C 2 RESEARCH AND DEVELOPMENT

In 2011, Germany once again increased its R&D intensity, i.e. the share of public and private R&D expenditure as a percentage of GDP (C 2–1). The overall economy's R&D intensity increased from 2.80 percent in 2010 to 2.88 percent in 2011, which largely resulted from enhanced R&D efforts in the private sector. With a total of EUR 50.3 billion, German companies' investments in R&D surpassed the figures from the previous year by 7.2 percent, thereby reaching a new high. But also in Korea and China, additional funds were allocated to research and development. It is estimated that Korea's R&D intensity increased from 3.74 percent in 2010 to 3.8 percent in 2011. After a slight decline in 2009 and 2010, Japan's R&D intensity increased again in 2011, reaching a value of 3.3 percent. Sweden and Finland saw a moderate decline in R&D intensity, albeit declining from a very high level. Great Britain's R&D intensity also decreased, following a slight declining trend that commenced in the early 1990s.

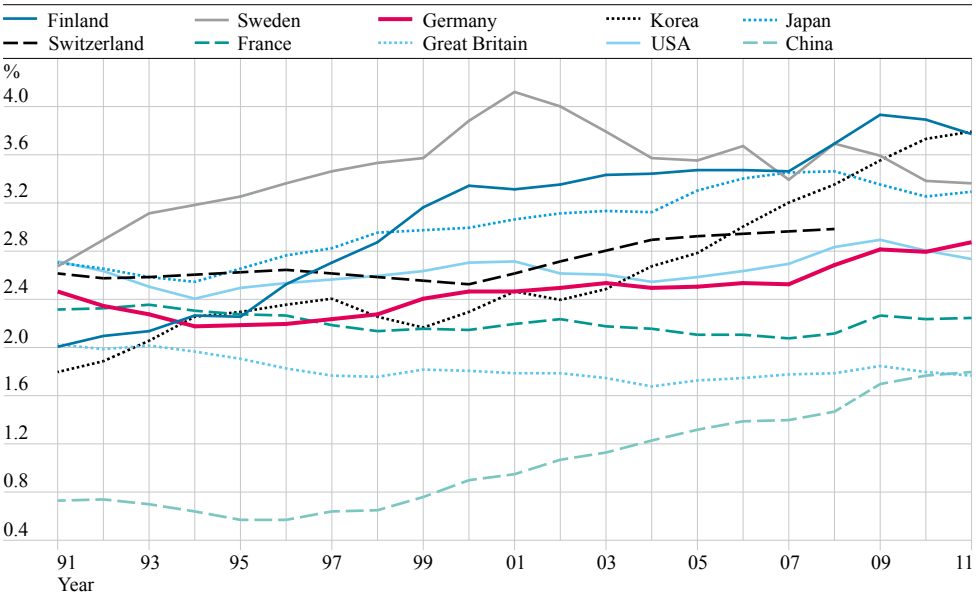
The breakdown of R&D intensity in Germany according to industry – measured by internal R&D expenditure as a percentage of returns from domestic products (C 2–2) – shows that after 2009, the majority of industries recorded a decrease in R&D intensity. This drop is the result of a statistical artifact: as a result of the slump in revenue caused by the financial and economic crisis, the share of R&D spending increased in most industries to a record high. In the years 2010 and 2011, revenue increased again, and the share of R&D expenditure dropped in spite of an increase in investment. The air and spacecraft manufacturing sector clearly stands out in this regard, as this industry managed to significantly increase its revenue in the crisis year of 2009 – contrary to the general trend.

The budgets proposed for civil research and development (C 2–3) clearly show that southern European countries are having difficulties maintaining their respective levels of R&D investment. After the southern European countries experienced above-average growth for several years, their budget estimates have dropped dramatically since 2009. A decline, albeit slightly less pronounced, was recorded for the whole of the OECD countries. The group of EU-15 member states, however, was still slightly lagging behind in 2011, which can be explained mainly by the fact that the two large European economies, Germany and France, continue to stock up government resources for investments in civil R&D – a policy that is also being pursued by Japan.

In terms of internal R&D expenditures of tertiary education institutions and non-university research institutions, (C 2–4) Germany experienced an above-average development. Other central European countries also continued to increase their expenditures in real terms, while the southern European countries and the UK recorded a decrease in public R&D activities. Korea's positive trend in expenditure is particularly striking. The 2010 index value shows how R&D expenditures of tertiary education institutions and non-university institutions have tripled since 1995.[385]

R&D intensity in selected OECD countries and China C 2–1
(figures in percent)

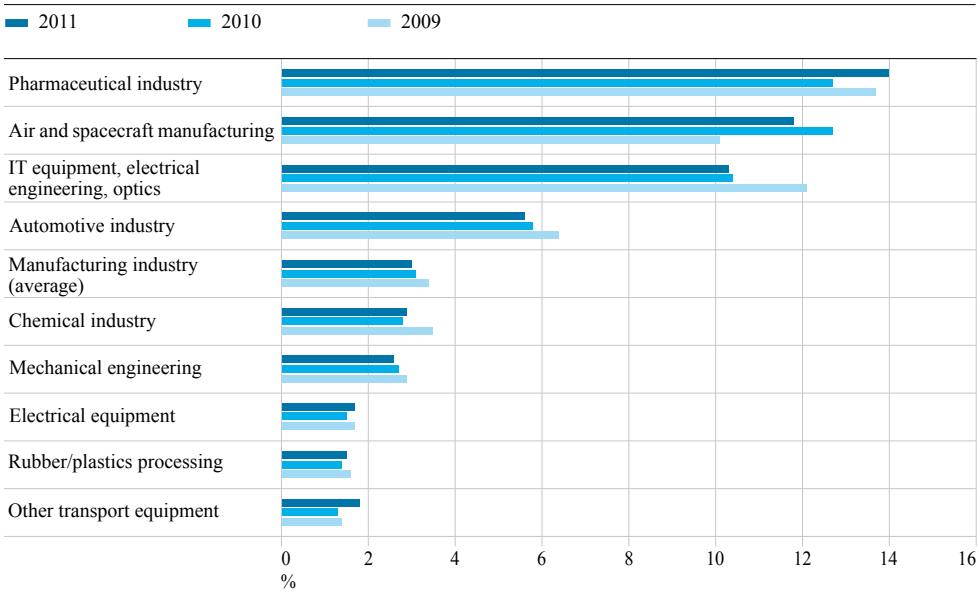
R&D intensity: share of expenditure on research and development of an economy's gross domestic product.



Source: OECD, Main Science and Technology Indicators (2012/1). Eurostat; *SV Wissenschaftsstatistik*. Calculations and estimates by NIW, in: Gehrke, Schasse et al. (2013).

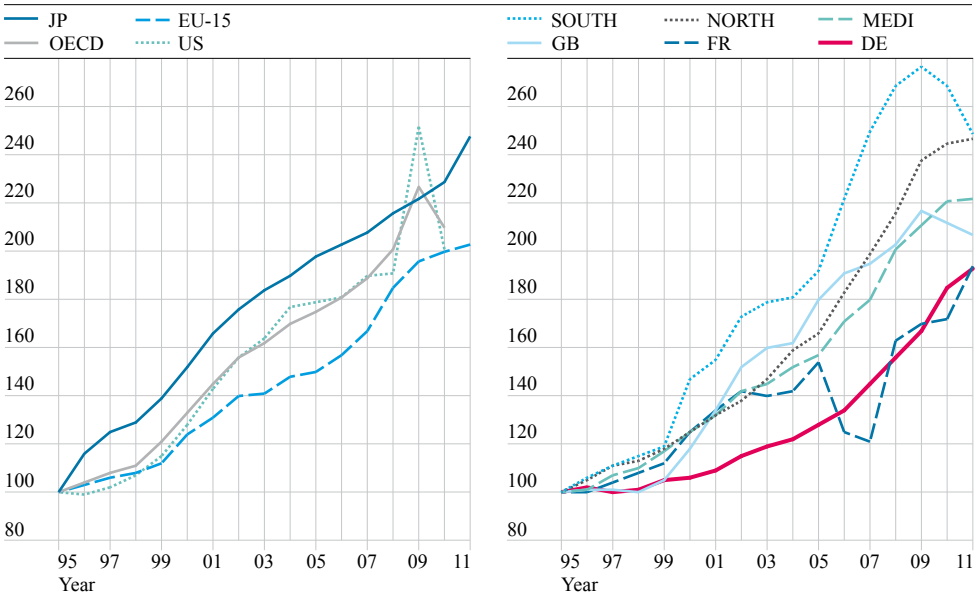
Internal private sector R&D expenditure relative to revenue from domestic products C 2–2

Internal R&D: research and development that is conducted inside the company, either for the company's own purposes or commissioned by a third party.



Source: *SV Wissenschaftsstatistik; Statistisches Bundesamt, Unternehmensergebnisse Deutschland,* unpublished charts, as well as *Fachserie 4, Reihe 4.3*. Calculations by NIW, in: Gehrke, Schasse et al. (2013).

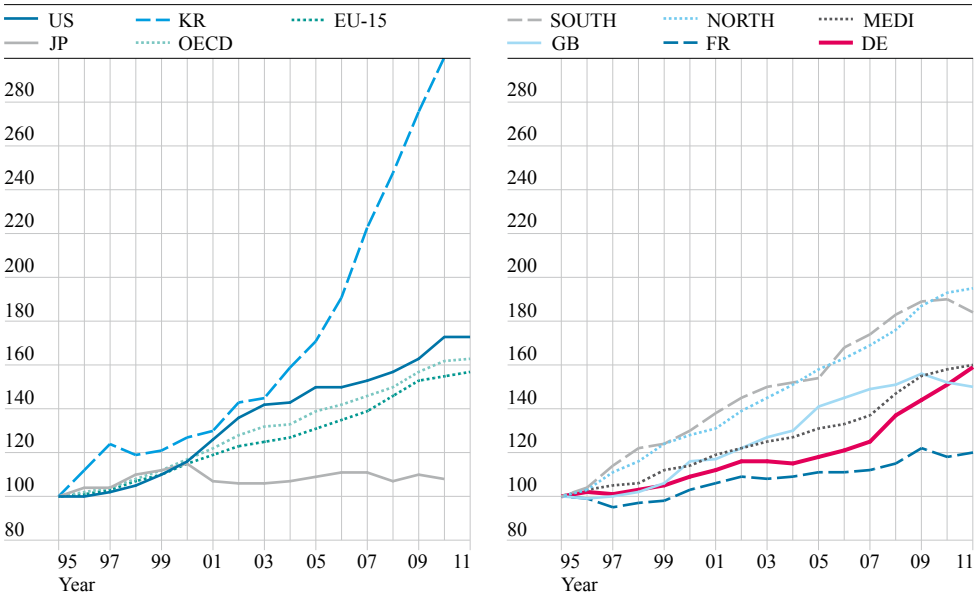
C 2–3 State budgets for civil R&D in selected world regions



R&D budget estimates: budget resources available for the financing of R&D as specified in the state budget.

Index: 1995 = 100. NORTH: SE, FI, NO, DK, IE, IS; SOUTH: IT, PT, ES, GR; MEDI: BE, NL, AT, CH.
Figures partially estimated.
Source: OECD, Main Science And Technology Indicators (2012/1); Eurostat. Calculations and estimates by NIW, in: Gehrke, Schasse et al. (2013).

C 2–4 Internal R&D expenditures of universities and non-university research institutions at constant prices, according to world regions



Internal R&D expenditures: financial outlays for R&D personnel, R&D equipment, and investments in R&D within an organisation.

Index: 1995 = 100. NORTH: SE, FI, NO, DK, IE, IS; SOUTH: IT, PT, ES, GR; MEDI: BE, NL, AT, CH.
Figures partially estimated.
Source: OECD, Main Science And Technology Indicators (2012/1); Eurostat.
Calculations and estimates by NIW, in: Gehrke, Schasse et al. (2013).