

Graph 3.3.4: Public-private co-publication



Source: European Commission

A number of efforts have been made to focus funding on priority areas. However, the main instrument used to stimulate business R&D investment, the R&D tax credit, does not allow the government to strategically direct R&D investment; every company can apply for the R&D tax credit, so the funds cannot be concentrated in priority sectors. The government has committed to protect the

science budget in real terms¹³⁵. The government also announced the creation of a new body, *Research UK*, which will work above and across the existing research councils, and to bring *Innovate UK* within this umbrella body.

¹³⁵ 2015 *Spending Review*, November 2015.