

## GREECE

**Hot STI issues**

- Improving framework conditions for innovation.
- Making innovation a centrepiece of a competitive economy.
- Moving from brain drain to brain circulation.

**General features of the STI system:** Greece is in a deep and protracted economic recession. In response the Greek government has embarked on fiscal consolidation and structural reforms. Improving framework conditions for innovation and overcoming serious weaknesses in the innovation system are critical for regaining competitiveness and sustainable growth. GERD has stagnated at 0.60% of GDP and is dominated by public expenditure which is far below the OECD median (Panel 1<sup>(a)</sup>). The share of BERD in GDP was the second lowest among OECD countries in 2007 (1<sup>(d)</sup>). Greece lacks large corporate investors in R&D (1<sup>(e)</sup>) and BERD is largely accounted for by SMEs (Panel 2). Links between academia and industry are weak; there is little demand from industry for R&D and innovation and the corresponding supply from universities and PRIs is small, as shown by the relative number of patents filed by universities and public labs to GDP (1<sup>(p)</sup>). Indicators of human resources fall short of the OECD median: Only 24% of the adult population has attained tertiary level education (1<sup>(s)</sup>), and S&T occupations accounted for a similar share of total employment in 2010 (1<sup>(v)</sup>). Greece also lags in terms of quality of universities (1<sup>(b)</sup>). Brain drain has been a recurrent issue and appears to be increasing in the wake of the crisis.

**Recent changes in STI expenditures:** Although GERD is already very near the bottom of OECD countries,

the crisis is exerting a dampening effect on public and business investment, including in R&D. EU structural funds remain the most important source of funding for R&D and innovation. The challenge is to absorb these funds and put them to efficient use.

**Overall STI strategy:** The National Strategic Plan for Research and Development 2007-13 defined as the main STI policy priorities the improvement of R&D capabilities (investment, human capital, infrastructures) and the promotion of links between research and industry to accelerate the dissemination of innovation. It also aimed at increasing participation in international (especially European) programmes.

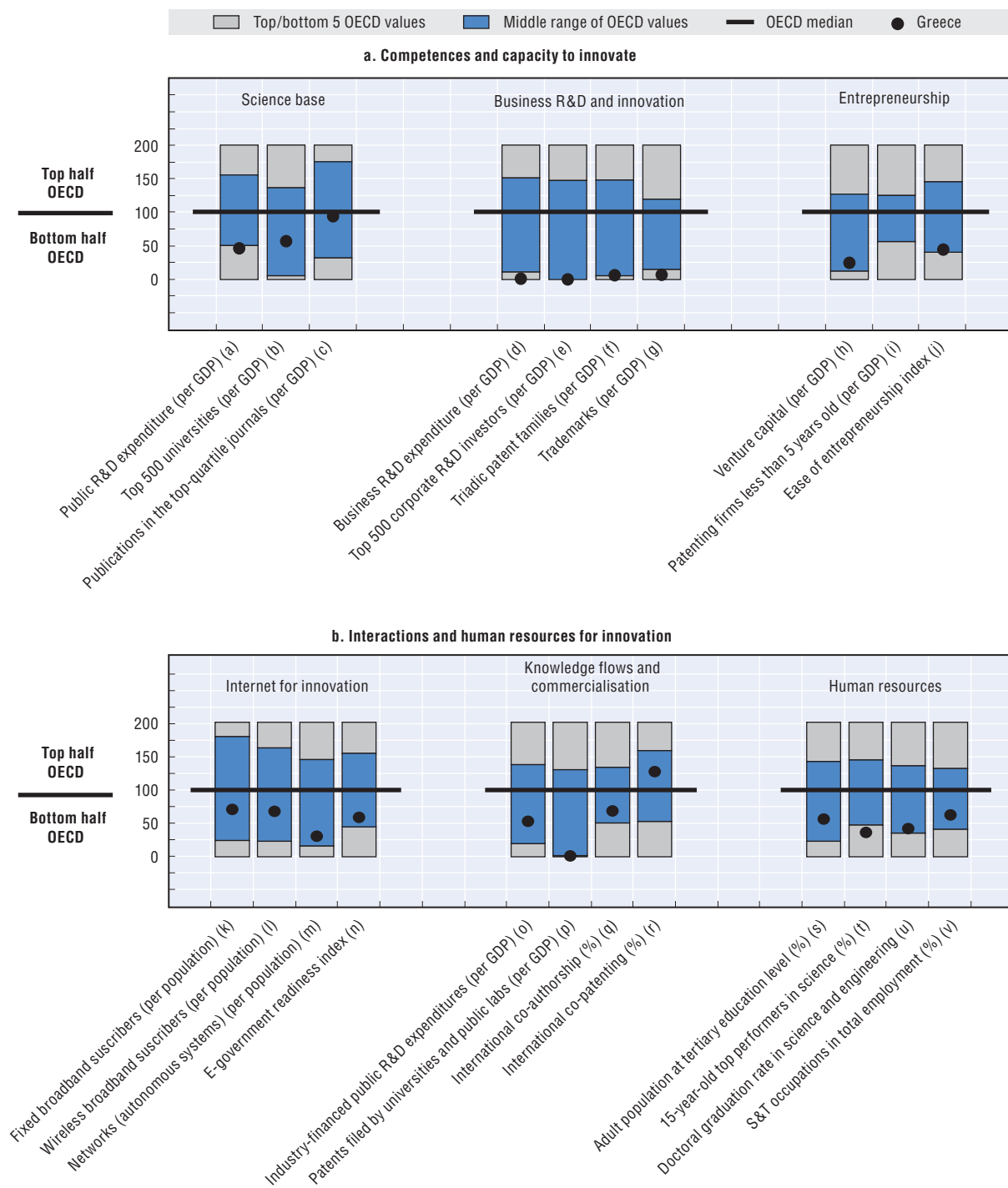
**STI policy governance:** The Greek governance system shows weaknesses in policy co-ordination and evaluation. Institutional changes in 2009 include the move of the General Secretariat for Research and Technology (GSRT) to the Ministry of Education, Lifelong Learning and Religious Affairs, with a view to building a unified area for education and research, and the establishment of the Ministry of Development, Competitiveness and Shipping, which manages the National Strategic Reference Framework, the reference document for programming of EU funds at national level, including structural funds.

**Key figures**

<b>Labour productivity, GDP per hour worked in USD, 2010</b> (annual growth rate, 2005-10 )	<b>33.6</b> (+0.6)	<b>GERD, as % of GDP, 2007</b> (annual growth rate, 2005-07)	<b>0.60</b> (+4.7)
<b>Environmental productivity, GDP per unit of CO<sub>2</sub> emitted in USD, 2009</b> (annual growth rate, 2005-09)	<b>3.68</b> (+3.5)	<b>GERD publicly financed, as % of GDP, 2005</b> (annual growth rate, 2001-05)	<b>0.29</b> (+4.6)

Figure 10.17. Science and innovation in Greece

Panel 1. Comparative performance of national science and innovation systems, 2011



**Science base:** Greece's current research system is weak and largely decoupled from the domestic economy. Against the backdrop of fiscal consolidation, increased public R&D expenditure is not considered realistic. Greece has forsaken the GERD target of 1.5% of GDP by 2020; the government emphasises more efficient use of available resources. Law 4009/2011 is moving universities towards greater autonomy and introduces a new funding mechanism based on quality indicators.

**Business R&D and innovation:** Structural reforms are being undertaken in the competition framework, the labour market and the tax system. The Investment Law 3908/2011 shifted public support for business R&D and innovation from grants towards subsidised loans, guarantees and tax incentives.

**Clusters and regional policies:** Cluster policy contributes to strengthening links between academia and industry through initiatives such as A Greek Product, a Single Market: The Planet. This scheme was launched in 2011 to invite existing networks to submit proposals that would demonstrate the possibility of developing innovation clusters in areas in which Greece has a comparative advantage.

**Knowledge flows and commercialisation:** The promotion of commercialisation, through the creation of a framework more conducive to entrepreneurship, is the main instrument for developing links between academia and industry. In addition to Innovation Vouchers for SMEs (2009) and calls for the creation of spin-offs, the Co-operation programme encourages partnerships between the private sector and research institutions in specific sectors. In 2011, a scheme for recruiting high-level scientific personnel to support business R&D was announced, and an Entrepreneurship Fund (ETEAN SA) was established with an expected budget of USD 1.7 billion to provide flexible funding (venture capital, start-up and seed capital, business angels). One-stop shops for start-ups became operational in 2011 and licensing procedures were simplified.

**Globalisation:** Strengthening the internationalisation of Greece's STI system is one of the objectives of the Strategic Plan. Therefore, GSRT has developed

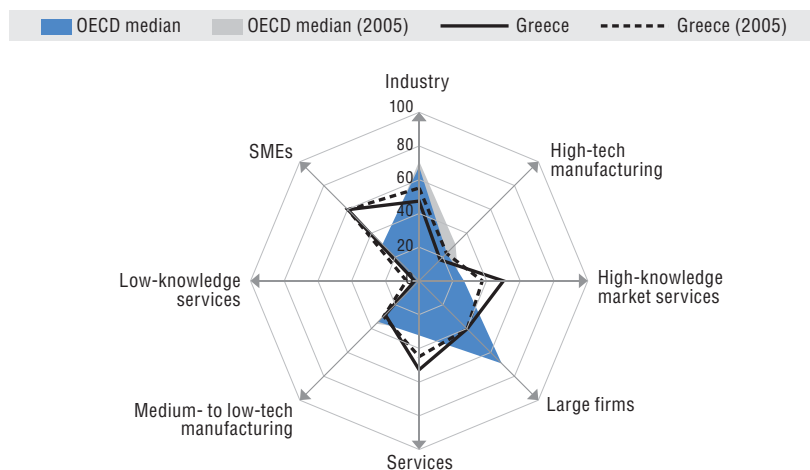
bilateral collaborations, and schemes have been launched to encourage further participation by PRIs and businesses in international (especially European) programmes such as the Joint Technology Initiatives (ENIAC, ARTEMIS) or ERA-NET.

**Human resources:** To reform the education system, Law 4009/2011 introduced major changes in the governance of universities in order to improve the quality of teaching and services delivered to students. The New School policy, introduced in 2010, targets improvement of primary and secondary schools through curriculum modernisation, reform of teacher training and implementation of a digital school strategy. These policies attempt to achieve the targets set out in the National Reform Programme 2011-14: under 10% of early school leavers and at least 32% of the younger generation tertiary-qualified. To alleviate mismatches between demand for and supply of skills, a National Network for Lifelong Learning was established.

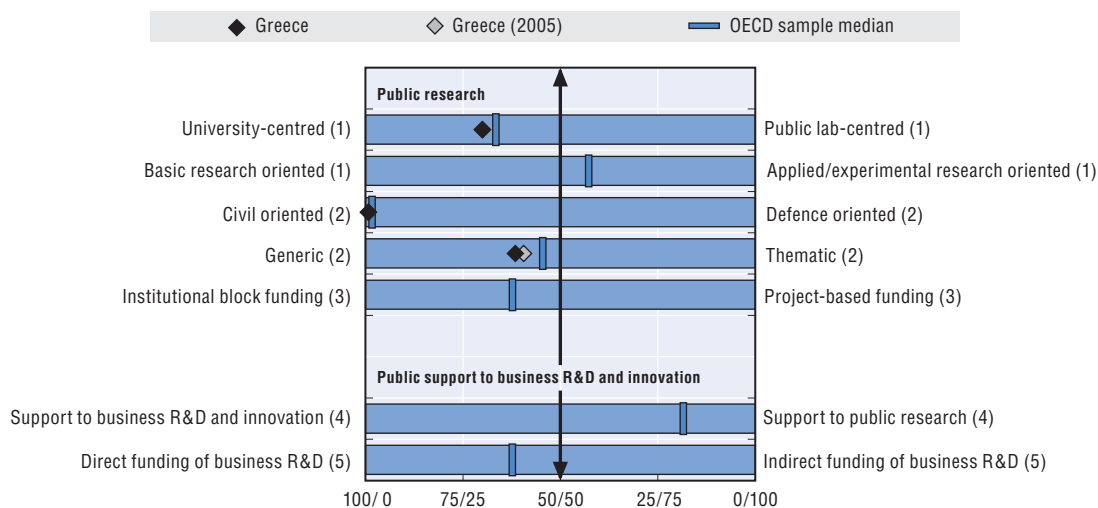
**Emerging technologies:** Micro- and nano-electronics and embedded systems have recently emerged on Greece's R&D landscape. They are developed through domestic measures (the Corallia cluster for microelectronics) and participation in international programmes such as joint technology initiatives (the European Nanoelectronics Initiative Advisory Council and the Advanced Research and Technology for Embedded Intelligence and Systems).

**Green innovation:** A Ministry of Environment, Energy and Climate was established in 2009. A set of measures has been introduced to achieve better alignment of environmental and energy policy with domestic technological development. These include green infrastructures (to make the environment and environmental protection an area of entrepreneurial activity), including the Green Island – Ai Stratis project for the development of mature renewable energy and energy-saving technologies to cover the island's needs; and the Energy Efficiency in Household Building Initiative (to improve the energy efficiency of existing dwellings and to achieve a 20% reduction in energy consumption).

**Panel 2. Structural composition of BERD, 2009**  
As a % of total BERD



**Panel 3. Overview of national innovation policy mix, 2010**



1. Balance as a percentage of the sum of HERD and GOVERD.
2. Balance as a percentage of total GBAORD.
3. Balance as a percentage of total funding to national performers.
4. Balance as a percentage of the sum of HERD and GOVERD funded by government and higher education and components of (5).
5. Balance as a percentage of the sum of indirect funding of business R&D and innovation through R&D tax incentives and direct funding of BERD through grants, contracts and loans.

Source: See reader's guide and methodological annex.

StatLink <http://dx.doi.org/10.1787/888932690453>