



Germany is an Innovation Leader. Over time, performance has declined by 3.7% relative to that of the EU in 2010.

Innovation system

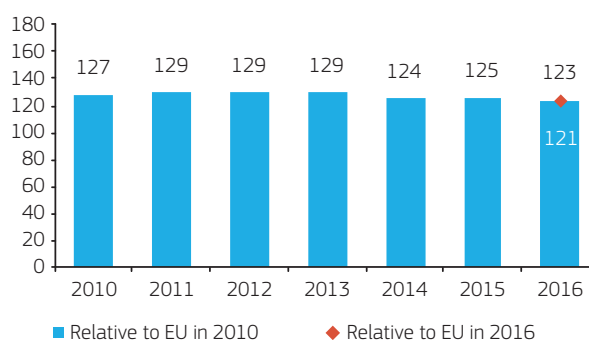
Relative strengths of the innovation system are in Firm investments, Innovators, and Intellectual assets. Relative weaknesses are in Finance and support, Employment impacts, and Attractive research systems.

Structural differences

Notable differences are a smaller share of employment in Agriculture & Mining and a larger share of employment in Manufacturing and particularly in High and Medium high-tech manufacturing, a smaller share of Micro enterprises in turnover, a higher number of Top R&D spending enterprises and a higher average R&D spending of these enterprises, a smaller share of enterprise births, higher GDP per capita, a higher growth rate of GDP, a lower and negative growth rate of population, and higher population density.

| | DE | EU |
|---|--------|--------|
| Structure of the economy | | |
| Composition of employment, average 2011-15 | | |
| - Agriculture & Mining (NACE A-B) (%) | 1.7 | 5.1 |
| - Manufacturing (NACE C) (%) | 19.6 | 15.6 |
| <i>of which High and Medium high-tech (%)</i> | 49.8 | 36.4 |
| - Utilities and Construction (NACE D-F) (%) | 8.2 | 8.6 |
| - Services (NACE G-N) (%) | 63.4 | 63.6 |
| <i>of which Knowledge-intensive services (%)</i> | 58.3 | 58.0 |
| - Public administration, etc. (NACE O-U) (%) | 7.1 | 7.1 |
| Business indicators | | |
| Composition of turnover, average 2011-2014 | | |
| - Micro enterprises (0-9 employees) (%) | 11.3 | 17.3 |
| - SMEs (10-249 employees) (%) | 36.1 | 38.0 |
| - Large enterprises (250+ employees) (%) | 52.5 | 44.1 |
| Share of foreign controlled enterprises, 2014 (%) | 1.19 | 1.18 |
| Top R&D spending enterprises | | |
| - average number per 10 mln population, 2011-15 | 41.8 | 29.9 |
| - average R&D spending, mln Euros, 2011-15 | 255.7 | 165.8 |
| Enterprise births (10+ empl.) (%), avg 2012-14 | 0.6 | 1.5 |
| Buyer sophistication 1-7 (best), 2013-14 | 4.3 | 3.6 |
| Ease of starting a business, Doing Business 2017 | 79.9 | 76.5 |
| Socio-demographic indicators | | |
| GDP per capita, PPS, avg 2011-13 | 31,400 | 25,400 |
| Change in GDP between 2010 and 2015, (%) | 8.2 | 5.4 |
| Population size, avg 2011-15 (millions) | 80.6 | 505.5 |
| Change in population between 2010 and 2015 (%) | -0.7 | 1.1 |
| Population aged 15-64, avg 2011-2015 (%) | 65.9 | 66.1 |
| Population density, average 2011-15 | 226.3 | 116.4 |
| Degree of urbanisation, average 2011-15 (%) | 80.7 | 74.4 |

Values in green show performance above 120% of EU, values in red show performance below 80% of EU.



| Germany | Performance relative to EU 2010 in | | Change 2010-2016 |
|--|------------------------------------|-------|------------------|
| | 2010 | 2016 | |
| SUMMARY INNOVATION INDEX | 127.1 | 123.4 | -3.7 |
| Human resources | 104.6 | 124.0 | 19.4 |
| New doctorate graduates | 184.6 | 204.1 | 19.5 |
| Population with tertiary education | 52.0 | 81.6 | 29.6 |
| Lifelong learning | 69.5 | 76.8 | 7.4 |
| Attractive research systems | 96.1 | 104.1 | 8.0 |
| International scientific co-publications | 174.6 | 251.6 | 77.0 |
| Most cited publications | 110.5 | 113.4 | 2.8 |
| Foreign doctorate students | 47.2 | 38.2 | -9.0 |
| Innovation-friendly environment | 75.5 | 107.0 | 31.5 |
| Broadband penetration | 100.0 | 133.3 | 33.3 |
| Opportunity-driven entrepreneurship | 58.3 | 88.4 | 30.1 |
| Finance and support | 100.0 | 99.0 | -0.9 |
| R&D expenditure in the public sector | 128.4 | 137.5 | 8.9 |
| Venture capital expenditures | 64.0 | 50.7 | -13.3 |
| Firm investments | 141.1 | 175.1 | 34.0 |
| R&D expenditure in the business sector | 155.8 | 165.3 | 9.4 |
| Non-R&D innovation expenditures | 128.8 | 192.5 | 63.7 |
| Enterprises providing ICT training | 135.7 | 171.4 | 35.7 |
| Innovators | 176.0 | 131.5 | -44.6 |
| SMEs product/process innovations | 178.5 | 127.6 | -51.8 |
| SMEs marketing/organizational innovations | 175.5 | 131.8 | -44.8 |
| SMEs innovating in-house | 172.1 | 155.0 | -37.1 |
| Linkages | 138.7 | 126.7 | -9.1 |
| Innovative SMEs collaborating with others | 106.1 | 89.3 | -16.8 |
| Public-private co-publications | 124.2 | 112.0 | -12.2 |
| Private co-funding of public R&D exp. | 177.9 | 177.9 | 0.0 |
| Intellectual assets | 145.2 | 131.5 | -13.7 |
| PCT patent applications | 136.6 | 130.8 | -5.8 |
| Trademark applications | 135.2 | 128.9 | -6.3 |
| Design applications | 164.5 | 134.3 | -30.1 |
| Employment impacts | 121.5 | 100.7 | -20.8 |
| Employment in knowledge-intensive activities | 124.4 | 116.7 | -7.7 |
| Employment fast-growing enterprises | 119.4 | 89.0 | -30.4 |
| Sales impacts | 128.2 | 117.9 | -10.3 |
| Medium and high tech product exports | 137.0 | 144.3 | 7.4 |
| Knowledge-intensive services exports | 118.9 | 115.5 | -3.3 |
| Sales of new-to-market/firm innovations | 107.7 | 100.7 | -39.9 |

Dark green: normalised performance above 120% of EU; light green: normalised performance between 90% and 120% of EU; yellow: normalised performance between 50% and 90% of EU; orange: normalised performance below 50% of EU. Normalised performance uses the data after a possible imputation of missing data and transformation of the data.

Change highlighted in green is positive; change highlighted in light red is negative.