

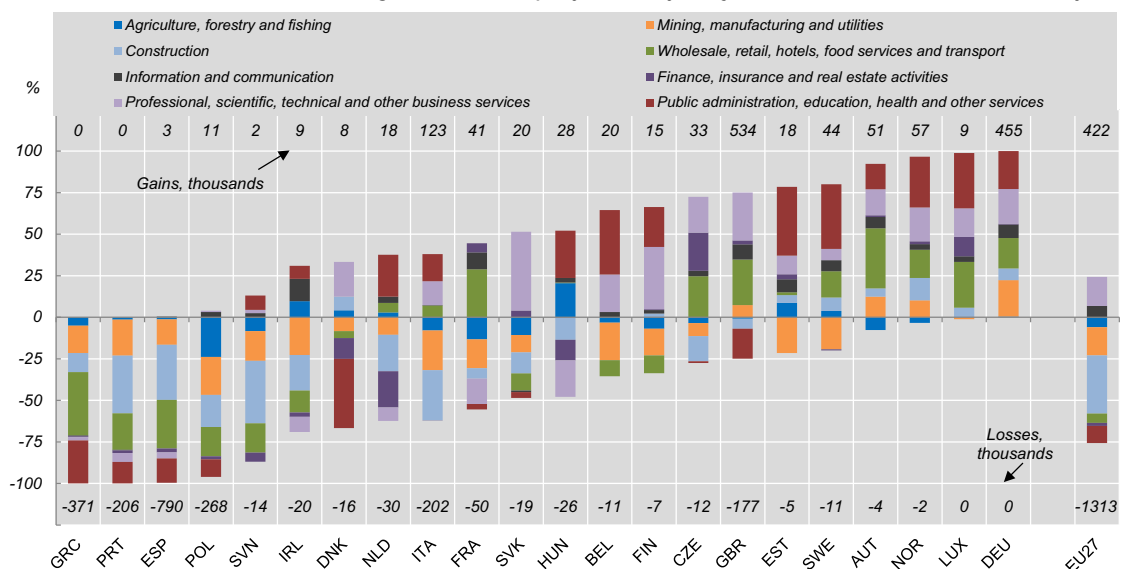
OECD Science, Technology and Industry Scoreboard 2013

GERMANY HIGHLIGHTS

- Since the 2008 economic crisis, Germany has one of the strongest employment performances in the OECD, generating jobs in almost every sector of the economy, and for almost every category of worker. Employment was supported by strong demand for German exports, including from Asia.
- Germany has experienced strong growth in business R&D over the past decade, despite the absence of tax incentives for R&D, instruments that are widely used in other EU countries. This strong R&D investment, together with other investments in knowledge-based assets, has contributed to a very strong bundle of intellectual property rights, including patents, designs and trademarks. Germany is the world's largest applicant of design rights in the transport sector.
- Germany trails leading OECD and EU countries in the impact of its scientific research. It has a low rate of international mobility of researchers, compared with other large EU countries, such as France and the United Kingdom.
- Germany is the world's fourth largest producer of manufactured goods in gross terms. Along with the United States and China, it is one of the three top exporters of manufactures in both gross and value added terms. Services account for about 50% of the value of Germany's exports.

Germany was the strongest performer on employment growth in Europe in 2011-2012, generating jobs in almost every sector of the economy (Figure 1).

Figure 1. Where people lost or gained their jobs in Europe, 2011-2012
Relative contribution to change in total employment by major sectors of economic activity



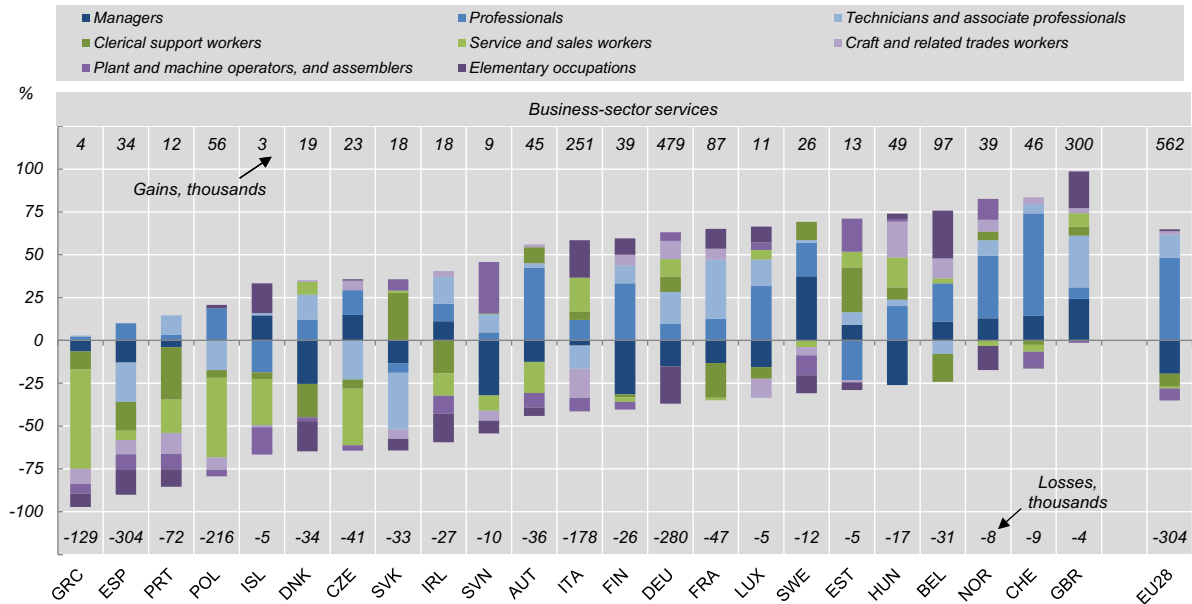
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Source: OECD (2013), OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth, OECD Publishing, www.oecd.org/sti/scoreboard.htm.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities or third party. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

This is in contrast with many other European countries, and notably Greece, Portugal and Spain, where employment fell by more than 4% from 2011. Germany's strong employment performance reflects changes in the mix of occupations. In both business services (Figure 2) and manufacturing, jobs declined for managers and elementary occupations. At the same time, the share of jobs rose for all other categories of workers, including many lower-skilled groups, such as craft and related trades workers and plant and machine operators. This differs from the experience in many other EU countries.

Figure 2. Changes in the skill mix in Europe, business services, 2011-2012
Relative contribution to changes in total employment by major occupation groups

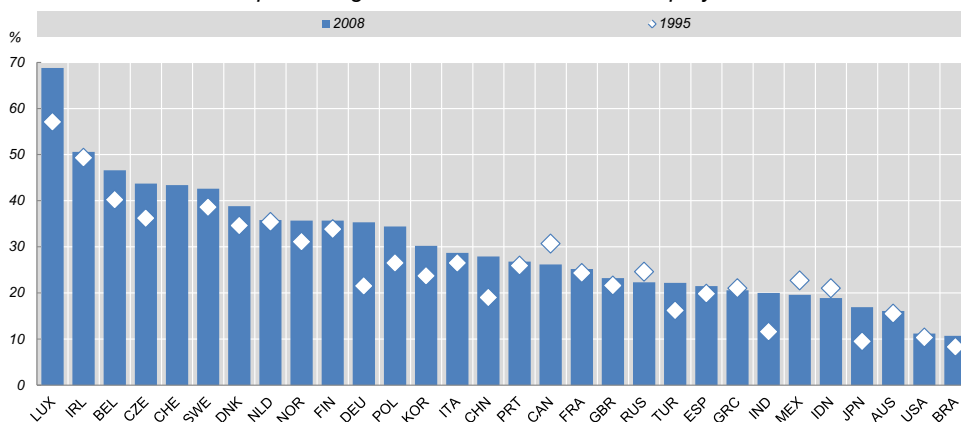


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Source: OECD (2013), OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth, OECD Publishing, www.oecd.org/sti/scoreboard.htm.

Preliminary estimates suggest that in 2008, 20% to 45% of business sector jobs in most European economies were sustained by final consumers in foreign markets, and about one third of business sector jobs in Germany, mainly from European demand. Compared to 1995, these shares increased in all countries; in Germany it rose by more than 10 percentage points (Figure 3). A significant share of these jobs, over 10%, was linked to demand from Asia.

Figure 3. Jobs in the business sector sustained by foreign final demand, 1995 and 2008
As a percentage of total business sector employment



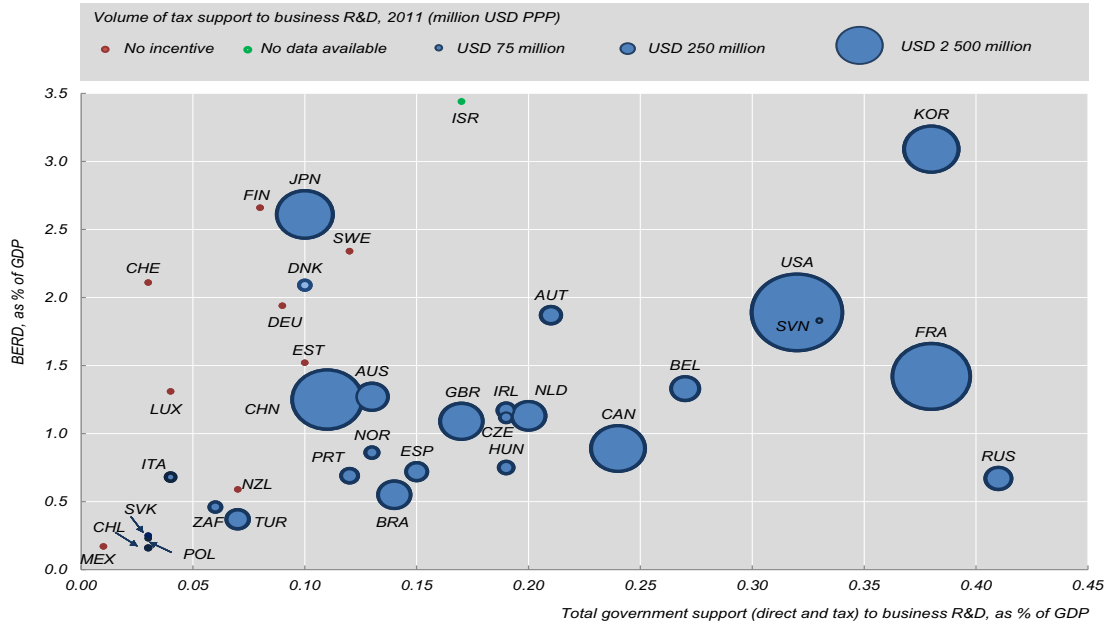
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Source: OECD (2013), OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth, OECD Publishing, www.oecd.org/sti/scoreboard.htm

Germany's strong economic performance partly reflects a sustained improvement in innovation. Germany is the world's 4th largest performer of R&D, trailing only the United

States, Japan and China. The growth of business R&D in the EU28 was principally due to strong growth in Germany, which more than offset reductions in many other EU countries. This is despite the fact that Germany, together with Estonia, Finland (up to 2011), Sweden and Switzerland, is one of the few European countries that does not offer tax incentives for business R&D (Figure 4).

Figure 4. Business R&D intensity and government support to business R&D, 2011
As a percentage of GDP



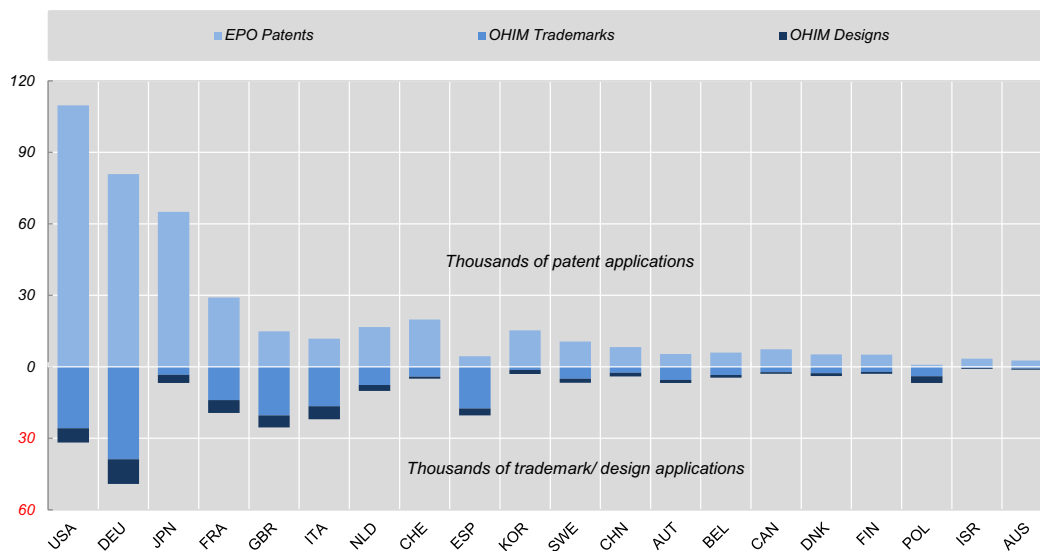
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Note: This is an experimental indicator. International comparability may be limited. See www.oecd.org/sti/rd-tax-stats.htm.

Source: OECD (2013), OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth, OECD Publishing, www.oecd.org/sti/scoreboard.htm

Investments in R&D and other knowledge-based assets contribute to a wide range of intellectual property rights. Germany has the second-largest number of patent applications at the European Patent Office, but is by far the largest applicant of Community Trademarks and registered Community Designs (Figure 5). In transport-related registered Community designs (RCD), Germany and Japan play an important role in the field of cars (Figure 6), and France and the United States in the design of aircraft and space vehicles.

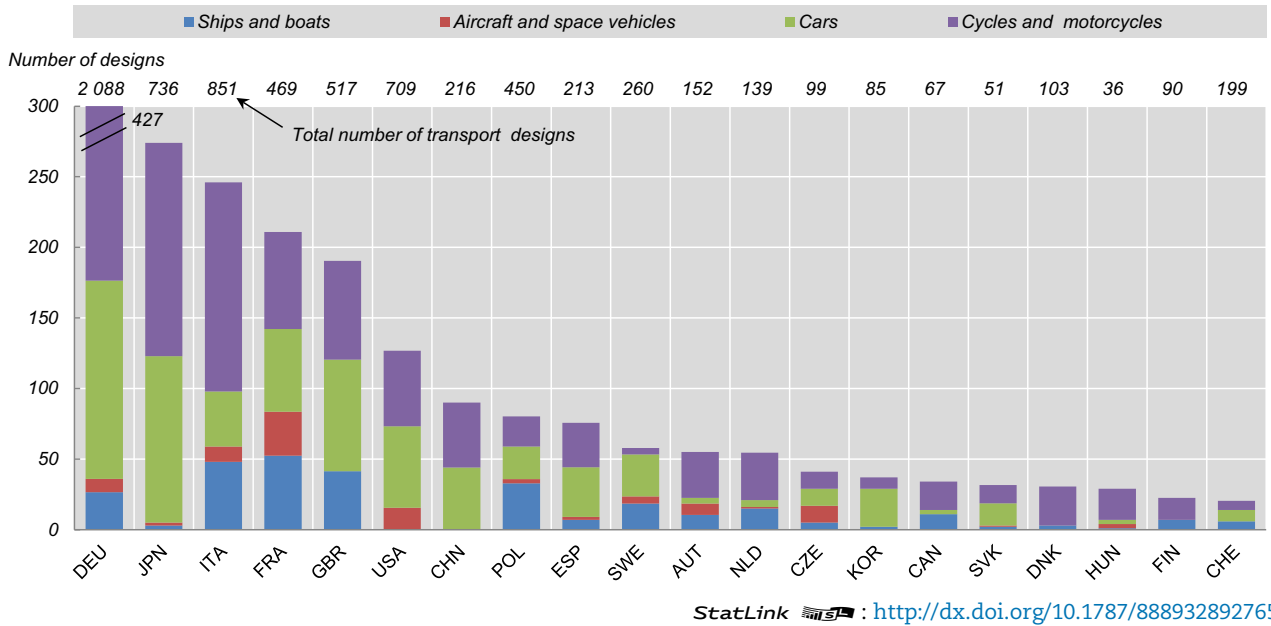
Figure 5. IP bundle of top applicants, 2010-2012



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Source: OECD (2013), OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth, OECD Publishing, www.oecd.org/sti/scoreboard.htm.

Figure 6. Transport-related designs, 2010-2012
Registered community designs, top 20 applicants

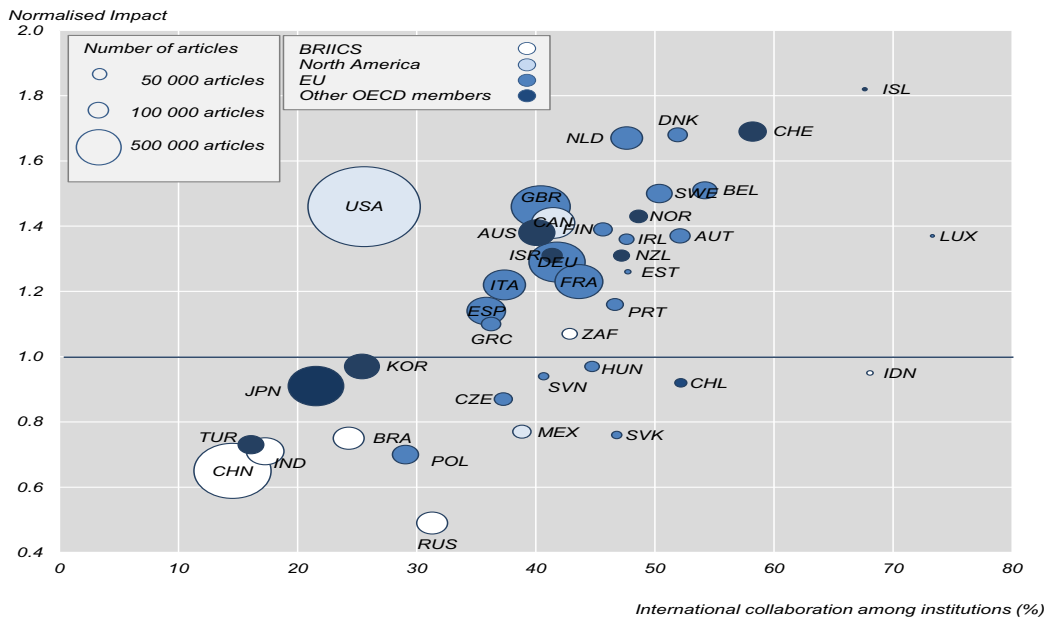


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Source: OECD (2013), OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth, OECD Publishing, www.oecd.org/sti/scoreboard.htm.

At the same time, the impact of German scientific research is not as high as leading OECD and EU countries (Figure 7). The cross-country evidence shows that because they draw on larger pools of expertise, international research collaborations are more likely to have a bigger impact in terms of citations. Such collaboration is more common in smaller economies that need to overcome their small scale by participating in global networks. Compared with other large EU economies, such as the United Kingdom and France, Germany has a low rate of international mobility of researchers (Figure 8). Returning researchers and new inflows tend to publish in journals with higher quality than researchers that have not engaged in international mobility.

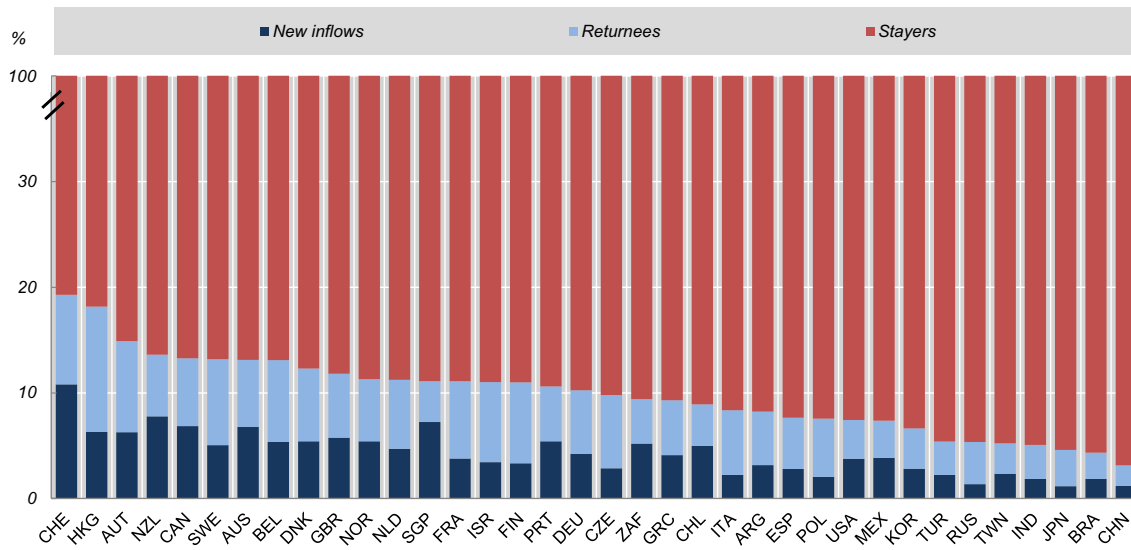
Figure 7. The impact of scientific production and the extent of international collaboration, 2003-11
Whole counts of internationally co-authored documents



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Source: OECD (2013), OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth, OECD Publishing, www.oecd.org/sti/scoreboard.htm.

Figure 8. International mobility of scientific authors, 1996-2011
As a percentage of authors with two or more publications, by last reported affiliation

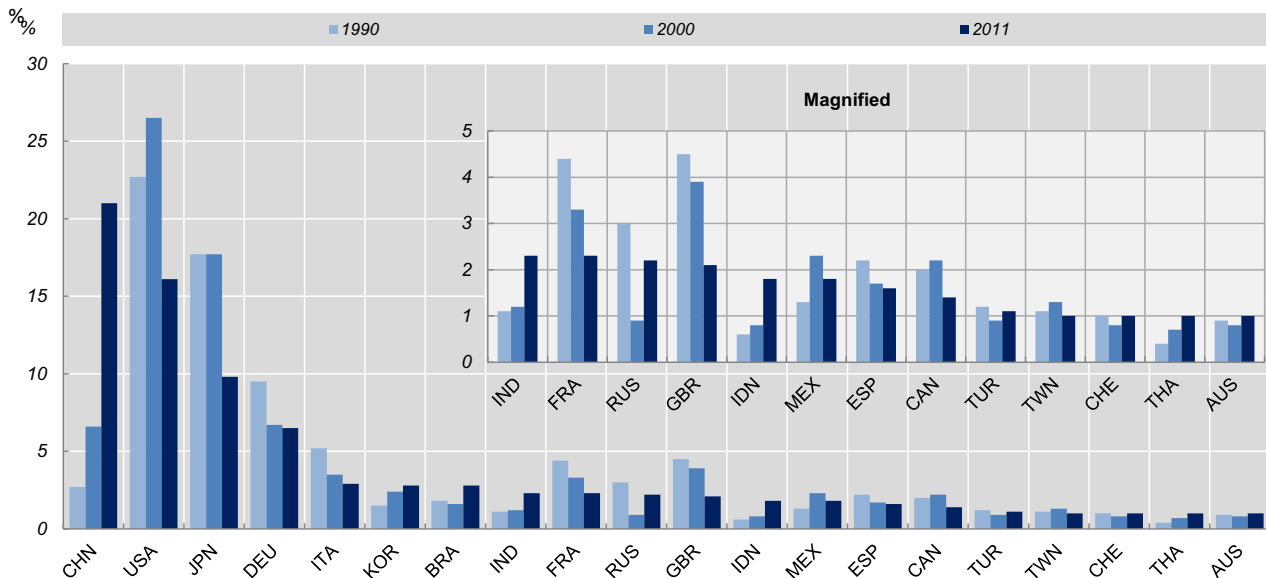


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Source: OECD (2013), OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth, OECD Publishing, www.oecd.org/sti/scoreboard.htm.

The strength of its manufacturing sector is one of the sources of Germany's success. Germany was the world's fourth largest manufacturing economy in 2011, behind China, the United States and Japan, but has experienced a slower decline in the share of its sector in global manufacturing than the United States and Japan (Figure 9). Germany remains a top exporter of manufacturing goods in gross terms (Figure 10), behind China but ahead of the United States. However, in value added terms based on the OECD-WTO TiVA database, Germany drops to third place behind China and the United States.

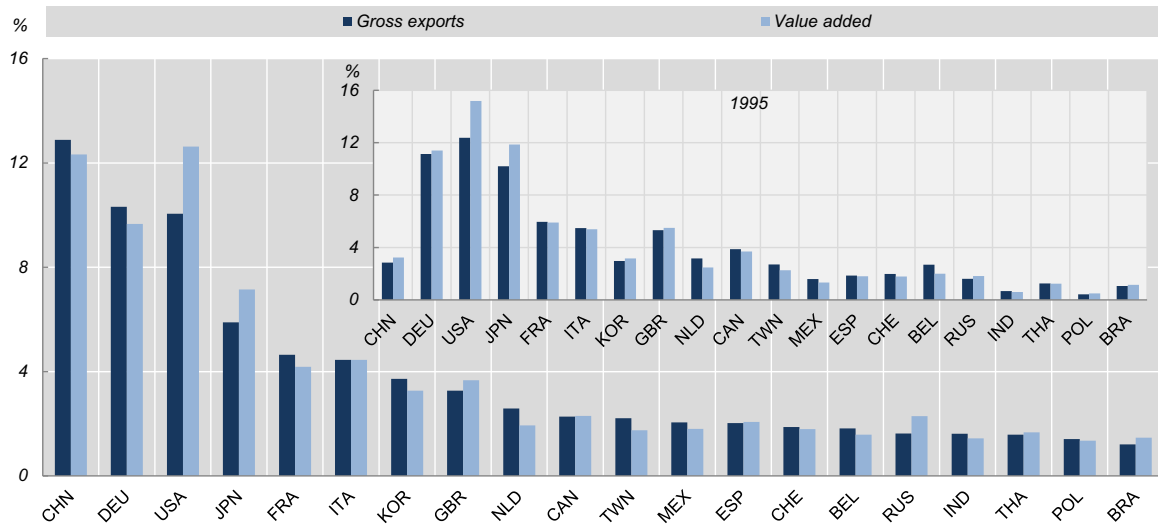
Figure 9. Top manufacturers, 1990, 2000 and 2011
Percentage share of total world manufacturing value added



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Source: OECD (2013), OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth, OECD Publishing, www.oecd.org/sti/scoreboard.htm.

Figure 10. Top 20 exporters of manufactured goods, in gross and value added terms, 1995 and 2009
 Percentage shares of total world manufacturing goods

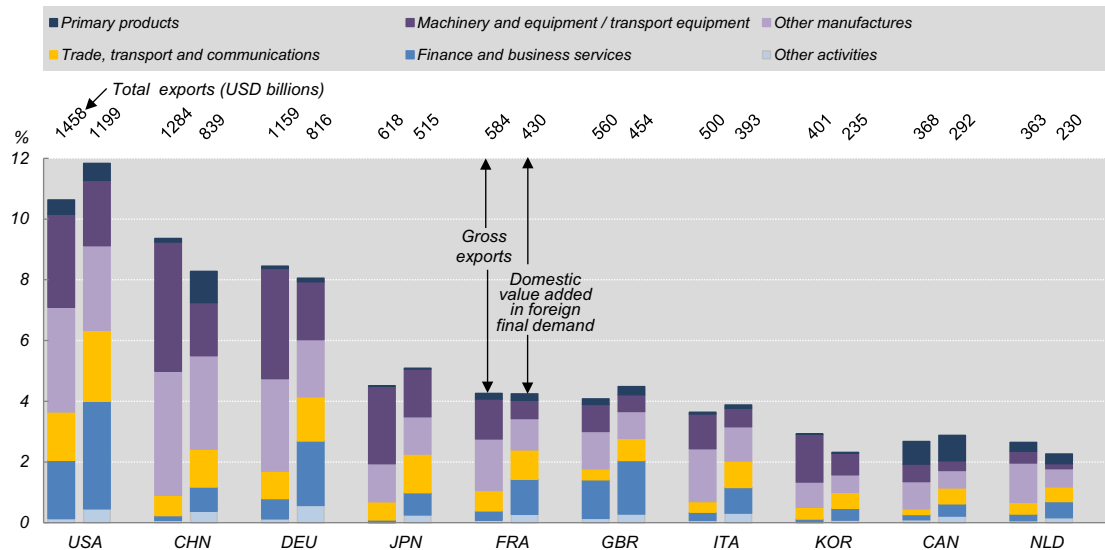


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Source: OECD (2013), OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth, OECD Publishing, www.oecd.org/sti/scoreboard.htm

In value added terms, a large share of Germany’s exports now involve services (Figure 11). Over a third of the value of manufactured exports can be attributed to service content – a significant proportion coming from other, mainly European, countries. In general, comparing a country’s gross exports with its domestic value added in foreign final demand reveals the greater weight of services in global markets. This is - particularly evident for financial and business services from France, Germany, the United States and the United Kingdom. Shares of manufactured output are lower for most countries in value added terms because the multiple counting of manufactured intermediates reported in “gross” trade statistics is eliminated.

Figure 11. Top ten exporting economies in gross and value added terms, 2009
 As a percentage of total world exports in gross and value added terms



StatLink : <http://dx.doi.org/10.1787/888932893373>

Source: OECD (2013), OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth, OECD Publishing, www.oecd.org/sti/scoreboard.htm

Note: The information included in this note is based on the October 2013 release of the OECD Science, Technology and Industry Scoreboard. The data can be accessed from www.oecd.org/sti/scoreboard.

For more information