



**OECD Economic Surveys**

# Germany

**June 2018**

**OVERVIEW**



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## *Executive summary*

### ***Economic growth is robust and wellbeing is high***

- *Strong domestic demand and exports are driving growth.*
- *Wages are growing moderately.*
- *Economic growth will slow somewhat, due to capacity constraints.*
- *The current account surplus remains large.*
- *Germans enjoy high living standards.*

### ***Using fiscal policy to address structural challenges lying ahead***

- *The strong fiscal position provides room in the near term to fund spending priorities.*

### ***Productivity growth is held back by slow technology diffusion***

- *Labour productivity growth in recent years has been subdued.*
- *Entrepreneurship is key to faster technology diffusion and higher productivity among SMEs.*
- *Government ownership in business sector activities holds back reallocation.*
- *Improving competition and boosting investment in digital networks would allow to better harness new technologies.*

### ***Preparing for the future of work with new and changing skills***

- *Automation, digital platforms, and other technological changes are altering the nature of work.*
- *Technological change increases the demand for cognitive and non-cognitive skills.*

### ***Policies to improve skills and better skills use boost inclusive growth***

- *Impressive progress has been made in reducing the impact of socio-economic background on education outcomes.*
- *Better opportunities for women to develop their careers would boost productivity and reduce poverty risk.*

### ***Transport policy reform can contribute to green growth and boost wellbeing.***

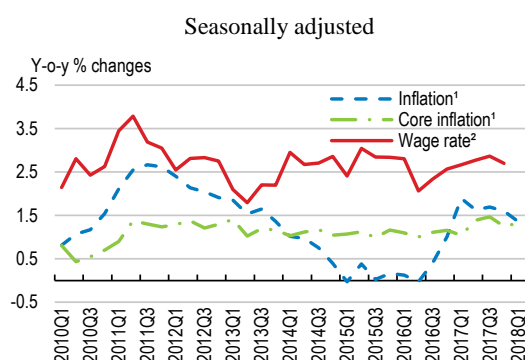
- *Emissions from transport have increased despite substantial gains in efficiency, leaving a weak spot in the overall climate policy mix.*

**Economic growth is robust and wellbeing is high**

**Strong domestic demand and exports are driving growth.** Record-low unemployment and real wage gains have underpinned consumption. Low interest rates and immigration boost residential construction. Exports benefit from a goods mix suited to investment needs in high-growth emerging economies and the recovery of the euro area economy. Business investment is picking up with the strong exports. Credit growth remains modest.

**Wages are growing moderately.** Recent collective bargaining outcomes points to some acceleration in wage growth. Unions have increasingly negotiated non-wage benefits to ensure a better work life balance. However, rising inflation, primarily due to higher oil prices, is eroding real wage gains to some extent (Figure A).

**Figure A. Wage growth is moderate**



1. Harmonised consumer price index (HICP). Core HICP excludes energy, food, alcohol and tobacco.

2. Average nominal wage per employee.

Source: OECD (2018), *OECD Economic Outlook: Statistics and Projections* (database).

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**Economic growth will slow somewhat, due to capacity constraints** (Table A). The recovery in the euro area will sustain exports and investment in equipment, while private consumption and housing investment may decelerate somewhat due to slower employment and real wage growth. Consumer price inflation

may rise modestly, as firms can absorb the impact of higher wages in profit margins. The fiscal stance is projected to be somewhat expansionary, as the new government plans tax reductions and higher spending on education, digital infrastructure and social transfers. Nonetheless, strong tax revenue growth and low interest rates are projected to raise the budget surplus to 1.5% of GDP.

**Table A. Economic growth will remain robust**

	2017	2018	2019
Gross domestic product <sup>1</sup>	2.5	2.1	2.1
Private consumption	2.1	1.0	1.6
Gross fixed capital formation	3.9	3.5	3.9
Exports	5.3	4.5	4.5
Imports	5.6	4.3	5.1
Unemployment rate	3.7	3.4	3.3
Consumer Prices	1.7	1.7	2.0
Core Consumer prices	1.3	1.3	2.0
Current account (% of GDP)	8.1	8.3	7.9
General government fiscal balance	1.3	1.5	1.5

1. Working-day adjusted.

Source: OECD (2018), *OECD Economic Outlook: Statistics and Projections* (database).

**The current account surplus remains large.**

Saving exceeds investment in the public and private sectors, notably in the corporate sector, where domestic investment has not kept pace with profitability. Exchange rate and energy price movements also mattered. Structural reforms to boost long-term, inclusive green growth and the use of fiscal space to support such reforms could reduce the current account surplus, by strengthening investment and reducing household saving.

**Germans enjoy high living standards,** especially in areas like jobs and earnings, and work-life balance. Disposable household income is more equally distributed than in other large OECD economies. However, inequality in wealth and market income is relatively high. Relative poverty risks relate to a high incidence of low-wage employment among low and middle-skilled workers as well as part-time working women.

### Using fiscal policy to address structural challenges lying ahead

**The strong fiscal position provides room in the near term to fund spending priorities**, such as increasing provision of high-quality childcare and full-day schooling, adult skills, or investing in infrastructure and new technologies, as argued below. Fiscal leeway should be used in a prudent manner, taking capacity constraints into account. In the medium term, higher interest rates and ageing-related spending will reduce fiscal space. Additional structural reforms will be needed to maintain sustainability in the long run. Further room for prioritising spending can be identified by more extensive use of spending reviews.

### Productivity growth is held back by slow technology diffusion

**Labour productivity growth in recent years has been subdued** (Figure B), which poses challenges in raising incomes and wellbeing. Slower productivity growth partly reflects strong employment performance, subdued investment, rising skill shortages and slower adoption of new technologies, including in the public sector. Productivity growth has been weaker among small and medium sized firms. Productivity can be boosted by encouraging more firms and individuals to seize opportunities new technologies provide, improving also inclusiveness.

**Figure B. Labour productivity growth has slowed down**



Source: OECD (2018), *OECD Economic Outlook: Statistics and Projections* (database).  
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**Entrepreneurship is key to faster technology diffusion and higher productivity among SMEs.** Firm creation has been declining partly due to strong employment growth. The lower income security associated with self-employment could hold back entrepreneurship. The period during which failed entrepreneurs must repay debt can last up to six years, discouraging firm creation. Women are under-represented among entrepreneurs, especially in technology-intensive sectors. R&D tax incentives may boost innovation if designed carefully to benefit fully young firms which have not generated profit. Well-developed e-government services can reduce the administrative burdens on start-ups.

**Government ownership in business sector activities holds back reallocation** of resources and the development of new business models. Privatising government stakes in businesses, including in the *Landesbanken*, could reduce risk of incumbent bias, for example in lending.

**Improving competition and boosting investment in digital networks would allow to better harness new technologies.** A larger number of mobile communication operators would result in more innovative services at lower prices. The upcoming radio spectrum auction for 5G networks should be used to promote competition in the mobile market. This would also stimulate demand for highest-speed broadband services, boosting roll-out. More investment is needed to expand high-speed broadband in rural areas where unsubsidised provision is unlikely.

### Preparing for the future of work with new and changing skills

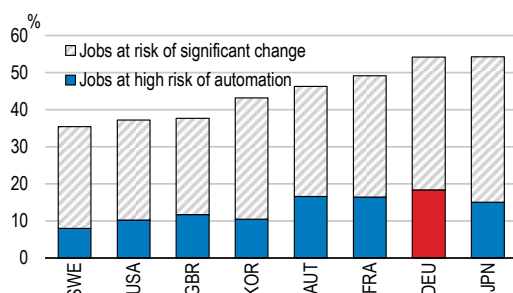
**Automation, digital platforms, and other technological changes are altering the nature of work.** Jobs with routine tasks are at risk of automation. They are concentrated in middle-skill occupations. The share of jobs with high risk of being automated or of undergoing substantial changes is high (Figure C).

New forms of work, such as digital platforms, involve more workers in flexible arrangements

such as “solo” self-employment. This reinforces the case for extending social safety nets to the self-employed.

**Figure C. Many jobs will undergo significant change**

The share of jobs at high risk of automation and significant change



Note: Jobs are at high risk of automation if the likelihood of their job being automated is at least 70%. Jobs are at risk of significant change if the likelihood is between 50 and 70%.

Source: Nedelkoska, L. and G. Quintini (2018), "Automation, skills use and training", *OECD Social, Employment and Migration Working Papers*, No. 202, OECD Publishing, Paris.

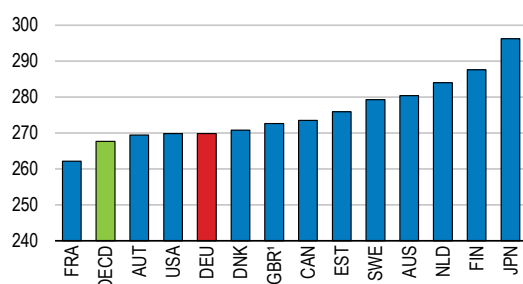
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### Technological change increases the demand for cognitive and non-cognitive skills.

Cognitive and digital skills of German adults are above the OECD average, but fall short of leading countries (Figure D). The vocational education and training system ensures excellent integration of young people in the labour market (Figure E).

**Figure D. Adult skills are above OECD average**

Mean proficiency scores in literacy, 15-65 year-olds



1. Data refer to England.

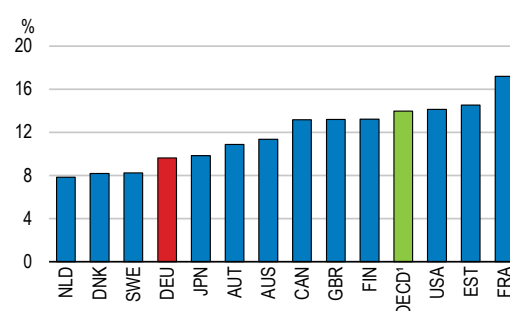
Source: OECD (2016), *Skills Matter: Further Results from the Survey of Adult Skills*.

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More than a quarter of vocational graduates earn more than academic graduates. However, their earnings increase little with experience. Strengthening general education within the vocational education system and stronger incentives to participate in life-long learning could enhance adaptability of German workers to technological change.

**Figure E. Most German youth are either in employment, education or in training**

Youth not in employment, education or training (NEET), per cent of 15-29, 2016 or latest year



1. Unweighted average.

Source: OECD (2017), *OECD Education Statistics* (database).

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More modular training offers, combined with opportunities to formally recognise skills acquired on-the-job, can boost life-long learning, as experience in Denmark and Portugal suggests.

### Policies to improve skills and better skills use boost inclusive growth

Impressive progress has been made in reducing the impact of socio-economic background on education outcomes, as improved PISA scores and a steep rise in childcare enrolment show. There is scope to further improve education outcomes among children with weakest socio-economic background. Ensuring high-quality childcare and early childhood education as well as that high-quality full-day primary schooling is available everywhere would allow making progress in this direction.

**Better opportunities for women to develop their careers would boost productivity and reduce poverty risk.** Women are overall as highly educated as men but their skills are used less, in part because they often work fewer hours, limiting professional choice and career prospects. Further developing full-day childcare and reducing the tax and social security disincentives for second earners, mostly women, to work longer hours and further strengthening fathers' incentives to take care of their children would improve gender equity.

**Transport policy reform can contribute to green growth and boost wellbeing**

**Emissions from transport have increased despite substantial gains in efficiency, leaving a weak spot in the overall climate policy mix.** Transport infrastructure plans need to be made consistent with CO<sub>2</sub> emission reduction targets, including by expanding the electric charging infrastructure for automobiles. Policies to deploy ICT-based ride sharing, coupled with congestion charging, facilitate the low-carbon transport transition, help deploy effective public transport at lower cost, and can boost competitiveness of cities by reducing congestion.



MAIN FINDINGS	KEY RECOMMENDATIONS
<b>Supporting steady inclusive growth with financial and budgetary policies</b>	
The budget balance is above the medium-term deficit objective of 0.5% of GDP. Additional government spending is needed to expand full-day primary schooling, high-quality childcare, life-long learning and roll out high-speed fibre broadband infrastructure.	Use fiscal leeway in a prudent manner, taking capacity constraints into account, to lower the taxation of low wage earnings and to raise priority spending on childcare, education and life-long learning as well as for low-emission transport infrastructure.
Rising life expectancy will raise pension spending.	Index the legal pension age to life expectancy.
Performance-related budgeting can free room for priority spending.	Introduce spending reviews more broadly at the federal and <i>Länder</i> level and use them to reallocate funding across broad spending fields.
<b>Strengthen productivity and prepare for the future of work</b>	
Self-employed workers are less well covered by social safety nets than dependent workers. This can increase precarious employment and poverty risk while discouraging some potential entrepreneurs.	Make enrolment in public old-age pension mandatory for the self-employed who are not covered by old-age pension insurance. Open access to public health insurance to all self-employed.
Failed entrepreneurs must stand ready to pay back debt for up to 6 years, depending on how much debt they have paid back. This discourages entrepreneurship.	Ease the conditions for bankrupt entrepreneurs to be discharged of debt after three years, while maintaining adequate safeguards for creditors.
E-government services are underdeveloped, raising administrative costs of entrepreneurs. The scope of available services differs across municipalities and information is scarce.	Create a one stop shop to process all procedures for starting up a company online.
Regulation barriers, such as rules on exclusive activities, hamper competition in some services.	Reduce restrictive regulation in the professional services, safeguarding quality standards and consumer interests.
Government ownership in business sector activities holds back the reallocation of resources.	Privatise government stakes in the <i>Landesbanken</i> , car manufacturing, telecommunications and postal services.
The limited number of infrastructure suppliers in mobile networks limits competition and innovation which keeps prices high.	Use the upcoming radio spectrum auction to promote competition in the mobile market.
<b>Boosting skills and skills use</b>	
The earnings gap between men and women is large, especially for the well-educated. Joint income taxation lowers incentives for second earners in couples, women in most cases, to work full time. Second parents, mostly fathers, take little parental leave. If both fathers and mothers share parental leave more equally, gender norms about child-raising and household responsibilities rebalance.	Lower the tax burden on the wage income of second earners. Increase the minimum amount of time the second parent has to take parental leave, from the current two months, for the couple to receive the maximum leave entitlement.
The impact of socio-economic background on educational attainment and cognitive skills is still strong. Children with weak socio-economic background are less likely to attend high-quality childcare institutions. Most children attend half-day primary education.	Raise quality standards in childcare and early childhood education. Expand primary education to high-quality full-day education programmes.
Literacy skills are relatively low among young people in vocational education coming from lower secondary schools.	Strengthen general education within vocational schools, and maintain the strong labour market orientation of vocational education and training.
Participation in life-long learning is lower than in leading countries. There is little validation of informal skills acquired on the job. This reduces incentives to participate in life-long learning, especially for unskilled and older workers. Unskilled adults face low-pay and unemployment risks.	Offer more training programmes for the modular acquisition of qualifications in life-long learning and foster the recognition of skills acquired on-the-job. Strengthen support for unskilled adults to obtain professional qualifications.
<b>Boosting green growth</b>	
The CO <sub>2</sub> emissions from the transport sector are high and have not fallen. The federal transport infrastructure plan is inconsistent with CO <sub>2</sub> emission reduction targets. Pollution from transport has high costs to human health especially in cities, while road congestion reduces productivity.	Extend charging station infrastructure to promote electrification of road transport. Develop congestion pricing. Remove regulatory hurdles to ride sharing services and allow them to serve public transport.

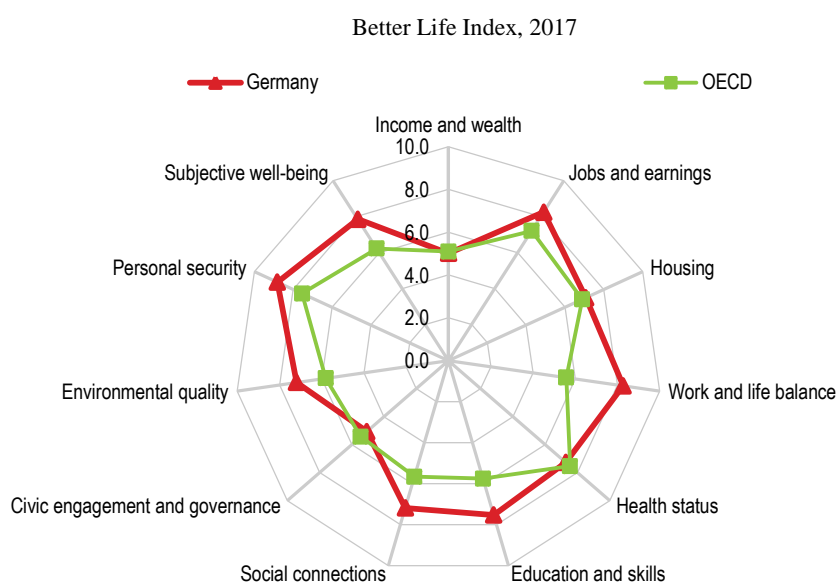


## Key policy insights

### Economic and social wellbeing are strong

Germany has been enjoying strong economic performance in recent years, building on strengthened domestic demand, good social outcomes and export performance. Exports have benefited from a large, productive and innovative manufacturing sector which has reinforced its position in sectors of long-standing comparative advantage, notably cars, chemical products and machine tools. Record-low unemployment, employment growth and real wage gains have underpinned private household demand. Business investment is picking up.

**Figure 1. How's life in Germany?**



*Note:* Each well-being dimension is measured by one to four indicators from the OECD Better Life Index set. Normalised indicators are averaged with equal weights. Indicators are normalised to range between 10 (best) and 0 (worst) according to the following formula: (indicator value - minimum value) / (maximum value - minimum value) x 10.

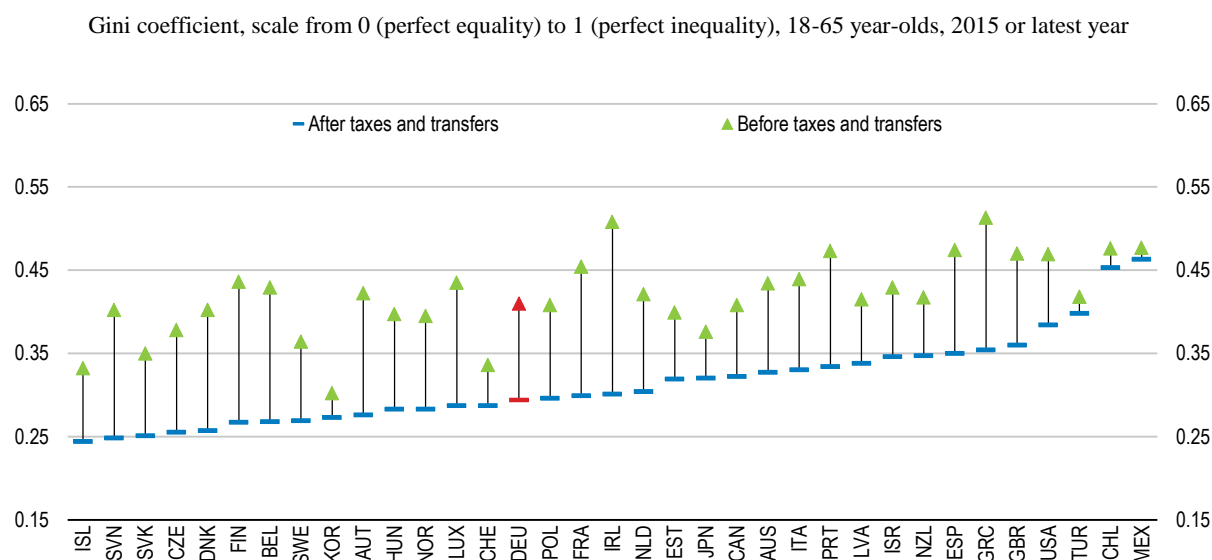
*Source:* OECD (2017), OECD Better Life Index, [www.oecdbetterlifeindex.org](http://www.oecdbetterlifeindex.org).

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On aggregate, the population enjoys a high standard of living, as reflected in broad measures of well-being (Figure 1). Personal security, work-life balance, jobs and earnings as well as subjective wellbeing are particularly good. Almost the entire population is educated to upper secondary level and PISA scores are in the upper range of OECD countries, though still at some distance from best-performing countries. While health

outcomes are relatively good overall, self-assessed health among adults with low education is poor (OECD, 2017<sup>[1]</sup>). Median household wealth is modest, in part reflecting a highly unequal distribution of wealth across households, low housing wealth, and a relatively short period of prosperity in Eastern Germany, where incomes are still lower. While wealth and market incomes are concentrated, disposable household income among the working age population is more equally distributed than in other large OECD economies (Figure 2). The share of population in relative income poverty is lower than in most OECD countries (Figure 3). Poverty is strongly concentrated in some regions. A high incidence of low pay employment, especially among low and middle-skill workers and among women, is a major driving force (Figure 4). Housing costs have risen in major urban centres and are now high, damping housing well-being indicators.

**Figure 2. Income inequality among the working population is lower than in most OECD countries after taxes**

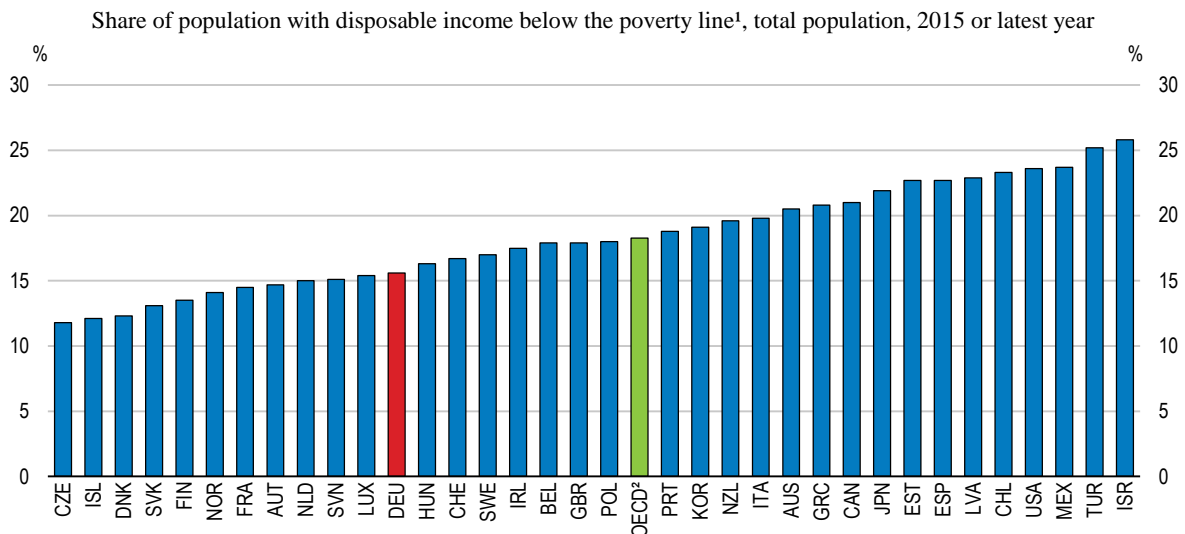


Note: After taxes and before transfers for Hungary, Mexico and Turkey.

Source: OECD (2018), *OECD Social and Welfare Statistics* (database).

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In this context, the main concern for policy makers is to make sure strong social and economic outcomes are sustained in the future, in the face of several challenges. As elsewhere, trend productivity growth has diminished (Figure 5), partly reflecting weakening technology diffusion. Past labour market reforms (the *Hartz* reforms), while having boosted employment, may have contributed by raising the share of workers with low qualifications. Productivity convergence in Eastern Germany has also slowed. However trend productivity growth has also been low in international comparison in recent years. Productivity growth is key to rising incomes, especially in the context of demographic ageing, which will reduce labour supply.

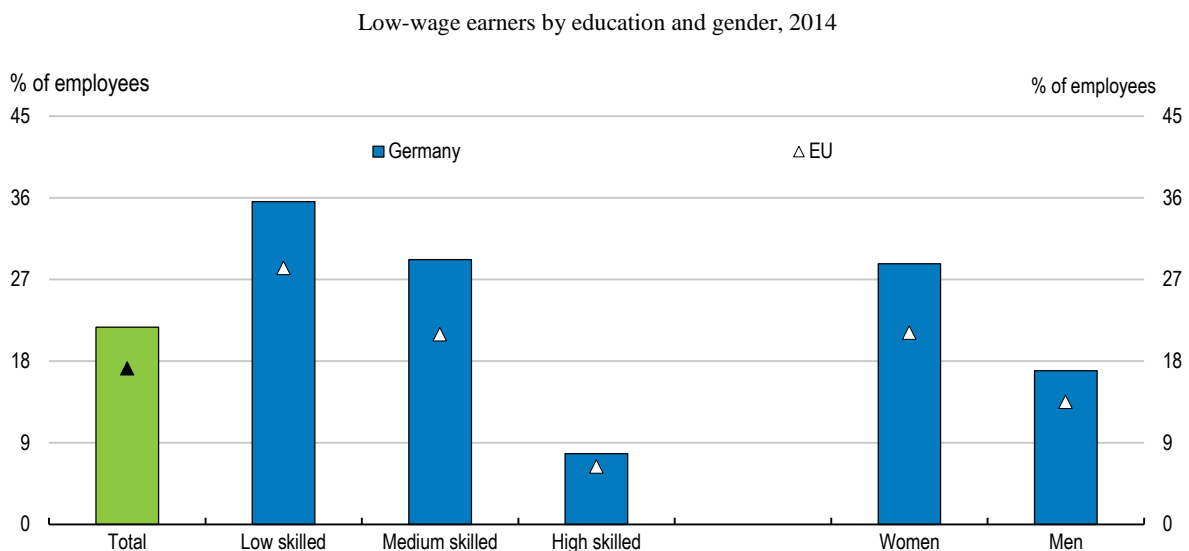
**Figure 3. Relative poverty is lower than in most OECD countries**

1. The poverty line is 60% of median household income. Household income is adjusted to take into account household size.

2. Unweighted average.

Source: OECD (2018), *OECD Social and Welfare Statistics* (database).

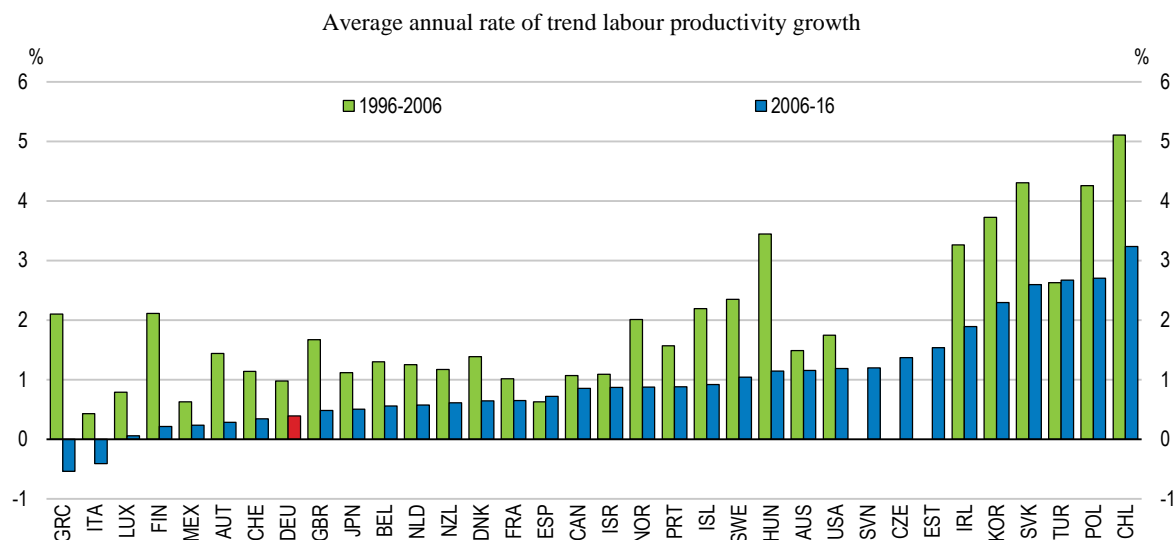
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**Figure 4. The incidence of low-pay employment is high**

Note: Low-wage earners are defined as those employees earning less than two thirds of the median gross hourly earnings. Low skilled, medium skilled and high skilled are defined respectively as educational attainments of below upper secondary (ISCED 0-2), upper and post-secondary (ISCED 3-4) and tertiary (ISCED 5-8). All employees excluding apprentices working in enterprises with 10 or more than 10 employees and which operate in all sectors of the economy except: agriculture, forestry and fishing (NACE Rev. 2, section A); and public administration, defence and compulsory social security (NACE Rev. 2, sections O).

Source: Eurostat (2018), *Employment and working conditions* (database).

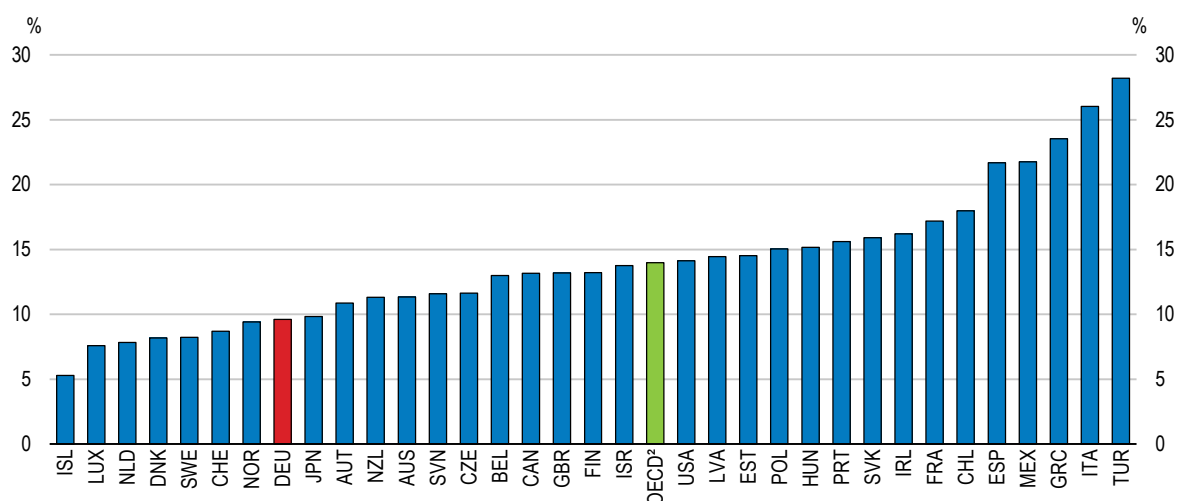
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**Figure 5. Trend productivity growth has diminished and is low in Germany**

Source: OECD (2018), *OECD Economic Outlook: Statistics and Projections* (database).

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Skills are becoming more important as technological change and globalisation are advancing. A skilled workforce, reflecting in part Germany's renowned vocational education and training system and strong science and engineering skills, have delivered high labour productivity, especially in the manufacturing sector, good job quality (OECD, 2017<sup>[2]</sup>) and an excellent integration of young people in the labour market (Figure 6). However, cognitive and digital skills among the adult population are weaker and more dispersed than in leading OECD countries. Germany has undertaken impressive education reforms which have improved outcomes for disadvantaged youth, but scope remains to reduce the impact of socio-economic and immigration background further. Efforts are undertaken but need to be stepped up to reduce inequality of market incomes and poverty risk, improve upward social mobility and boost economic growth overall (OECD, 2015<sup>[3]</sup>).

**Figure 6. Most German youth are either in employment, education or in training**Youth not in employment, education or training (NEET), per cent of 15-29, 2016 or latest year<sup>1</sup>

1. 2015 for Ireland and Chile. 2014 for Japan.

2. Unweighted average.

Source: OECD (2017), "Education at a glance: Educational attainment and labour-force status", *OECD Education Statistics* (database).StatLink  <http://dx.doi.org/10.1787/888933737172>

Against this backdrop, the main messages of this Economic Survey to increase living standards for all are:

- New technologies must be exploited more extensively to boost wellbeing and productivity, with benefits for the whole society. Boosting entrepreneurship especially among women, wider access to high-speed Internet and strengthening digital skills would allow faster and more sustainable adoption of new technologies.
- Accelerated skill-biased technological change requires workers to be ready to adapt throughout their life time, including through strong skills and life-long learning. Better use of workers' skills, especially among women, can also boost productivity.
- Enhancing education opportunities for people with weak socio-economic background would help ensure that technological change brings better access to economic opportunities to all. Labour market regulations and social safety nets need to adapt to the changes new technologies bring to the labour market, so their benefits can be broadly shared.

The coalition agreement of the new German government (Box 1) addresses some of these challenges and includes some steps towards the recommendations developed below, notably by proposing to strengthen education and skills, lowering the taxation of low wage incomes, strengthening innovation and entrepreneurship, and addressing environmental challenges in transport. As recommended in this *Survey* it also aims at using fiscal space for this purpose.

### Box 1. Key features of the programme of the new government

The coalition agreement between the two conservative parties (CDU and its Bavarian ally CSU) and the Social Democrats (SPD) includes a comprehensive overview of planned measures and additional government spending for these purposes.

- **Government spending:** The political objective of a balanced headline budget is kept. Budgetary space in the federal government's budget is estimated at EUR 46 billion (1.5 % of GDP; envisaged to be spent almost entirely in the three year period of 2019-2021). Of it 8 billion are planned to be given as support to the *Länder* to relieve them for the costs of integrating refugees. Priority spending areas are education, family benefits and pensions. In addition, revenues from auctioning 5G licences will be used for investment in high-speed broadband infrastructure and digital equipment of schools. Surpluses in the social security system will be reduced to lower social security contributions.
- **Tax policy:** The government intends to reduce the unemployment insurance contribution rate by 0.3 percentage points, shift about 0.5 percentage points of health insurance contributions from employees to employers, and to reduce employee-paid social security contributions for low-paid workers above the *mini-job* income threshold of EUR 450 (*mini-jobs*). Steps to raise the taxation of interest income received by households to the standard income tax rate are envisaged. From 2021, income tax reductions worth EUR 10 billion, mostly for middle-income households, are planned.
- **Labour market policy:** The government plans to reduce the scope for fixed-term contracts. A legal right for temporary limited part-time work, with the right to return to the previous working hours in companies employing more than 45 employees, will be introduced. In order to reduce long-term unemployment the government aims to strengthen active labour market policies. The government plans to introduce an immigration law to facilitate immigration of skilled workers. The agreement proposes to strengthen participation of women in executive positions in the private and public sector. The government plans to subsidise domestic services in private households to promote reconciliation of work and family life, and to foster regular employment in this sector.
- **Pension reform:** The government intends to keep the pension benefit replacement rate constant at 48% until 2025 while limiting pension contributions to 20%. This may have little effect on pension spending before 2025. For the time after 2025 a pension reform commission will be set up to investigate how to stabilise pension contributions and benefits. Furthermore a new basic pension will be introduced for people with long contribution records. They will receive a retirement income exceeding social assistance benefits by 10%, subject to a means test. Disability pension entitlements and pension entitlements for mothers who have raised 3 or more children will be increased. The government plans to introduce compulsory pension insurance for the self-employed, eventually including them in the public pay-as-you-go pension scheme with an opt-out possibility.

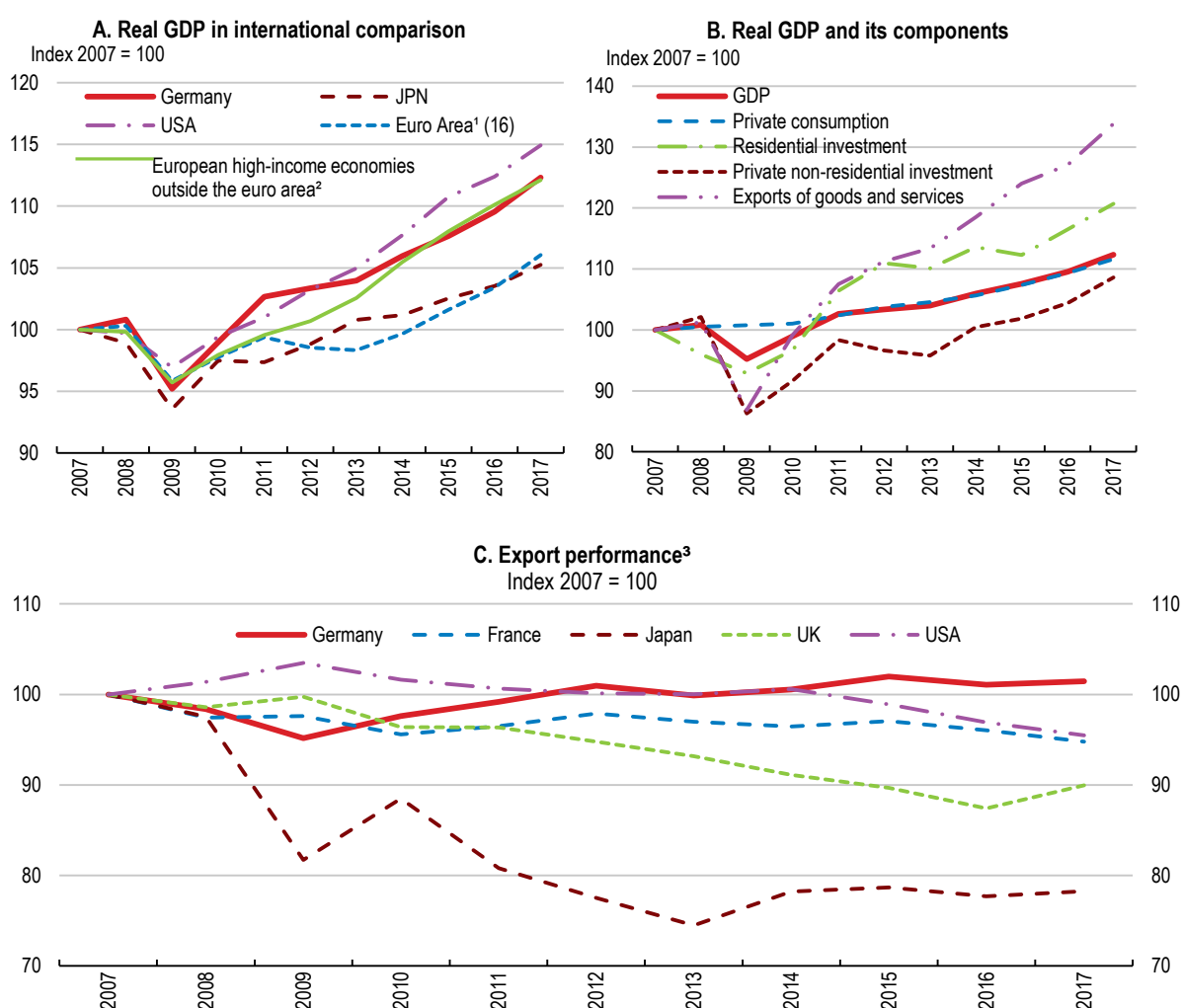
- **Innovation and entrepreneurship:** The government plans to raise R&D spending from currently below 3.0% to 3.5% of GDP by 2025. The High Tech Strategy will be further developed and focus on digitalisation and artificial intelligence (AI). In order to incentivise private R&D spending, especially within SMEs, the introduction of tax incentives will be considered. To facilitate start-ups, the government plans to introduce a “One-Stop-Shop” and a VAT exemption for the first years after starting a business. It will also examine further tax incentives for venture capital. Public health care insurance contributions for low-income self-employed workers will be reduced.
- **Child care, education and skills:** The government plans to improve child care and school education, including full-day care and schooling. By 2025, a legal right to primary full-day school places will be introduced. Schools will be better digitally equipped. To address needs due to technological change and strengthen ICT skills, a national life-long learning strategy with social partners will be put in place. Furthermore programmes will be introduced to upgrade skills in vocational education and address challenges from digitalisation, including a "digital pact for schools" (*Digitalpakt Schule*), the "vocational education and training pact" (*Berufsbildungspakt*) and an updated “Alliance for Initial and Further Training” (*Allianz für Aus- und Weiterbildung*). In addition the government plans to increase grants for adults in life-long learning. It also envisages introducing minimum apprenticeship pay. Challenges related to digitalisation and the upgrading of skills for the future of work are widely recognised in Germany’s coalition agreement where these challenges are addressed accordingly.
- **Family benefits:** The agreement proposes to raise family benefits (child benefits, child benefit supplements for low income households and child tax allowances as well as better in-kind benefits for low-income families e.g. for school lunch). The government plans to target additional education support to pupils from low-income households. Furthermore it plans to introduce substantial tax incentives and grants for private home purchases for families with children (EUR 1 200 per child per year for maximum of ten years).
- **Climate policy:** The government intends to implement additional measures to reduce the gap in greenhouse gas (GHG) emissions with respect to the 2020 climate goal. To meet the 2030 GHG emission target, it envisages reducing coal-fired energy generation while supporting structural change in the affected regions. Low emission transport policy will be strengthened (rail, public transport, low- and zero emission mobility, support for car sharing). Measures to improve air quality especially in cities will be implemented. Among other things, the government wants to increase the purchase bonus (*Umweltbonus*) for low-emission light commercial vehicles and taxis and to expand the charging infrastructure for cars to facilitate electric transport. The government also plans to introduce digital test fields for autonomous driving and open transport regulation for new shared mobility services.



## Economic growth has been robust

Germany's recovery from the global financial and economic crisis has been stronger than in the euro area as a whole (Figure 7, Panel A). Past structural reforms have increased the resilience of the German economy. Germany has benefited from its status as a safe haven, which results in capital inflows when other euro area countries experience financial or fiscal difficulties. Residential investment has expanded strongly. Exports have gained momentum and business investment is accelerating in the context of the euro area recovery (Figure 7, Panel B). Unusually among high-income countries, German exporters have maintained market shares (Figure 7, Panel C). However the euro exchange rate has also strengthened somewhat recently.

**Figure 7. Growth has been strong**



1. Euro area countries which are OECD members.

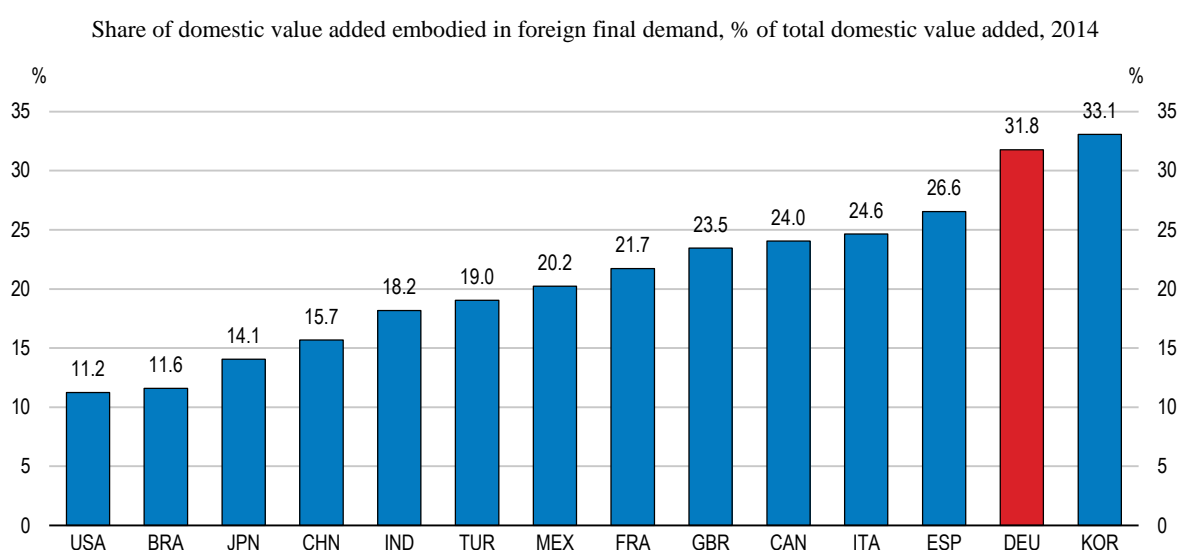
2. Includes Denmark, Sweden, Switzerland and the United Kingdom. The weighted sum of growth rates of their GDP in volume is used for the aggregate.

3. Export performance is measured as the ratio of actual export volume to the country's export market size.

Source: OECD (2018), *OECD Economic Outlook: Statistics and Projections* (database).

The strong export performance relies on the highly innovative manufacturing sector that is deeply integrated in global value chains (GVCs). For a large economy, Germany earns an unusually high share of value added from foreign final demand (Figure 8). German firms supply high value added goods, with a marked specialisation on capital goods. Global demand for capital goods has strengthened over the past 15 years, in the context of the increasing weight of emerging economies. German firms specialise in highly complex, technology-intensive goods which compete less with exports in emerging economies, such as China (Figure 9). Large German manufacturing firms have expanded their global production networks, incorporating more foreign value added (Figure 10). This has helped retain competitiveness and penetrate dynamic emerging markets.

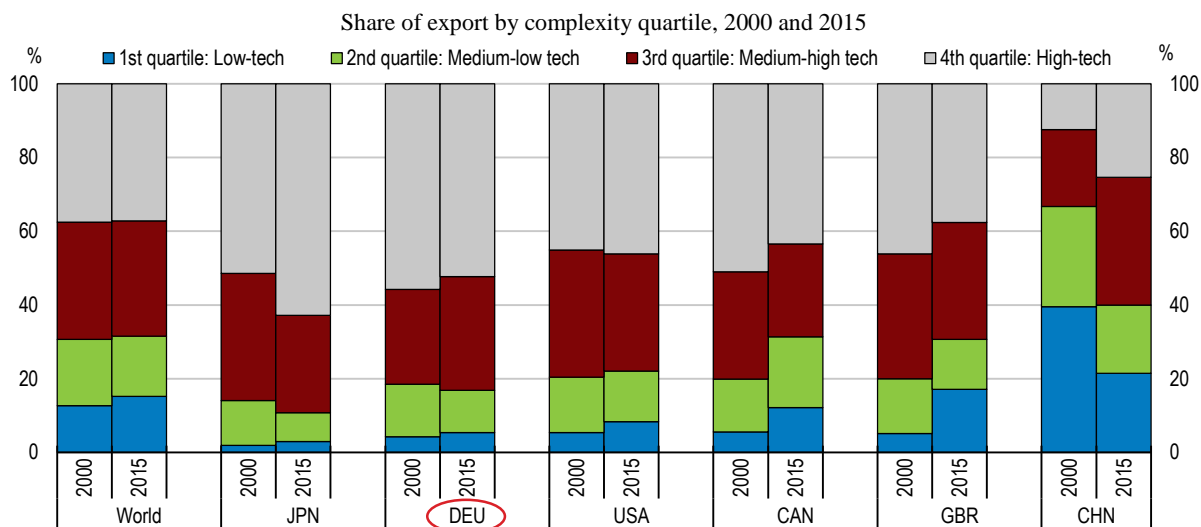
**Figure 8. Germany draws high value added from participation in global value chains**



*Note:* Domestic value added embodied in foreign final demand captures the value added that industries export both directly, through exports of final goods or services, and indirectly via exports of intermediates that reach foreign final consumers (households, government, and as investment) through other countries.

*Source:* OECD (2018), "TiVA Nowcast Estimates" in *OECD International Trade and Balance of Payments Statistics* (database).

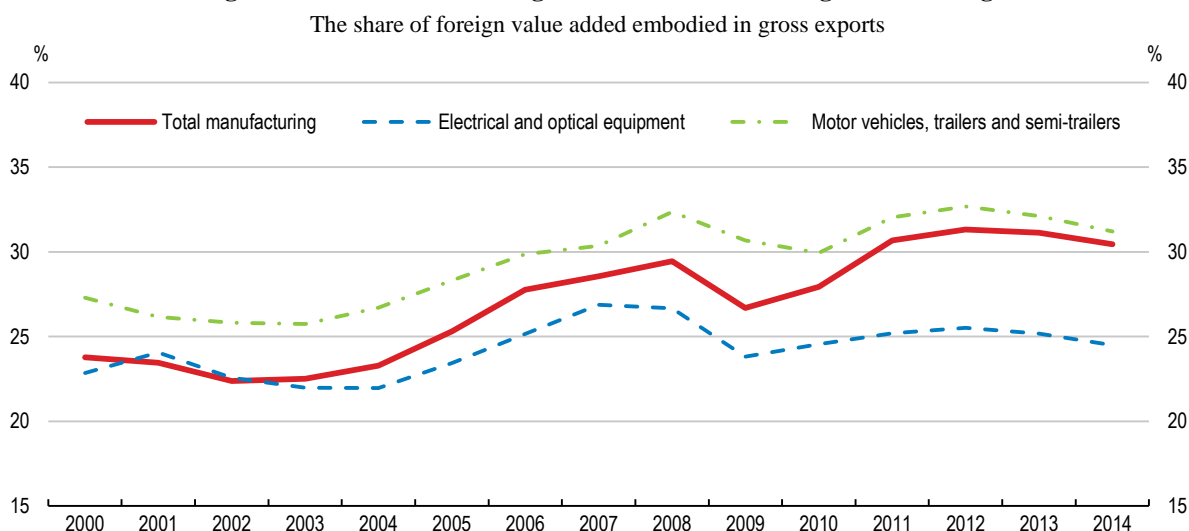
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**Figure 9. Germany's exports are strong in high-tech goods**

*Note:* Complexity is defined by the implied productivity of the product (PRODY) using the methodology of Hausmann, R., J. Hwang and D. Rodrik (2007), "What you export matters", *Journal of Economic Growth*, Springer, vol. 12(1). PRODY is calculated by taking a weighted average of the per capita GDPs of the countries that export the product. The weights are the revealed comparative advantage of each country in that product. The products are then ranked according to their PRODY level. An example of product in the 4th (highest) quartile is magnetic imaging resonance (MRI) machines used in scans in hospitals which ranked 18th in 2015, out of 4989 products listed in the Harmonized System 6 classification. A product in the 1st (lowest) quartile is crayons ranked 4218th in 2015. The analysis is carried out using a high level of product disaggregation to try to capture specialisation at different stages of the production chain.

*Source:* OECD (2018), "OECD Economic Outlook No. 102 (Edition 2017/2)".

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**Figure 10. The manufacturing sector has increased its global sourcing**

*Note:* Data from 2012 to 2014 are TiVA nowcast estimates, which are extended estimates of the "Trade in Value Added (TiVA)" database based on more recent trade flow data.

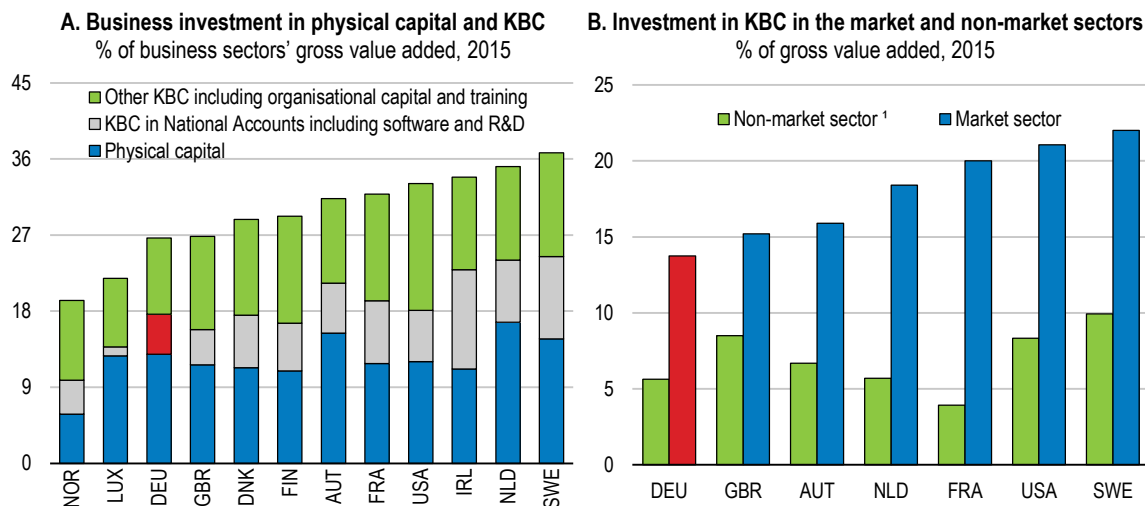
*Source:* OECD (2018), "Trade in Value Added - December 2016" and "TiVA Nowcast Estimates" in *OECD International Trade and Balance of Payments Statistics* (database).

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Business investment is picking up as capacity utilisation is above long-term average. Also confidence and demand in the euro area have strengthened, contributing positively to growth in Germany. But business expenditure on knowledge-based capital (KBC), including software and databases or firm-sponsored training, remains lower than in leading OECD countries (Figure 11). Spending on these intangible assets has become an increasingly important driver of productivity (OECD, 2015<sup>[4]</sup>).

Vigorous employment growth has pushed the unemployment rate to a record low, while the number of vacant jobs is rising strongly (Figure 12, Panel A). Jobs in long-term care and jobs related to construction have recorded the longest vacancy durations. Employment growth, low unemployment and real wage growth underpin household consumption. Residential construction has picked up markedly, boosted by the housing needs of immigrants, higher household incomes and low interest rates.

**Figure 11. Investment in knowledge-based capital (KBC) is lower than in leading economies**



*Note:* The non-market sector consists of the following NACE Rev. 2 sections: (1) public administration and defence; (2) education; and (3) human health and social work activities, (4) scientific research and development and (5) arts, entertainment and recreation.

*Source:* OECD (2017), OECD Science, Technology and Industry Scoreboard 2017: The digital transformation.

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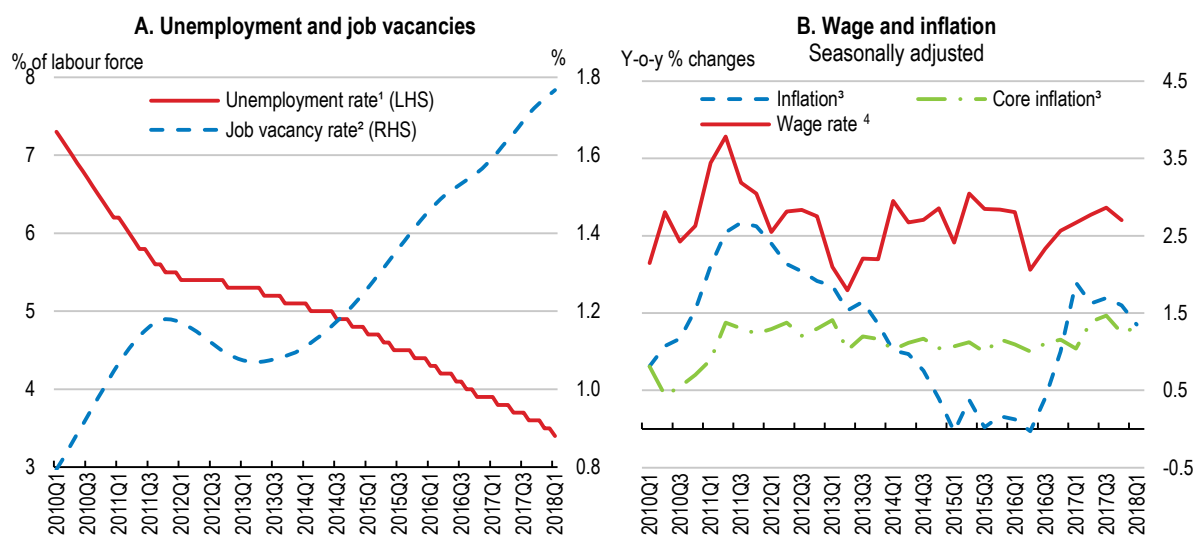
Rising wages, especially at the bottom of the wage distribution, are welcome as this will reduce worker poverty and further strengthen domestic demand. While wages are growing above inflation and productivity, they have not grown as much as could be expected on the basis of historic norms, given low unemployment (Deutsche Bundesbank, 2016<sup>[5]</sup>). This could be explained by declining collective bargaining coverage. It may have reduced wage growth by about 0.2 percentage points annually (Deutsche Bundesbank, 2016<sup>[5]</sup>). In some sectors, wage growth is still influenced by more modest collective agreements negotiated some years ago.

Recent collective bargaining outcomes suggest a modest acceleration of wages. In the metal industry, where unions remain relatively strong, negotiated wages will rise by about 3% on an annual basis. In sectors where collective bargaining is still ongoing, unions have demanded around 6% higher wages, somewhat more than in earlier years (Deutsche Bundesbank, 2018<sup>[6]</sup>). Unions have increasingly negotiated non-wage benefits, such as

better work-life balance, by giving workers more leeway to reduce working time (with a proportional cut in pay), for example, to look after children. Immigration may have reduced the extent to which wage growth responds to domestic unemployment. The trend increase in the dispersion of wages in past decades has not continued in recent years. Low-pay workers have benefited from the gradual introduction of the minimum wage in all sectors since 2015, and a tight labour market has diminished competition for jobs with low skill requirements.

Real wage gains diminished as consumer price inflation rose in 2017 (Figure 12, Panel B) mostly reflecting higher oil prices. Core inflation also rose to 1.5%, reflecting spillovers from oil prices, notably in transport services, as well as higher capacity utilisation (Deutsche Bundesbank, 2018<sub>[6]</sub>). In recent months inflation has not risen further. Credit growth also remains modest. However, capacity utilisation in industry has climbed well above historic averages. Capacity constraints appear most binding in construction where prices have risen significantly. Immigration is allowing employment to expand despite low unemployment. On aggregate, despite a tight labour market and supportive fiscal and monetary policy conditions, there is so far little sign of overheating.

**Figure 12. The labour market is tight but nominal wage growth has remained broadly stable**



1. Population aged 15-74 years. Based on the German labour force survey.

2. Percentage of unfilled job vacancies relative to total employment.

3. Harmonised consumer price index (HICP). Core HICP excludes energy, food, alcohol and tobacco.

4. Average nominal wage per employee.

Source: OECD (2018), *OECD Economic Outlook: Statistics and Projections* (database) and Statistisches Bundesamt.

StatLink  <http://dx.doi.org/10.1787/888933737381>

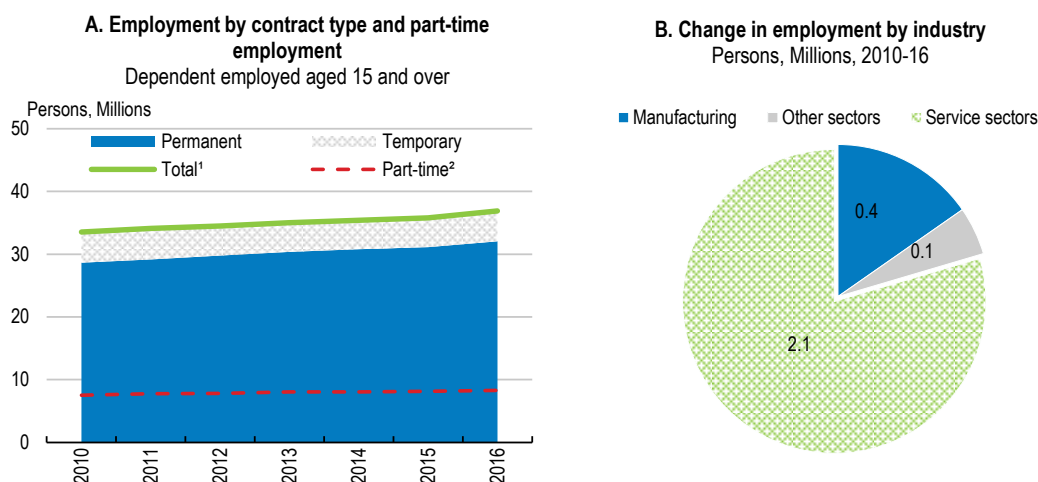
Most new jobs are full-time permanent contracts (Figure 13), which is welcome, as non-regular forms of employment are typically less productive and raise in-work poverty risks. Expanding labour supply has fed most of the employment gains, notably immigration. Hours worked among women have risen, in part reflecting expanding childcare, but most employed women continue to work part-time. Employment has mostly grown in services. Health services, professional services and support services have contributed strongly (Figure 14 panel A). Data shows that professional services provide high value-added activity and highly paid jobs, while health and support services provide

many low value-added and low-paid jobs, for example, in long-term care, cleaning, security. Employment growth has been strongest for jobs with the high skill demands (experts and specialists) as well as with the lowest skill demands (Figure 14, Panel B). The impact of skill-biased technological change may have contributed (see below). Employment of immigrants and formerly unemployed workers may also have made it easier to fill vacancies for low-skill jobs.

Immigration, mostly from other EU countries, remains strong and includes many highly skilled young workers. By contrast, most of the about 1 million refugees, mostly from the middle-east and Africa, who arrived in 2015 and 2016, have no recognised qualifications.

Germany has taken strong measures to facilitate labour market entry for refugees (2016 *Economic Survey of Germany*). In general, refugees may start working three months after registration. They also have access to preparatory courses to enter the vocational education and training system. Incentives to obtain qualifications have also been improved by offering guarantees to stay at least two years following completion of a vocational qualification to refugees with otherwise uncertain perspectives to stay. German language classes, support for integration in schools and counselling services have been stepped up. Language programmes integrate general and job-related language learning. Skills assessment has been reinforced (OECD, 2017<sup>[7]</sup>). Efforts continued in 2017 to help young refugees and migrants enter and complete vocational training, for example with programmes to support all youth with weak socio-economic background, including mentoring and coaching. In addition refugee recruitment advisors (“*Willkommenslotsen*”) help companies to find trainees among the refugees. Further steps could however be taken to open labour markets more generally, including by facilitating business creation, notably in the construction-related crafts, which can attract many immigrants and where there are capacity constraints (see below and the 2016 *Economic Survey of Germany*). The inflow of refugees diminished sharply in 2017.

**Figure 13. Most jobs created are full-time permanent jobs and are in the service sector**



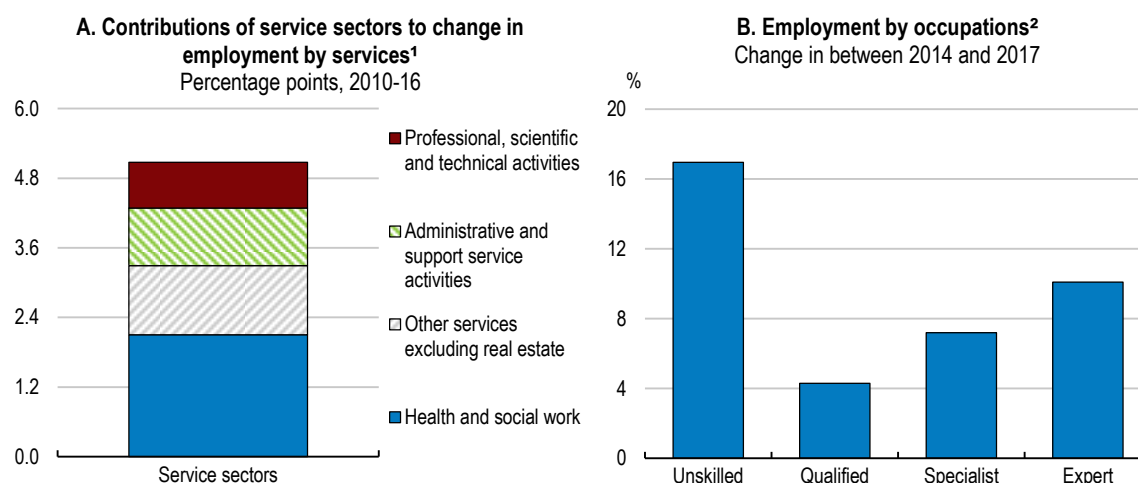
Note: Based on labour force surveys.

1. Total employment is calculated as the sum of permanent and temporary employment and it is slightly different to the sum of full-time and part-time employment. The difference is 0.1%.

2. Part-time employment is defined as people in employment who usually work less than 30 hours per week in their main job

Source: OECD (2018), *OECD Employment and Labour Market Statistics* (database) and *OECD National Accounts Statistics* (database).

StatLink  <http://dx.doi.org/10.1787/888933737400>

**Figure 14. Jobs with the highest and the lowest skill demands have grown strongly**

1. Based on labour force surveys for Panel A.

2. Unskilled jobs include simple tasks requiring little skill. Qualified jobs contain more complex tasks requiring intermediate vocational skills. Specialist jobs include highly complex and managerial tasks, typically requiring higher vocational skills. Expert jobs include the most knowledge-intensive tasks, typically requiring an advanced university degree.

Source: OECD (2018), *OECD National Accounts Statistics* (database) and the Federal Employment Agency of Germany.

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Economic growth is expected to slow somewhat, as capacity constraints have been reached, including in the labour market (Table 1). Strengthening world trade and the recovery in the euro area are projected to sustain exports. The tight labour market will continue to boost private consumption. Wage growth is projected to pick up, although the response to tight labour market conditions will be damped by lower collective bargaining coverage in the services, immigration and the expansion of low-skill jobs. Consumer price inflation may rise modestly as higher wages can be absorbed in comfortable business profit margins. Remaining slack in some trading partners, notably in the euro area, may also damp inflation. A deterioration of exports, for example, as a result of protectionism affecting world trade or lower demand from China, could weaken economic prospects (Table 2). There are also downside risks related to the impact of the exit of the United Kingdom from the European Union, as it may disrupt the value chains in key German industries, including automotive production and chemicals. On the other hand, some businesses have announced they will transfer activity to Germany.



**Table 1. Macroeconomic indicators and projections**

Annual percentage change, volume (2010 prices)						
	2014	2015	2016	2017	2018 <sup>1</sup>	2019 <sup>1</sup>
Current prices (billion EUR)						
<b>Working-day adjusted GDP</b>	<b>2,937.0</b>	<b>1.5</b>	<b>1.9</b>	<b>2.5</b>	<b>2.1</b>	<b>2.1</b>
Private consumption	1,595.5	1.6	1.9	2.1	1.0	1.6
Government consumption	563.9	2.9	3.7	1.6	1.3	2.0
Gross fixed capital formation	588.4	1.0	2.9	3.9	3.5	3.9
Housing	172.7	-1.1	3.8	3.6	2.6	3.1
Business	355.1	1.4	2.5	4.0	4.5	4.4
Government	60.6	4.5	2.6	4.6	0.6	3.1
Final domestic demand	2,747.9	1.7	2.5	2.4	1.6	2.2
Stockbuilding <sup>2</sup>	-15.3	-0.3	-0.1	0.0	0.2	0.0
Total domestic demand	2,732.6	1.5	2.4	2.4	1.8	2.2
Exports of goods and services	1,344.2	4.7	2.4	5.3	4.5	4.5
Imports of goods and services	1,139.9	5.2	3.8	5.6	4.3	5.1
Net exports <sup>2</sup>	204.4	0.1	-0.3	0.3	0.4	0.1
<b>Other indicators</b> (growth rates, unless specified)						
GDP without working day adjustment	2,932.5	1.7	1.9	2.2	2.1	2.1
Potential GDP	..	1.5	1.7	1.6	1.6	1.7
Output gap <sup>3</sup>	..	0.2	0.4	1.3	1.8	2.2
Employment	..	0.8	2.4	1.1	1.1	0.9
Unemployment rate <sup>4</sup>	..	4.6	4.2	3.7	3.4	3.3
GDP deflator	..	2.0	1.3	1.5	1.6	2.1
Consumer price index (harmonised)	..	0.1	0.4	1.7	1.7	2.0
Core consumer prices (harmonised)	..	1.1	1.1	1.3	1.3	2.0
Household saving ratio, net <sup>5</sup>	..	9.6	9.7	9.9	9.9	10.0
Current account balance <sup>6</sup>	..	9.0	8.5	8.1	8.3	7.9
Government primary balance <sup>6</sup>	..	1.8	1.8	2.0	2.1	2.0
General government fiscal balance <sup>6</sup>	..	0.8	1.0	1.3	1.5	1.5
Underlying general government fiscal balance <sup>3,7</sup>	..	0.5	0.7	0.6	0.6	0.4
Underlying government primary fiscal balance <sup>3,7</sup>	..	1.4	1.5	1.4	1.2	1.0
General government gross debt (Maastricht) <sup>6</sup>	..	71.1	68.4	64.0	60.7	57.9
General government gross debt (national accounts definition) <sup>6</sup>	..	79.2	76.5	71.7	68.4	65.6
General government net debt <sup>6</sup>	..	43.0	41.1	36.6	33.8	30.9
Three-month money market rate, average	..	0.0	-0.3	-0.3	-0.3	-0.2
Ten-year government bond yield, average	..	0.5	0.1	0.3	0.6	0.8

1. Projections

2. Contribution to changes in real GDP.

3. As a percentage of potential GDP.

4. Survey-based unemployment rate following the definition of the the International Labour Office.

5. As a percentage of household disposable income.

6. As a percentage of GDP.

7. The underlying balances are adjusted for the cycle and for one-offs.

Source: OECD (2018), *OECD Economic Outlook: Statistics and Projections* (database), May.

**Table 2. Possible shocks and their economic impact**

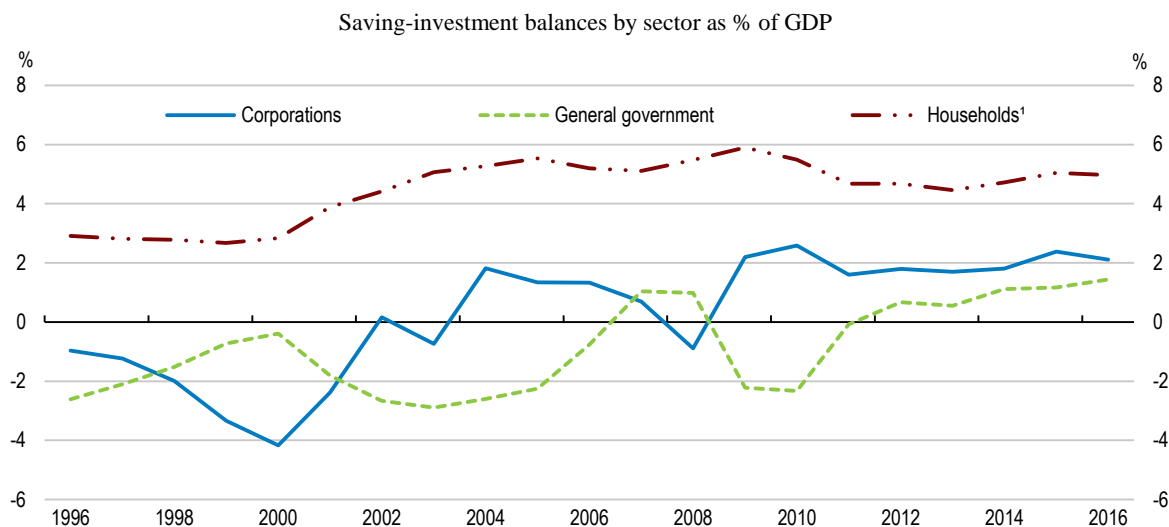
Shock	Possible outcome
Rising protectionism in trade and investment.	Lower world trade would hit German exports and investment, which could feed to lower private consumption and employment. Global value chains, in which Germany is closely integrated, would be disrupted. Exports to key trading partners outside the euro area (United States, China) could be particularly affected.
Demand for German products in China could weaken markedly in the context of a financial crisis in China.	Exports and the value of the stock of German foreign direct investment would fall, with a negative impact on investment, employment and private consumption.

### The current account surplus remains large

Germany's current account surplus remains large. It correlates strongly with global demand for capital goods (Grömling, 2014<sup>[8]</sup>). The large external imbalance reflects excess saving by households, corporations and government (Figure 15). The saving-investment balance has risen in the government sector and in the corporate sector, where retained earnings have risen more than investment. Investment has fallen among large corporations quoted in the stock market (OECD, 2016<sup>[9]</sup>). German firms increased their equity to strengthen resilience to external shocks. One important factor contributing to boosting corporate savings has been the deep integration of German firms into global value chains through foreign direct investment and the associated profits of foreign affiliates. Excess saving by non-financial corporations is also observed in many other high-income countries.

A large part of the current account surplus can be attributed to structural factors like demographics, a competitive industry and the specific composition of German exports. In 2017, about 25% of the German current account surplus can be attributed to a surplus in the primary income balance, reflecting the income earned on Germany's large net international investment position. At the same time, the 2016 *Economic Survey* identified barriers to the reallocation of resources, restrictive regulation in some services, skills shortages and uncertainty about prospects in the euro area as factors holding back domestic investment in Germany, including investment in knowledge-based capital.

Several policies recommended below that boost productivity and inclusiveness can reduce the current account surplus by stimulating investment and consumption. Policies which promote investment, entrepreneurship, the diffusion of new technologies, and skills, as recommended further below and in previous *OECD Economic Surveys*, would increase investment, as would using fiscal space to increase public investment in key infrastructure. However, such steps could also boost competitiveness in the long-term. Tax reductions on low wage earnings would boost private consumption. Policies that increase labour market participation and reduce poverty risks can also reduce precautionary savings. In particular, reforms that remove barriers to women's full time employment and to better careers would protect households better against poverty risk. Policies to improve income prospects at older age would also reduce the need for households to save to prepare for old-age. This includes better opportunities for upskilling, stronger incentives to work at higher age, better insurance against income risks from disability and better access to low-cost pension annuities (see below).

**Figure 15. Excess savings in the corporate and government sector increased**

1. Includes non-profit institutions serving households.

Source: OECD calculations based on OECD (2018), *OECD National Accounts Statistics* (database).

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### Low interest rates and high leverage are potential risks to the financial market

Lending to non-financial corporations and to households has picked up (Figure 16) but growth remains broadly in line with nominal GDP. The share of nonperforming loans is low. Banks have stepped up precautions against sudden changes in interest rates (Deutsche Bundesbank, 2017<sub>[10]</sub>).

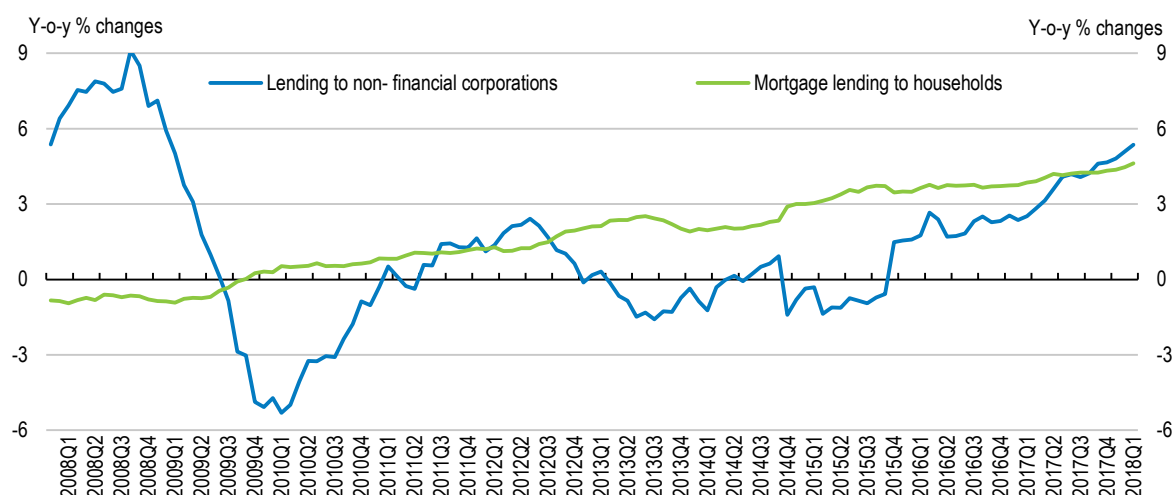
House prices have risen fast, especially in major cities (Figure 17, Panel A). So far, overall increases are primarily driven by fundamental market forces, notably housing demand and lower interest rates (Deutsche Bundesbank, 2017<sub>[10]</sub>). Only in the major cities are prices higher than implied by fundamental market forces. The ratio of house price to household income is still lower than the long-run average (Figure 17, Panel B). Banks have not eased credit standards for housing loans (Deutsche Bundesbank, 2017<sub>[10]</sub>).

The Federal Financial Supervisory Authority (*BaFin*) has been given powers to take macroprudential measures such as ceilings on loan-to-value ratios. This is timely as risks related to the housing markets may arise in the future. However, imposing a ceiling on the loan-to-value ratio may not always be effective to halt a credit-driven price bubble, as a stable loan-to-value ratio may be consistent with high growth of both lending and house prices (Deutsche Bundesbank, 2017<sub>[10]</sub>). The macroprudential toolkit can be strengthened by including a cap on the ratio of a borrower's debt servicing relative to income. Such a cap was recently introduced in Denmark and Norway and is envisaged in Sweden.

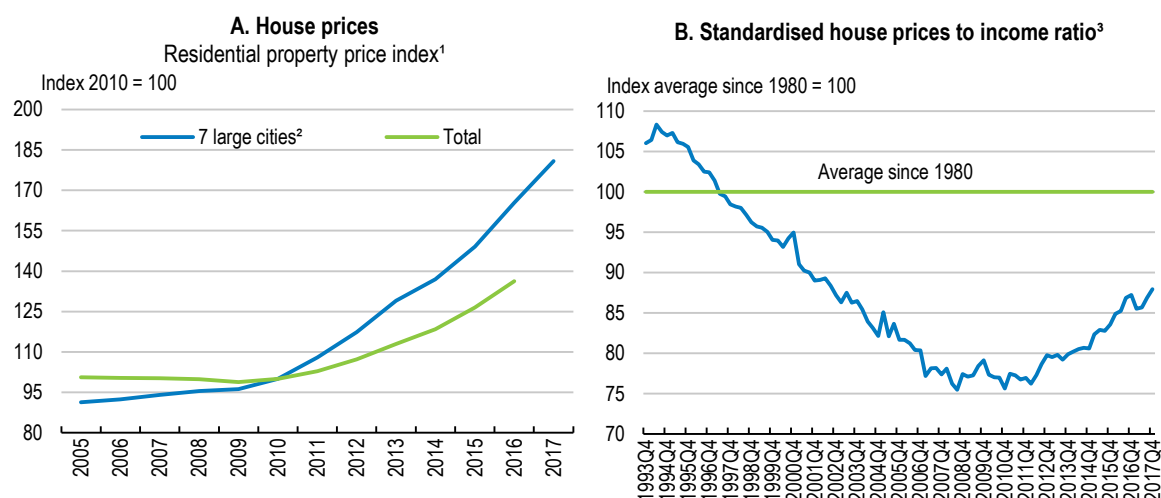
The Bundesbank provides analysis to prepare macroprudential decisions. Its analysis must prove that banks' lending practices pose macroprudential risks. However, it cannot conduct surveys of financial institutions on individual banks' housing-related lending practices on a regular basis. It is important that the Bundesbank be able to collect such data regularly.

**Figure 16. Credit growth is picking up**

Growth of lending to non-financial corporations and mortgage lending to households



Source: Deutsche Bundesbank.

StatLink  <http://dx.doi.org/10.1787/888933737457>**Figure 17. House prices are rising but remain broadly in line with income growth**

1. Bundesbank calculations based on price data provided by Bulwiengesa AG.

2. Berlin, Düsseldorf, Frankfurt, Hamburg, Cologne, Munich and Stuttgart.

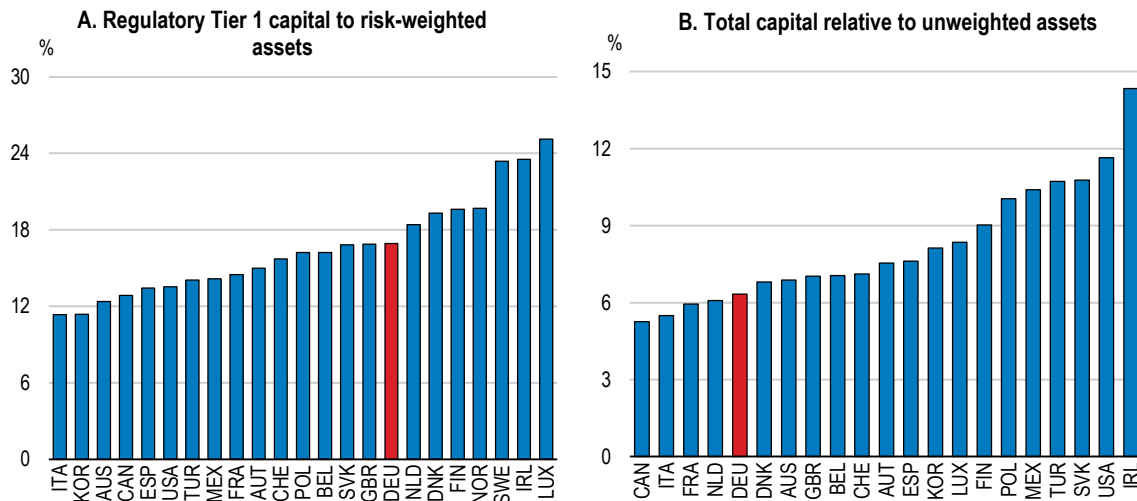
3. The nominal house price is divided by the nominal disposable income per head. It is standardised by being divided by the long-term average as a reference value over post-1980.

Source: OECD (2018), *OECD Analytical House Price Statistics* (database) and Deutsche Bundesbank.StatLink  <http://dx.doi.org/10.1787/888933737476>

Bank capital relative to risk-weighted assets has increased. It is still lower than in some countries, but most of these have had to take macroprudential steps to prevent excessive housing-related lending (Figure 18, Panel A). Large banks calculate the risk weights of their assets with internal models, which may result in excessively good capital ratios (e.g. the (German Council of Economic Experts, 2016<sub>[11]</sub>). The rules concerning risk weights in internal risk models have recently been tightened somewhat in the context of the Basel III agreement.

Banks are still highly leveraged. The unweighted capital ratio of banks in Germany remains lower than in many OECD countries (Figure 18, Panel B). Leverage is particularly high in the largest banks. The seven largest banks' leverage ratio (following the definition in the capital requirements regulation which banks have to fully implement by 2022) amounted to 3.7% mid-2017. Since the new tools to resolve globally active systemically-important banks in financial distress are still untested, the low capacity of equity to absorb losses exacerbates the distorting impact of implicit government guarantees. The perception that too-big-to-fail banks may be rescued by the government in case of distress can lead to excessive risk-taking by the banks, impair the quality of their lending, put taxpayers' wealth at risk and aggravate the destabilising macro financial effects of asset price fluctuations. The authorities should induce banks to further strengthen capital buffers where necessary.

**Figure 18. The capital to asset ratio is low**  
2017 or latest year<sup>1</sup>



1. 2016 for Italy, France, Switzerland, Belgium, the United Kingdom and Norway and 2014 for Korea.  
Source: IMF (2018), *IMF Financial Soundness Indicators Database*.

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The exposures to derivatives can be a factor in propagating systemic risks, as they raise interconnectedness between institutions, especially to the extent that the derivatives are not centrally cleared. The rapid growth in derivatives trade in the past has been motivated not only by the need to hedge risks but by tax and regulatory arbitrage and speculation (OECD, 2014<sub>[12]</sub>). Derivative positions are concentrated in large banks, aggravating the risks associated with high leverage. The weight of derivatives in their assets has declined but still amounts to around 20%. Germany has introduced legislation to separate retail banking from investment banking, but the separation requirements could be more effective, as argued in the 2014 *Economic Survey*. Steps by the German government would be particularly timely as the European Commission has abandoned plans to legislate separation requirements at the EU level. Such steps may help change the strategic relation between the supervisory authorities and the banks, with the supervisor being less under pressure to stand behind a systemically important bank when it faces problems, as relatively smaller and less complex banks tend to be easier to resolve if in distress.

As the 2014 *Economic Survey* pointed out, the regional *Landesbanken*, which are mostly owned by *Länder* governments, have had a poor track record in efficiency and vulnerability to solvency risk. Profitability has remained substantially weaker than in other banks since 2012 (Deutsche Bundesbank, 2017<sup>[13]</sup>). Their balance sheets have shrunk by 40%, but they remain important banks, with assets worth about 30% of GDP. Owing to their strong financial links with other banks, notably the savings banks, and their role in interbank lending, they have a substantial systemic weight. One *Landesbank* merged. Another *Landesbank* is in the process of privatisation, after it failed to meet requirements by the European Commission. The two *Länder* governments owning this *Landesbank* will make losses on account of the support they provided over the past ten years. These losses may amount to about 5% of the GDP of the two *Länder's* GDP.

Regional government ownership of the *Landesbanken* has caused a governance problem due to the international nature of their business. *Landesbanken* have supported shipping in Northern Germany, holding back the reallocation of resources. Further progress in their privatisation could also reduce risks and facilitate the exit of banks with poor profitability (OECD, 2016<sup>[9]</sup>; OECD, 2014<sup>[12]</sup>).

### Fiscal policy can help address structural challenges

Germany's budgets are governed by top-down and multi-year budgeting. They are bound by a structural general government medium term deficit objective of 0.5% of GDP agreed with the European Union. According to national constitutional rules, a structural deficit limit (0.35% of GDP) applies to the federal government and, from 2020 onwards, balanced budget rules to the *Länder*. The Stability Council (*Stabilitätsrat*), a joint body representing the German federal government and the *Länder*, monitors their budgets and the social security system. It is tasked with making sure that these, taken together, comply with the medium-term objective and, if necessary, issues recommendations. The Stability Council is assisted by an independent advisory board. A panel of independent experts provides revenue projections which guide government budgeting.

Tax revenues relative to GDP amount to 38% of GDP, more than in the OECD on average (34%). This ratio has increased in recent years, partly reflecting bracket creep. The fiscal position is sound and the general government budget has been in surplus since 2014. According to OECD projections, government gross debt (Maastricht definition) is expected to fall below 60% of GDP in 2019 and net debt close to 30%. According to government estimates the general government structural budget balance may amount to a surplus of 0.75% of GDP in 2019, though without incorporating the budgetary measures foreseen by the new government. Structural surpluses are also expected in the federal government budget and in the social security system. The OECD estimates the new measures to reduce the general government surplus by 0.25% of GDP in 2018 and 2019. Although the timing of the measures is uncertain, social security contributions are likely to be reduced and subsidies for families purchasing owner-occupied housing are likely to be introduced in the near term. In addition spending to improve childcare provision, full-day primary schooling and schools' digital equipment is expected to rise in 2018 and 2019. Income tax allowances and child benefits will also rise. Nonetheless, tax revenue growth is likely to increase the government surplus to 1.5% of GDP by 2019. Additional budget space consistent with meeting Germany's budget rules could amount to 0.4% of GDP.

The strong fiscal position provides some room to fund additional priority spending in the near term. However, fiscal leeway should be used in a prudent manner, taking capacity

constraints into account. Enrolling more young children from disadvantaged socio-economic backgrounds in high-quality childcare and providing more full-day primary schooling are welcome spending priorities of the new government. A policy package which includes the budgetary and tax policies in Table 5 below and key growth-enhancing structural reforms (Box 2) would imply structural government deficits in the medium term, which would still be consistent with budgetary rules. The policy package would raise the ratio of government debt to GDP modestly in the medium term, and even reduce it in the long-term, reflecting the impact of the indexation of the statutory retirement age to life expectancy, which would lower pension spending (Figure 25 below). The baseline and reform scenario assume that commitments to budget rules are kept and do not assume that higher ageing-related spending increases the government deficit. Stronger support for young children is particularly effective to strengthen skills in the long term. Simulations suggest that investment in childcare, early childhood education and full-day schools could improve the sustainability of government finances in the medium and long-term, by boosting GDP growth and reducing the risk of benefit dependency when the children reach adulthood (Krebs and Scheffel, 2016<sup>[14]</sup>). These steps would also make it easier, especially for women, to reconcile family life and full-time employment. Policies to boost skills and gender equity have large potential to boost long-term growth (Box 2). By improving the earnings potential among individuals at the lower end of the skill distribution, boosting support for very young children may, in the long-term, help reduce the need for cash transfers to prevent poverty.

Spending on childcare and early childhood education is substantially lower than in Denmark or Sweden for example. Primary education spending is relatively low in comparison to other high-income countries (Figure 19). It is welcome that the government plans to address these priority spending areas.

Further improvements could in part be funded by remaining fiscal space and reducing tax breaks for households with children, while maintaining child cash benefits. As argued in the 2016 *Economic Survey* (OECD, 2016<sup>[9]</sup>), these tax breaks do not increase labour supply because they widen the gap in the taxation between first and second earner in a household. They do not reduce poverty significantly because they provide the most relief to high-income households. By contrast, better childcare and early childhood education reduce poverty and raise the labour supply of women the most. Child cash benefits have also proven effective in reducing poverty, especially the supplementary benefit for low income households (OECD, 2016<sup>[9]</sup>).

There is also scope to improve the efficiency of government funding for childcare and early childhood education. Most government funding is provided by *Länder* and municipalities. Some *Länder* and their municipalities reimburse individual institutions for their operating costs without consideration to the number of children attending. In others, funding of individual institutions includes a demand-based add-on (for example, Saxony, Saxony-Anhalt and *Schleswig-Holstein*). Indeed, allowing the money to follow the children could strengthen incentives to offer formal childcare in locations and at times which suit parents, improving efficiency.

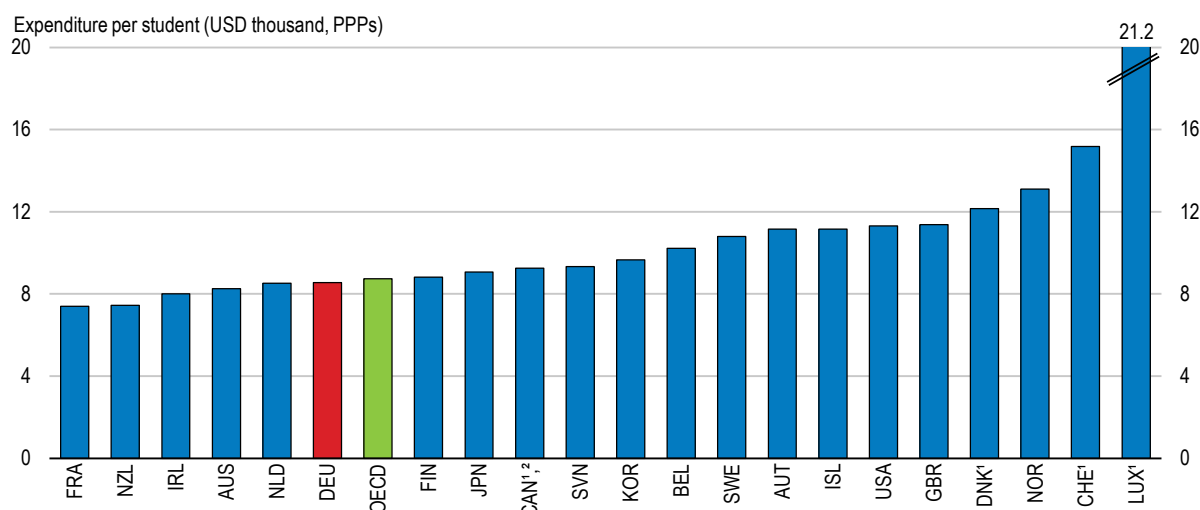
Other spending priorities include the rollout of high-speed fibre broadband infrastructure, which is poor, especially in rural regions, as foreseen in the coalition agreement. Accelerating rollout could improve economic development of rural regions which has fallen behind and boost GDP (Box 2). Spending on life-long learning and on low-emission transport infrastructure also needs to be stepped up (see below). The coalition agreement foresees subsidies for acquiring owner-occupied housing and higher pensions



for mothers having raised three or more children in the past. These measures are not targeted to low-income households. This will limit the budgetary space available for spending that would support growth-enhancing structural reform.

**Figure 19. Primary education spending is low**

Annual public expenditure per student by educational institutions for all services, in primary education, 2014



1. Public institutions only.

2. Primary education includes data from pre-primary and lower secondary education.

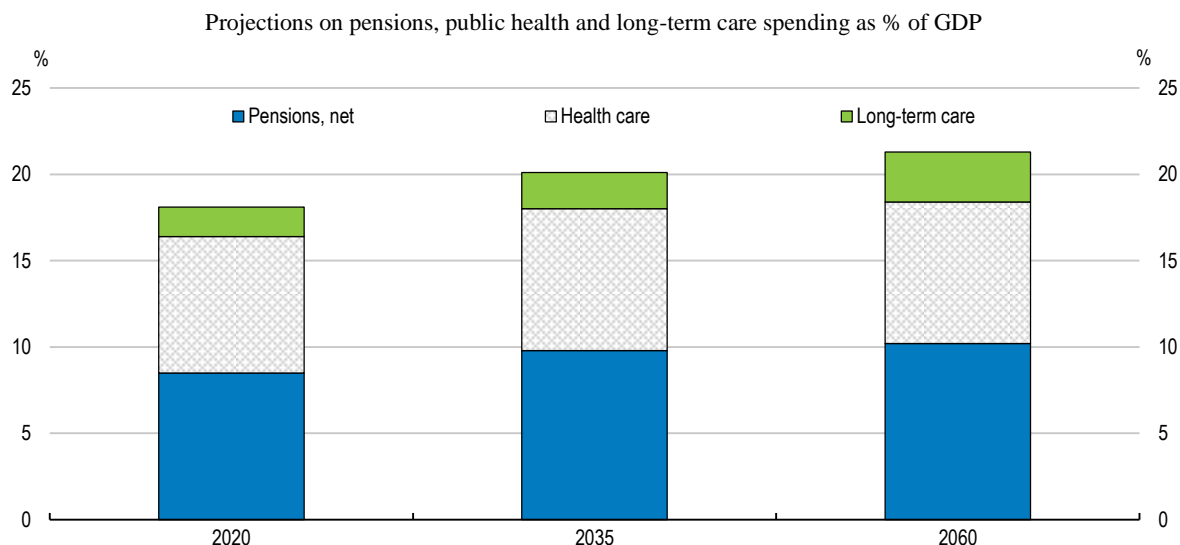
Source: OECD (2017), *Education at a Glance 2017: OECD Indicators*.

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### ***Ageing-related spending will increase, requiring better spending prioritisation***

Looking further ahead, demographic change will increase the old-age dependency ratio and drive up public spending on old-age pensions, health and long-term care. The baseline scenario of the 2015 Ageing Report by the European Commission projects that spending could increase by almost 4% of GDP by 2060 (Figure 20), mostly driven by spending on pensions (net of taxes paid on pensions), and long-term care. These baseline scenarios broadly fall within the range of scenario projections by the German government. These also point to considerable uncertainty around projected spending beyond 2035. The temporary inflow of refugees in 2015-16 may reduce the increase of ageing-related spending only slightly, under the assumption that they are well-integrated into the labour market and stay in Germany durably (Federal Ministry of Finance, 2016<sup>[15]</sup>). By contrast, pension plans in the coalition agreement would further increase spending. Higher pension spending should be limited to reducing poverty risks.

Most of the increase in ageing related spending is projected to occur between 2025 and 2035, as the “baby boom” cohorts retire. However, in the long-term, the increase in ageing-related spending is mostly caused by gains in life expectancy. Since these gains are an ongoing process, resulting higher ageing related spending should not be prefunded with higher government surpluses today. Instead, structural reforms are necessary to provide workers with incentives and the capacity to extend working lives. Skills policies are critical in this regard (see below) and require higher government investment.

**Figure 20. Ageing-related spending will increase**

Source: European Commission (2015), "The 2015 ageing report: Economic and budgetary projections for the 28 EU Member States (2013-2060)". Based on the reference scenario.

StatLink  <http://dx.doi.org/10.1787/888933737533>

The statutory pension age will increase from age 65 in 2012 to age 67 by 2029 (meaning that people born in 1964 will only be able to retire with an unreduced pension in 2031). However, indexation of the retirement age to life expectancy, as recommended in the 2016 *Economic Survey of Germany* has not yet been introduced. It could reduce spending by 0.6% of GDP by 2060. Moreover incentives to work for longer still need to be strengthened by raising the pension premium for later retirement. According to OECD estimates postponing retirement still results in a loss of net pension wealth (OECD, 2017<sup>[16]</sup>). In many OECD countries, the premium for later retirement is large enough so retiring later increases net pension wealth. Germany could adopt a similar approach, as working for longer has social benefits, in addition to the private benefits for the worker who decides to postpone retirement. For example, longer working lives raise more tax revenue. Moving in this direction in Germany would therefore help raise income at high age while improving sustainability of government finances. It would also be inclusive as earlier retirement is often taken up by high-income individuals.

These steps need to be complemented by measures to lower income risks for workers who lose earnings capacity on account of disability before reaching retirement age, as the ageing process is unequal across socio-economic and professional backgrounds. Some progress has been made (Table 3). Indeed, poor health and low skills are important factors pushing older workers with weaker socio-economic status into early retirement. In addition, individuals with low lifetime income tend to have lower life expectancy, and Germany's pension system does not redistribute except through taxation. Reflecting the increase in income inequality in past decades, inequality in health outcomes by socio-economic status is widening, and these differences are relatively large in Germany, according to an OECD assessment (OECD, 2017<sup>[17]</sup>). Old-age poverty is low, but the number of pensioners in relative poverty risk is expected to rise by 25% until 2035 (DIW/ZEW, 2017<sup>[18]</sup>). These points reinforce the case for limiting any increases in

pension spending to steps which prevent old-age poverty, as recommended in the 2016 *Economic Survey of Germany*.

*Länder* governments bear part of the cost of pension spending, as they pay the pensions of their former civil servants. Most of Germany's civil servants are employed by the *Länder*. To make sure the *Länder* take into account the financial burdens when they arise, they are required to build up reserves to cover pension commitments. However, the *Länder* have discretion as to how they calculate these reserves (Sachverständigenrat, 2017<sup>[19]</sup>). Since some high-debt *Länder* have benefited from bailouts by the central government in the past, incomplete budgeting of future pension commitments could result in moral hazard.

**Table 3. Past recommendations and actions taken on pension reform**

Recommendations	Action taken
Index the legal pension age to life expectancy.	No action taken.
Raise the pension premium for starting to draw old-age pensions later in life and do not reduce pensions for old-age pensioners who work. Allow working old-age pensioners to accrue benefits on social security contributions employers pay on their behalf.	The pension premium remains unchanged. Since 2017, a partial pension and wage earnings can be combined in a more flexible and individual way. Wage earnings now reduce pensions by 40% only above a threshold of EUR 6 300 annually (previously the threshold was EUR 450 per month). Since 2017, individuals who continue to work after the statutory retirement age can choose to pay pension contributions and thereby accrue full benefits on all their pension contributions.
Focus additional pension entitlements on reducing future old age poverty risks, for example, by phasing out subsistence benefit entitlements more slowly as pension entitlements rise. Fund such additional spending from general tax revenue instead of higher payroll taxes.	From 2018, individual and occupational private pension savings will not be deducted from means-tested minimum pensions, up to a limit.
Strengthen insurance against disability, for example by making it easier to claim legitimate private disability insurance benefits. Consider eliminating the discount from public disability benefits for claiming the benefit before the age of 63 years and ten months. Reconsider the cuts of these benefits as other income rises.	Legislation in 2017 improved the benefits in case of reduced earnings capacity in the statutory pension insurance. A more flexible combination of partial pension and supplementary earnings also applies for disability benefits.
Remove barriers to the portability of civil servant pensions.	No action taken.
Enroll all individuals in occupational pensions by default, allowing them to opt out.	From 2018, social partners can agree enrolment by default in businesses covered by collective bargaining.
Strengthen supervision of direct pension commitments of employers. Make contributions to the risk-pooling scheme dependent on risk indicators.	No action taken.
Reduce operating costs of subsidised, individual pension plans by improving comparability among providers.	Since 2017, providers of subsidised individual pension plans are obliged to disclose costs and the implied reduction in the yield in a standardised fashion.
Strengthen experience-rating in employer contributions to work accident and disability insurance.	No action taken.

### ***Better prioritising public spending would help boost growth and wellbeing***

Spending reviews provide evaluations of spending programmes with the objective to identify savings, improve efficiency by allowing to reallocate spending and create fiscal space (OECD, 2016<sup>[20]</sup>; 2011<sup>[21]</sup>). Systematic scrutiny improves prioritisation. Spending reductions, if needed, can be made sustainable (Robinson, 2014<sup>[22]</sup>). Spending reviews reconsider programme objectives and the impact of the resources devoted to them. The OECD regularly gathers expertise on spending reviews to develop best practice (OECD, 2017<sup>[23]</sup>; 2017<sup>[24]</sup>; 2016<sup>[25]</sup>).

Following the 2014 OECD Budget Review (OECD, 2015<sup>[26]</sup>), Germany introduced spending reviews in 2015 (Federal Ministry of Finance, 2017<sup>[27]</sup>). They are performed in

inter-ministerial working groups and include external experts. They are coordinated by a steering committee headed by the Ministry of Finance. However, results are only used to prioritise spending within narrowly-defined policy areas, not to shift funds between broad policy fields, as is done in the United Kingdom for example (Federal Ministry of Finance, 2017<sub>[27]</sub>).

Germany can broaden the scope of spending reviews in various ways (Shaw, 2016<sub>[28]</sub>; OECD, 2016<sub>[25]</sub>). The Netherlands applies them comprehensively to wide policy areas (such as transport or health) while Canada and Denmark apply them to all the spending programmes conducted by selected departments. Canada also applies a horizontal approach across departments on selected policy areas (e.g. innovation in the public sector). At an earlier stage Canada reviewed spending ministry-by-ministry to redirect funding (Shaw, 2016<sub>[28]</sub>). Some countries, such as Ireland and United Kingdom, do comprehensive spending reviews across all government policy areas, covering established programmes as well as new programme proposals (European Commission, 2017<sub>[29]</sub>), usually at the beginning of a new government.

Spending reviews should draw on systematic ex-ante and ex-post evaluation. Canada for example has introduced a central registry of evaluation results. Ireland conducts evaluations every three years for all major blocks of spending. To be useful for spending reviews, evaluation requires defining clear programme objectives and introducing standards for the analysis of efficiency (Shaw, 2016<sub>[28]</sub>).

To ensure their systematic use, spending reviews can be integrated in budgeting procedures. In the United Kingdom, for example, comprehensive spending reviews were explicitly linked to the setting of departmental expenditure limits (OECD, 2011<sub>[30]</sub>). In Chile it is a requirement to incorporate recommendations from broad evaluations in the preparation of the budget. Defining cycles of recurrent spending reviews, such as in Denmark, the Netherlands and the United Kingdom, also helps ensure their continued application.

Strengthening spending reviews would foster performance-oriented budgeting, which is less developed in Germany than in many OECD countries, such as Austria (Downes, Moretti and Nicol, 2017<sub>[31]</sub>), Canada and Ireland (Shaw, 2016<sub>[28]</sub>). Performance-oriented budgeting improves decision-making and public scrutiny (OECD, 2017<sub>[24]</sub>), thereby strengthening civic engagement and governance, a key wellbeing dimension (Figure 1 above). It can also improve the evaluation of whole-of-government policies, such as gender equity. Spending reviews could be legally required and to allow the review of priorities across broad policy areas (OECD, 2015<sub>[26]</sub>). The implementation of recommendations in spending reviews needs to be tracked closely (OECD, 2017<sub>[24]</sub>). They could also help set priorities within *Länder* budgets.

### ***The tax system could be made more growth and equity friendly***

The taxation of low labour incomes is high (Figure 21), mostly on account of social security contributions, and has fallen little below the level in 2016. Moreover, the increase in ageing-related spending is expected to entail an increase in ear-marked social security contributions, which fund pension, health and long-term care spending. Steps to reduce this tax burden and prevent future increases should therefore be a priority. It would also help workers maintain employability in the face of technological change (see below). The coalition agreement foresees reducing the unemployment insurance contribution rate by 0.3 percentage points. It also proposes to shift some social security contributions from employees to employers and to lower taxes and social security

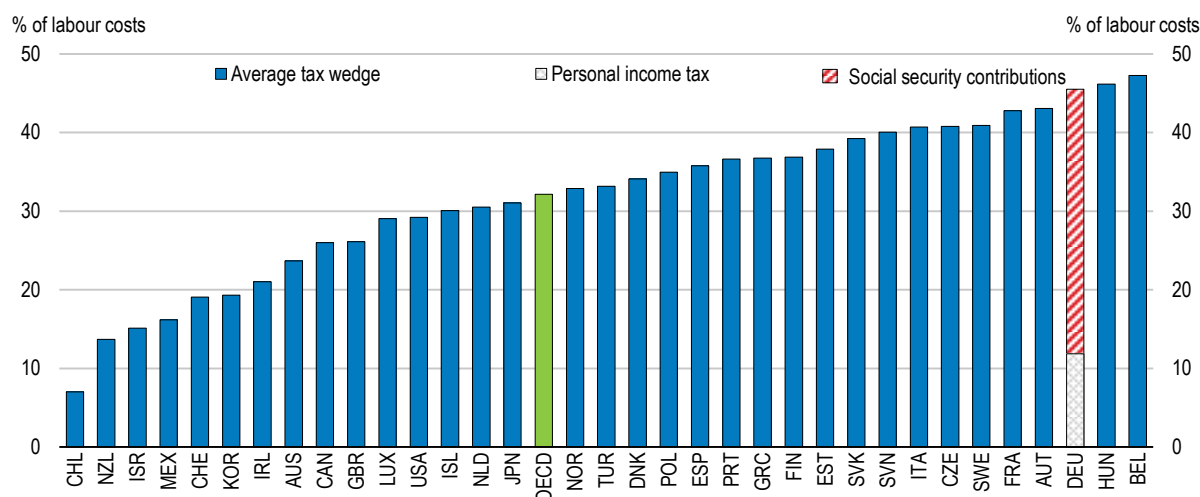
contributions paid by low-wage earners above the *mini-job* income threshold of EUR 450. Another option would be to phase out means-tested social assistance more slowly as wage earnings rise.

Second earners (often women) in households are taxed particularly highly which discourages full-time employment of women (Figure 22). Lower taxation of second earners would improve incentives to work longer hours and therefore give women better access to good professional careers and reduce the gender earnings gap. Non-working spouses are ensured in public health insurance free of charge. Relating health insurance premiums to the number of adults in a household and introducing a separate tax-free allowance which can only be deducted from the earnings of the second earner would reduce the tax wedge on second earners. In some OECD countries, spouses' incomes are assessed fully separately for income taxation. However, this would be inconsistent with the German constitution. Removing barriers to gender balance has a large potential for boosting long-term growth (Box 2).

The taxation of corporate profits is higher than in other high-income OECD countries (Figure 23). However business investment has been subdued despite strong corporate profitability in recent years, suggesting that corporate income taxes may not constrain investment much at present. In recent years, several high-income OECD countries reduced corporate income taxes, including Spain, Italy, Norway, Luxembourg, the United Kingdom, Japan and the United States. Recently, France and Australia announced reductions. In the United Kingdom a further reduction is envisaged for 2020. This may put pressure on Germany to reduce its corporate income taxes.

**Figure 21. Labour taxes on low incomes are high**

Income tax plus employee and employer contributions less cash benefits for single person, no child, 67% of average earnings<sup>1</sup>, 2017



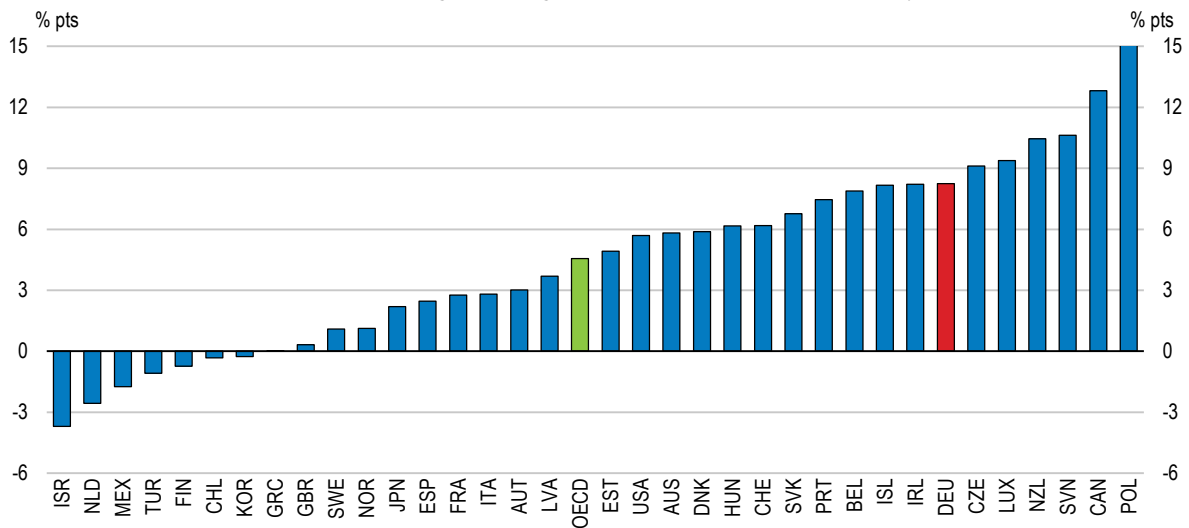
1. 67% of the average wage earnings of a full-time worker in the private sector.

Source: OECD (2018), *Taxing Wages Statistics* (database).

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**Figure 22. Taxes on second earners are high**

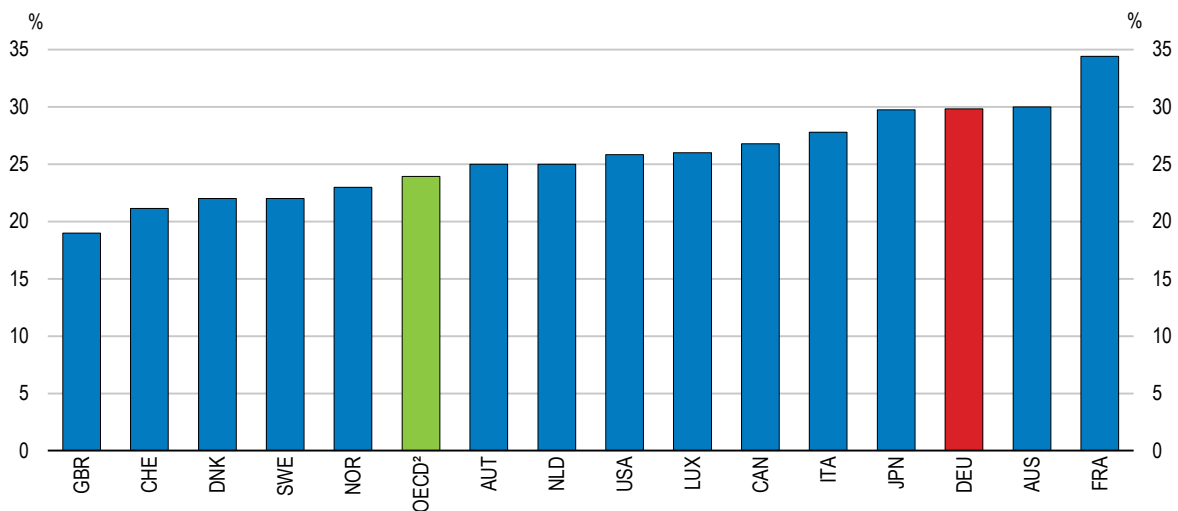
Difference in the average tax wedge between two- and one-earner family, 2017



*Note:* The bars show the difference between the tax wedge of a two- and a one-earner family. The main earner earns the average earnings and the secondary earner earns 67% of the average earnings of a full-time worker in a family of a married couple with two children. The tax wedge is the sum of personal income tax, employee plus employer social security contributions, minus benefits as a percentage of labour costs.

*Source:* OECD (2018), *Taxing Wages Statistics* (database).

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**Figure 23. Corporate taxes are higher than in most high-income OECD countries**Statutory corporate income tax rate<sup>1</sup>, 2018

1. Basic combined central government and sub-central government corporate income tax rate.

2. Unweighted average of 35 OECD countries.

*Source:* OECD (2018), *OECD Tax Statistics* (database).

StatLink  <http://dx.doi.org/10.1787/888933737590>

Fiscal space could be used to reduce the taxation of low earnings further. More room for a reduction of taxes, in particular social security contributions, on wage income could be made by changing the tax mix. Consumption, environmental externalities, real estate and household capital income could be taxed more consistently, eliminating reduced rates and exemptions. Reduced VAT rates could be raised to the standard VAT rate. Shifting the tax system away from labour towards consumption, real estate and environmental taxes is growth-friendly (Johansson, Å., et al., 2008<sup>[32]</sup>). Little progress has been made on tax reform recommendations in previous Economic Surveys (Table 4). In part, this is because revenues from different taxes flow to different government levels. For example, social security contributions fund pensions, public health insurance institutions and unemployment insurance. Real estate taxes accrue to local governments. Broader tax reform would therefore need to be accompanied by reforms to the financial relationships between government levels.

The revenue from environmentally related taxes accounts for 2% of GDP, only about half of what is raised in Denmark according to OECD data (Figure 24). Charges electricity consumers pay to finance subsidised feed-in tariffs for renewable energy are not included in environmental taxes, in Germany and elsewhere. The structure of Germany's energy taxation sends inconsistent carbon abatement signals across fuels, as argued in previous *Economic Surveys*. Carbon intensive fuels are often taxed at lower rates per tonne of CO<sub>2</sub> compared to low-carbon fuels. For example, diesel is taxed at a lower rate than gasoline on a per litre basis. However, burning diesel emits higher levels of CO<sub>2</sub> per litre. Tax rates differ widely across energy users and fuels. Coal use is taxed at lower rates than natural gas use. Certain energy-intensive production processes are partially or fully exempt from energy taxes. In addition, tax expenditures for environmental harmful activities could be gradually phased out, energy tax rates could be aligned with carbon intensity and taxation of nitrogen oxide emissions could be introduced, as recommended in the 2016 *Economic Survey*.

Reforming the taxation of immovable property would be particularly timely in view of rising house prices. Valuations for the purpose of real estate taxation date back to 1964 (in Western Germany) and 1935 (in Eastern Germany). The constitutional court has recently required a reform to update valuations by 2024. Updating could be used to raise more revenues with relatively little economic distortion. Extending the taxation of capital gains to residential real estate which is not owner-occupied (i.e. owned by households for investment purposes only) would be particularly timely in view of house price developments and would also benefit inclusiveness, as the richest 20% of German households own 75% of the housing stock (Clamor and Henger, 2013<sup>[33]</sup>). It would also do away with a distortion which biases investment away from more productive investment.

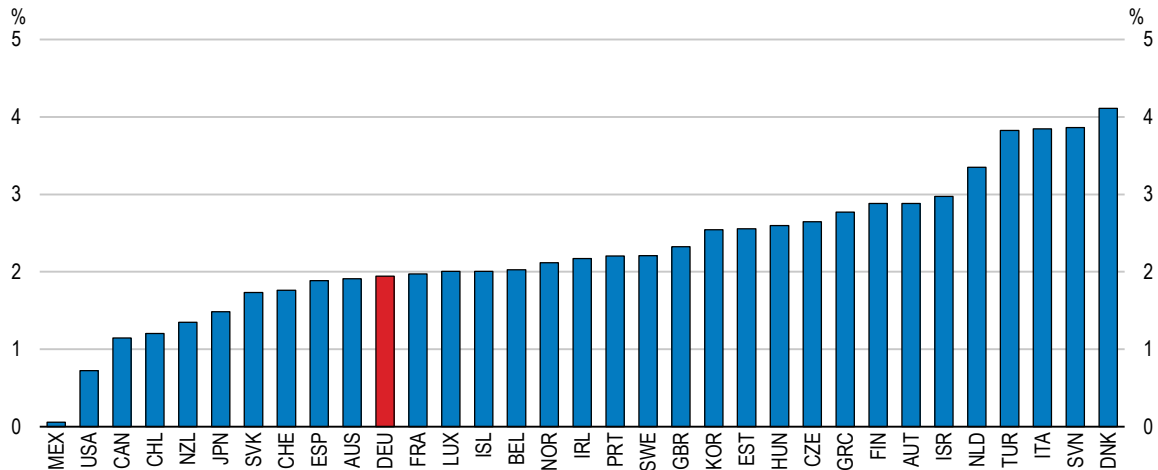
Taxes on household capital income could be better aligned with taxation of other household income. Interest income, dividends and capital gains are taxed at a flat rate, which is in most cases lower than the personal income tax rate. Aligning tax rates on household capital income more closely with personal income tax rates would strengthen the tax system's progressivity, as capital income is concentrated among wealthy households. It is welcome that the coalition agreement proposes to do so for interest income. In view of the international mobility of capital, which disconnects domestic saving from domestic investment decisions, taxing households' capital income in line with the taxation of other household income need not hamper investment. Inheritance tax exemptions with respect to family firms lock in capital in these firms, harming reallocation and inclusiveness in view of the strong concentration of wealth. Steps to give



more time for family-owned businesses to pay inheritance tax liabilities and to treat the inheritance tax liability as subordinate debt in the balance sheet can help avoid unwanted liquidations.

**Figure 24. Environmental tax revenue could be higher**

Environmental tax revenue as % of GDP, 2014



Source: OECD (2018), "OECD Instruments used for environmental policy", *OECD Environment Statistics* (database).

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**Table 4. Past recommendations and actions taken on tax reform**

Recommendations	Action taken
Reduce social security contributions, notably for low income workers.	Public pension contributions were lowered by 0.1 percentage points in 2018.
Update real estate tax valuations while protecting low income households.	No action taken.
Extend capital gains taxes on residential real estate except for owner-occupied housing.	No action taken.
Raise the tax rates applying to household capital income towards marginal income tax rates applying to other household income.	No action taken.

A policy package which includes the budgetary and tax policies in Table 5 and key growth-enhancing structural reforms (Box 2) would imply structural government deficits in the medium term, which would still be consistent with budgetary rules. Nevertheless they would allow the debt-to-GDP ratio to fall substantially (Figure 25). The baseline and reform scenario assume that commitments to budget rules are kept and that higher ageing-related spending is offset by increased revenues or lower spending.

**Table 5. OECD reform proposals on budgetary and tax policy**

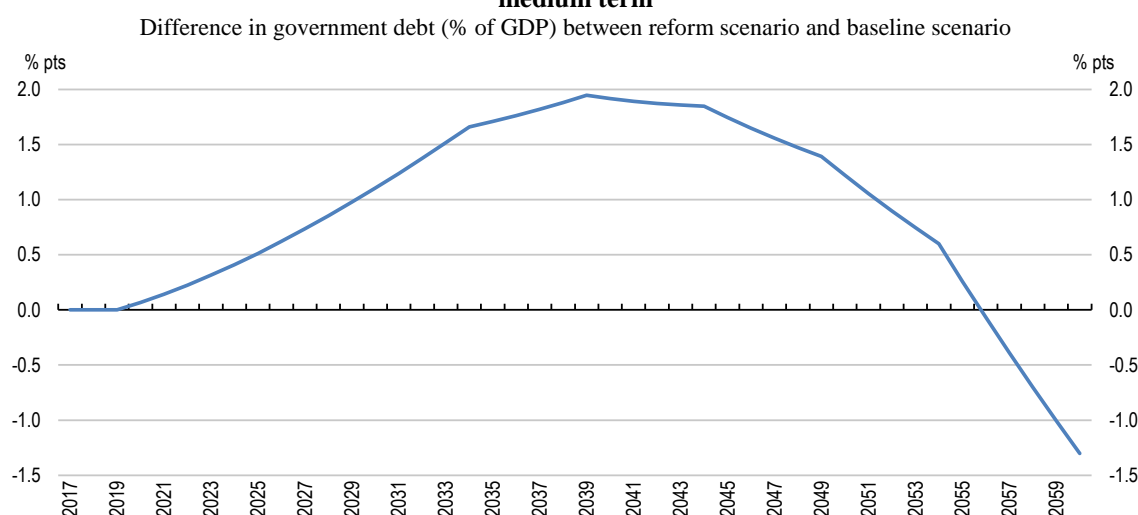
Estimated impact on government financial balance	Budgetary impact (annually, % of GDP)	
	Short-term	Long-term
Increase spending on primary education per pupil to the level of Denmark or Sweden, in purchasing power terms of GDP	-0.1% <sup>1</sup>	-0.1%
Increase government spending on early childhood education and childcare to the level of Sweden or Denmark, while reducing family tax breaks.	-0.2% <sup>2</sup>	-0.2%
Reduce taxation of wage earnings, while strengthening the taxation of environmental taxation, real estate taxes, the taxation of capital income received by households and raising reduced VAT tax rates to the standard rate	-0.1%	-0.1%
Index the statutory retirement age to life expectancy	0	+0.6% <sup>3</sup>

*Note:* The short-term budgetary impact is 0.4% of GDP, equal to the OECD estimate of near-term budgetary space. The spending increases are constant shares of GDP.

1. Increase in government spending in Germany towards the level of spending per pupil observed in Denmark.

2. Raising government spending on childcare and early childhood education towards the level observed in Denmark and Sweden (% of GDP), while assuming that tax breaks for families with children in Germany are abolished and savings used to pay for childcare and childhood education.

3. Estimates by (European Commission, 2015<sup>[34]</sup>).

**Figure 25. Policies which raise inclusive growth can be deficit financed in the short and medium term**

*Note:* The baseline scenario assumes real GDP growth of 1% and an inflation rate of 1.5% after 2019. The primary balance is assumed to remain constant at its 2019 level (0.65% of GDP). The reform scenario assumes real GDP growth of 1.6%, which includes the annual average impact of structural reforms quantified in Box 2, as well as the budgetary measures in Table 5. The interest rate on government debt is assumed to converge to 1.8%.

*Source:* Calculations based on OECD (2018), *OECD Economic Outlook: Statistics and Projections* (database).

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## Boosting productivity and preparing for the future of work are key medium-term challenges

As other OECD countries, Germany faces the challenge of making the most of technological changes, including through appropriate skills policies. This needs to include policies to remove barriers for women to good careers and to make better use of their skills. The GDP gain from structural reforms in these policy areas would be particularly large (Box 2).

**Box 2. Simulations of the potential impact of structural reforms**

This table gauges the potential impact of some of the key structural reforms proposed in this *Economic Survey*, based on OECD studies on relationships between reforms and growth and other studies. The simulation results are based on cross-country estimates that do not reflect the unique institutional settings in Germany. These estimates should be seen as purely illustrative.

**Table 6. Potential impact of structural reforms on GDP per capita**

Structural policy reform	Change in GDP per capita		Scenario
	After 10 years	Long run	
Product market regulation			
(1) Upgrading e-government	0.13%	0.25%	Creation of an online single contact point, where all notifications and licenses be issued or accepted via the Internet.
(2) Reducing entry barriers to professional services	2%	2%	Making regulations as competition-friendly as in the United Kingdom.
Infrastructure investment			
(3) Investment in high speed broadband	3%	3%	Germany's average connection speeds (15.3Mbps/s) catches up to the average of ten best performing OECD countries (21Mbps/s) (37% increase in connection speed) by 2025
Skills			
(4) Boosting cognitive skills, including by improving the quality of childcare, expanding high-quality full-day primary education, improving general education within vocational education, strengthening life-long learning.	-	15% (75 years)	Cognitive skills as measured by PISA or PIAAC move from an upper-middle to a top position among OECD countries. The improvement of cognitive skills takes place over a 20-year period.
Labour market policies			
(5) Remove barriers to women's full-time employment and access to good careers, including by reducing the gap in the taxation of main and second earners, improving full-day childcare and primary education, improving gender balance in parental leave and encouraging firms to increase women's presence in the highest decision making bodies.	4.1%	20% (45 years)	Women's labour participation rate and hours worked are assumed to converge to men's. Women's productivity per worker is assumed to converge to men, to the extent the earnings gap with respect to men's earnings reflects differences in experience and hours worked. As women's labour supply decisions and earnings depend on their experience, convergence is assumed to be gradual. Men's participation rate, hours worked and earnings are assumed not to diminish in response, so the estimates are an upper bound.
(6) Reduce taxation of labour income	0.45%	0.47%	2.28 percentage point reduction in average tax wedge (the average size of reform observed across OECD countries), while increasing indirect taxes to keep tax revenue constant.
(7) Indexation of the retirement age to life expectancy	0.13%	0.14%	Proxied by the rise in statutory retirement age of 0.57 years (the average size of reform observed across OECD countries).
Total	10%	41%	
Welfare gain (monetary equivalent, % of GDP)			
(8) Introducing pricing of congestion and removal of regulatory hurdles to car-sharing. Electrification of car transport.	6.76%		Welfare gains from reforming urban transport, including reduction of congestion cost to zero. Reduction of pollution-related mortality and morbidity costs to zero.

*Note:* Reforms are quantified using the framework of (Égert and Gal, 2017<sup>[35]</sup>) (1, 6, 7); (Arentz et al., 2016<sup>[36]</sup>) (2); (Kongaut and Bohlin, 2014<sup>[37]</sup>) (3); (Hanushek and Woessmann, 2008<sup>[38]</sup>) (4); (OECD, 2016<sup>[39]</sup>) (5); (INRIX, 2016<sup>[39]</sup>) (INRIX, 2017<sup>[40]</sup>) (8). Investment in high speed broadband is included in the coalition agreement.

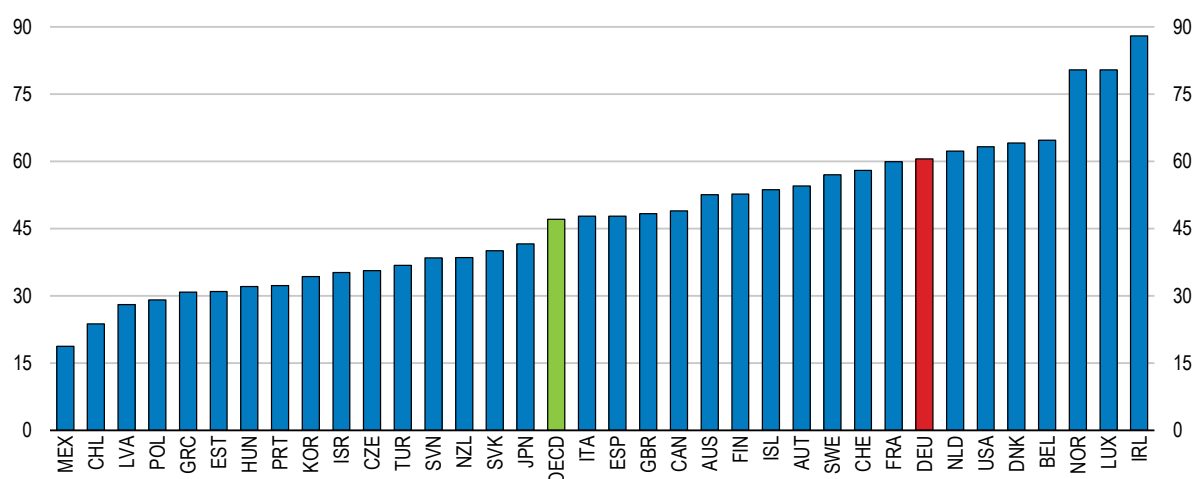
*Source:* OECD calculations.

### *Productivity growth has slowed and new technology is adopted only slowly*

Germany enjoys high labour productivity (Figure 26). However, it is held back by weak capital deepening and slower diffusion of new technology (Chapter 1). Technology diffusion can be accelerated by reinvigorating entrepreneurship and strengthening high-speed digital infrastructure.

**Figure 26. Labour productivity is relatively high**

Real GDP in constant USD PPP per total hours worked, 2016

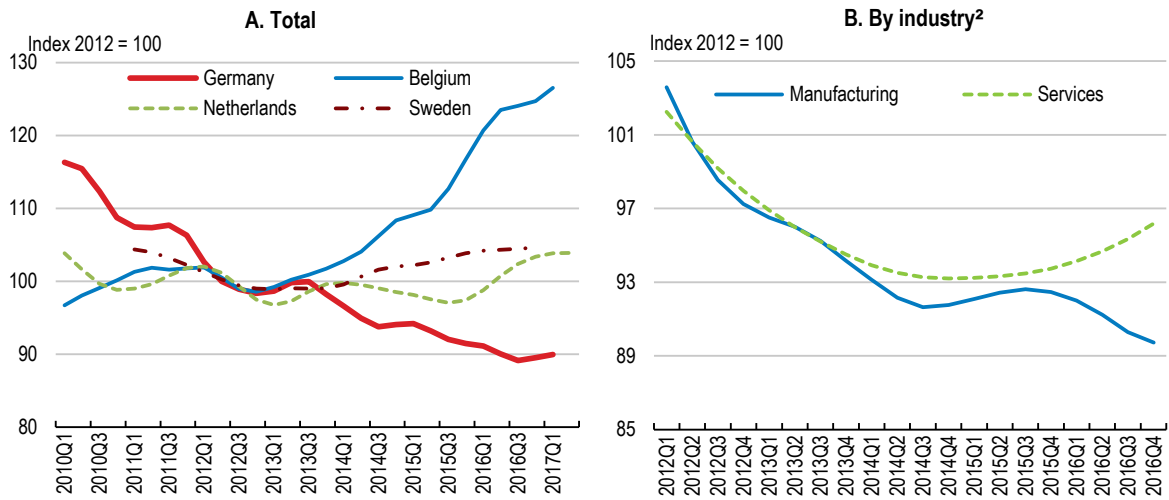


Source: OECD (2018), *OECD Productivity Statistics* (database).

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### *Boosting entrepreneurship would accelerate technology diffusion*

New firm creation, which often helps introduce new technologies into the market, has been declining (Figure 27). In Germany, talented individuals are less willing to choose entrepreneurship, partly because it is associated with higher income risk, especially in view of the abundant job offers (KfW, 2017<sub>[41]</sub>). Including the self-employed more effectively in some social safety nets could protect them better against risks, which may encourage some individuals to become self-employed (see below). Germany's insolvency regime is among the most efficient in OECD countries (Figure 28). However, failed entrepreneurs must wait up to six years to be discharged from pre-bankruptcy debt, which is longer than on average in OECD countries (2.9 years) (Adalet McGowan, Andrews and Millot, 2017<sub>[42]</sub>). The period can be shortened to three years if 35% of debt is repaid. However, this repayment condition can be too demanding in some cases and in such cases could undermine the fresh start of entrepreneurs (Fossen and König, 2015<sub>[43]</sub>). Easing the requirements to qualify for the three-year discharge period while maintaining adequate safeguards for creditors could encourage entrepreneurship.

**Figure 27. New enterprise creation is weak**Number of new enterprises, by industry, trend-cycle<sup>1</sup>

1. The trend-cycle component is extracted from quarterly data by applying seasonal adjustment to quarterly series. Refer to the source for more details.

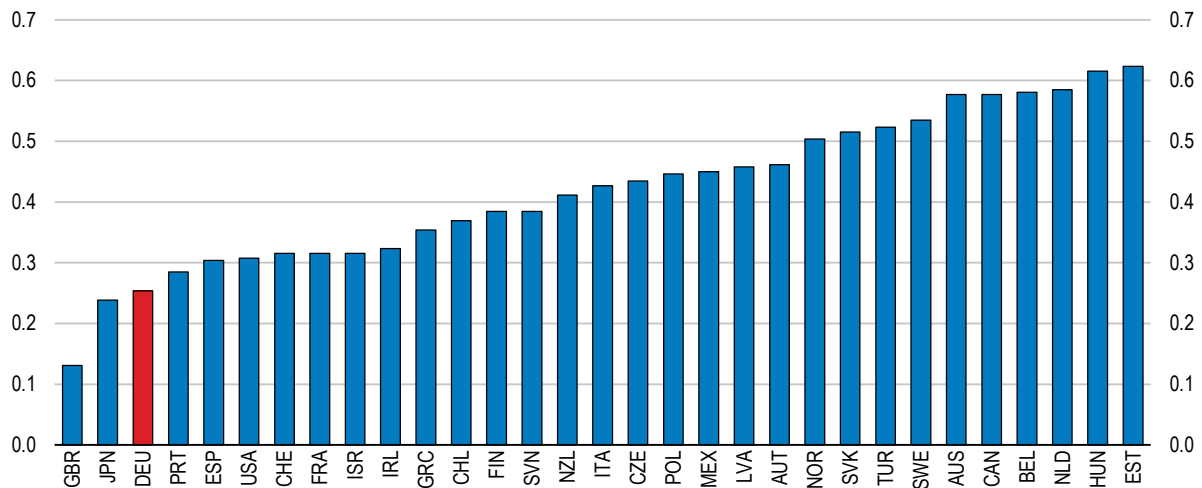
2. Manufacturing refers to ISIC Rev.4 Divisions 10 to 33. Services refer to Divisions 45 to 82 excluding 64 to 66.

Source: OECD (2017), *Entrepreneurship at a Glance 2017*.

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**Figure 28. The insolvency regime is among the most efficient in OECD countries**

OECD indicator of insolvency regime, composite indicator based on 13 components, 2016



Note: The OECD insolvency regime indicator captures (1) personal costs to failed entrepreneurs that include the time to discharge, (2) lack of prevention and streamlining and (3) barriers to restructuring. Higher values of the composite indicator correspond to more inefficiency.

Source: Adalet McGowan, M., D. Andrews and V. Millot (2017), "Insolvency regimes, zombie firms and capital reallocation", *OECD Economics Department Working Papers*, No. 1399.

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Few women are entrepreneurs. Only 8% of all active female workers are self-employed, less than in the average of European Union countries (13%), although this share is rising (OECD, 2017<sup>[44]</sup>). Women's self-employment is concentrated in personal and business services. Only 13% of high tech start-ups are led by women (OECD, 2017<sup>[44]</sup>).

Women's entrepreneurship could be encouraged by making it more compatible with giving birth. Maternity benefit coverage depends on the women's choice of health insurance package. Self-employed women on maternity leave receive a benefit of about 70% of their previous income if they are covered by statutory insurance and have opted for sickness benefits. Alternatively, if they have purchased private health insurance with an option for a daily sickness allowance, they receive a sickness allowance during the maternity protection period if they do not work or if they work only a limited time during this period. By contrast, in the Netherlands, all self-employed women can receive a benefit equal to the full-time minimum wage for 16 weeks, paid from general tax revenue (Conen, Schippers and Schulze Buschoff, 2016<sup>[45]</sup>).

Setting up a company in Germany takes more procedures and time than in other advanced OECD economies (The World Bank, 2018<sup>[46]</sup>). Administrative burdens can be reduced by a well-developed e-government service that allows all procedures to be processed online. The use of online services for administrative procedures is low in Germany (OECD, 2017<sup>[47]</sup>). The scope of available services differs across municipalities and information is scarce (Commission of Experts for Research and Innovation, 2017<sup>[48]</sup>). Steps were taken to require the central and local governments to offer their services online and make them accessible via central portals. Also, the federal government can prescribe electronic access to the administrative services of regional authorities. These rules should be implemented swiftly.

Some legal transactions for creating new businesses require notary services at a high regulated price (OECD, 2016<sup>[9]</sup>). Entrepreneurship in professional services is also subject to regulatory barriers to entry. No progress has been made in reforming exclusivity rules or entry regulations (Table 7).

Price and entry regulation in different forms have been accumulating over time to meet different objectives, like consumer protection or non-discriminatory access of consumers to public goods. However, previous *Economic Surveys* highlighted that self-regulation by sector-specific business chambers risks protecting the status quo against reforms and that consumer protection should be pursued with fewer entry barriers (OECD, 2016<sup>[9]</sup>; 2014<sup>[12]</sup>). To remove regulatory bias in favour of incumbents, Germany could benefit from an independent standing capacity to regularly undertake comprehensive in-depth reviews of policy areas in the light of their economy-wide effects. For example, the benefits of regulatory reform in the professional services would largely accrue to downstream sectors, which use such services as intermediate products.

Fast technological diffusion requires swift resource allocation to innovative firms that experiment with new technologies (Andrews, Criscuolo and Menon, 2014<sup>[49]</sup>). Privatisation of government ownership in the business sector would help remove barriers to resource reallocation and boost competition. Privatising government shares in telecommunications and postal services, could help remove potential conflicts of interest between the government's role as owner of these businesses and its role as the regulator of the relevant markets, boosting market entry. In addition to the *Landesbanken*, *Land* ownership includes just above 20% of one of the biggest car manufacturers.

**Table 7. Past recommendations and actions taken on professional service regulation**

Recommendations	Action taken
Reduce exclusive rights in the professional services. For example, allow new companies to register in the commercial registry without notary services and open the provision of auxiliary services in property conveyancing to other professions. Reduce exclusive rights of lawyers in providing legal advice and representation in court.	No action taken.
Abandon price regulation in some professional services. Abolish the price regulation for architects and engineers and consider liberalising price regulation for notaries. Give lawyers more options to deviate from the principle of effort-based remuneration, e.g. allow all-inclusive fees for certain tasks and extend outcome-based payments.	No action taken.
Ease requirements to hold a tertiary level vocational degree or alternatively to have job experience in a leading position, for self-employment in some crafts.	No action taken.
Scrutinise compulsory membership and chamber self-regulation in the professional services and crafts chambers for entry barriers and lower entry requirements where possible.	No action taken.
Give consideration to abolishing restrictions on shareholders for limited liability companies of lawyers, tax consultants, architects and engineers.	No action taken.

### *Strengthening high-speed broadband networks*

High-speed Internet is a prerequisite for the adoption of many data-intensive new technologies (OECD, 2017<sup>[47]</sup>). However, the average Internet connection speed is considerably slower in Germany than in peer countries (Figure 29), which holds back technology diffusion (Federal Ministry of Economic Affairs and Energy, 2017<sup>[50]</sup>). The government has set an ambitious goal to roll out gigabit fixed broadband networks throughout the country by 2025. A faster pace of investment is needed to reach this goal. It is welcome that the coalition agreement foresees this. Private investment in gigabit networks should be accelerated while strengthening competition. Decisions to pay government subsidies should be based on cost-benefit analysis.

Competition in the provision of next generation mobile networks would also boost communication and data transmission. Better mobile services would raise the demand for gigabit fixed broadband networks, facilitating their deployment and reducing access prices, on the back of scale economies. Germany has three mobile services operators in mobile networks. Increasing the number to four would make a substantial difference for service prices and innovation (OECD, 2014<sup>[51]</sup>). The government should use the upcoming radio spectrum auction to promote competition in the mobile market.

### *The impact of technological change on the labour market will be large*

Intensive use of digital technologies is considered to displace a large number of workers engaging in routine tasks that can be automated. Those workers will have to shift to jobs that may not necessarily match their original skills.

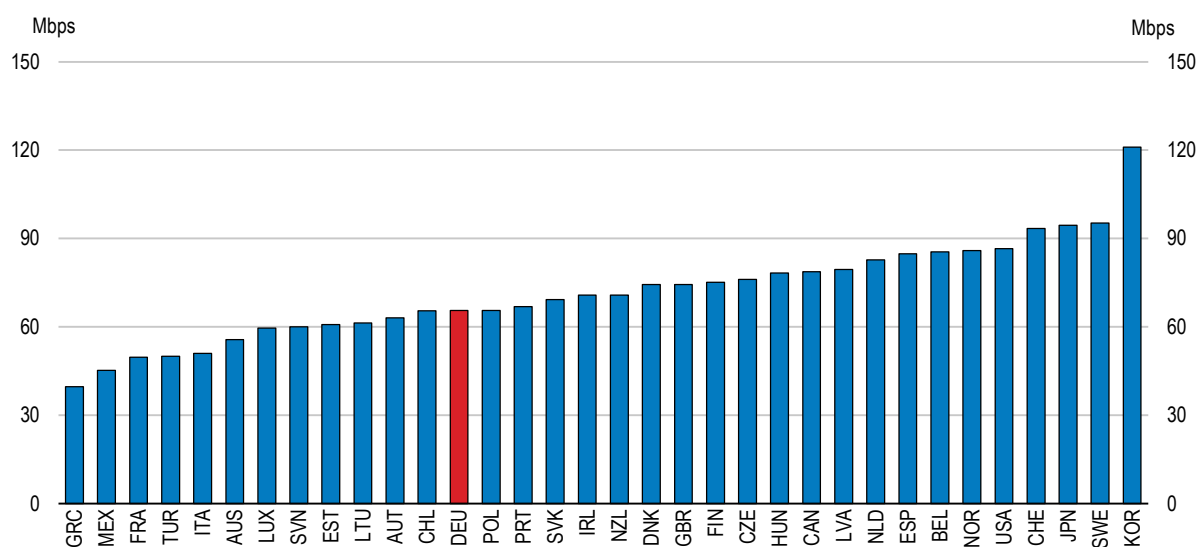
The share of mid-level skilled jobs that largely involves routine tasks has declined in Germany, although not to the same extent as in Nordic countries and the United Kingdom (Figure 30). However, the share of jobs at risk of automation or undergoing radical changes is high (Figure 31). Middle-skilled workers may suffer wage losses if they move to new jobs or tasks where they cannot apply their skills. Boosting opportunities for them



to develop their skills is therefore important, especially in Germany, where the share of middle-skilled production workers is particularly large.

**Figure 29. The internet connection speed is slow**

Akamai's average peak connection speed, Q1 2017



Source: Akamai (2017), "Akamai's state of the Internet report: Q1 2017 report", <https://www.akamai.com>.

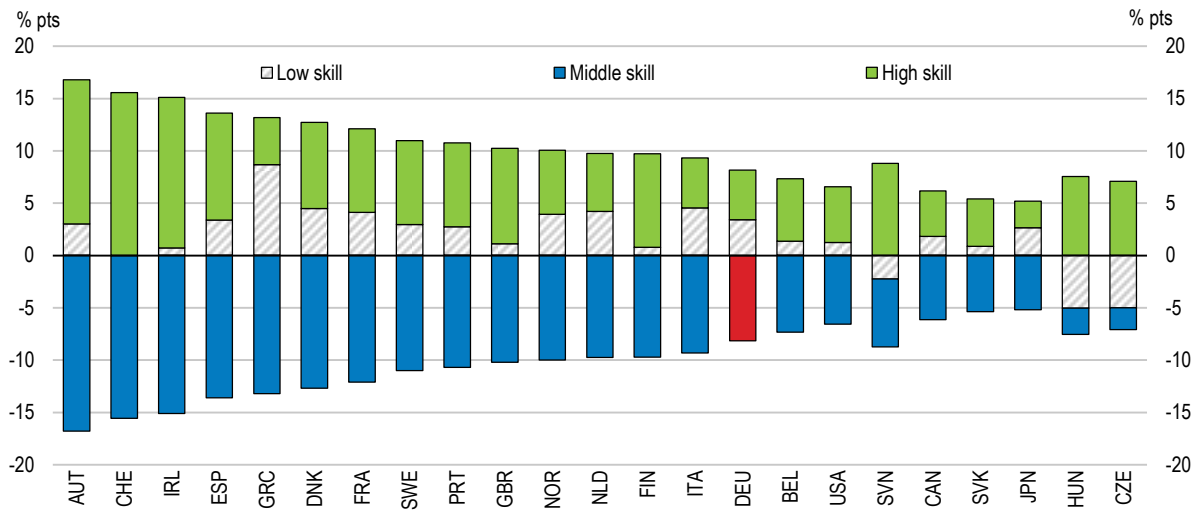
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Wider use of digital technologies increases the demand for reading, numeracy and problem solving skills (OECD, 2016<sup>[52]</sup>). Workers endowed with such skills will be increasingly better remunerated. Some low-skilled workers engage in manual non-routine jobs that cannot be automated easily (Autor, Levy and Murnane, 2003<sup>[53]</sup>). Yet, overall the demand for low-skilled workers is also foreseen to decrease in Germany, although not as much as for middle-skilled workers (Warning and Weber, 2017<sup>[54]</sup>). Low-skilled workers are also likely to suffer wage losses as they compete with displaced middle-skilled workers for low-skilled jobs. Policies that sustain workers' employability and allow them to upgrade their skills need to be stepped up (see below).

Self-employment in highly flexible work arrangements is likely to increase with digital platforms. These self-employed are not generally covered by all social safety nets, including old age pension and unemployment insurance. They are required to enrol in health insurance but are not generally eligible to public health insurance. Private health insurance can be costlier than public insurance and increase income risks as contributions do not depend on income. As a result risks of poverty following sickness, workplace accidents, or unemployment may be higher. Inclusion in the public pension system appears to be the most effective way to include the self-employed in pension insurance, for example to cover disability risks, ensure integration with the means-tested minimum pension and avoid mobility barriers.

**Figure 30. The share of middle-skilled jobs in employment has declined**

Percentage point change in the share in total employment between 1995 and 2015



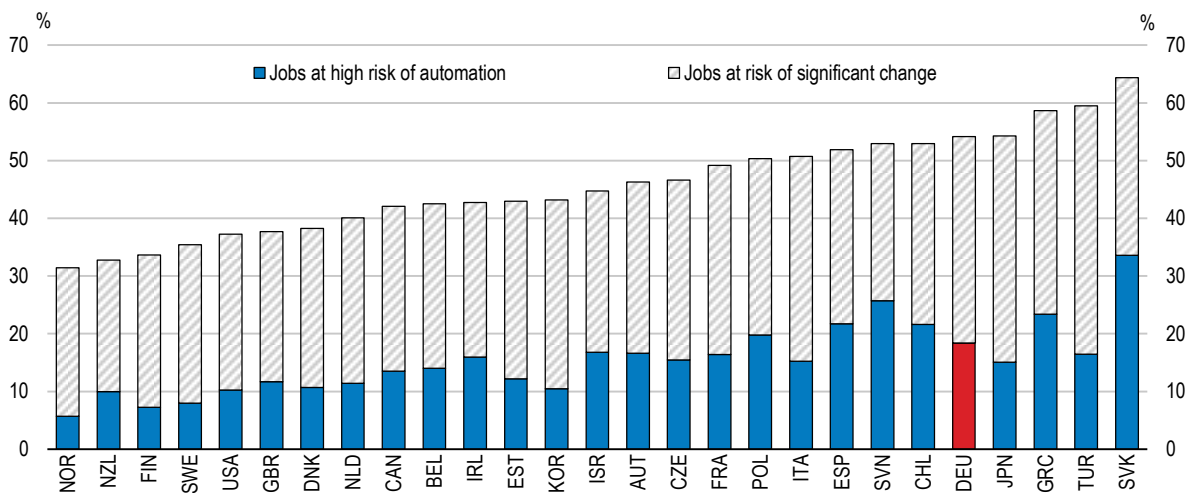
*Note:* High-skilled occupations include jobs classified under the ISCO-88 major groups 1, 2, and 3. These are legislators, senior officials, and managers (group 1), professionals (group 2), and technicians and associate professionals (group 3). Middle-skilled occupations include jobs classified under the ISCO-88 major groups 4, 7, and 8. These are clerks (group 4), craft and related trades workers (group 7), and plant and machine operators and assemblers (group 8). Low-skilled occupations include jobs classified under the ISCO-88 major groups 5 and 9. These are service workers, shop and market sales workers (group 5), and elementary occupations (group 9).

*Source:* OECD (2017), *OECD Employment Outlook 2017*.

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**Figure 31. Many jobs are at risks of significant change**

The share of jobs at high risk of automation and significant change



*Note:* Jobs are at high risk of automation if the likelihood of their job being automated is at least 70%. Jobs are at risk of significant change if the likelihood is between 50 and 70%.

*Source:* Nedelkoska, L. and G. Quintini (2018), "Automation, skills use and training", *OECD Social, Employment and Migration Working Papers*, No. 202, OECD Publishing, Paris.

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### *Adult skills are a major determinant of long-term growth and well-being*

Skills are a strong determinant of economic growth, wages and employment (Hanushek and Woessmann, 2008<sup>[38]</sup>), as argued in Box 2.1 in Chapter 2. Across OECD countries the impact of skills on economic growth, income and wellbeing is reinforced by skill-biased technological change (Hanushek et al., 2017<sup>[55]</sup>). In Germany, this is for example reflected in rapid and regular updating of vocational education and training programmes, including in response to digitalisation. How much workers use their skills at the workplace has an even stronger impact on wages than skills themselves (OECD, 2016<sup>[56]</sup>). Policies thus need to support skills as well as skills use.

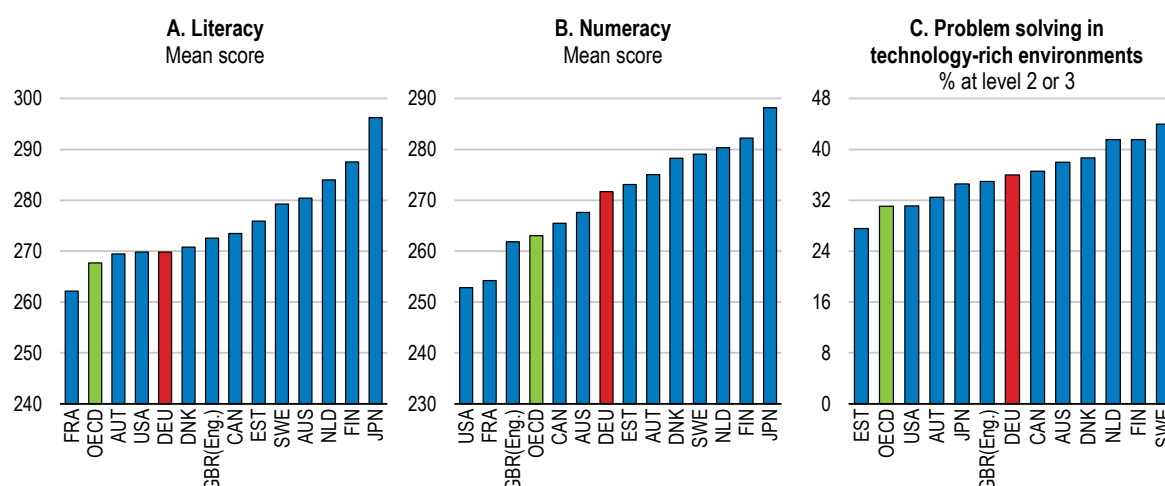
Cognitive and non-cognitive skills, and their use, are powerful predictors of important life outcomes beyond income, such as job satisfaction, health and civic engagement as well as participation in life-long learning (OECD, 2016<sup>[56]</sup>; Kosse et al., 2016<sup>[57]</sup>). The important role of access to education and acquired skills in upward social mobility has also been well documented.

### *Adult cognitive skills still have some way to catch up with leading countries*

Adult proficiency in literacy, numeracy and problem-solving skills in technology-rich environments, as measured in the OECD PIAAC Study, is above OECD average but lags behind leading countries (Figure 32). Literacy proficiency is below OECD average for adults with low (below upper secondary) and close to the average for middle (upper secondary) education (Figure 33). In Germany, upper secondary educated workers have mostly gone through the vocational education system.

**Figure 32. Adult skills are above OECD average, but lower than in leading OECD countries, especially in literacy**

Mean proficiency scores in literacy and numeracy, and the percentage of adults scoring at level 2 or 3 in problem solving in technology-rich environments, 15-65 year-olds, 2012

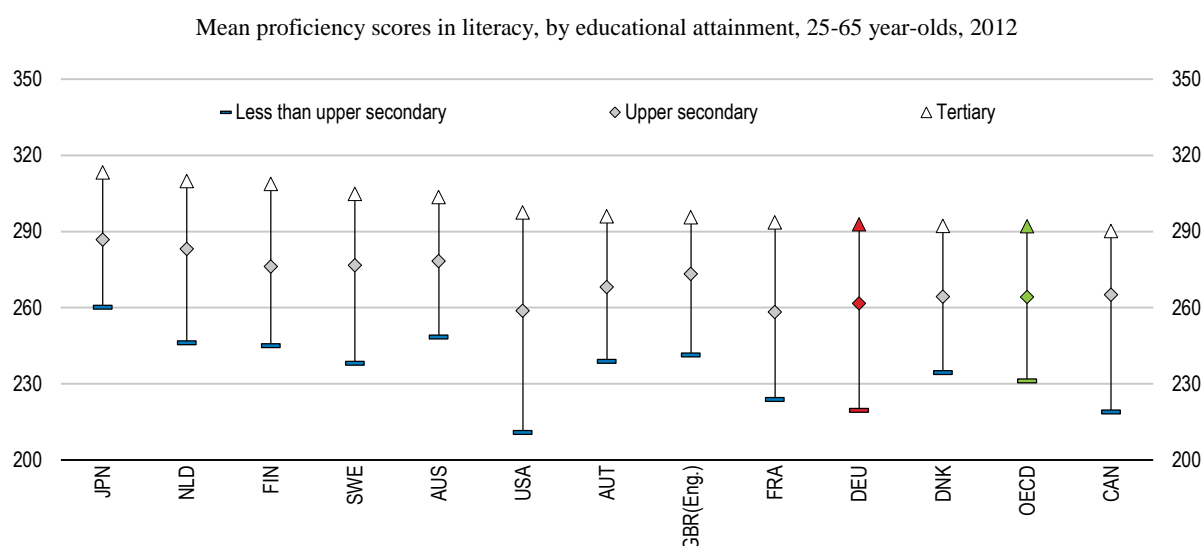


Note: France did not participate in the problem solving in technology-rich environments assessment.

Source: OECD (2016), *Skills Matter: Further Results from the Survey of Adult Skills*.

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**Figure 33. Performance gaps with respect to leading countries are larger for adults with low and intermediate educational attainment**



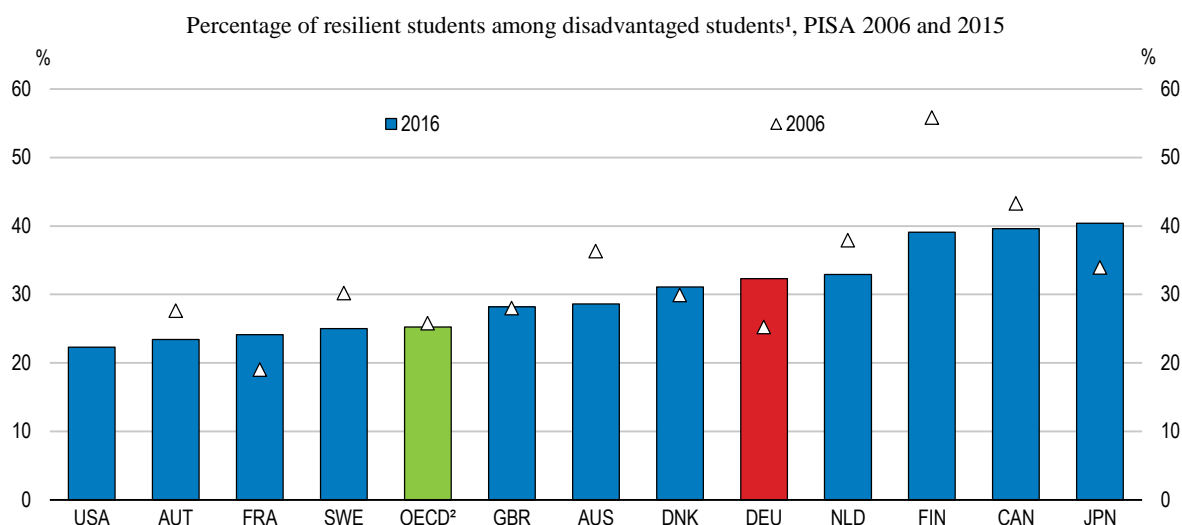
Source: OECD (2016), *Skills Matter: Further Results from the Survey of Adult Skills*.

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### *Progress has been made in improving education outcomes of youth with weak socio-economic background*

Over the past ten years the share of 15-year-old pupils with weak socio-economic background who reached median performance in reading, mathematics and science, rose strongly, more so than in most OECD countries (Figure 34). Fostering cultural activities, through extracurricular activities is one successful strategy (Borgonovi and Pál, 2016<sup>[58]</sup>), as in the programme “*Kultur macht stark*” (Prognos AG, 2016<sup>[59]</sup>). Nonetheless, the strength of the impact of socio-economic background on student performance in science remains above the OECD average (OECD, 2016<sup>[60]</sup>). Upward mobility through education pathways has improved only slowly (OECD, 2017<sup>[61]</sup>). Only 14% of 30-44 year-olds whose parents did not attain tertiary education have attained an academic tertiary qualification themselves, little more than among older adults. Another 11% have attained a vocational tertiary qualification. The impact of socio-economic background on education outcomes is a key transmission mechanism through which inequality can have a negative impact on economic growth and thereby reduce living standards for all (OECD, 2015<sup>[62]</sup>).


Investing at an early stage in children’s development and education can produce high returns since this lays the foundation for future learning, especially for youth with weak socio-economic background (OECD, 2017<sup>[61]</sup>). Germany has made much progress over the past decade in boosting enrolment of young children in childcare, which has risen above OECD average. The effect of attendance in early childhood education and care on subsequent education outcomes depends on the quality of the interactions and learning environment in these institutions (Stahl, Schober and Spiess, 2017<sup>[63]</sup>).

**Figure 34. The share of resilient students has increased strongly over the past 9 years**

1. Resilient students are the 25% most disadvantaged students in their country according to the PISA index of economic, social and cultural status but are able to achieve at or above level 3 in all three PISA domains – reading, mathematics and science. Level 3 corresponds to the median proficiency level across all OECD countries on average.

2. Unweighted average of available countries. PISA 2006 results in reading are not available for the United States.

Source: Agasisti, T., et al. (2018), "Academic resilience: What schools and countries do to help disadvantaged students succeed in PISA", *OECD Education Working Papers*, No. 167.

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The federal and *Länder* governments have taken strong initiatives to improve quality of early childhood education and childcare, especially for children with disadvantaged socio-economic background. For example, programmes have been introduced to improve language development. Nonetheless, the quality of childcare is uneven. The federal government and the *Länder* have developed instruments to improve quality so all *Länder* can raise the quality in all early childhood education and care (ECEC) institutions according to their priorities. However, many young children from disadvantaged socio-economic backgrounds are enrolled in lower-quality institutions (Stahl, Schober and Spiess, 2017<sub>[63]</sub>). It is particularly important to improve quality in institutions attended by young children who need the most support. In addition, incentives need to be developed to encourage parents with disadvantaged socio-economic background to enrol their children, for example, with conditional cash benefits, in addition to free enrolment.

About 66% of primary schools provide full-day schooling and 40% of the pupils attend. Differences between the *Länder* are marked. The quality of programmes is key for obtaining benefits from full-day schools. Many full-day schools provide mostly childcare in the afternoon, rather than education (StEG, 2016<sub>[64]</sub>).

### *Vocational education ensures excellent integration of young people*

The German vocational education and training system ensures excellent integration of young people in the labour market. Germany's NEET (not in education, employment or training) rate among young people is among the lowest in the OECD. The integration of young people with a migration background will remain a key challenge in vocational education and training. Assistance for young refugees is a particularly complex task in

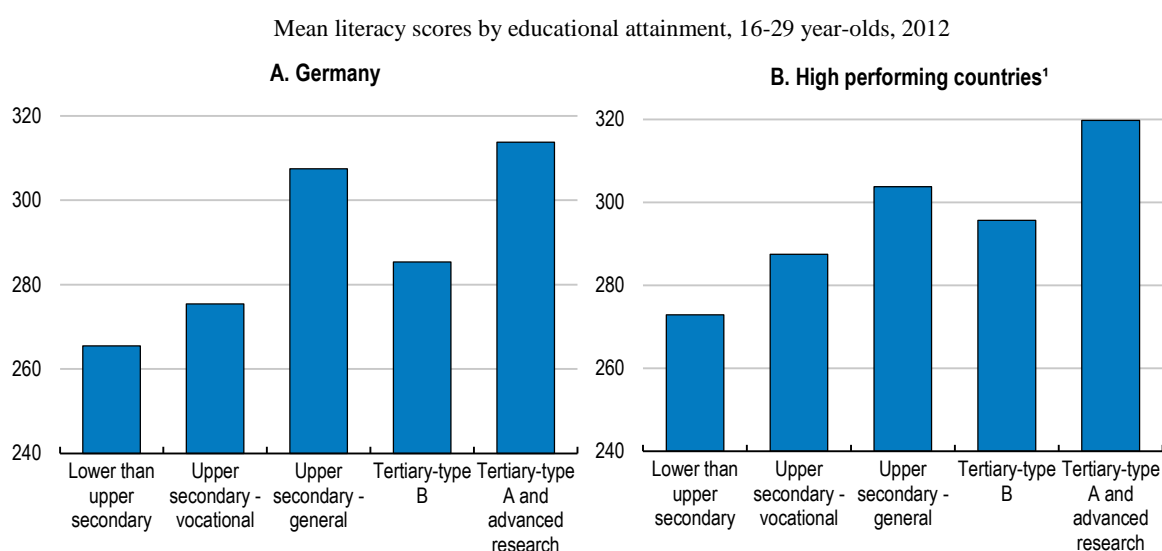
many cases. Language programmes have been introduced, integrating general and job-related language learning.

Wage and employment prospects of vocational education graduates may be exposed to risks as a result of technological change at higher age. Vocational education graduates are often middle-skilled workers whose tasks are most likely to change substantially as a result of automation (see above). While occupation-specific vocational education and training helps with school-to-work transitions, especially in countries with strong apprenticeship systems, it appears to be linked with lower employment prospects later in life, relative to general education pathways (Hampf and Woessmann, 2016<sup>[65]</sup>), discussed also in Chapter 2. The government supports vocational education graduates in their efforts to obtain further qualifications, such as *Meister* courses or technical schools. It is welcome that the coalition agreement proposes to increase this support.

Literacy skills are relatively low among young people in vocational education coming from lower secondary schools, notably compared to countries with strong PIAAC results (Japan, Finland and Australia, Figure 35). Since the PIAAC Survey of adult skills was undertaken in 2012, it is likely that test scores would today be higher, reflecting reforms which have boosted PISA scores for 15 year-olds since the first OECD PISA study was undertaken, especially among those with weak socio-economic background. Many of these youth have entered upper secondary vocational education subsequently. However, PIAAC scores among upper secondary vocational students also appear little higher than among young people with no upper secondary degree.

Only 37% of students in upper secondary vocational education learn English, far fewer than in most European OECD countries (Eurostat, 2018<sup>[66]</sup>). In 2015, the *Länder* adopted a framework agreement to be able to better react to the requirements of a globalised world. This includes the extension and deepening of foreign language competence according to its significance in each vocational qualification.

**Figure 35. Literacy skills improve modestly in upper secondary vocational education**



1. Unweighted average of Australia, Austria, Finland and Japan. The estimate for Tertiary-type B for Finland is based on a sample size close to 30 and thus is not included.

2. Only a sample of countries is shown as an example.

Source: OECD (2013), *OECD Skills Outlook 2013: First Results from the Survey of Adult Skills*.

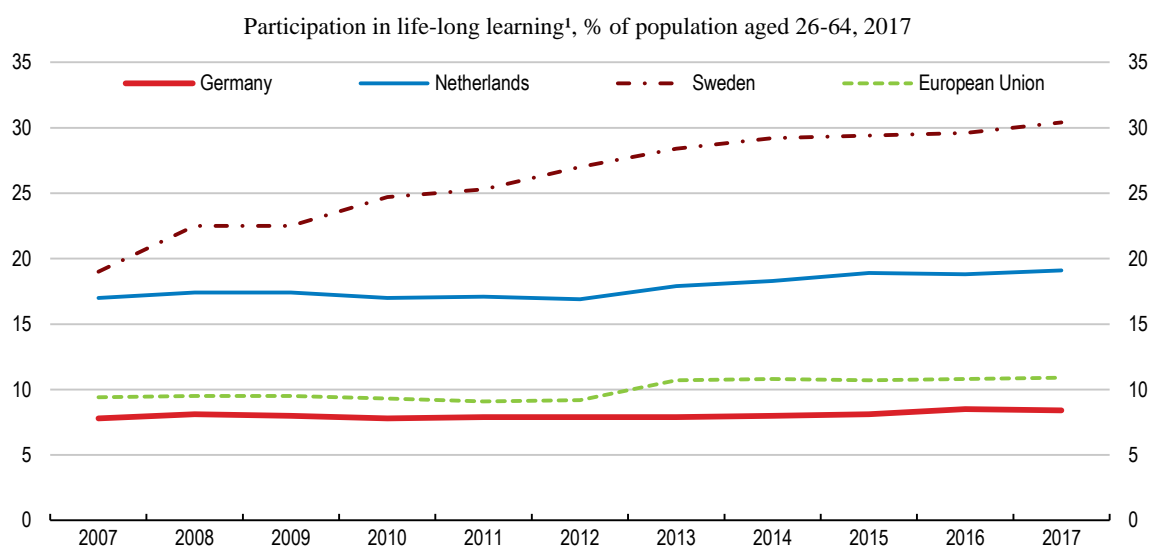
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*Participation in life-long learning is around EU average but lower than in leading countries*

Adult participation in general and vocational education has risen little and is well behind best-performing high income countries, such as Denmark, Finland and Sweden, according to Labour Force Survey data (Figure 36) and the Adult Education Survey (AES). The latest results of the Adult Education Survey show that one in two adult Germans participated in at least one adult education measure in 2016 while in the best-performing countries nearly three out of four participated. Participation in formal and non-formal education and training is relatively low also according to the 2012 OECD PIAAC Survey. Germany is among the few countries with lower participation by women than by men. Women above the age of 35 are particularly unlikely to participate in life-long learning likely reflecting family responsibilities. It is welcome that the new government aims at strengthening support for life-long learning as well as information and counselling services.

Modular training offers, combined with opportunities to formally recognise skills acquired on-the-job, have boosted adult learning in Denmark and Portugal, especially among the unqualified (Desjardins, 2017<sup>[67]</sup>). They can boost incentives to participate in adult education and learning by allowing individuals to focus learning on skills they need in order to acquire formal qualifications. Modular life-long learning offers need not result in lower standards for the qualifications required for specific professions but widens access to such qualifications, notably among adults with poor formal qualifications, including immigrants. (Kis and Windisch, forthcoming<sup>[68]</sup>).

**Figure 36. Participation in life-long learning can be raised further**



1. Includes formal as well as non-formal education and training. The reference period for the participation is the four weeks prior to the interview.

Source: Eurostat (2018), *Education and training* (database).

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Modular training offers combined with formal skills recognition can make it easier for workers to adapt to technological change, helping to maintain employability. It is welcome that in the White Paper “Work 4.0” the government has recognised that modularisation needs to be strengthened. Germany could do so by further developing

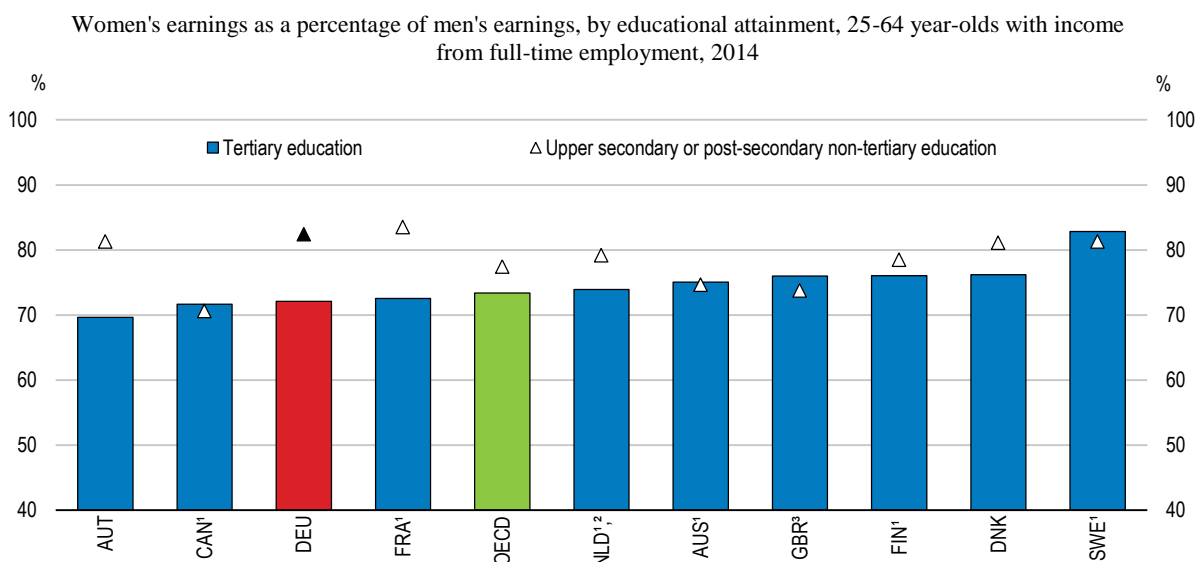


existing projects (e.g. *Kölner Bildungsmodell*, *Perspektive Berufsabschluss*, *TrialNet*) and initiatives to recognise skills of formally unqualified workers (e.g. *ValiKom*) or immigrants (e.g. *Recognition Finder*). Government support for adult learning, including grants, loans and educational leave, generally requires participants to complete a full programme leading to a professional qualification. In order to allow for more flexibility, these policies could be adapted to support modular programmes.

### *Gender inequality contributes to underutilisation of skills*

While education attainment among women is broadly as high as among men, and even higher among young women, the full-time earnings gap is large, particularly so between highly educated men and women (Figure 37). The earnings gap is even bigger when hours worked are taken into account. In 2015, 47% of all women in employment were working part-time, while this was the case for only 9% of men.

**Figure 37. The earnings gap between men and women is particularly large among highly educated workers**



1. 2010 for the Netherlands. 2012 for Australia, France and Sweden. 2013 for Canada and Finland.

2. Educational attainment levels are based on the ISCED-97 classification.

3. Data for upper secondary attainment levels include completion of a sufficient volume and standard of programmes that would be classified individually as completion of intermediate upper secondary programmes (18% of the adults are under this group).

Source: OECD (2016), *Education at a Glance 2016: OECD Indicators*.

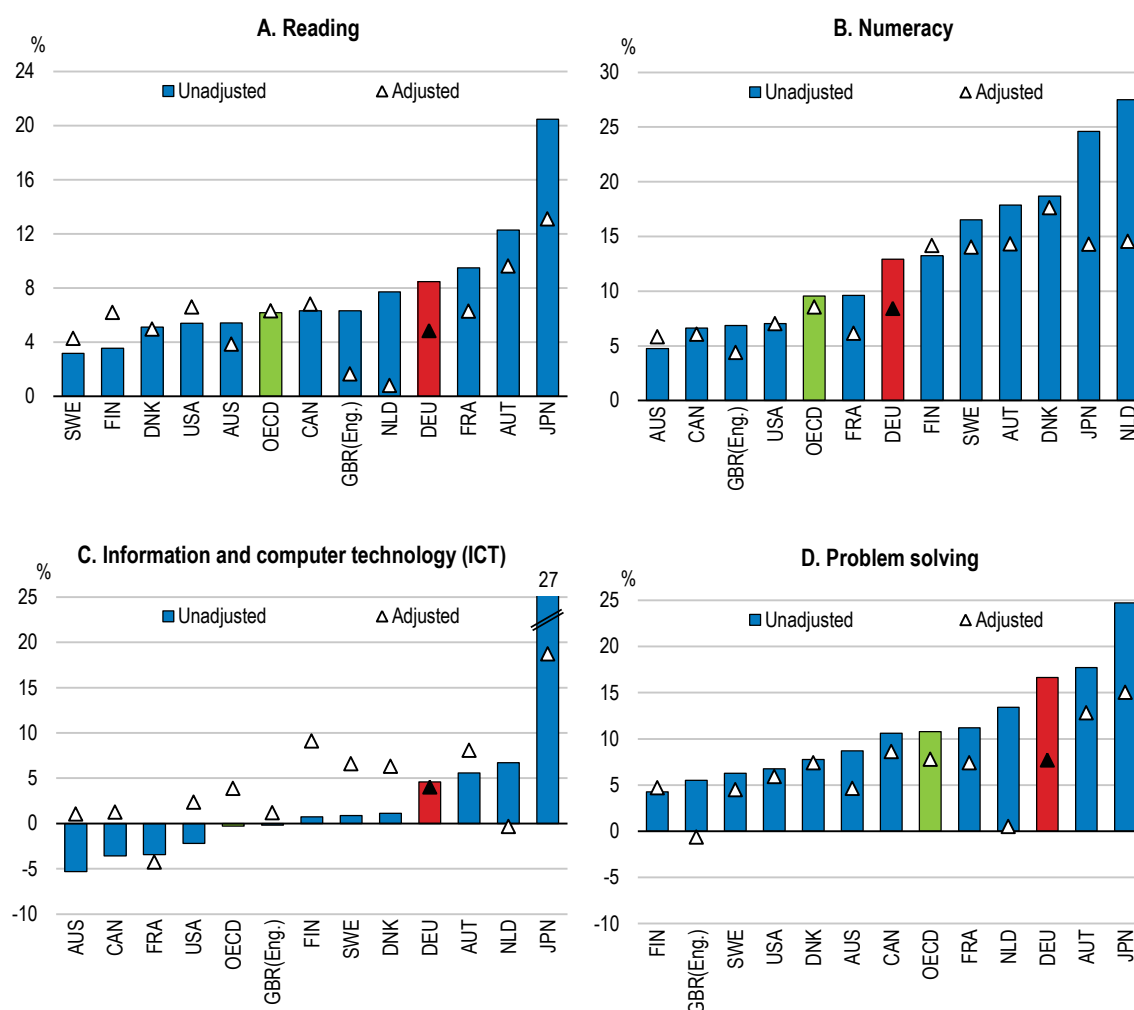
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Women's skills are used less than men's, and this difference is more marked than in other high-income countries with strong PIAAC results (Figure 38, unadjusted results). A large part of this difference can be attributed to the incidence of part-time work and occupational choice (Figure 38, adjusted results). Indeed, part-time workers are 25% more likely to be overqualified than full-time workers in Germany (OECD, 2016<sub>[56]</sub>). This makes part-time employment among women a major cause of overqualification, resulting in substantial productivity loss. Most women state that they work part-time voluntarily. However, their decisions are influenced by the incentives in the tax system and the availability of childcare and full-day schooling. Steps to lower the taxation of second

earners, who are often women, would boost their incentives to work longer hours, while better provision of full-day primary education and childcare would make it easier for them to do so, as family and responsibilities are still mostly left to women.

**Figure 38. Women's skills are used less than men's**

Gender differences in the mean use of information-processing skills at work (men minus women), % of the mean use of skills by women, 2012



*Note:* Adjusted estimates are based on ordinary least squares (OLS) regressions including controls for literacy and numeracy proficiency scores, hours worked, and occupation dummies based on the International Standard Classification of Occupations (ISCO, 1-digit).

*Source:* OECD (2016), *Skills Matter: Further Results from the Survey of Adult Skills*.

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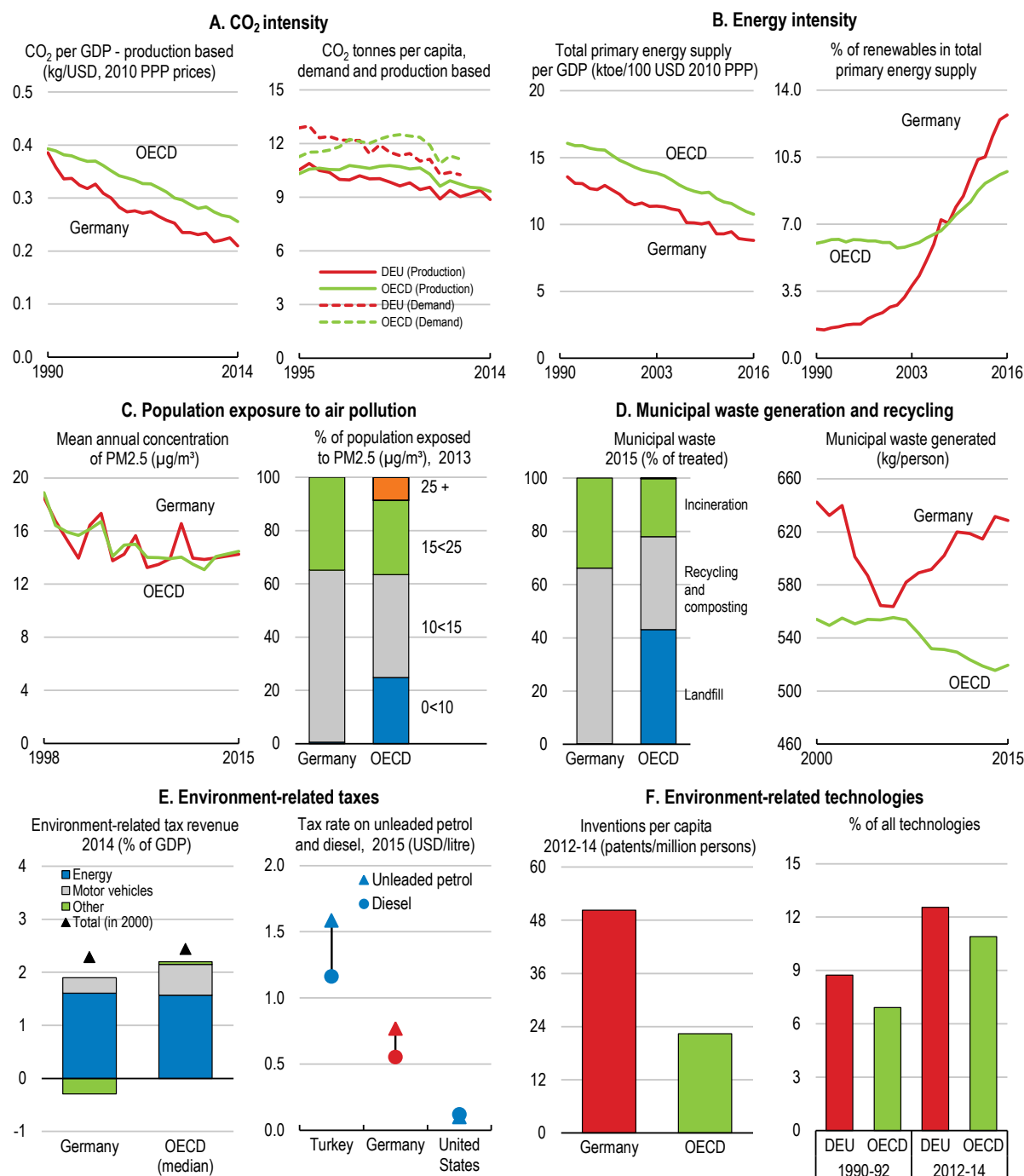
Parental leave benefits can currently be taken up either by the father or the mother for a maximum of 12 months, if they temporarily stop working to look after their children. If the second parent takes at least 2 further months off work to look after a child, the total duration for the couple is 14 months. Requiring fathers to take more parental leave for the couple to benefit from the maximum joint allowance would result in further benefits in terms of reducing gender stereotypes, stronger labour market participation by women, and better skills use.

## Meeting climate objectives requires more action

Germany has committed to reducing greenhouse gas (GHG) emissions by at least 40% by 2020 and by at least 55% until 2030, compared to 1990 levels. For 2020 Germany has chosen an ambitious national target consistent with the EU burden sharing agreement. Germany intends to reduce emissions by 80% to 95% in 2050 compared to 1990 levels, consistent with the need to achieve close to zero net greenhouse gas emissions in the second half of the century to keep the climate goals from the Paris agreement.

Additional policies are needed to meet even the near-term targets. Per capita CO<sub>2</sub> emissions have not fallen in recent years, unlike the OECD average, as economic growth has offset falling CO<sub>2</sub> intensity (Figure 39). The coalition agreement has softened the commitment to when the national 2020 target will be met. It is important to meet targets on time as the credibility of climate policy is critical in view of the long-term nature of the climate challenge.

Phasing out coal-fired energy generation has among the lowest CO<sub>2</sub> emission abatement costs and would enable Germany to meet its 2020 target (Sachverständigenrat für Umweltfragen, 2017<sup>[69]</sup>). Moreover, it would reduce electricity supply and raise wholesale prices, making low-emission gas-fired power plants more profitable and allowing to integrate renewable energies with a lower subsidy cost (Agora Energiewende, 2016<sup>[70]</sup>). Higher wholesale prices also imply an increase in household and firm electricity prices. Therefore the transition path needs to be chosen under consideration of other relevant energy policy goals like affordability and security of energy supply. However, as a recent OECD report has pointed out (OECD, 2017<sup>[71]</sup>) the low-carbon transition is consistent with achieving higher and more inclusive economic growth and stronger wellbeing, if it is accompanied by structural reforms to support the reallocation of resources and the deployment of low-carbon infrastructure. The low-carbon transition also has benefits for security of energy supply. Additional scope for GHG emissions reduction comes from aligning energy taxation better with environmental externalities (see above and the 2016 *Economic Survey*).

**Figure 39. Green growth indicators: Germany**

Source: OECD (2018), Green Growth Indicators (database).

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### *Forward-looking transport policy helps achieve climate goals, boosts wellbeing and cities' competitiveness*

Transport represents around one fifth of Germany's GHG emissions. While total GHG emissions have fallen by more than 30% since 1990, transport emissions have increased

as rising traffic more than offset efficiency gains. The 2016 Climate Action Plan for 2050 envisages a reduction of emissions from the transport sector by 40-42% by 2030. Some 96% of transport emissions are caused by road transport (Federal Ministry of Transport and Digital Infrastructure, 2017<sup>[72]</sup>), of which passenger transport contributes 64% (Statistisches Bundesamt, 2017<sup>[73]</sup>).

The transportation sector lacks an overarching policy strategy. Recent research proposes four most important policy directions that need stronger support at national level: 1) shift to public transport; 2) low-carbon freight logistics; 3) new mobility services, including internet-based car sharing, 4) non-motorised transport, including walking and cycling (Hochfeld et al., 2017<sup>[74]</sup>; Vieweg et al., 2017<sup>[75]</sup>; Umweltbundesamt, 2017<sup>[76]</sup>). Better transport management and a stronger focus on combining transport modes could make better use of rail and water transport capacities (Umweltbundesamt, 2014<sup>[77]</sup>). To allow for better and more evidence-based decisions data on the costs and benefits of different transport modes is needed. Fees and taxes on transport modes need to be based on such cost-benefit-analysis (Monopolkommission, 2017<sup>[78]</sup>). Better pricing of the externalities of transport modes, especially of individual car use (including congestion, pollution and CO<sub>2</sub> emissions) is essential to guide transport policy.

The federal government has a role to play in identifying good practice. The multiplicity of transport policy actors, including subnational governments, reinforces the need for alignment of priorities and investment. For example, Switzerland developed a nationwide concept (“*Sachplan Verkehr*”) which combines the targets of spatial and transport development and therefore could serve as an example for Germany. The Norwegian National Transport Plan envisages achieving zero emissions economic growth. It conditions central-government funding for urban infrastructure on “urban environment agreements” between central and subnational government authorities. The plan specifies that land-use plans for the larger urban areas must be aligned with the zero-growth objective. (OECD, 2016<sup>[79]</sup>).

Aligning infrastructure policies are key to achieve GHG emission reduction objectives (OECD, 2017<sup>[71]</sup>). The 2030 Federal Transport Infrastructure Plan is expected to generate emission reductions less than 8% of the needed reductions (Hochfeld et al., 2017<sup>[74]</sup>).

### *Electrification and ICT-based car sharing are key elements of a low carbon transport strategy*

Using electricity to meet primary energy needs while expanding renewable electricity generation is key for preparing economies to operate in a carbon-neutral way (OECD, 2017<sup>[71]</sup>). Germany needs to extend its charging infrastructure to promote electrification of road transport. Full electrification of the currently 45 million cars would be costly, given the limits of the expansion of renewable energies and the challenges for the electricity grid (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, 2016<sup>[80]</sup>; Umweltbundesamt, 2017<sup>[76]</sup>). To minimize the additionally needed electricity, the transport transition needs to include a mobility transition leading to fewer cars in the streets. OECD research has shown that public car sharing modes may have the potential to reduce the car fleet size dramatically. For example, a simulation for Helsinki shows that only a car fleet size equivalent to 4% to 7% of the current private car stock would be required (ITF, 2017<sup>[81]</sup>). To develop car sharing services the German authorities need to review regulation restricting development of new shared transport services. For example, the testing of transport modes which are not included in current regulation is

limited to 4 years (Sachverständigenrat für Umweltfragen, 2017<sup>[82]</sup>; Hochfeld et al., 2017<sup>[74]</sup>).

Ride sharing also reduces the cost of using electric cars below the cost of using cars with internal combustion engines. Operating costs of electric car use are relatively low, so more intensive use helps to amortise investment in electric cars and associated infrastructure. In addition accelerated fleet replacement would make quicker penetration of newer, cleaner technologies possible (ITF, 2016<sup>[83]</sup>).

### *Cities are important actors for green growth policies*

The transition towards more shared transport also offers the potential to boost wellbeing and competitiveness of cities, thanks to lower pollution and reduced congestion. About 80% of Germans live in metropolitan areas with more than 500 000 inhabitants (OECD, 2015<sup>[3]</sup>) and urbanisation is expected to grow further (Deschermeier, 2017<sup>[84]</sup>; Bertelsmannstiftung, n.d.<sup>[85]</sup>). According to an OECD study, there are about 50 000 premature deaths annually as a result of air pollution in Germany (OECD, 2016<sup>[9]</sup>).

Cities are key contributors to national socio-economic and environmental performance (OECD, 2015<sup>[86]</sup>; Ahrend and Schumann, 2014<sup>[87]</sup>). This is due to several factors, such as greater competition and deeper labour markets, a faster spread of ideas and a more diverse intellectual and entrepreneurial environment (OECD, 2015<sup>[86]</sup>). The time cost of congestion and looking for parking have been estimated at EUR 110 billion annually (INRIX, 2016<sup>[39]</sup>; 2017<sup>[40]</sup>), about 4% of GDP. Since transport is an intermediate service to other sectors, substantial additional productivity losses in downstream sectors are likely.

Shared mobility services can provide citizens with more flexible, comfortable and easily available transport and encourage the shift away from individual car use. Modelling of urban transport flows for some OECD cities has shown that ICT-based Taxi-Bus and Shared Taxi services can reduce emissions, congestion and the need for parking space sharply (ITF, 2017<sup>[88]</sup>; 2017<sup>[89]</sup>). Shared private transport works particularly effectively in tandem with public transport, for which they can act as feeders (ITF, 2017<sup>[89]</sup>), especially in areas further from the city centre (ITF, 2017<sup>[81]</sup>).

Ride sharing systems can produce transport service at lower cost than conventional public transport or private car use. Costs may be a third of current public transport cost (ITF, 2016<sup>[83]</sup>). It also reduces travel time (ITF, 2017<sup>[81]</sup>). By contrast, autonomous cars, if used individually, could increase sprawl and congestion (OECD, 2015<sup>[3]</sup>). The authorities must carefully reflect on regulation and supervision of shared urban transport systems to ensure efficient outcomes (ITF, 2016<sup>[83]</sup>). One promising approach would be to charge a single entity with matching demand and supply (ITF, 2017<sup>[88]</sup>).

Congestion charges often face fierce political resistance but have nevertheless been successfully introduced in several major cities (such as London, Singapore, Milan and Stockholm) in recent years. A congestion charge close to the level currently applied in London, with receipts being used to improve public transport in less well-served areas would lead to a reduction in car traffic by roughly 8%, with reductions in particulate matter and carbon emissions in the order of 6% (OECD, 2015<sup>[3]</sup>). This highlights that pricing policies are not sufficient but need to be accompanied by policies facilitating the development of new transport modes.

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## **Annex 1.A. Progress in structural reforms**

*This annex summarises recommendations made in previous Surveys and main actions taken since the OECD Economic Survey on Germany was published in April 2016.*

Recommendations in previous Surveys	Action taken
<b>Improving efficiency and stability in financial markets</b>	
Micro- and macroprudential regulation should address remaining risks emanating from the <i>Landesbanken</i> . Continue restructuring the <i>Landesbanken</i> , including through privatisation, consolidation or focusing on core activities according to a viable business model.	One <i>Landesbank</i> is being privatised, as required by the EU Commission under state aid rules.
Improve corporate governance in the <i>Landesbanken</i> and savings banks, for example, by requiring members of the board to be more independent from elected regional and local governments.	No action taken.
Consider ways to improve the effectiveness of requirements to separate investment banking activities from retail banking. For example, give consideration to including securities held for market-making purposes in separation requirements and to focusing such requirements on derivatives exposures.	No action taken.
<b>Improving efficiency in public finance</b>	
Strengthen public investment in childcare, early childhood education (ECEC) and primary education. Invest more in full-day schooling,	The federal government has launched an investment program until 2020 that supports expansion of childcare services. It also supports the operating costs of childcare services borne by <i>Länder</i> . Also, measures have been taken to improve access to ECEC and quality of ECEC such as the qualification of child minders.
Provide more support for good municipal investment projects, including by strengthening administrative capacity, especially in municipalities burdened with high spending mandates (such as cash transfers).	In 2017, the federal government increased funding for school infrastructure. It also grants financial relief to municipalities with high federally-mandated social benefit spending.
Improve priority setting in budgeting, for example by enhancing the analytical capacity of parliament and by making poor performance of budget programmes public.	The federal government introduced yearly rolling spending reviews on selective narrowly-defined policy fields in order to improve expenditure prioritisation. Some performance information is included in the budget review.
Introduce regional advisory units in all <i>Länder</i> to provide technical support for local governments in carrying out investment.	The federal government has launched a service to provide organisational and technical support and it has supported more than 100 projects.
Promote e-procurement by improving skills of procurement officials. Involve the public more effectively in investment projects through electronic communication tools.	Since 2016 all federal administration authorities have to publish notices and provide procurement documents online and accept submission of electronic bids. The government is promoting awareness on the training of procurement officials at all levels of public administration.
Improve assessment and disclosure of long-term financial risks of public-private partnerships (PPPs) of subnational governments. Share experience across levels of government and national borders and harmonise procedures.	A special working group was launched in 2017 to improve transparency of PPP projects including their financial risks, chaired by the Federal Ministry of Finance and involving federal line ministries, <i>Länder</i> and other local authorities.
Re-allocate administration of the collection of taxes which accrue to the federal government or are shared between the different layers of government from the <i>Länder</i> to the federal government.	No action taken.
Consider introducing usage-dependent and congestion-dependent road tolls for cars.	The infrastructure charge for the use of federal trunk roads is expected to be collected from 2019.
Include private insurers in the financing system based on the central health fund.	No action taken.
<b>Reforming the tax system</b>	
Phase out reduced VAT tax rates.	No action taken.
Reduce social security contributions, notably for low income workers.	The contribution rate to the statutory pension insurance was reduced slightly in 2018.
Cut statutory corporate tax rates. Consider lowering or abolishing the local trade tax.	No action taken.
Update real estate tax valuations while protecting low income households.	No action taken.
Extend capital gains taxes on residential real estate except for owner-occupied housing.	No action taken.
Raise the tax rates applying to household capital income towards marginal income tax rates applying to other household income.	No action taken.
Equalise the inheritance tax burden for different forms of wealth. Remove exemptions for family businesses.	No action taken.
Broaden the contribution base for the funding of health and long term care	Since 2015, the transfer from the federal government budget to public

Recommendations in previous Surveys	Action taken
beyond wage income to all household income.	health insurance has been increased somewhat.
<b>Reforming the pension system and improving wellbeing at old age</b>	
Index the legal pension age to life expectancy.	No action taken.
Raise the pension premium for starting to draw old-age pensions later in life.	The pension premium remains unchanged.
Do not reduce pensions for old-age pensioners who work.	Since 2017, a partial pension and wage earnings can be combined in a more flexible and individual way. Labour market earnings now reduce pensions by 40% only above a threshold of EUR 6 300 annually (previously the threshold was EUR 450 per month). Since 2017, individuals who continue to work after the statutory retirement age can choose to pay pension contributions and thereby accrue full benefits on all their pension contributions.
Allow working old-age pensioners to accrue benefits on social security contributions employers pay on their behalf.	
Focus additional pension entitlements on reducing future old age poverty risks, for example, by phasing out subsistence benefit entitlements more slowly as public pension entitlements rise. Fund such additional spending from general tax revenue instead of higher payroll taxes.	A lump-sum allowance for private old-age provision was introduced in subsistence benefits in January 2018. The additional income within the threshold will not be deducted from the benefits.
Strengthen insurance against disability, for example by making it easier to claim legitimate private disability insurance benefits. Consider eliminating the discount from public disability benefits for claiming the benefit before the age of 63 years and ten months. Reconsider the cuts of these benefits as other income rises.	Legislation in 2017 improved the benefits in case of reduced earnings capacity in the statutory pension insurance.. A more flexible combination of partial pension and supplementary earnings also applies for disability benefits.
Remove barriers to the portability of civil servant pensions.	No action taken.
Enrol all individuals in occupational pensions by default, allowing them to opt out.	As of 1st January 2018, social partners can establish enrolment by default in firms covered by collective bargaining.
Strengthen supervision of direct pension commitments of employers. Make contributions to the risk-pooling scheme dependent on risk indicators.	No action taken.
Reduce operating costs of subsidised, individual pension plans by improving comparability among providers.	Since 2017, providers of subsidised individual pension plans are obliged to disclose the operating costs and how much it reduces yield.
Promote workplace health by improving monitoring and the collaboration between authorities and employers.	No action taken.
Strengthen enforcement of workplace regulation for workers on non-standard contracts.	No action taken.
Strengthen experience-rating in employer contributions to work accident and disability insurance.	No action taken.
Encourage healthy life-styles by raising taxes on alcohol and tobacco and reviewing regulation.	The EU directive on advertising of tobacco has been implemented. The minimum tax rate on cigarettes was increased in 2016.
<b>Improving labour market performance</b>	
Lower the tax burden on the second earner in personal income taxation for example by introducing a separate tax-free allowance for second earners.	No action taken.
Relate health insurance premiums to the number of adults in a household.	
Continue to expand formal childcare provision, notably for full-day care. Consider introducing a voucher system for childcare. Lower regulations for the set-up of childcare facilities to encourage more private supply.	A new investment program for expanding and improving childcare worth EUR 1.1 billion was launched in 2017.
Reduce the gap in employment protection between permanent and temporary workers by moving towards a unified job contract with the degree of protection rising with tenure.	Since 2017, the duration of employment on jobs filled by temporary work agency workers is limited to 18 months.
Ease employment protection legislation for regular job contracts by shortening the notification procedure, by reducing the notice period for workers with long tenure and, in case of dismissals for economic reasons, by giving employers the right to choose between a severance payment or paying a higher unfair dismissal compensation which would replace the court route.	
Limit the use of multiple successive fixed term contracts with the same employee.	
Target the preferential tax treatment of minijobs towards low-wage workers.	No action taken.
Continue to review in-work benefits (means-tested benefits which low-pay workers may be able to receive in employment) to ensure that the most vulnerable receive sufficient support while minimising disincentives to work. For instance, phase out more slowly means-tested subsistence benefits for	No action taken.

Recommendations in previous Surveys	Action taken
particularly vulnerable individuals earning more than EUR 100. Phase out additional child benefits paid to parents receiving a housing allowance more slowly.	
<b>Integrating immigrants better in the labour market</b>	
Ease labour market testing requirements for asylum seekers who are judged likely to stay and include them in active labour market programmes.	Labour market tests have been suspended for asylum seekers since 2016. Since 2016, refugees with good prospects of staying can participate in a job opportunity programme financed by the Federal Government. They also have access to preparatory courses for on-the-job vocational training after three months of staying in Germany.
Improve access of immigrants to public sector jobs.	No action taken
Improve training and the recognition of immigrants' skills.	Monitoring through common statistics across the <i>Länder</i> is in preparation and will be available in the course of 2018. Between 2012 and 2016, the government received 86.000 applications filed according to the Federal Recognition Act. Most of the applicants received full recognition. Others were offered trainings by several organisations. Furthermore, the Federal Employment Agency provides qualification programmes and counselling (see above). A new program was launched in 2016 to lower the costs of application for skills recognition for low income immigrants. Programs aimed at the integration of asylum seekers into the labour market are in place. They include German classes, (re)-enrolling in school, and counselling services.
Decide quickly who will be allowed to stay and reunite families quickly, especially those with young children.	No action taken.
Integrate migrant children in mainstream schooling while providing specific language support.	Children without any knowledge of German are usually first taught German in preparatory courses. At the same time, they also attend some regular classes to prepare the transition into the regular system. Some <i>Länder</i> boosted language support to accelerate integration.
Provide financial incentives and advice to parents to encourage refugees to make use of childcare and early childhood education.	Access to school education is guaranteed for all children of asylum seekers. The funding for the migration counselling service for adult immigrants (Migrationsberatung für erwachsene Zuwanderer) was updated in 2016.
Take stock of all available integration measures and evaluate their effectiveness.	The review of the government strategy for German courses and integration of refugees was published in 2017.
Consider establishing an institution tasked with designing, assessing and coordinating labour migration policy.	No action taken.
<b>Enhancing competition in product markets</b>	
Liberalise the issuance of SIM cards in mobile communication. Sell the remaining government shares of Deutsche Telekom.	Since 2016, the use of foreign International Mobile Subscriber Identities (IMSI) in Germany and the use of German IMSIs abroad are allowed for Machine-to-Machine (M2M) communication.
Raise competition in the railway sector, for example by fully privatising the transport service subsidiaries while retaining state ownership of the tracks, and by eliminating exemptions from tendering of regional railway services. Facilitate access of market entrants to rolling stock.	The investigative and interventional competences of the regulator will be strengthened by transposing the 4th EU railway package into national law.
Strengthen the role of the regulator by improving its investigative and interventional competences. Move to full ex ante regulation of access conditions.	
Provide equal treatment in value added taxation for all postal service providers.	No action taken.
Sell the remaining government shares of Deutsche Post.	
Ease requirements to hold a tertiary level vocational degree or alternatively to have job experience in a leading position, for self-employment in some crafts.	No action taken.
Scrutinise compulsory membership and chamber self-regulation in the professional services and crafts chambers for entry barriers and lower entry requirements where possible.	No action taken.



Recommendations in previous Surveys	Action taken
Abandon price regulation in some professional services. Abolish the price regulation for architects and engineers and consider liberalising price regulation for notaries. Give lawyers more options to deviate from the principle of effort-based remuneration, e.g. allow all-inclusive fees for certain tasks and extend outcome-based payments.	No action taken.
Reduce exclusive rights in the professional services. For example, allow new companies to register in the commercial registry without notary services and open the provision of auxiliary services in property conveyancing to other professions. Reduce exclusive rights of lawyers in providing legal advice and representation in court.	No action taken.
Review restrictions on business conduct in the professional services. Abolish all remaining restrictions on advertising for lawyers. Give consideration to abolishing restrictions on shareholders for limited liability companies of lawyers, tax consultants, architects and engineers.	No action taken.
Relax the requirement that pharmacies can only be owned by a pharmacist who has to work personally in one out of a maximum of four branches he/she is allowed to own.	No action taken.
Strengthen the analysis of the economy-wide impact of regulation. Establish an advisory body tasked with identifying and reviewing regulatory hurdles to higher productivity.	No action taken.
Strengthen transparency on the role of lobbies in the design of new legislation and regulation, for example, by providing more information in the lobbying register, such as the potential beneficiary and the targeted government action.	No action taken.
Remove limitations on the carrying forward of losses when a start-up firm is sold while taking measures to prevent tax evasion.	A legislation expanding the options for carrying forward tax losses was adopted in 2016.
<b>Improving educational outcomes</b>	
Remove constitutional barriers to federal government co-funding of education expenditure by subnational governments.	In 2017, the constitution allowed the federal government to provide funding to financially weak municipalities for important investment in local education infrastructure.
Ensure equal access of the most vulnerable to affordable high-quality childcare.	A program reaching out to families advocating the benefits of early childhood education and care system was launched in April 2017.
Improve the quality of early childhood education and care, including by improving the staff-child ratio in accredited facilities; by better integrating education and care; and by ensuring early childhood professionals have better qualifications, more professional development opportunities and better working conditions.	No action taken.
Increase the availability of full-day schooling.	The proportion of full-day schools has reached more than 50%.
Continue to reduce the stratification in the school system, notably by delaying the tracking decision beyond age ten and reducing the number of school tracks across all <i>Länder</i> .	Many <i>Länder</i> are merging Haupt- and Realschulen.
Reduce grade repetition.	
Continue reducing the assignment of pupils to special needs schools ( <i>Sonderschulen</i> ) and make sure assignment to such schools does not reflect the socio-economic background of pupils.	No action taken.
Provide more financial resources to schools with a comparatively high share of pupils with weak socio-economic background in particular at lower secondary level.	No action taken.
Further reform the VET system by considering reducing the variety of VET qualifications and providing continuing education offers of general skills (mathematics, German, foreign languages, computer skills) according to labour market needs.	Some courses on general skills are offered since 2015 as response to large enrolment of refugees.
Let vocational schools and chambers jointly prepare and carry out the final examination of dual VET programmes.	
Ensure sufficient and diverse financing of higher education and overcome the free-rider problem between <i>Länder</i> in the financing of university education.	No action taken.
Strengthen life-long learning. Improve transparency in the adult education market and facilitate access to guidance on adult training. Carefully monitor	A counselling hot line for continuing education was launched in 2015.

Recommendations in previous Surveys	Action taken
the outcome of financial support programmes for adult learning and education.	
<b>Fostering green growth</b>	
Gradually adjust energy tax rates according to carbon intensity. Eliminate exemptions and reduced energy tax rates, except if they are designed to avoid double taxation, notably in sectors covered by the EU ETS.	No action taken.
Introduce taxation of NOx emissions of large emitters. Tax cars according to their NOx emissions.	No action taken.
Phase out tax expenditures for activities that damage the environment without harming international competitiveness, and better align environmental taxation with negative externalities. For example, raise taxes on diesel.	No action taken.
Make feed-in tariffs of renewable energy more cost-effective by linking them to market developments. Consider reforms to move the current support scheme to a competitive auction system.	Competitive auctions were introduced in 2017 to determine the funding for renewable installations.
Provide adequate incentives for the transmission systems operators to invest in the most efficient technologies while extending the grid.	No action taken.

