



EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR RESEARCH & INNOVATION
Directorate A - Policy Development and Coordination
A.4 - Analysis and monitoring of national research policies

References to
Research and Innovation
in the European Semester Country Report 2016

Portugal

Introduction

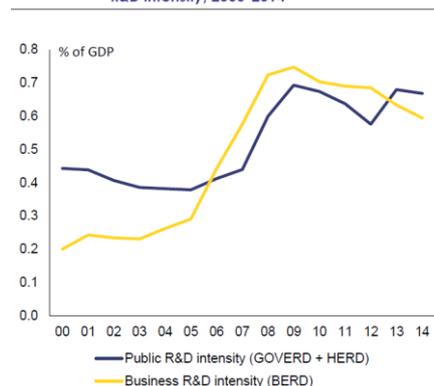
This document is a compilation of the Research and Innovation (R&I) references extracted from the European Semester Country Report 2016. It offers a quick overview of the analysis done by the European Commission on the reforms undertaken by the country in research and innovation and the progress made towards the Europe 2020 target on R&D.

References to research and innovation

1.1. 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 knowledge¹. It ranks low in public-private scientific co-publications per million population (PT: 15; EU: 50). The low level of public R&I financed

¹ 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).

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 innovation², 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 shopping online or using online banking³. 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 employment⁴. Furthermore, 52% of the population and 45% of the labour force have low digital skills or none at all⁵, 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

² 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.

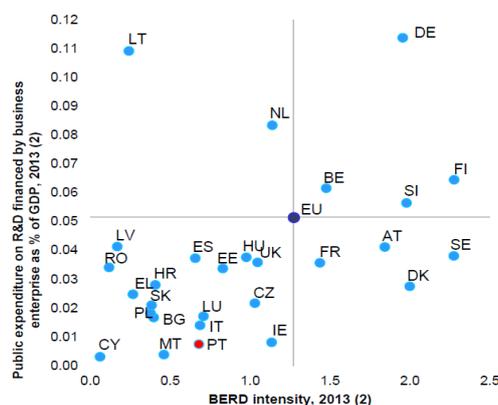
³ In Portugal in 2015, only 61% of households subscribed to fixed broadband (EU: 72%) and there were only 46 mobile broadband subscription per 100 people (EU: 75). (c.f. DESI 2016). In 2015, 28% of the Portuguese population had never used the internet (EU: 16%), and only 65% of the population used the 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).

⁴ 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%.

⁵ Digital Economy and Society Index – DESI 2016, Digital Agenda Scoreboard.

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.

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

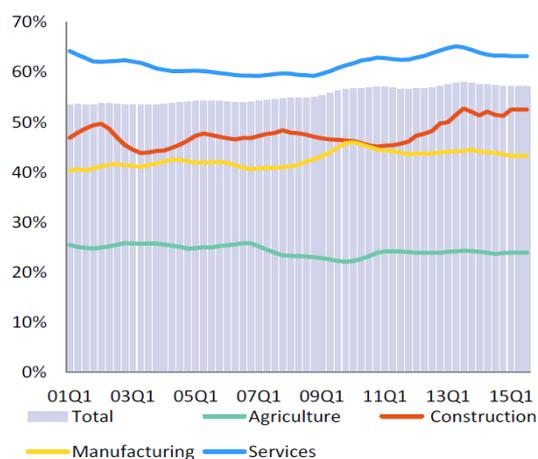
Portugal is expanding its R&I system and improving education outcomes, but innovation performance and the skills of the workforce remain low. Enrolment in vocational and education training has been increasing and monitoring of school outcomes is improving. However, the low skill level of the labour force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

1.2. Additional references to R&I

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

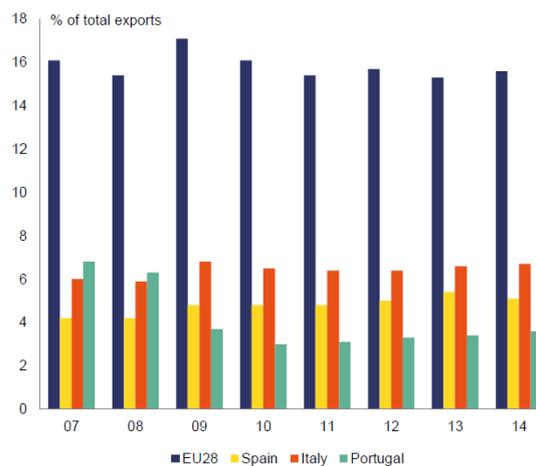
Portugal shows a persistent productivity gap with the euro area. Total labour productivity in Portugal remained at around 60% of the euro area levels in 2013-2014, although it varies considerably across sectors (Graph 1.8). Portugal's persistent productivity gap relative to average euro area levels is 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



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 investment⁶ 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

⁶ The contribution made by cohesion funds amounted to 1.75% of GDP in 2014, almost equalling total public investment (2% of GDP in 2014).

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 industry⁷.

⁷ 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.