

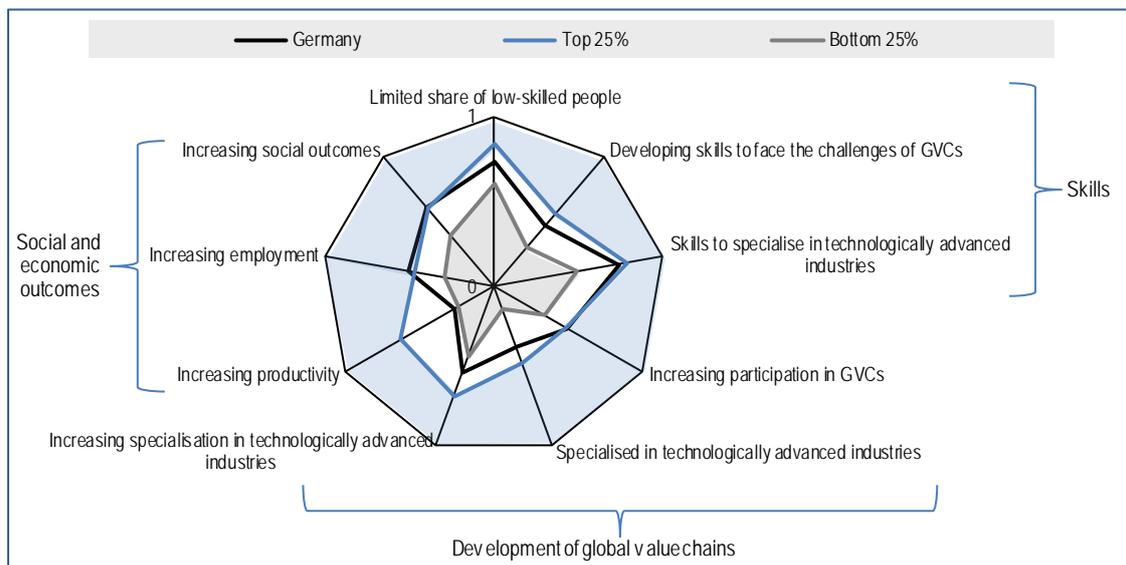
SKILLS OUTLOOK 2017 SKILLS AND GLOBAL VALUE CHAINS

How does Germany compare?

OECD Skills Outlook 2017

The *OECD Skills Outlook 2017* shows that skills matter for global value chains. The report presents new analyses based on the Survey of Adult Skills, a product of the OECD Programme for the International Assessment of Adult Competencies (PIAAC), and the Trade in Value Added Database. It develops a Scoreboard on Skills and Global Value Chains with the objective to measure the extent to which countries have been able to make the most of GVCs through the skills of their populations in terms of skills, global value chains, and social and economic outcomes. It also explains what countries would need to do to specialise in technologically advanced industries.

Figure 1. Scoreboard on skills and global value chains



Source: OECD (2017), *OECD Skills Outlook 2017, Skills and Global Value Chains*, <http://dx.doi.org/10.1787/9789264273351-en>.

- Since the 2000s, Germany has increased its participation in global value chains more than many other OECD countries, particularly in terms of final demand (Figure 1, Table A.1; OECD, 2017, pp. 41-44). In Germany, 40% of jobs in the business sector are sustained by foreign final demand, because of direct links with trade partners or indirect ones when products reach final consumers through exports of third countries (OECD, 2017, Figure 2.9).
- Germany specialises in many technologically advanced industries, including complex business services and high- and medium/high-tech manufacturing. The analysis shows that

this specialisation pattern is to some extent supported by the country’s skills characteristics, which can help the country deepen specialisation in these industries (Figure 1; Table 1; OECD, 2017, pp. 107-115). However, more investment in skills might be necessary to ensure workers’ skills are well aligned with the needs of high-tech manufacturing industries to maintain specialisation in these industries.

- Increased participation in global value chains and specialisation in technologically advanced industries have been accompanied by employment and to some extent social outcomes well above the OECD average over the last decade. The NEET rate for youth has declined substantially and indicators suggest that job quality has improved. At the same time, inequalities have increased and productivity growth has been modest.
- To ensure that Germany benefits more from its participation in global markets, the country needs to enhance its population’s skills mix of both cognitive and social and emotional skills, and encourage adults to continuously develop and adapt their skills. The Survey of Adult Skills (PIAAC) shows that 23% of adults, slightly below the OECD average, are low performers in either literacy or numeracy skills, and many workers have low readiness to learn. In addition, Germany’s share of tertiary graduates remains below the OECD average. The country can also develop further its participation in global networks for education, training and innovation.

Table 1. Specialisation opportunities in technologically advanced industries

From the alignment of Germany’s skills characteristics with industries’ skills requirements

		Medium/high-tech manufacturing			High-tech manufacturing			Business services (more complex)				
		Machinery and equipment n.e.c	Electrical machinery, apparatus n.e.c	Motor vehicles, trailers, semi-trailers	Chemicals and chemical products	Computer, electronic, and optical	Other transport equipment	Finance and insurance	Real estate activities	Renting of machinery, equipment	Computer and related activities	R&D, and other business services
specialisation in 2011	observed	○	○	○	○	○	○		○	○	○	○
	opportunity		■							■		■
specialisation trend 2000-11	increased	●	●	●	●	●	●	●	●		●	●
	decreased									●		

Note: The dots in the table show whether countries have increased (black circle) or decreased (grey circle) their revealed comparative advantages over the period 2000-11. Revealed comparative advantages (white circle) show the extent to which a country is specialised in a certain industry within GVCs (or receives more income from its exports in this industry than other countries). Opportunities for specialisation are the results of empirical work developed in the OECD Skills Outlook 2017. Countries have an opportunity to specialise in an industry if there is a good alignment of countries’ skills characteristics with the skills requirements of this industry. Several characteristics of skills shape countries’ specialisation in GVCs. The extent to which these characteristics are aligned with each industry’s skills requirement can be consolidated into one measure showing the specialisation opportunities of each country in each industry.

Source: OECD (2017), *OECD Skills Outlook 2017, Skills and Global Value Chains*, <http://dx.doi.org/10.1787/9789264273351-en>.

Key policy messages

Equip graduates with strong mixes of relevant skills and reliable qualifications

- Workers in Germany have numeracy and problem solving skills in technology-rich environment slightly above the OECD average (OECD, 2017, Figure 3.2). They also perform STEM tasks and tasks requiring self-organisation on the job more frequently than workers in other OECD countries (OECD, 2017, Figure 3.3). However, workers in Germany are less likely to perform managing, communicating and marketing tasks suggesting they could be better equipped with these skills. They also show a lower readiness to learn than on average in OECD countries. These skills are highly valued by employers. To preserve Germany’s

comparative advantage in some industries, the country needs to ensure workers' cognitive skills are paired with social and emotional skills.

- To specialise in most technologically advanced industries, countries need pools of workers with qualifications that reliably reflect what they can do. This is the case in Germany more than in many other OECD countries. Its share of higher education graduates is below the OECD average but 90% of the country's recent graduates have numeracy skills at level 3 or above, far exceeding the OECD average. Skills discrepancies exist between advantaged and disadvantaged 15-year-old students in Germany and they persist among the adult population, but to a less extent than in many other OECD countries, participating in the Survey of Adult Skills. High-quality vocational education and training programmes and multiple pathways within the German education system provide several opportunities for success at school and beyond.
- To equip all graduates with a strong skills mix and reliable qualifications, the Skills Outlook emphasises the importance of high-quality pre-primary education for all to give every child a strong start to their education careers. In addition, innovative teaching methods in schools and a stronger teacher support for all students can help them attain the relevant skills, both cognitive and social and emotional ones.

Continuously develop and adapt adults' skills

- Participation in adult learning is at the OECD average, according to the Survey of Adult Skills, which might not be enough for a country that specialises in high-tech manufacturing industries (OECD, 2017, Figure 4.16). The gap in participation in adult learning between high-skilled and low-skilled adults is much larger than in most OECD countries.
- Germany's low-skilled workers and those adults who withdraw from the labour market face a vicious cycle in which they do not benefit from training and therefore their skills remain weak. Policies need to better support all workers at risk of displacement and ensure quality of adult learning.

Make the best use of the skills pool

- Data suggest that the use of best management practices is more widespread in Germany than in any other OECD country but the United States (OECD, 2017, Figure 4.9). These practices are a powerful tool for using effectively the skills assets, adjusting them to new needs, and thereby giving a country a comparative advantage in GVCs.

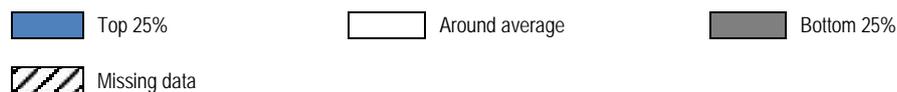
Participate in the global network of education, training and innovation

- Among OECD countries, Germany co-operates relatively little in the global network of education, training and innovation (OECD, 2017, pp. 144-45). Patenting activities run in collaboration with international partners were far below the OECD average in 2012. The international mobility of scientific authors in Germany is also relatively low, along with the country's funding incentives for international co-operation. In addition, Germany has not attracted many international students and researchers, which can be linked to the limited provision of tertiary education programmes taught in English (OECD, 2017, Figures 4.13 and 4.14).
- Many policies affect countries capacities to be part of global education, innovation and research networks, underlining the need to adopt a comprehensive approach.

Reference

OECD (2017), *OECD Skills Outlook 2017, Skills and Global Value Chains*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264273351-en>.

Table A.1. Scoreboard on skills and global value chains



	Skills			Development of GVCs			Economic and Social Outcomes		
	A limited share of low-skilled people	Developing skills to face the challenges of GVCs	Skills to specialise in tech. advanced industries	Increasing participation in GVCs	Specialised in tech. advanced industries	Increasing specialisation in tech. advanced industries	Increasing productivity	Increasing employment	Improving social outcomes
Australia	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%
Austria	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Top 25%	Bottom 25%
Belgium	Bottom 25%	Bottom 25%	Top 25%	Bottom 25%	Top 25%	Bottom 25%	Bottom 25%	Bottom 25%	Top 25%
Canada	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%
Chile	Bottom 25%	Top 25%	Bottom 25%	Top 25%	Bottom 25%	Bottom 25%	Top 25%	Top 25%	Missing data
Czech Republic	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Top 25%	Top 25%	Bottom 25%	Bottom 25%
Denmark	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%
Estonia	Bottom 25%	Top 25%	Bottom 25%	Bottom 25%	Bottom 25%	Top 25%	Top 25%	Bottom 25%	Bottom 25%
Finland	Top 25%	Bottom 25%	Top 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%
France	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%
Germany	Bottom 25%	Bottom 25%	Bottom 25%	Top 25%	Bottom 25%	Bottom 25%	Bottom 25%	Top 25%	Top 25%
Greece	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%
Hungary	Missing data	Bottom 25%	Missing data	Bottom 25%	Bottom 25%	Bottom 25%	Top 25%	Top 25%	Bottom 25%
Iceland	Missing data	Bottom 25%	Missing data	Top 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Top 25%
Ireland	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Top 25%	Bottom 25%	Top 25%	Bottom 25%	Bottom 25%
Israel	Bottom 25%	Top 25%	Bottom 25%	Bottom 25%	Top 25%	Bottom 25%	Bottom 25%	Top 25%	Top 25%
Italy	Bottom 25%	Top 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%
Japan	Top 25%	Bottom 25%	Top 25%	Top 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%
Korea	Bottom 25%	Bottom 25%	Bottom 25%	Top 25%	Top 25%	Bottom 25%	Top 25%	Bottom 25%	Top 25%
Luxembourg	Missing data	Bottom 25%	Missing data	Bottom 25%	Top 25%	Bottom 25%	Bottom 25%	Top 25%	Bottom 25%
Mexico	Missing data	Bottom 25%	Missing data	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%
Netherlands	Top 25%	Bottom 25%	Top 25%	Bottom 25%	Bottom 25%	Top 25%	Bottom 25%	Bottom 25%	Bottom 25%
New Zealand	Top 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Top 25%	Bottom 25%	Bottom 25%	Bottom 25%
Norway	Top 25%	Bottom 25%	Top 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%
Poland	Bottom 25%	Top 25%	Bottom 25%	Top 25%	Bottom 25%	Top 25%	Top 25%	Bottom 25%	Top 25%
Portugal	Missing data	Top 25%	Missing data	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Top 25%
Slovak Rep.	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Top 25%	Top 25%	Top 25%	Bottom 25%
Slovenia	Bottom 25%	Top 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%
Spain	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Top 25%	Bottom 25%	Bottom 25%	Bottom 25%
Sweden	Top 25%	Bottom 25%	Top 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%
Switzerland	Missing data	Bottom 25%	Missing data	Bottom 25%	Top 25%	Top 25%	Bottom 25%	Bottom 25%	Bottom 25%
Turkey	Bottom 25%	Top 25%	Bottom 25%	Top 25%	Bottom 25%	Bottom 25%	Bottom 25%	Top 25%	Top 25%
United Kingdom	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%	Top 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%
United States	Bottom 25%	Bottom 25%	Bottom 25%	Top 25%	Top 25%	Bottom 25%	Bottom 25%	Bottom 25%	Bottom 25%

Note: indicators are described in Box 1.1 of the report. The scoreboard shows for each sub-category, countries that perform in the top 25%, bottom 25%, and those around the OECD average. For instance, Finland is among the OECD countries that have the lowest share of low-skilled people, have not developed skills much to face the challenges of GVCs but have the skills to specialise in technologically advanced industries, and have not increased much their specialisation in technologically advanced industries. It performs around the average for the other sub-categories.

Source: OECD (2017), *OECD Skills Outlook 2017, Skills and Global Value Chains*, <http://dx.doi.org/10.1787/9789264273351-en>.