

Youth Employment Index 2018

The potential £40 billion prize from boosting youth
employment, education and training in the UK

November 2018

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Foreword

This report is part of a series of PwC studies into the structure, performance and potential of the UK labour market in comparison to other OECD countries. Alongside our *Women in Work* and *Golden Age* indices, it explores ways in which people from all demographic groups can be encouraged and enabled to realise their potential through productive careers that will also benefit our future economy and society. In this report, we discuss how governments and businesses in the UK and the rest of the OECD can support young people to engage with education, training and work.

The index estimates the potential gain from boosting youth employment, education and training to be around £40 billion in the UK and over \$1 trillion across the OECD. This can be achieved by lowering the NEET (not in education, employment or training) rate to German levels. Potential gains could be as high as 8% of GDP for Turkey and Italy, where there are currently high levels of youth unemployment. The UK could see an annual improvement of around 1.9% of GDP in the long run.

Across the OECD, a young person aged 15-24 is, on average, 2.5 times more likely to be unemployed, compared with someone aged 25-54. This year, we take a closer look at the drivers of youth unemployment.. We find that faster economic growth, a higher level of employment of older workers and financial incentives are associated with lower youth unemployment.

To understand what can be done to lower the youth unemployment rate, we have used econometric modelling techniques to identify the common factors shared by the top performers in our Youth Employment Index. These countries have high-quality educational and vocational training systems as well as support for disadvantaged youths. For example, the top three economies in the index (Switzerland, Germany and Japan) have an upper-secondary attainment rate among 25-34 year olds of 87-94%, compared with the OECD average of 84%.

In the UK, there are three government policies currently exerting a strong influence on the opportunities available to young people, relating to apprenticeships, upper-secondary education and social mobility. However, despite these positive steps, there is still more to be done to make education and training more accessible for young people across the UK.

This report aims to highlight the challenges facing young people today and to stimulate conversations on how governments, businesses and society can work together to address these issues. Please feel free to reach out to us if you have any questions or comments on this study, or would like to discuss further how this applies to your organisation.



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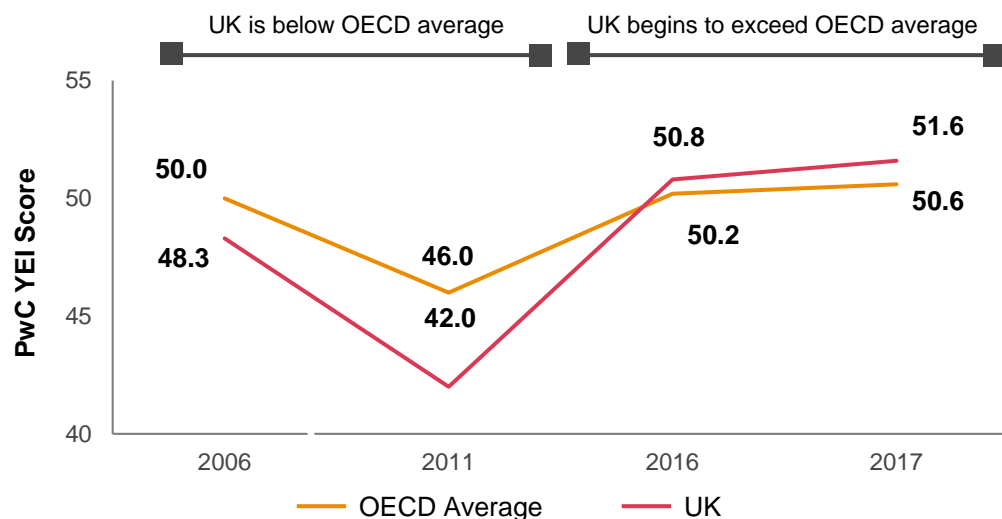
Executive summary



The UK continues to improve its Youth Employment Index score gradually, rising from 20th to 19th in the OECD. But policymakers and businesses can take further steps to support workers in the education and training system and the workplace

UK 19th

The UK ranks 19th in our Youth Employment Index this year, up from 20th last year, and is starting to move clear of the OECD average



There are three government policies currently exerting a strong influence on the opportunities available to young people in the UK

1. Apprenticeship Levy

Which is benefiting some firms, but design changes might further enhance its impact

2. Educational reforms

Including the introduction of T-levels and new rules on student loans

3. Social mobility

Policies to improve social mobility, such as targeting funding towards UK opportunity areas

Ways in which businesses can strengthen their financial performance while also helping to attract and retain talented people



Offering high-quality training opportunities

High-quality training opportunities attract better talent and improve staff retention rates



Achieving a diversity of perspective

Firms should prevent discrimination of all kinds and ensure opportunities are open to workers from disadvantaged backgrounds. This will help companies gain a broader diversity of perspective and potentially boost their long-term performance.



Incentivising staff through means other than compensation

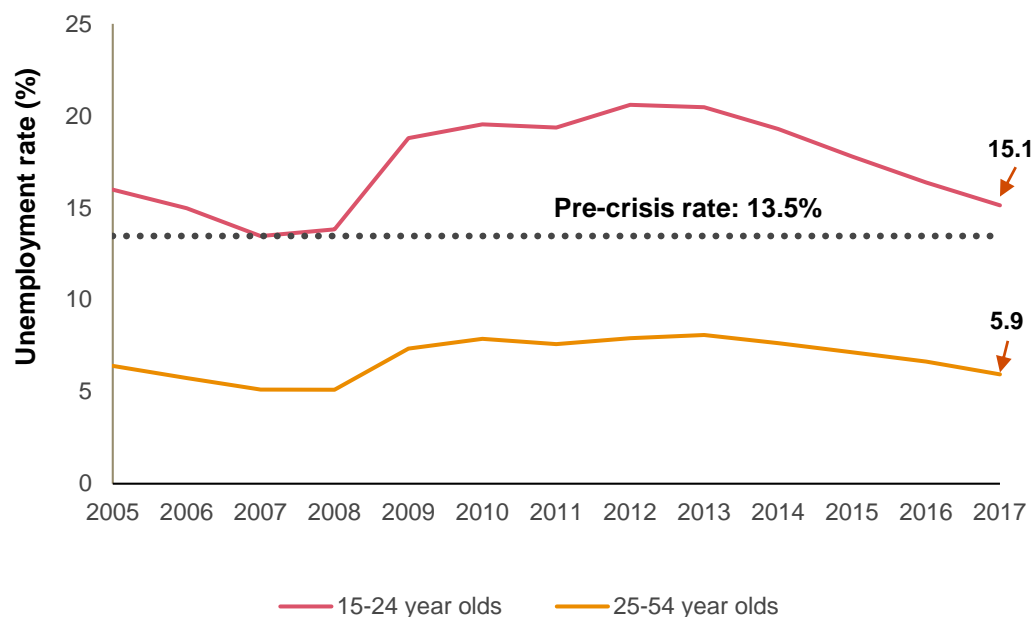
Many people are interested in other forms of compensation beyond their basic wage. Examples include businesses scrapping strict uniform policies and relaxing limits on annual leave

Youth unemployment across the OECD continues to fall, but remains above the average pre-crisis rate. Joblessness has long-term adverse consequences for individuals and the economy

Although the average unemployment rate across the OECD has continued to fall since 2013, it remains 1.6 percentage points higher than pre-crisis levels at 15.1% in 2017

A young person aged 15-24 is, on average, 2.5 times more likely to be unemployed compared with someone aged 25-54.

Average unemployment rates across the OECD



Sources: PwC analysis, OECD, Public Health England, Eurofound



Consequences for the economy

Youth unemployment is also a significant cost to the economy. Research suggests that the annual loss to European economies is around €142 billion (2015 prices), as a result of benefits costs and foregone earnings and taxes.



Consequences for individuals

Engaging young people in education and employment is important. Work and training help the individuals realise their potential and make a positive contribution to their community and influence social stability.

Time spent as a NEET (not in education, employment and training) can have negative consequences on physical and mental health, and increase the likelihood of long-term unemployment, low wages, or low quality of work later in life.

Christine Lagarde, the Managing Director of the International Monetary Fund, recently emphasised the problems faced by the next generation and the importance of young people in society:

“

Building an economy that works for young people creates a stronger foundation for everyone. Young people with productive careers can contribute to social safety nets. And reducing inequality across generations goes hand-in-hand with creating sustained growth and rebuilding trust within society.

None of this is easy. Policies need to be tailored to the needs of individual countries, recognise political realities, and stay within a budget.

But there is no doubt that now is the right moment to act — the time to fix the roof is while the sun is shining.

”

Christine Lagarde, January 2018

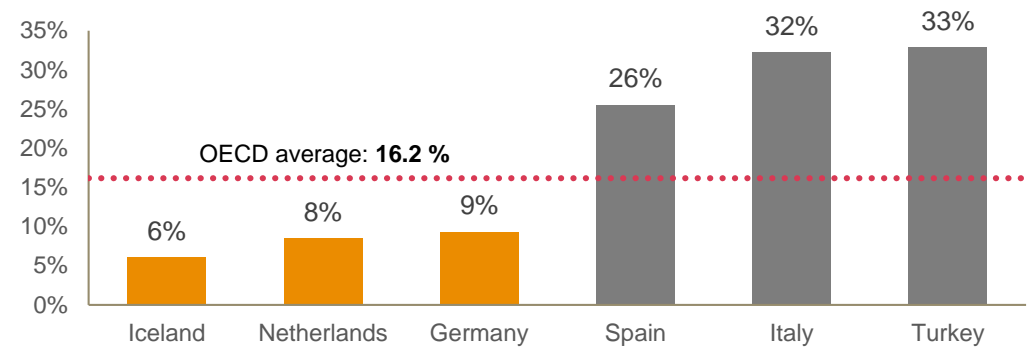
We estimate that lowering NEET rates across the OECD to German levels could boost UK GDP by around £40 billion – or around \$1.2 trillion across the OECD

The top three spots in our Youth Employment Index are occupied by:



Countries with the lowest NEET rates (20-24 year olds)...

...and the highest rates

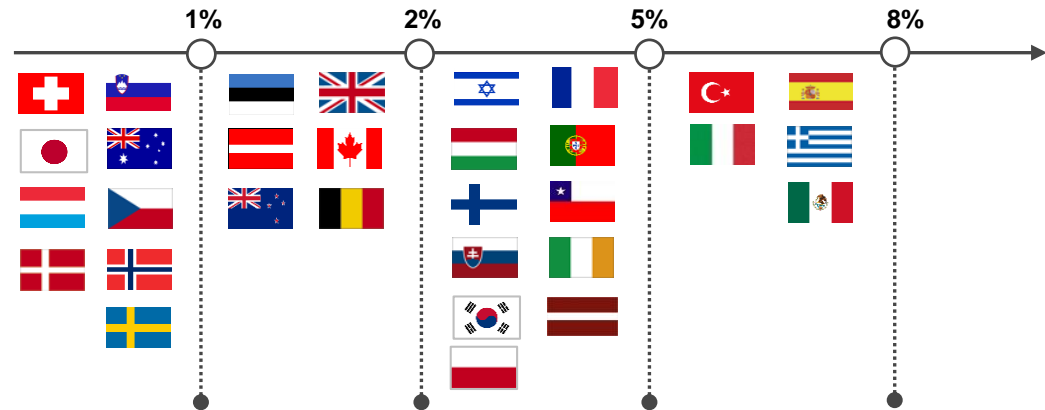


\$1.2tn
£40bn

Our analysis suggests the OECD could experience a potential long-run increase in GDP of c.\$1.2 trillion by lowering NEET rates to German levels.

For the UK, the potential long-term gain could be around 1.9% of GDP, equivalent to around £40 billion per year at current GDP values.

If OECD countries lowered their NEET rates to German levels, they could experience a long-run boost to GDP of...



Sources: PwC analysis, OECD

Economic growth is critical to lowering youth unemployment. Top performers in our Youth Employment Index also have high educational attainment rates and well-established vocational training routes into work

From our analysis we find that key drivers that influence the youth unemployment rate include the following:



Economic growth

Youth unemployment is highly negatively correlated with GDP growth, which means that the young were particularly hard hit by the global financial crisis of 2008/09 and the subsequent Eurozone debt crisis.



Older workers

A higher employment rate among older workers also correlates with lower levels of youth unemployment. This suggests a complementary effect rather than substitution effect between the two groups of workers (i.e. older workers do not crowd out younger workers, or vice versa)



Unemployment benefits

Higher levels of state spending on unemployment benefit is associated with a higher youth unemployment rate. This could be because there is a greater incentive not to work if there are public financial benefits available.

Top performers in the index like Switzerland, Germany and Japan have successfully implemented policies in three key areas:

1

High educational attainment and graduation rates

- Higher educational attainment opens up greater choice over future careers.
- The top three performers in the index have an upper-secondary attainment rate of 87-94% among 25-34 year-olds, compared with the OECD average of 84%.

2

High-quality vocational training opportunities

- Vocational pathways are also growing in importance, including an emerging skills shortage in STEM skills.
- Some countries have impressive educational attainment, but lack young people trained in vocational courses (for example, the UK). This can result in an undersupply of skilled workers in some sectors of the economy.
- Over 70% of young people participate in vocational education and training in Switzerland, the top ranked country in our index. Germany is also strong in this area.

3

Supporting the disadvantaged in society

- Policies to support the disadvantaged can help lower the unemployment rate, and prevent a minority of young people being 'left behind'.
- For example, Germany provides a job-seekers' allowance package designed to provide a "decent existence", including involvement in social, cultural and political life.

2

Key index results



Our Youth Employment Index takes a holistic view of the labour market across the OECD, combining eight key indicators into one comparable metric



Labour market indicators

The PwC Youth Employment Index¹ combines a broad range of labour-market indicators as listed below with relative weights shown in brackets. Employment rates have the highest weights but other variables are included to present a more holistic picture:

- Employment rate, 15-24 year olds (20% weight)
- Rate of 20-24 year olds not in education, employment or training (20%)
- Unemployment rate, 15-24 year olds (10%)
- Relative unemployment of 15-24/25-54 year olds (10%)
- Incidence of long-term unemployment, 15-24 year olds (10%)
- Incidence of part-time work, 15-24 year olds (10%)
- School drop-outs, 20-24 year olds (10%)
- Enrolment rate of 15-19 year olds (10%)

Process

- These indicators are normalised, weighted and aggregated to generate index scores for each country. This allows us to benchmark the UK against other OECD countries.
- The index scores are on a scale from 0 to 100, with the average OECD value in the base year of 2006 set to 50. However, the average index values for 2011, 2016 and 2017 can be higher or lower than this 2006 baseline.
- We can therefore compare how each country's performance has evolved over time in absolute terms, as well as the relative performance of countries in a particular year.
- **See Annex for more details of the methodology**

Labour-market indicators

- All data is taken from the OECD
- We focus mostly on the 15-24 age group for data reasons, but some variables are more applicable for the later age group of 20-24 year olds as there is more variation across countries and time. We use the latest available data from the OECD for each country which in most cases this is 2016 or 2017.

¹The Youth Employment Index was previously known as the Young Workers Index.. Data contained in the 2018 edition are broadly comparable to those published in previous years.

Switzerland, Germany and Japan occupy the top spots in our index, while Southern European countries remain towards the bottom; the UK rises from 20th to 19th

	Rank				Country	Index			
	2006	2011	2016	2017		2006	2011	2016	2017
Japan's index score continues to increase, going from 5th to 3rd position, being driven by a sharp decline in long-term youth unemployment between 2016 and 2017.	2	1	1	1	Switzerland	67.0	69.8	70.3	71.6
	11	2	3	2	Germany	57.8	65.5	64.8	65.3
	9	6	5	3	Japan	60.7	58.7	61.5	63.9
	4	3	4	4	Austria	64.8	65.4	61.5	62.8
	1	5	6	5	Denmark	67.5	58.8	60.7	61.3
Iceland has fallen from 2nd to 8th place in the last year. Iceland's index score has decreased as youth unemployment has increased slightly, while adult unemployment has continued to fall, leading to an overall increase in relative youth to adult unemployment ratio.	13	16	9	6	Estonia	55.5	48.2	57.3	59.9
	3	4	7	7	Netherlands	66.7	62.3	58.0	59.7
	5	10	2	8	Iceland	63.1	54.2	67.6	59.4
	6	7	11	9	Canada	62.5	58.3	57.0	57.9
	34	28	12	10	Israel	29.9	36.8	56.7	57.9
Ireland has struggled to regain its position in the top half of the table since the financial crisis.	12	14	14	11	United States	56.6	49.0	56.4	57.9
	19	13	15	12	Czech Republic	50.3	49.8	55.8	57.5
	8	8	10	13	Australia	61.8	58.3	57.3	57.2
	7	9	8	14	Norway	62.5	57.8	57.7	56.6
	17	11	22	15	Slovenia	52.6	52.1	50.1	56.6
The OECD average index score has continued to improve, surpassing its pre-crisis level.	24	17	16	16	Sweden	44.5	47.7	54.0	55.0
	16	24	18	17	Latvia	53.0	39.2	52.2	53.8
	15	18	17	18	New Zealand	53.4	46.6	52.4	52.0
	21	22	20	19	United Kingdom	48.3	42.0	50.8	51.6
	14	12	19	20	Finland	55.0	52.0	51.5	51.4
Core European countries continue to do well, with Switzerland and Germany at the top of the table.	25	25	24	21	Hungary	43.1	38.8	49.1	51.4
	18	15	21	22	Korea	51.8	48.2	50.2	50.7
	27	19	13	23	Luxembourg	41.0	46.3	56.5	50.4
	29	21	25	24	Poland	39.6	42.3	48.3	49.3
	10	31	23	25	Ireland	60.1	33.4	49.4	46.4
The North American countries continue to move up the index, returning to their pre-crisis positions.	30	30	28	26	Slovak Republic	38.7	33.5	43.5	46.3
	22	20	27	27	Belgium	46.1	44.7	44.4	44.7
	28	26	26	28	Chile	40.8	38.6	45.8	42.1
	26	23	30	29	France	41.0	41.8	39.5	41.4
	31	27	29	30	Mexico	38.6	37.4	39.6	39.8
The UK has improved its overall index score and moved up one place from 20th to 19th place.	23	29	32	31	Portugal	45.6	34.0	34.3	36.4
	35	32	31	32	Turkey	13.3	28.1	34.7	33.6
	20	33	34	33	Spain	49.4	24.9	25.0	26.2
	32	34	33	34	Greece	37.2	24.2	25.8	25.7
	33	35	35	35	Italy	30.2	21.1	16.6	17.3
OECD Average						50.0	46.0	50.2	50.6
Southern European countries remain at the bottom of the index and have struggled to match their pre-crisis scores.									

3

Potential
boost to GDP

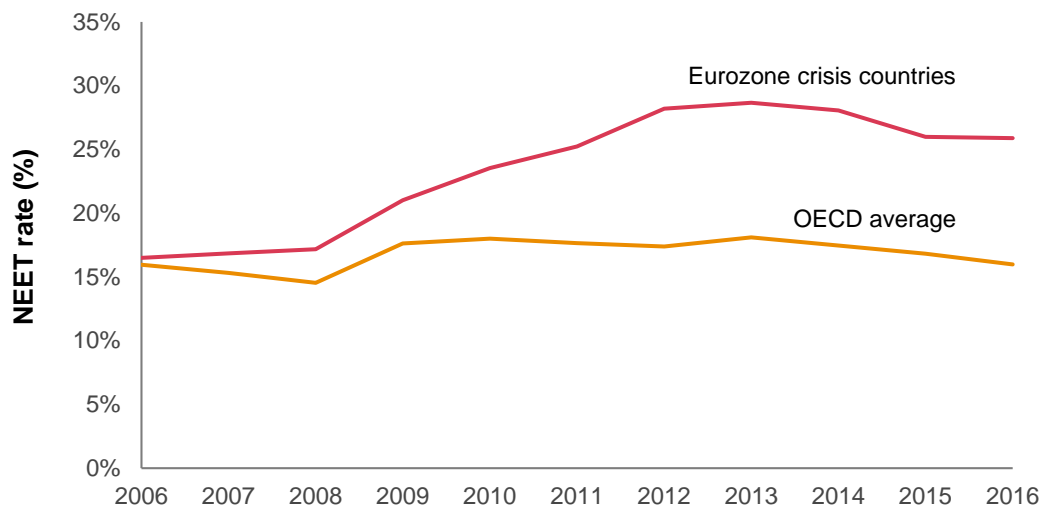


There is significant variation across the OECD in the number of young people not in education, employment or training (NEETs)

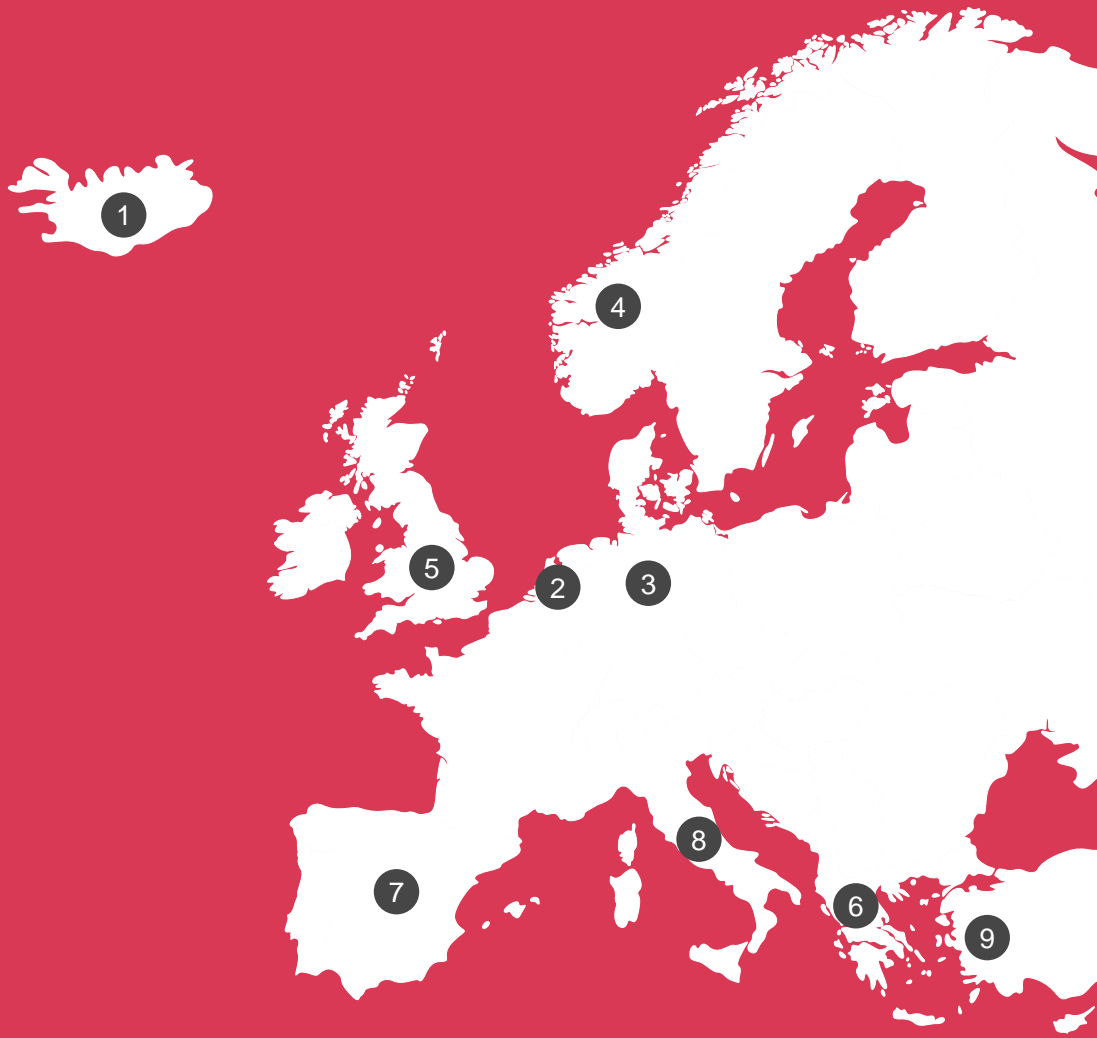
There is huge variance in NEET rates across the OECD, ranging from around 6% in Iceland to more than 30% in Italy and Turkey. Based on these variations, we estimate the economic gain from lowering NEET rates to the levels of Germany, a large economy with a low NEET rate.

The OECD average NEET rate is back down to its pre-crisis level. Having risen to 18% in 2010, it has now fallen to 16%.

However, in many of the Eurozone crisis countries, rates remain significantly higher. The average level in Greece, Ireland, Italy, Portugal and Spain still remains almost 10 percentage points higher than in 2008, at around 26%.



Sources: OECD.
*We use the latest annual available data (2016) for NEET rates across the OECD. The only exception is Germany where we have used the 2015 NEET rate as the 2016 statistic showed an increase in the NEET rate that was inconsistent with the general trend for the declining NEET rate. Eurostat has 2017 data for Germany which shows the NEET rate at 9.1% similar to 2015 levels, hence we have used the 2015 figure from the OECD of 9.3% in the calculation for potential long-term boost to GDP across the OECD countries.



NEET rate (20-24 year olds)*

Share of youth that are not in employment, education or training

1	Iceland	6.0%	4	Norway	10.9%	7	Spain	25.5%
2	Netherlands	8.5%	5	UK	15.0%	8	Italy	32.2%
3	Germany	9.3%	6	Greece	25.0%	9	Turkey	32.9%

We estimate that the long-run gain from reducing NEET rates of 20-24 year olds to match German levels could be around \$1.2 trillion across the OECD. For the UK, the annual long-run boost could be around 1.9% of GDP (c.£40 billion)

The OECD could add around \$1.2 trillion to total GDP in the long run if countries with higher NEET rates among 20-24 year olds lowered their rates to German levels

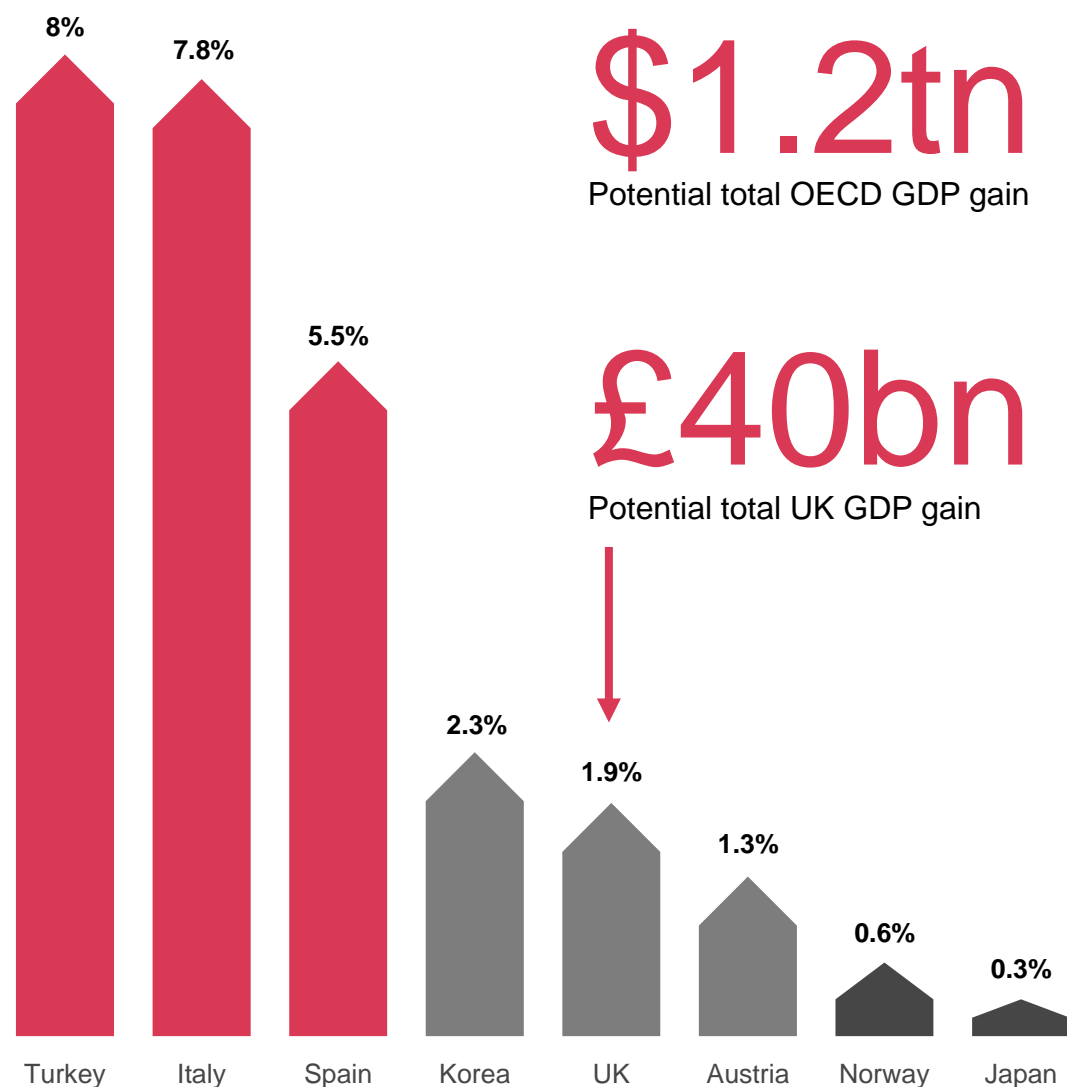
- Our analysis provides an estimate of the broad order of magnitude of potential gains from lowering NEET rates to match those of Germany– a top ranking EU economy in the index.*
- The potential GDP boost from lowering NEET rates for 20-24 year olds varies significantly, from around 0.3% in Japan, which already performs well, to around 8% in Turkey.

Those who scored lower on the Youth Employment Index have the most to gain in the long-run from lowering their NEET rates

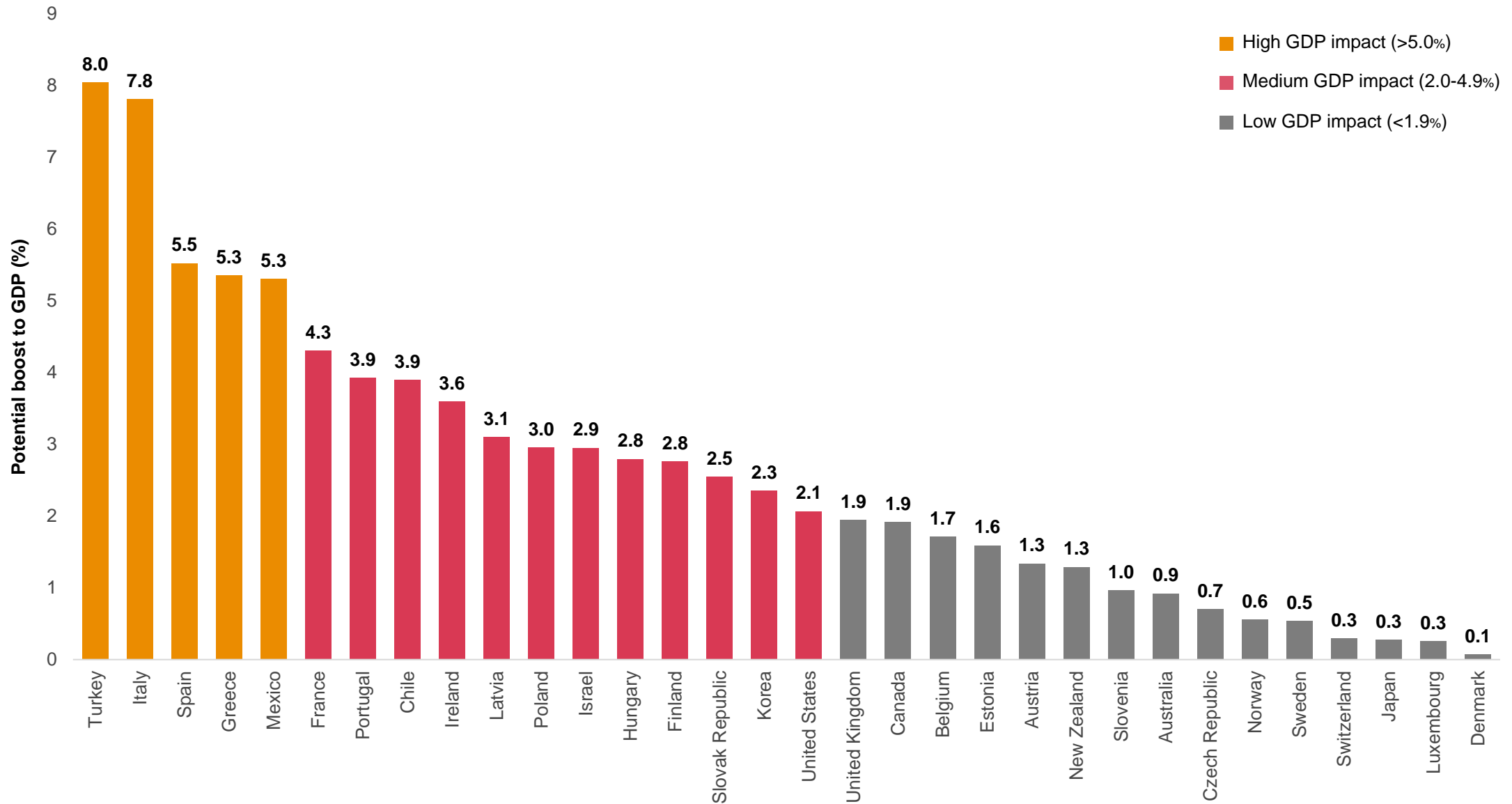
- Turkey, which ranked in 32nd place, and Italy, which came last, could experience the largest economic gains, of around 7.8-8% of GDP.

The UK could achieve a potential long run boost of around 1.9% of GDP (c.£40bn):

- Although Germany gradually lowered its NEET rate for 20-24 year olds between 2006 and 2015, from 19% to 9%, the UK's rate has drifted upwards between 2006 and 2012, from 18% to 20%. However, the UK has made considerable progress in the last two years, with its rate falling to 15% in 2016 – but this is still above Germany's rate of 9.3%.
- By matching the NEET rates of 20-24 year olds in Germany, the UK could increase its GDP by around 1.9%, or around £40 billion at 2017 GDP values. This would take time to build up, so should be interpreted as a long-term potential boost to the economy.



The lower performers on our Youth Employment Index generally have the most to gain from reducing their NEET rates to German levels



A close-up, profile shot of a young woman with dark hair, wearing a light-colored ribbed turtleneck and a dark jacket, driving a car. She is looking out the window with a thoughtful expression. The background is blurred, showing a building and a bright light source. A red rectangular overlay is on the left side of the image.

4

Drivers of youth
unemployment rates

We use an econometric approach to analyse drivers of youth unemployment rates across the OECD

Youth unemployment is often a major concern for society and policymakers, as it is on average much higher than the adult unemployment rate. For example, in 2017, the OECD average unemployment rate for the 15-24 age group was 12% compared to 5% for the 25-54 age group. This section of the report will explore the key drivers of youth unemployment, analysing how macroeconomic conditions and structural factors, including labour market incentives and policies, impact the youth unemployment rate on average across countries. This analysis can help support our understanding of how policymakers and businesses can decrease the unemployment rate among younger workers to ensure sustainable long-run growth and, from an individual perspective, ensure young people have good health and well-being and are engaged in society

Our approach

We use a dynamic panel model to estimate the key drivers of the employment rate of older workers, using unemployment rate for the 15 to 24 age group as our dependent variable. Our dataset covers all 35 OECD countries over 17 years (2000-16).

Our approach exploits cross-country differences in the labour market for young workers across the OECD. Our approach is robust, as it accounts for a) potential reverse causalities where the unemployment rate for young workers influences one or more of the explanatory variables and b) endogeneity concerns (e.g. unobserved factors that are potentially correlated with labour market and policy variables).

We model the drivers of unemployment as the function of a number of explanatory variables, as outlined on the right. The model accounts for country-specific characteristics (or ‘fixed effects’) that explain the employment rate for young workers and are constant over time.

The dynamic panel model also tests whether the unemployment rate of young workers is persistent over time. Persistency (i.e. when the current unemployment rate is influenced by past unemployment rates) could be caused by policy and structural factors which take time to have an effect, such as public spending on employment services (e.g. providing career advice to jobseekers, setting up placements for the unemployed), or out of work income maintenance and support (e.g. unemployment benefits, insurance and assistance) which do not vary significantly unless there is major structural reform.

Appendix 1 contains more details of our econometric specification, modelling approach and results.

Variables used in the econometric model

Dependent variable

Unemployment rate, 15-24 (% of age group)
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Independent variables

GDP growth rate	Economic crisis indicator	Log of real minimum wage\
Public expenditure on employment services as % of GDP	Employment rate, 55-64 (% of age group)	Lag youth unemployment rate
Public expenditure on out of work income maintenance and support as % of GDP	Gender employment gap, 15-24 (%male-%female)	

Other variables (e.g. public spending on training, employment protection, participation rate, youth unemployment rate for different skill levels, value added by different sectors as % of total value added) were also considered for the econometric model but were not statistically significant (see appendix 1)

Evidence suggests that macroeconomic, structural and policy factors all influence youth unemployment rates

Persistence of youth unemployment

Studies focusing on the causes of youth unemployment or the NEET rate, such as Caporale and Gil-Alana (2014) and Bruno et al. (2014b), have found high levels of persistency of the unemployment series. Persistency in the labour market could be due to a variety of factors. For example, it takes time for employers to hire new workers or change prices and wages to meet labour demand and supply, but also there are structural factors such as the industrial structure of the economy which influences the types of jobs that young workers can participate in (Brada et al., 2014) which evolves as the economy grows.

GDP growth

The observed relationship between GDP growth and unemployment is known as Okun's law (Okun, 1962). This economic theory outlines the empirical observation that as GDP growth increases, unemployment decreases. Decreases in labour productivity and shorter working hours may contribute to higher levels of unemployment as GDP growth decreases. GDP growth is also often used as a control variable in cross-country econometric analysis of drivers of the youth unemployment rate as seen in studies by Bruno et al. (2014b, 2017), Choudhry et al. (2012, 2013) and Dunsch (2016).

Public expenditure on unemployment benefits

Unemployment benefits provided by governments offer financial support to the unemployed whilst they are searching for employment. Whilst payments for unemployed workers offer a safety net for those in temporary unemployment, the financial benefits can also be seen as an incentive to stay in long-term unemployment. Studies by Kluve (2006), Bruno et al. (2017), and Choudhry et al. (2013) have all found statistically significant positive relationships between unemployment and unemployment benefits.

Public expenditure on public employment services

Public employment services include placement and related services, benefit administration and other expenditures required to implement labour market programmes. This variable can be an indicator for the quality of institutions that provide support and assistance to the unemployed. One can expect the more investment there is for infrastructure to provide support for the unemployed the greater the impact on reducing youth unemployment.

Minimum wage

The minimum wage may have a greater impact on young workers compared with older workers as young workers often begin their careers at entry-level hourly paid jobs. Studies on the impact of a minimum wage on unemployment have been mixed. It can be argued that increasing wages both increases the incentive to work but it also increases labour costs to businesses incentivising them to hire fewer workers. A cross-national study by Neumark (2004) found that higher minimum wages reduce youth employment. However, a review of studies by Manning (2016) concluded that owing to frictions in the labour market and differences of effect on different age groups, the impact is difficult to estimate.

Economic crisis

The impact of the 2008 financial crisis and Eurozone crisis has been widely explored in recent years. Studies by Choudhry et al. (2012) and Bruno et al. (2014b, 2017) have found statistically significant effects from the most recent and past financial crises on youth unemployment. The negative effects from financial crises can last for around five years after the onset of the crises, with the most adverse effects found in the second and third year after the financial crisis (Choudhry et al., 2012).

Gender employment gap

Lowering the barriers that prevent women from participating in the labour force is likely to improve the overall employment rate. The gender employment gap is an indicator of both the structural and policy factors which have impacted women's decision to work. The gap can also be an indicator of the change in cultural and societal roles of females.

Older worker employment

Some studies hypothesize that there may be a substitution relationship between employment rates of older workers and younger workers. However studies such as that by Boldrin et al. (2010) find that is no substitution effect and that the relationship may even be complementary. This may be the case if higher levels of participation from older workers stimulates economic growth and increases consumption in the economy which can create more job opportunities for younger workers.

Higher levels of economic growth and greater levels of employment of older workers are associated with lower youth unemployment rates

Reduces youth unemployment rate

GDP growth

Countries with faster GDP growth tend to have lower unemployment rates for young workers. A 1pp increase in GDP growth rate is associated with a 0.63pp decrease in the unemployment rate for 15-24 age group workers

Older worker employment

Countries with higher employment rate of the 55-64 age group are associated with lower youth unemployment rate. A 1pp increase in older worker employment rate is associated with a 0.01-percentage-point decline in the youth unemployment rate, implying that older workers do not 'crowd out' younger workers (or vice versa). It may be that higher employment of older workers generates greater demand in the economy, therefore creating growth and more opportunities for youth employment

Increases youth unemployment rate

Economic crises

The impact of economic crises has a statistically significant effect on the youth unemployment rate. The variable used in the econometric analysis is a dummy variable (i.e. takes on the value of 1 for the country in the year that there is an economic crisis and 0 otherwise); we have also lagged this variable by one year as economic shocks often take time to channel through the economy to the labour market. The coefficient on this variable is positive meaning during economic crises, there is an association with youth unemployment rate increasing

Limited effect

Public spending on employment services

Greater spending on employment services, as a percentage of GDP, does have an association with lower levels of youth unemployment but is not statistically significant. This may be because the effects of programmes are yet to be observed in the data or that the levels of expenditure are not great enough to make a significant impact

Gender employment gap

The youth gender employment gap does not have a statistically significant relationship with the youth unemployment rate. Our study only covers the time period since 2000 for OECD countries and it may be that the gender gap for young workers is not a significant factor for explaining the youth unemployment rate, given recent improvements in supporting more women to work

High levels of previous unemployment

Persistency of youth unemployment is statistically significant. This means that if in the previous years there were high levels of unemployment, then the following years are more likely to follow the same trend. Persistency could indicate particular issues that young workers face, such as lack of work experience which may lead to longer periods of unemployment, or the impact of structural factors such as training and education policies which may take years before they come into effect

Real minimum wage

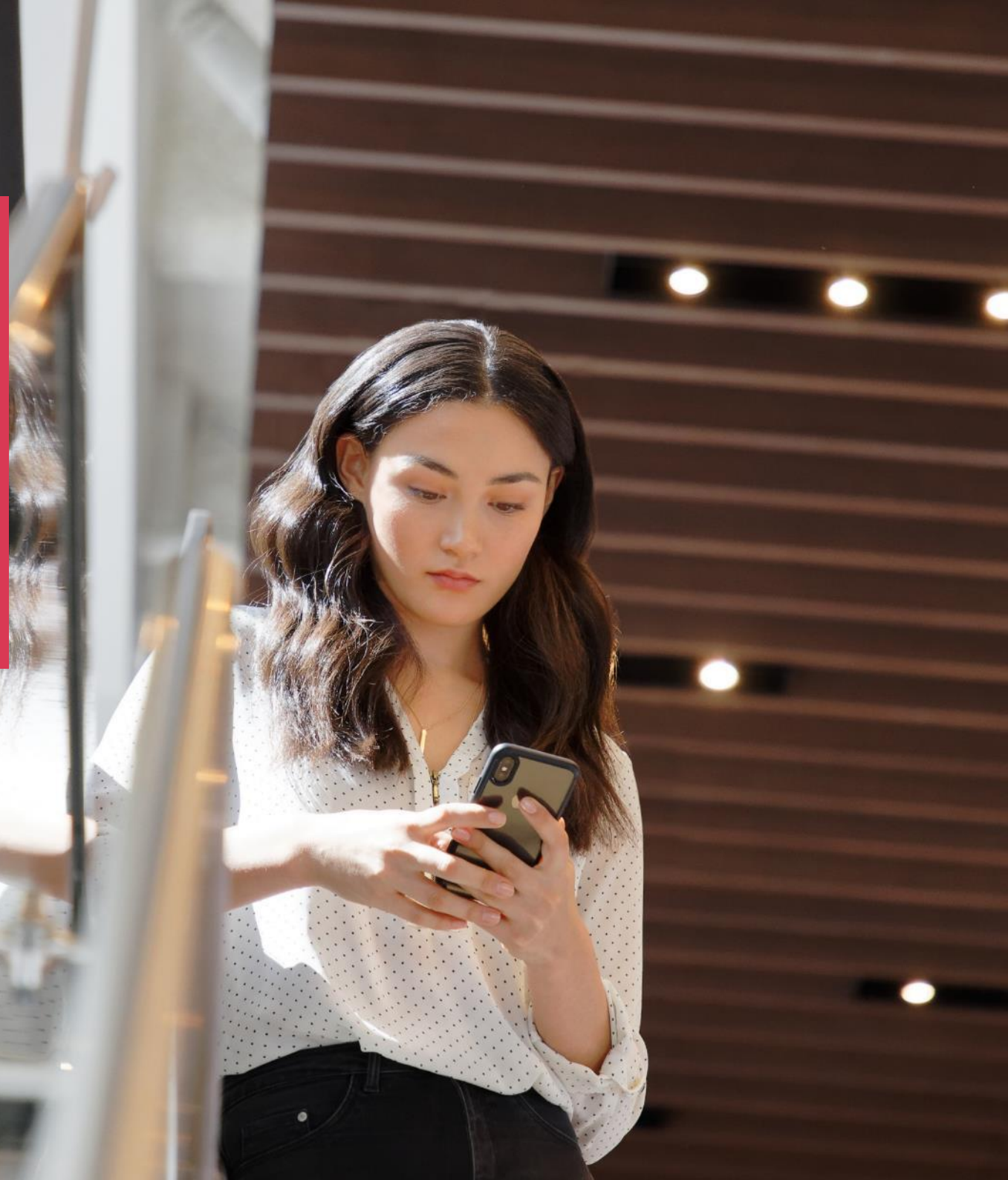
A higher real minimum wage on average across OECD countries have an association with lower levels of youth unemployment but is not statistically significant. Since the result is not statistically significant, there may be other policy measures that better incentivises youth employment for policymakers to focus on changing

Unemployment benefits

Countries with higher expenditure on unemployment benefits is associated with higher unemployment rate for young workers. A 1-percentage-point increase in expenditure, as a percentage of GDP, is associated with a 1.91-percentage-point increase in the youth unemployment rate.

5

The UK – what can be done to improve youth opportunities?



The UK continued to steadily improve its index score in 2017, moving up from 20th to 19th position, as both youth unemployment and NEET rates fell

As with many other OECD countries, the UK has continued to make steady improvements since the global financial crisis, with both youth unemployment and NEET rates in decline. The UK has now moved above the OECD average index score, but it has stiff challenges to overcome to match the best performers.

1 In each previous edition of the YEI, the UK has been a median performer – with its unemployment rate, NEET rate and educational enrolment rate fairly close to the OECD average. In this edition, the UK has performed particularly well in youth unemployment, with its rate falling 3 percentage points below the OECD average. However, the UK does lag the OECD in the youth unemployment/ adult unemployment ratio with a score of 3.6, compared with the OECD average of 2.6. (This is partly owing to low unemployment among older workers in the UK).

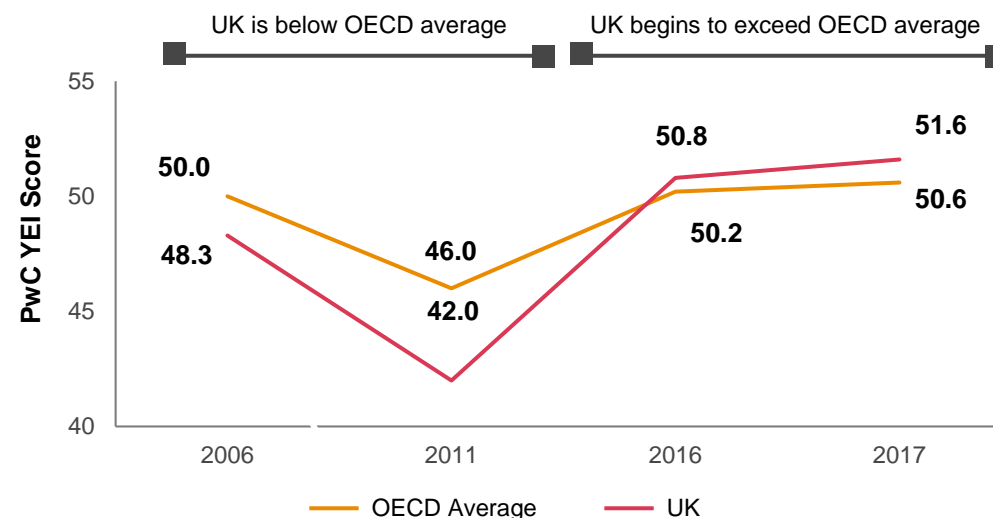
2 The average 2017 score in the index among OECD countries is almost identical to that in 2006, but this masks a serious deterioration during the global financial crisis and a recovery in the period since. Although the UK score has followed a similar pattern, it has risen above the OECD average since 2017. This is because the UK has seen steady improvements in employment, unemployment and NEET rates over time, even if it still lags behind leading countries in the index.

3 Although some key policy issues discussed in this sub-section of the report are specific to the UK, other OECD countries face similar challenges, such as ensuring investment in human capital matches the needs of the job market. Therefore the discussion here is UK focused, but it is also relevant for policymakers in other countries.

How has the UK performed?

- Between 2006 and 2011, the UK saw its index score fall by over 6 percentage points following the financial crisis. Since 2011, the UK has recovered steadily and exceeded its pre-crisis peak in 2016, having reduced the long-term unemployment rate of 15-24 year olds by almost 5 percentage points since 2015.
- However, there are many OECD countries that continue to outperform the UK. For example, Switzerland's employment rate of 15-24 year olds is 9 percentage points higher than the UK, indicating scope for further improvement.
- The impact of Brexit is also yet to be determined. Currently, certain deprived areas of the UK receive regional development funding via the EU (£359m in 2016).¹ After Brexit, the UK will not receive EU funding, and the government will then have to decide what level of resources to assign to these regions. A fall in resourcing could result in worse outcomes and fewer opportunities for disadvantaged young people.

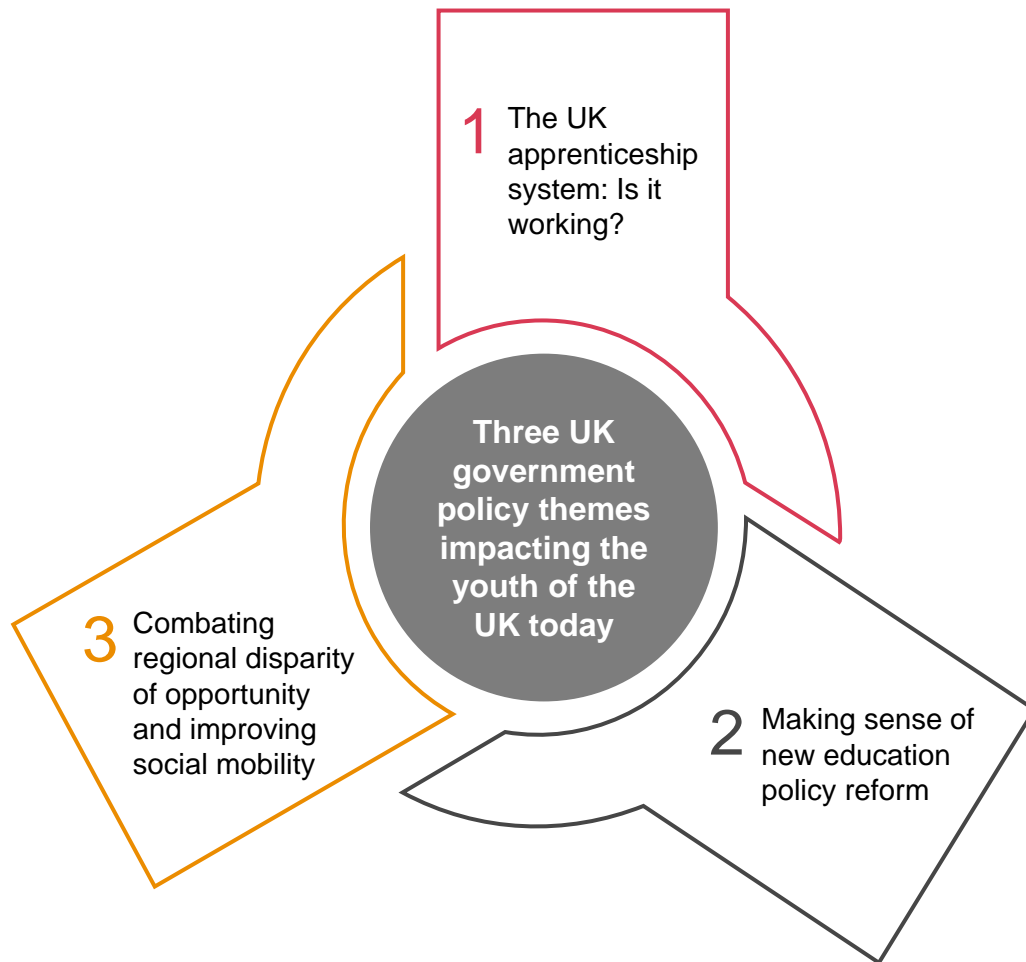
UK and average OECD index scores over time



The UK government has implemented an apprenticeship policy and education reforms, but matching German and Swiss performance will be a long term project

This section focuses on the UK and where it falls behind in outcomes for young people. But the issues outlined are not specific to the UK: they are evident in many OECD countries, especially the lower-performing ones.

Although the specific facts and figures are UK-focused, we hope that this section provides useful policy implications that can be applied elsewhere.



1 The UK continues to perform below the OECD average in terms of opportunities for vocational education. To better facilitate young people into work after leaving school and improve the country's skills deficit, the government has been aiming to develop a stronger apprenticeship system. We analyse the apprenticeship levy and conclude that it can benefit medium-sized firms with a payroll less than £3m, but adds further taxation to larger businesses without generating significant new opportunities for young people.

2 The UK government has carried out a series of educational reforms in the last few years, including expansion of school academies, introducing T-levels and changing the student loan conditions.

3 Social mobility remains a prominent issue within the UK. Continued government work is needed in order to improve outcomes for disadvantaged youth. Furthermore, there are wide disparities in the outcomes and opportunities for young people regionally within the UK, with considerable variation in NEET rates.

Despite a shift in approach to raise standards, most UK apprenticeships will remain equivalent to below degree level

What is an apprenticeship?

- A genuine job with wages and holiday
- A training programme lasting between one and five years
- At least 20% of an apprenticeship must entail formal study
- An opportunity to learn from experienced staff and receive on-the-job support.

There are currently two types of apprenticeship

Apprenticeship standards

- Outline the key skills needed to become competent at the job role
- Developed by at least ten employers called “Trailblazers”
- End assessment run by an independent registered apprentice assessment organisation
- There are currently 225 standards.

Apprenticeship frameworks

- Outline the qualifications required to complete the apprenticeship
- Developed by sector bodies
- Ongoing assessment until all qualifications are passed
- There are currently 130 frameworks.

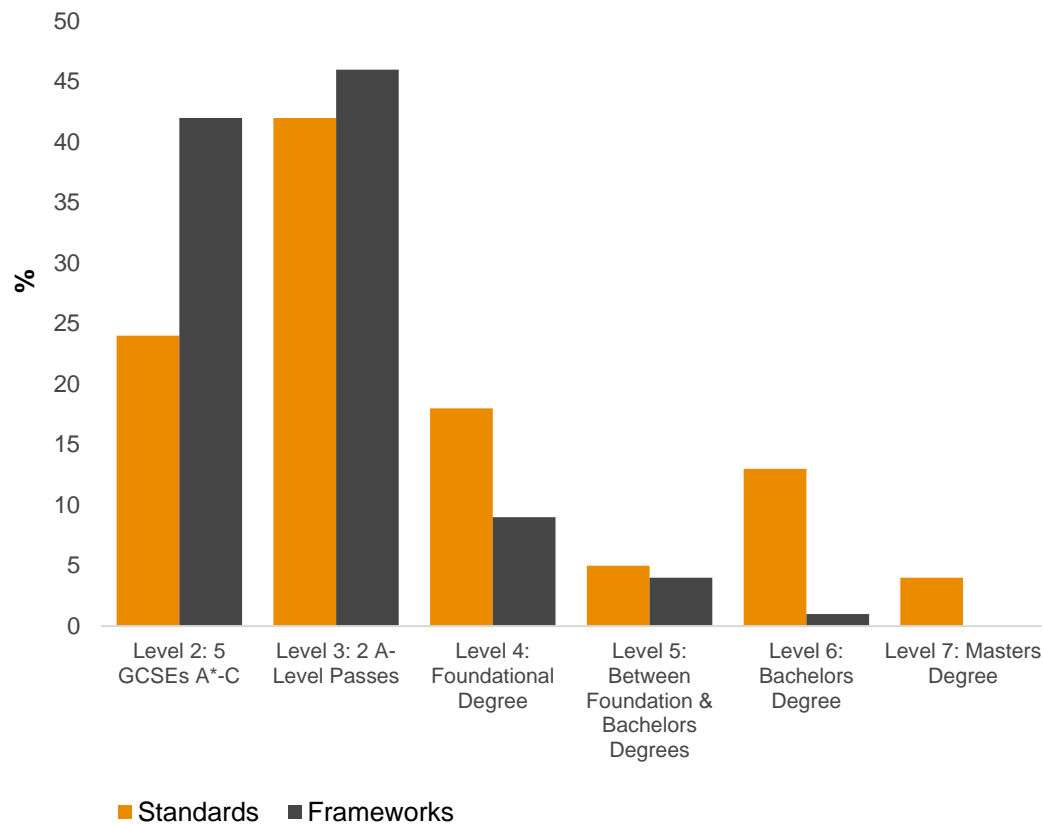
From 2020, new apprentices will only start under apprenticeship standards

- There is overlap between the two apprenticeship approaches and feedback indicated apprenticeship standards better integrated apprentices into jobs.
- Although apprentices earned qualifications under the apprenticeship frameworks, the material was not always relevant to day-to-day work and there was no guarantee an apprentice would be ‘work ready’ through passing exams.

Apprenticeship qualification levels compared with degrees

- It is unsurprising that apprenticeships are often portrayed as less beneficial than a degree, as most apprenticeships correspond to lower levels of educational attainment.
- Although apprenticeships range from the National Qualification Levels 2 to 7, they are concentrated at Level 2 to 3 as shown below.

% of apprenticeships by National Qualification Level, March 2018



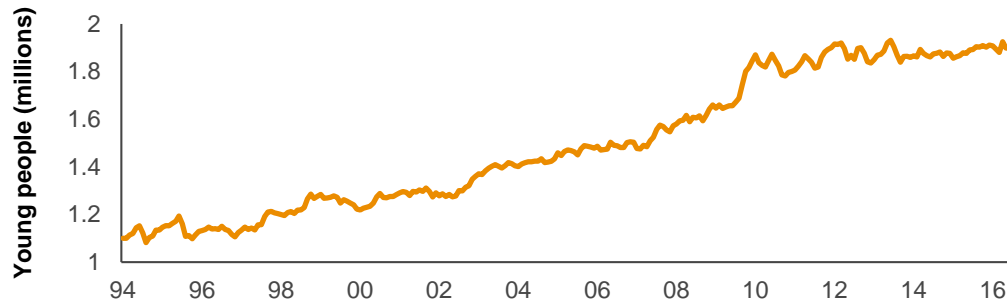
Sources: gov.uk (2018) “A-Z of apprenticeships”, PwC analysis

There appears to be a glut of graduates and a shortage of young people in vocational training relative to the needs of the job market

The UK has long pursued a high graduate rate

- In 2001, the ruling Labour Party pledged to ensure “50% of young adults progress to higher education by 2010”. Half of young people do now go to university and student numbers doubled to 2m from 1994 to 2016.
- Furthermore, the proportion of the UK workforce with degrees increased from 24% in 2002 to 42% in 2017.

Young people (ages 18-24) in full-time education, 1994 - 2016



Evidence suggests there is now an oversupply of graduates, as only 41% of UK graduates work in roles requiring a degree

- An oversupply of graduates may result in an undersupply of workers in other areas of the economy, such as vocational jobs, as the UK government has not focused on the provision of vocational training like some other OECD countries.
- Only around 30% of UK students pursue vocational education – far lower than the OECD average of 50%. It is important that UK government considers this potential mismatch as it seeks to improve opportunities for young people.
- Moreover, an oversupply of graduates implies that significant public investment in human capital may go unrewarded and over half of young people with degrees may find it hard to realise a reward for their investment in education.

Sources: Labour Force Survey, gov.uk, IFS, OECD, FE Data Library and PwC analysis

In mid-2015, apprenticeship targets were set by the Department for Business Innovation & Skills

- Apprenticeships to be given equal legal status as degrees
- 3m apprenticeships to be created by 2020 – an implied rate of 600,000 a year – with public-sector bodies to set targets to help to reach the 3m target.
- However, in July 2018, figures from the Department for Education revealed that in the first nine months of 2017/18 there was a 34% year-on-year fall in apprenticeship starts, with a projection for 2017/18 well below target.
- The decrease is partly explained by changes in apprenticeship funding policy and the introduction of the Apprenticeship Levy in April 2017.

A possible indication of demand for apprentices is their average pay is significantly above the minimum level set by the UK government

- A separate minimum wage exists for apprentices under 19 years or in the first year of the apprenticeship, yet most employers pay more than the legal minimum, even for the lowest national qualification levels.

Minimum wage, April 2018 - March 19



The apprenticeship levy aims to incentivise firms to create more apprentice opportunities, although the reception from business has been mixed so far

Background to UK government apprenticeship policy

- In April 2017, the UK government launched the Apprenticeship Levy of £1 for every £200 in payroll above £3m. Up to 110% of the levy is returned to levy-paying firms if they meet certain conditions, such as hiring enough apprentices onto official programmes to justify a rebate, and claiming an amount per apprentice that is the lower of the actual cost of training or the relevant government-funding band, ranging from £1,000-£30,000 per apprentice.
- Firms with a payroll of less than £3m can also apply for government funding so long as they claim less than or equal to 90% of the actual cost of training up to a maximum of the relevant government-funding band per apprentice.

Business groups have raised some concerns about the levy and some changes were announced in the Budget:

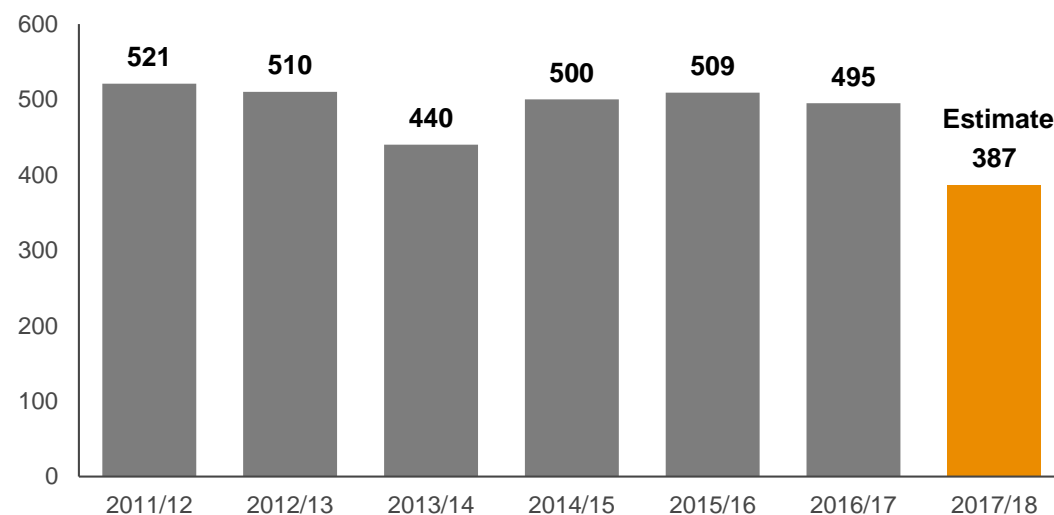
- The levy disproportionately targets firms that employ lots of workers. For example, a capital intensive mining company could have a low payroll-to-revenue ratio of, say, 10-15%, while a labour-intensive catering company might have a ratio of 40-50%. If the government changed its policy on the apprenticeship levy to a percentage-of-revenue basis (while aiming to raise the same amount of tax revenue as before), the catering company's levy payment would fall substantially and the mining company's would increase.
- For levy-paying firms claiming a rebate, there is the administrative burden of sending money to HMRC, only to claim it back, as well as needing to navigate the strict rules of the scheme regarding contracting registered training providers.
- Levy-paying firms could also have cash-flow issues as they can only pay registered training providers out of their government apprenticeships service accounts, which are only made available in equal monthly instalments. 20% of funds are also withheld until the completion of each apprenticeship.
- Firms which pay the levy can transfer 10% of their available funds to support apprentices in their supply chain. In the October 2018 Budget, the Chancellor announced this rate will increase to 25% from April 2019.

Some medium-sized businesses will benefit from government funding by significantly reducing their apprenticeship training costs, provided they are careful to match government funding rules

- Businesses with a payroll of less than £3m can receive up to 90% of the training cost of apprenticeships in a process called co-investment. In the October 2018 Budget, the Chancellor announced this rate will increase to 95% in 2019.
- However, there are only about 110,000 UK firms with a workforce between 20-99 employees, which is the scale likely to benefit most from the scheme. This is because firms with fewer than 20 employees, of which there are over 2.5m, are less likely to have the resources to train apprentices. Of the more than 24,000 firms with over 100 employees, most will hit the £3m payroll threshold.

Because of these issues, the levy has been cited as a contributing factor behind the estimated fall in the number of apprenticeship starts in 2017/18, as shown in the chart below.

UK apprenticeship starts (000s)¹



Sources: ONS, gov.uk & PwC analysis

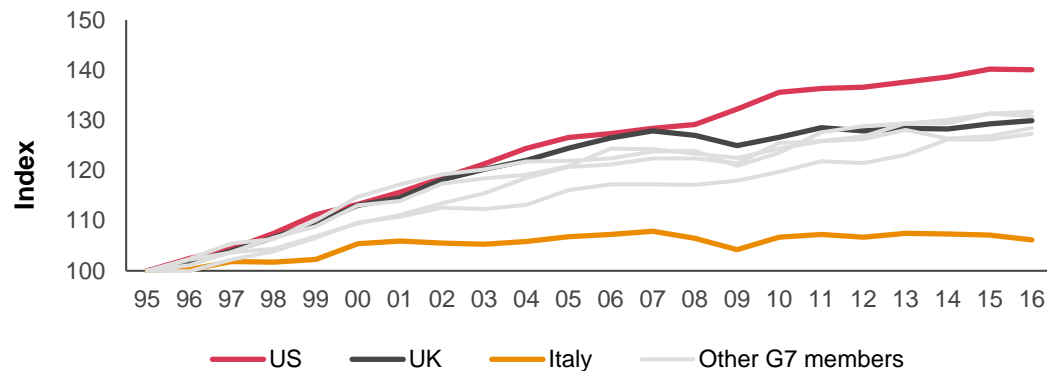
¹The 2017/18 estimate was calculated by multiplying the official nine-month figures by 4/3

T-levels are designed to promote vocational careers in the UK and follow a series of other educational reforms that aim to raise standards

T-levels should increase demand for apprenticeships

Owing to the undersupply of young workers pursuing apprenticeships, the government plans to launch new technical education routes (T-Levels) in 2019. These are intended to be offered alongside traditional A-Levels and be of the same standard. The idea behind offering this alternative route for young people is that T-levels will offer a more natural progression into an apprenticeship. This could help the UK raise its productivity to a similar pace as to before the financial crisis, as since, UK productivity has been stagnant compared to its G7 peers.

Productivity index of the G7 (1995 = 100 for each member)



UK government industrial strategy

A focus of the government's 2017 industrial strategy was addressing the widening skills gap in STEM industries and reducing not only the regional differences across the UK, but also that between the UK and its peers. As part of the commitments, £170m of capital funding was pledged to create new Institutes of Technology to deliver quality technical education in STEM. The strategy also pledges to explore how to increase enrolment in STEM subjects. For disadvantaged young people, strengthening skills that will be of value to future employers can provide them with better career pathways.

There were major education reforms following the change of government in 2010

In 2010, the Department of Education recognised that:

- Schools were encouraging pupils, particularly from disadvantaged backgrounds, into taking 'equivalent qualifications' to inflate league table rankings
- The growth of 'equivalents' coincided with a sharp decline in the enrolment rates for some highly valued subjects, including modern foreign languages
- Grade inflation was rife, undermining confidence in national qualifications; and
- Freedoms associated with the academy programme were only being enjoyed by a few hundred schools.

In response, the government further liberalised schools by scrapping regulations and central guidance, freeing teachers to focus on teaching.

Many schools were liberalised to become "academies" (now 60% of secondary schools and 20% of primary schools). Academies are former local-authority maintained schools, now run by charitable trusts and fully funded by central government. They have more freedom over the curriculum and administration.

The English Baccalaureate was also launched, combining Maths, English, two or three sciences, a humanity and a language.

In addition to T-levels, other qualifications have been reformed

- GCSEs and A-levels have been shifted to a linear structure, with exams taken at the end, rather than at regular intervals with coursework. This policy was designed to prevent students re-taking parts of exams to boost grades.
- GSCE grading changed from A*-E to 9-1 in 2018. Moreover, both GCSEs and A-level exams were made tougher. Raw marks were lower in 2018, but the same proportion of students received equivalent grades to previous years.

Sources: OECD (2017), UK Commission for Employment and Skills (2015), CIPD (2015), House of Lords (2016)

1. Productivity is defined here as the amount of GDP earned per hour worked. It measures how efficiently labour input is combined with other factors of production and used in the production process.

T-levels are a promising start to establishing a dual education system in the UK, similar to that of the top performers in the index, Switzerland and Germany

The government's Post-16 Skills Plan demonstrates the UK's continued commitment to improving opportunities for vocational training. A greater emphasis on technical education is a step forward, but the current policy framework still presents challenges.

Recent government policy initiatives

Sainsbury report: In 2015 an independent panel was commissioned to assess the quality of technical education in England. The panel found that current technical education was too confusing, with young people choosing from over 20,000 courses offered by 160 providers. The panel's report recommended simplifying the system with standards being set by employers, as in Germany. The recommendations were incorporated in the government's Post-16 Skills Plan.

Post-16 Skills Plan: Released in mid-2016, it aimed to improve vocational education opportunities and address the widening skills gap between what young workers have leaving school and what employers are seeking. Central to the reforms is the greater role of employers in developing the standards and curriculum of technical training, so that young people are better equipped to enter the workforce upon leaving school.

T-level launch: The government announced that the first students able to enrol on T-levels will be those who are 16/17 years old in the 2019/20 school year.

Proposed changes to technical education in the Post-16 Skills Plan

- 1** After GCSEs, students will choose between an 'academic option' or a new 'technical option'.
- 2** In the technical option, students will choose between 15 technical education routes e.g. from hair and beauty to legal, finance and accounting. There are a number of T-levels within each of the 15 routes.
- 3** Each qualification at levels 2 and 3 (GCSE, A Level and diploma equivalent) will be awarded by a single body.

For the UK to implement its technical education plans successfully, public policy needs to consider a range of possible challenges, including:

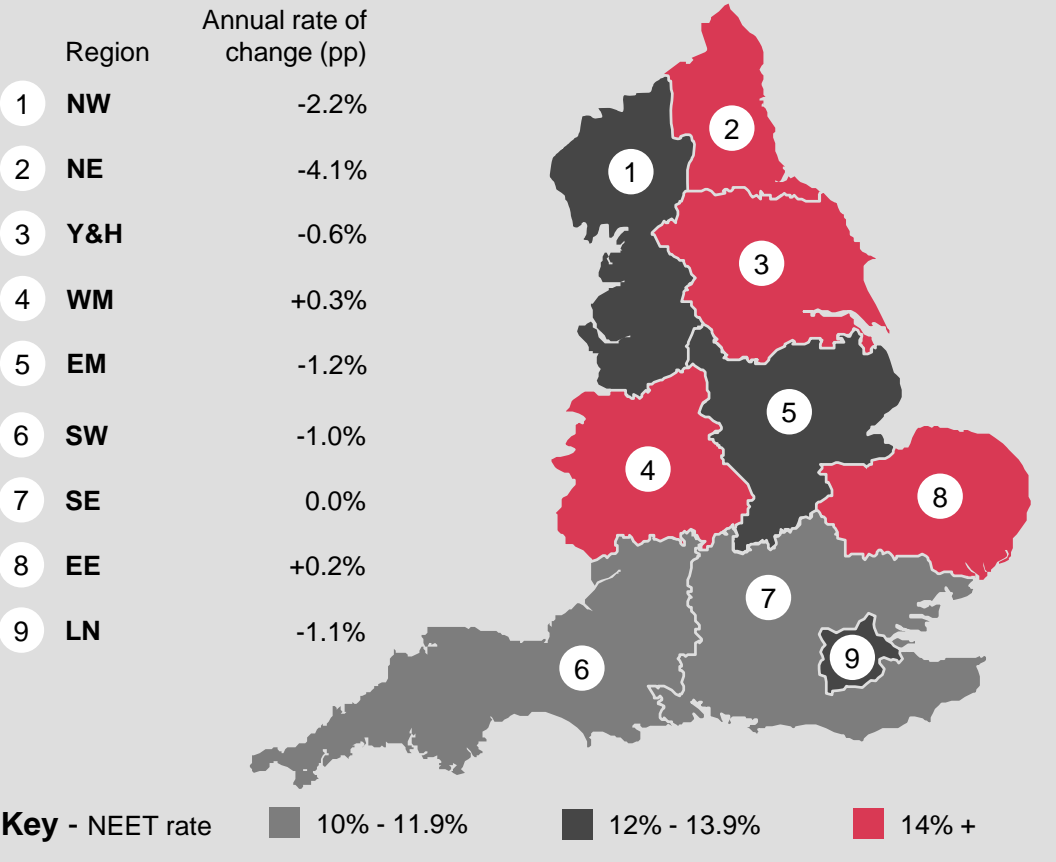
- 1 Perception** – Although the introduction of T-levels is a step forward in making vocational education a viable alternative to A-levels, the government needs to steer business and societal perceptions towards these qualifications, making it clear to parents, students and businesses that these qualifications hold as much merit as A-levels.
- 2 Binary choice** – Unlike the German 'dual' education system, the UK route presents more of a binary choice between vocational training and academia. Instead, students could be offered the opportunity to engage in both during their school years, meaning both apprenticeship and university routes are equally possible.
- 3 Under-representation** – The current proposals do not cover all potential vocational occupations – for example, there is no sports or technology option.

Regular review and consultation with industry leaders will be necessary to ensure the training offered is up-to-date with evolving labour-market demands.

The region you grow up in affects the likelihood of becoming NEET – the highest NEET rates are currently found in the North East and West Midlands

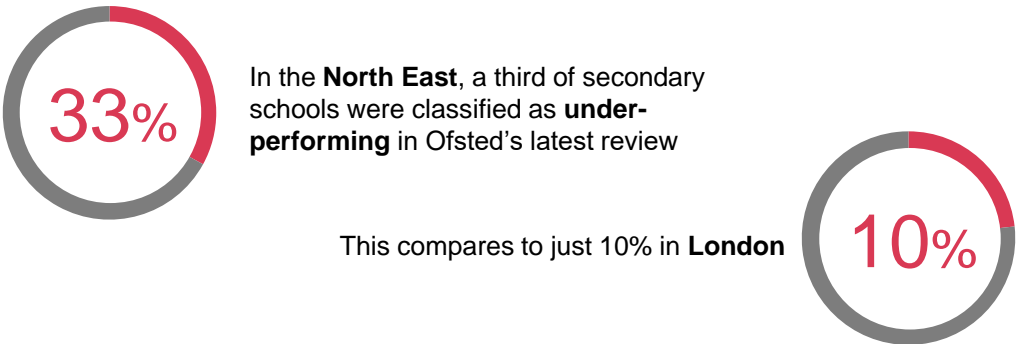
There are wide differences in the educational outcomes of young people across the UK. This reflects lower attainment in regions such as the North East and also a relative lack of job opportunities compared with regions in the South.

NEET rates for 19-24 year-olds differ across England. The North East had the highest rate in 2017, although it fell considerably from 2016 levels.

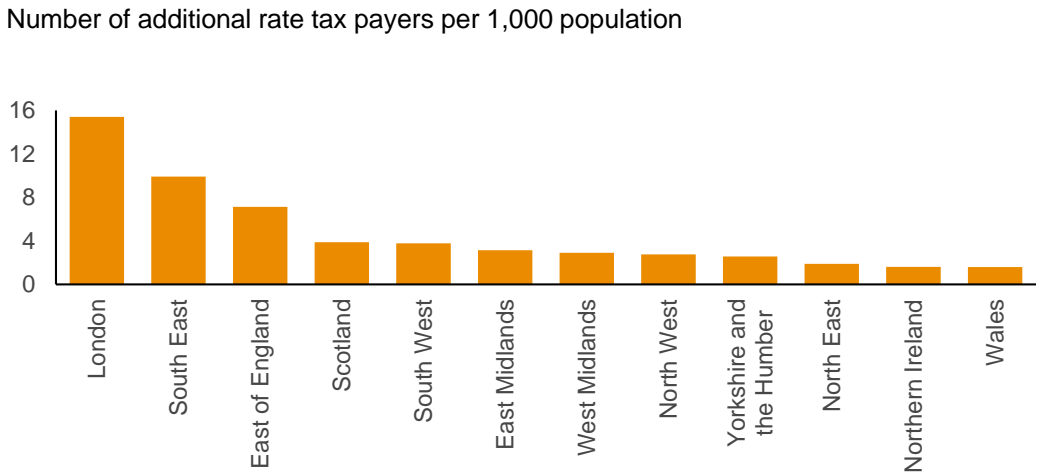


Sources: PwC calculations of annual averages for 2016 and 2017 based on quarterly ONS Labour Force Survey data published in March 2018, Social Mobility Commission (2017), Ofsted (2017), ONS (2018) Survey of Personal Incomes

Differences in education quality and attainment play a large role in determining NEET rates.



Education and employment opportunities are factors determining future earnings. A forecast by the ONS for 2018-19 reveals significant regional earnings variation. For example, a person is ten times more likely to be an additional rate taxpayer in London than in Wales.



Some policies are helping to reduce regional variations in labour market opportunities, but there are still big differences across England

Apprenticeship starts have fallen across most of England, and especially in the North West

- From 2011/12 to 2016/17, the fall in the number of apprenticeship starts across England have averaged around 1% a year. The rate in the South-east and South-west and Yorkshire and the Humber is fairly consistent with the overall trend for England, while the East and West Midlands have fared better.
- The North has seen a significant drop, particularly the North West, from almost 90,000 starts in 2011/12 to fewer than 34,000 in 2017/18.

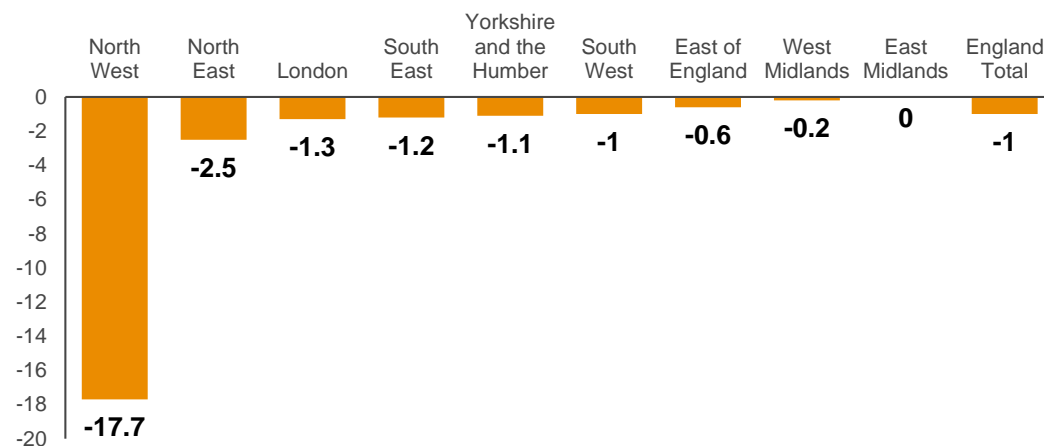
Regions that have fewer pupils achieving A*-C in English and Maths typically have higher NEET rates among 19-24 year olds.

Recent policy initiatives aimed at improving education in underperforming regions, labour-market outcomes and the lives of young people include:

- The identification of **12 opportunity areas** to receive funding aimed at improving local youth access to education and employment within **social mobility 'coldspots'**.
- As part of its 'social mobility package', the Department for Education has also **pledged £75m** to the **Teaching and Leadership Innovation Fund**. This programme will invest in the development of teachers and leaders working in challenging areas
- As part of apprenticeship policy, **additional government funding** is available to firms that hire apprentices who are: (1) aged 16-18; (2) aged between 19-24 with an education, health and care plan provided by their local authority or been in the care of their local authority or (3) a person lacking C-grade GCSEs in English and Maths.

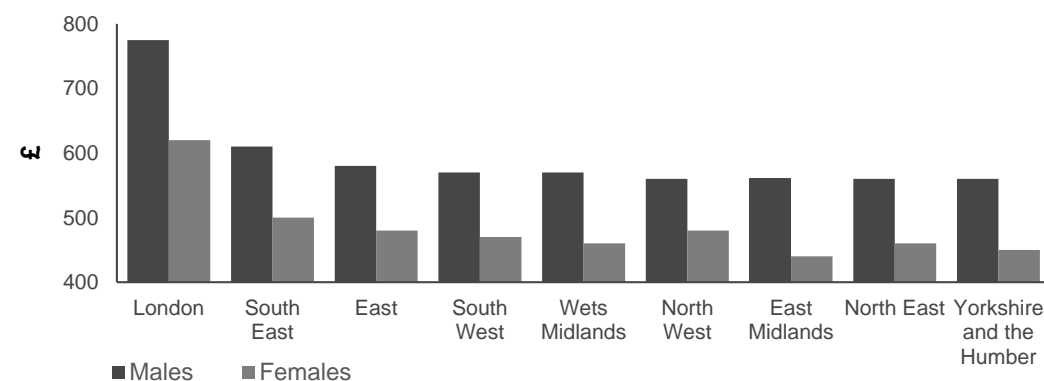
Sources: FE Data Library, ONS and PwC analysis.

Average year-on-year change in apprenticeship starts from 2011/12 to 2016/17 (%)



Large pay differences by region and gender exist throughout England

Average weekly pay, by region and gender (2017)



Bradford is one of 12 opportunity areas receiving government funding to improve access to education and employment



Case study: PwC and the Bradford Opportunity Area



Will Richardson
PwC Office Senior Partner
Leeds

Why social mobility is important to me and why PwC is signing up to the government's opportunity areas

I was lucky growing up. Both of my parents had jobs; my mum was a primary-school teacher and my dad ran the local newsagent in a small village in North Yorkshire. I grew up expecting to get a job.

For far too many people across the UK the expectation of having a job simply doesn't exist, never mind the aspiration that they may have a rewarding and satisfying career. That is why social mobility is so important to me.

At PwC, supporting skills development and social mobility is not just about who comes to work for us; it is about supporting a much wider group to help them progress as far as their talent and determination will take them - regardless of what career path that might be.

That is why we have signed up to one of the government's flagship social mobility initiatives, known as Opportunity Areas, which seeks to make targeted interventions into 12 of the UK's lowest-performing areas for school achievement and social mobility.

PwC in Bradford

Bradford is the sixth largest city in the UK, with a population of around 500,000. A third of all adults in the city are unemployed, and 40% of the city's wards fall within the poorest 20% in the UK.

Our work in Bradford focuses on the provision of more employer involvement, which helps to create more awareness of opportunities, more expectation and more aspiration. Research reveals that people who have four or more encounters with employers while at school are 86% less likely to end up NEET in later life.

Bradford's Opportunity Area Partnership Board, on which our Leeds senior partner Will Richardson sits, set the objective that over the next three academic years every 11-18 year old will receive at least four meaningful employer encounters. PwC believes that this will help Bradford's youth to break the cycle of low achievement, expectation and aspiration that has held them back for too long.

All employers can play their part, not just in Bradford but across the country. PwC believes that the training, support and advice we are providing to thousands of schoolchildren in Bradford is improving their business awareness, developing their employability skills and giving them confidence in their future, helping to create a better prepared and equipped workforce for tomorrow.

Until we start to instil more expectation and more aspiration within our young people, we will never properly increase social mobility nor create the workforce that will achieve the inclusive growth our country needs.

The UK has risen in the Youth Employment Index over the last two years, but could progress further by improving social mobility and its vocational education system

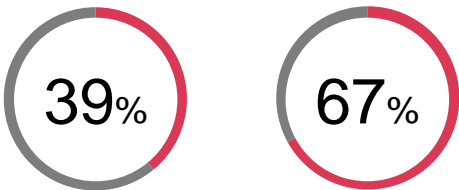
The social mobility problem in the UK is often linked to the quality of regional education provision

A child living in one of England’s most disadvantaged areas is **27 times more likely** to go to an inadequate school than a child in the most advantaged.



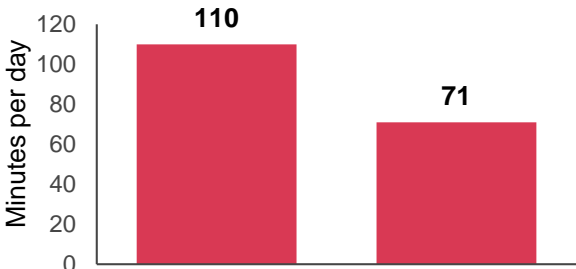
This means that those from higher socioeconomic backgrounds achieve better educational outcomes

Only 39% of children eligible for free school meals achieve GCSE English and Maths at grades A*-C, compared with 67% of those who do not.



The perceived availability of opportunities also varies widely across the regions

Families where both parents are highly educated spend on average around **110 minutes a day on educational activities** with their young children compared to **71 minutes a day** for those with **lower education levels**.



The provision of education then affects young workers’ qualifications and labour-market outcomes

- Young people from low-income homes with similar GCSEs to their better-off classmates are one-third more likely to drop out of education at 16 and 30% less likely to study A-levels.
- Young people are six times less likely to go to Oxbridge if they grow up in poor household than the median household. In the North East, not one child receiving free school meals went to Oxbridge after leaving school in 2010.
- Despite some efforts to change the social composition of the professions, only 4% of doctors, 6% of barristers and 11% of journalists are from working-class backgrounds.

Not all young people in the UK are academic, but there is not yet a performing alternative vocational education system

- Effective policy would make apprenticeships more attractive to young people and businesses. An initial step would tackle the misconceptions around apprenticeships, such as university students having better career prospects and apprenticeships not being for high achievers (see our 2016 YEI report for detail on 5 common misconceptions).
- Although the government has incentivised some medium-sized firms and some specific large firms to hire apprentices through the apprenticeship levy and government funding, it could design better policy, such as removing the link to payroll, disproportionately taxing firms that hire a lot of workers.
- It is also vital that all opportunities are provided across the UK and made easily available to young people from disadvantaged backgrounds to promote social mobility.

6

Youth Employment
Index top
performers- what
have they got right?



Top performers in the Youth Employment Index typically have high education attainment rates, established training routes for vocational work and support for the disadvantaged

This year's Youth Employment Index focuses on the following themes:

1 High educational attainment and graduation rates

Countries that perform well in the index typically have high educational attainment and graduation rates. However, even these countries have challenges to overcome. For example, while Japan's under 25-year-old secondary attainment rate is an impressive 98%, 1-2% Japanese population under 30 will have suffered from a condition called 'Shakaiteki Hikikomori' (acute social withdrawal) for a period that lasted at least 6 months.

2 Supporting the disadvantaged in society

Countries that score highly on the index typically have good provision for the disadvantaged in their societies. This lowers the unemployment rate and prevents a significant minority of young disadvantaged people being 'left behind'.

3 High-quality vocational training opportunities

High-performing countries often have established vocational training opportunities for the young. For example, both Switzerland and Germany have large-scale public vocational education and training (VET) programmes which are well integrated into schools so that students can move easily from upper secondary education into work. Vocational pathways are growing in importance with the emerging skills shortage in STEM subjects (science, technology, engineering and mathematics).

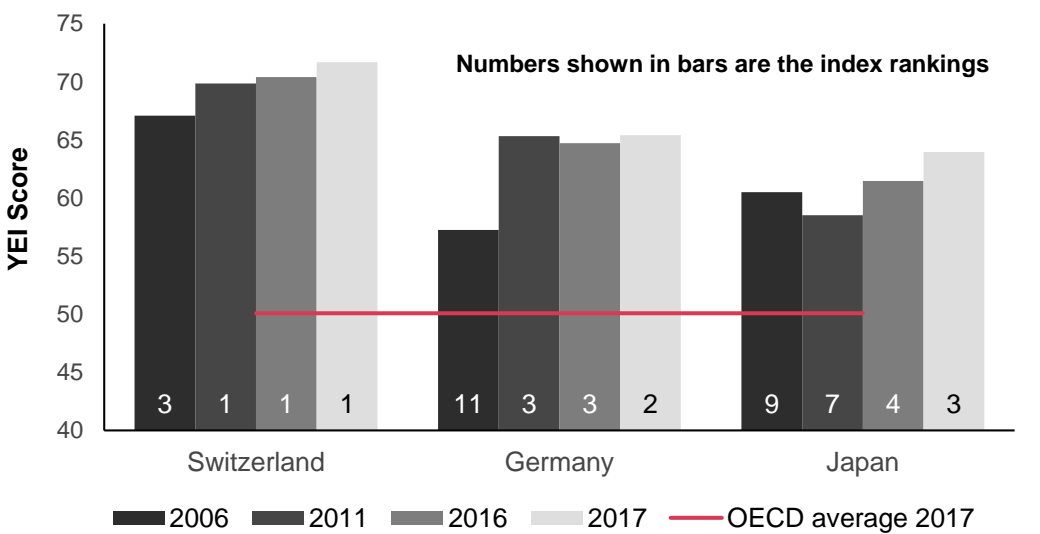
Youth Employment Index top performers

Throughout this section, we provide country-specific examples of government policies from Switzerland (ranked 1st), Germany (ranked 2nd), and Japan (3rd). Where relevant to our three key themes, we also include additional examples of good or improving practice from the UK and other OECD countries.

As shown in the chart below, Switzerland has been a consistent performer in the index, maintaining the number one spot from last year; a place it also held in 2011. Similarly, Germany was ranked third in 2011 and in the 2017 index; moving up to second place in 2018.

Japan has also improved its ranking in recent years, having moved from 9th in 2006 to 3rd this year.

The top three performers and average OECD scores, 2006-17



Top performers in the Youth Employment Index typically have a high proportion of young workers with upper secondary or tertiary education

Key definitions

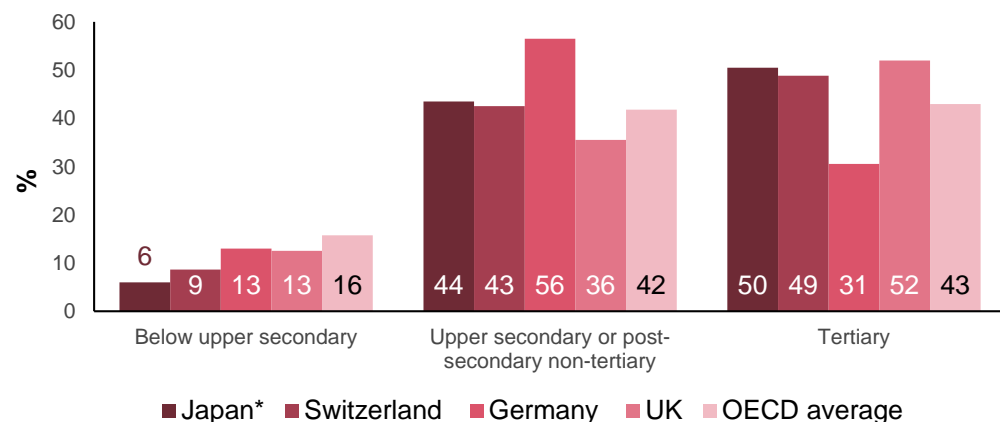
- **Upper secondary education:** Pre-university education (A-level equivalent)
- **Tertiary education:** University-level education (Bachelors degree equivalent)

Educational attainment of the top three performers

Across the OECD, the average proportion of 25-34 year olds with educational attainment below upper secondary is 16%. Switzerland, Germany and Japan have a lower proportion of young people not achieving at least upper secondary education, ranging from 6% to 13%

Switzerland and Japan also have a higher proportion of 25-34 year olds with tertiary education at 49-50%, compared with the OECD average of 43%

Highest educational attainment of 25-34 year-olds (2016)



Sources: OECD, PwC analysis

*Japan's rate of 94% is across the population aged 25-64, and is most likely higher than 94% for ages 25-34

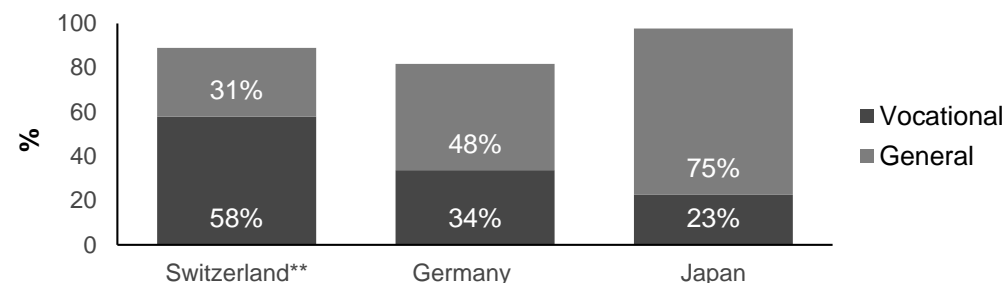
** Switzerland data is from 2014,

¹Solow Growth Model

Although top performers have high levels of educational attainment, they vary significantly in the proportion of young workers graduating with vocational or general (academic) education

- Japan's impressive under-25-year-old secondary attainment rate of 98% exceeds those of Germany and Switzerland (82% and 89% respectively)
- However, Germany and Switzerland have considerably higher proportions of graduates with vocational training

Upper secondary education graduation rates for under 25 year olds (2015)



A high proportion of graduates studying vocational courses may better match a country's job market

- Neoclassical economic theory explains that relatively wealthy (high capital stock/worker) countries can only increase their long-term rate of economic growth and potential output by increasing total factor productivity (TFP). This is achieved through increasing R&D, requiring a highly educated workforce¹
- However, it seems that a workforce comprising of 50% of young people with tertiary education may be higher than optimum. Vocational education equips young people with skills needed in the workplace and job market, and is often integrated with practical work experience

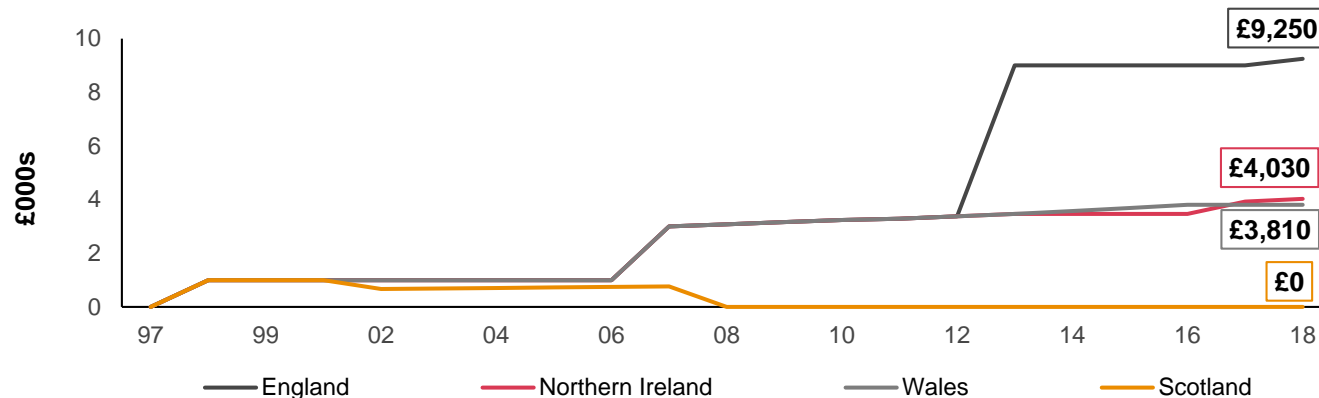
A good education does not guarantee you a job: forward-thinking governments should develop value-for-money education that matches labour-market demand

UK

The UK has a particularly high level of young people with tertiary education. This is partly attributable to the government's long-standing policy of providing any EU citizen who has a place at a UK university with access to student loans

- Student loans in England are designed so that any student with a place at UK university can attend without the financial pressure of tuition fees.
- At present, students starting a course do not have to repay loans until their annual income exceeds £25,000 (£17,335 for Northern Ireland). They must pay 9% of income above this amount until the loan and interest are paid back in full, or until 30 years have passed, at which point the debt is cleared.
- The system aims to boost social mobility as no up-front investment is required. However, the system was more generous in the past due to higher state sponsorship and therefore lower student loans. Devolved areas of the UK further subsidise tuition fees. This has resulted in some peculiar outcomes, such as English, Welsh and Northern Ireland students having to pay or borrow £9,250/year in tuition fees to study in Scotland, while EU (and Scottish) students can study for free.
- **Despite the impressive UK tertiary education level of 52% (for 25-34 year olds), there is evidence of oversupply of graduates in the job market, evidenced by only 41% of UK graduates having graduate-level jobs.**

Annual tuition fees in the UK by region¹



Sources: OECD, PwC analysis, gov.uk, UNESCO "The changing Status of Vocational Higher Education in Contemporary Japan and the Republic of Korea"

¹There are qualifying conditions for the rates provided for Wales and Scotland such as residency status and income

Japan

Japan has achieved high levels of educational attainment by government policies such as a tuition fund that reduces the financial burden of attaining upper secondary education

- From 2010, all students received an annual tuition grant of ¥120,000 (around £800), equivalent to the average yearly tuition fee at a public high school. If school fees are higher, parents must contribute the rest of the fee. Low-income households are eligible for larger grants.
- The aim of tuition grants was to minimise the financial burden on households, ensuring high-school students can feel secure about completing education, regardless of the financial circumstances at home.
- However, there has been a decline in vocationally orientated upper-secondary schools from around 40% in the 1980s to 25% today. Combined with the expansion of high-school education, the status of vocational training has diminished and there is now increased demand for post secondary vocational training in Japan.

Top-performing European countries better match education with job opportunities through an integrated VET system at upper secondary level

Switzerland

Over 70% of young people in Switzerland participate in Vocational Education and Training (VET), resulting in 58% of 25 year olds with upper secondary vocational education

- VET offers apprenticeships and qualifications in over 200 different occupations.
- One third of Swiss companies engage in apprenticeship training programmes.
- VET is available to a wide range of students and across a range of occupations, including information technology, advanced manufacturing, healthcare, as well as traditional trades and crafts.
- Although some countries such as Japan and the UK have pursued a high proportion of university graduates, it is seen as perceived threat to the success of Swiss VET if an increasing proportion of Swiss parents subscribe to the view that their children would be better served by the country's universities.

Several other countries have established vocational training policies

Austria: Every young person interested in an apprenticeship is given a place under the Austrian Youth Guarantee Scheme

Iceland: Young people unemployed for 3 months can enrol onto programme offering jobs, training and study opportunities

Norway: After six months of unemployment, young workers can enrol onto a job or training programme lasting six months

Denmark: Immediate offers of employment are given to 18-19 year olds, who are also given mentoring support

Finland: Young people are offered training guarantees immediately after completing upper secondary education school. 83% of young people who take up the offer obtain jobs within 3 months of starting the programme

Germany

Over 50% of school students participate in Germany's upper secondary VET system (a dual vocational- academic system) choosing from one of 326 training opportunities ranging from diamond cutters to chimney sweepers

- Germany's dual education system combines the experiences of education in a school with taking an apprenticeship in a company.
- Strict regulations set the national standards of each apprenticeship so that they maintain their prestige.
- A strong dual education system has resulted in lower levels of tertiary education (Germany is 12 percentage points below the OECD average), as young graduates from these programmes typically find jobs without needing further study.
- German government policies to improve education attainment include the:
 - National Pact for Career Training and Skilled Manpower Development to provide the public sector and companies with training in VET
 - Education Chains Initiative, starts at age 12 with a vocational orientation programme and aims to create job prospects, avoid early drop-out and ensure better transition into VET and the labour market
 - Vocational Training Act insures that over 500,000 company-based training contracts are awarded to young people each year.

EU member states

EU Member States have committed to the Youth Guarantee ensuring all under-25-year-olds receive a good-quality offer of employment, further education, apprenticeship or traineeship within four months of becoming unemployed or leaving education

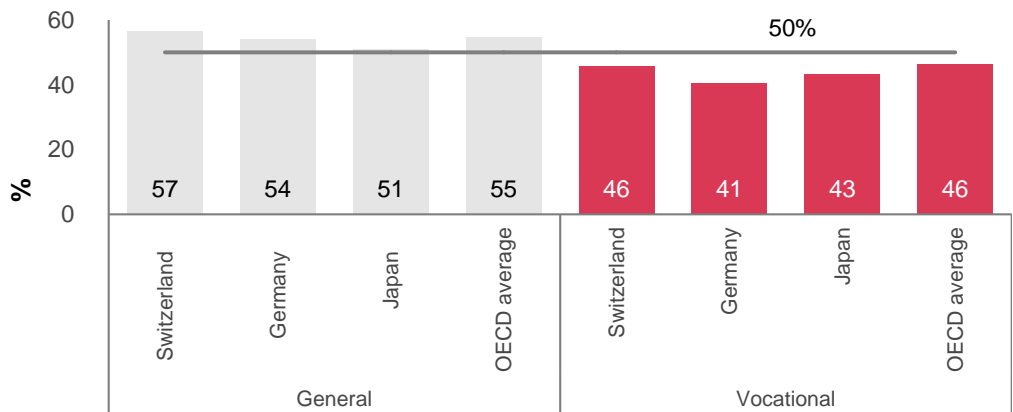
- Since 2014, more than 3.5m young people have taken up an offer of employment, education, apprenticeship or traineeship each year (around 70% of those who register onto the scheme).

Of upper secondary graduates in the OECD, 55% of graduates from academic courses are female, compared with 46% for vocational courses

Gender differentiation between general and vocational courses is fairly consistent across the top performers

- Across the OECD and among the top performance in the index, there is a small bias towards female graduates in general upper secondary education and small bias towards males in vocational courses.
- Small differentiation between countries is expected owing to their different policies, but the OECD average shows clear differences between the genders.
- However, social problems may arise if the gap were to remain or grow and if labour opportunities are highly dependent on the type of education pursued.
- For example, if the job market began to favour those with vocational training who were disproportionally male, this may result in a higher unemployment rate among women and lower pay, despite equal qualifications.

Female percentage of graduates from upper secondary education (2015)



Sources: OECD, PwC analysis

¹japantoday.com (2013) "1 in 3 Japanese women want to be housewives: poll"

²OECD Japan Policy Brief (2017) "Improving the labour market outcomes of women"

Japan

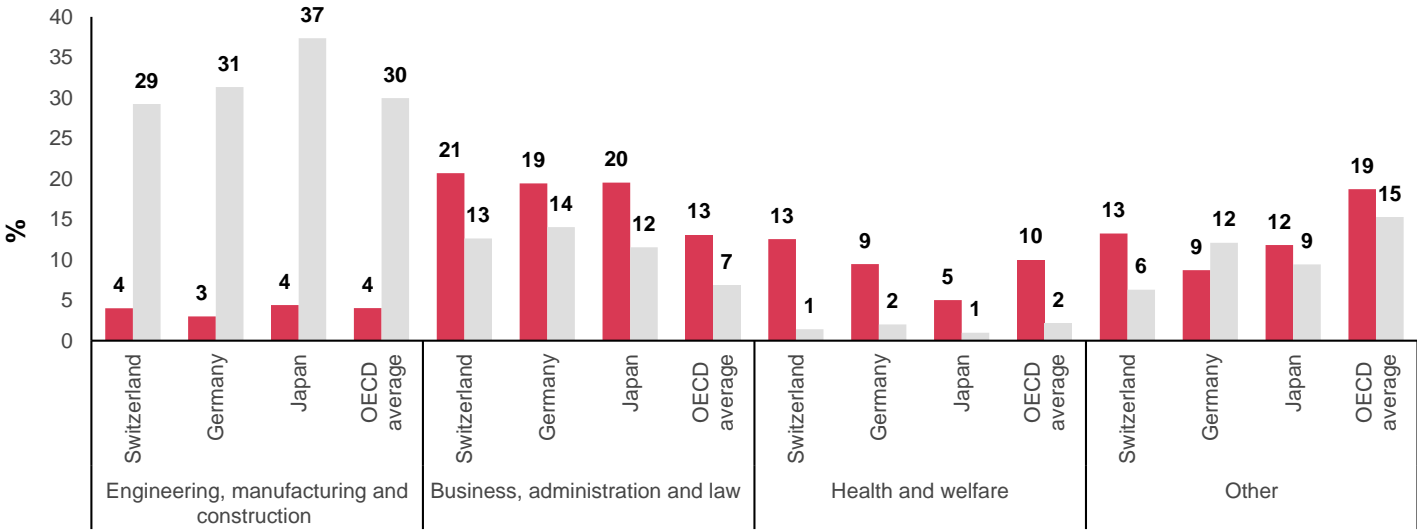
Although Japan has particularly high educational attainment, female labour force participation is relatively low, due to weak childcare provisions and social attitudes

- In any country, access to affordable childcare is key to the gender pay gap. Japan has the third worst gender pay gap among OECD countries at 26% (the OECD average is 14%), although it has come down from 33% in 2005.
- The political class of Japan is also heavily male dominated. Only 10% of parliamentarians are women, compared with the OECD average of 29%.
- Japan has shortages of childcare facilities. In 2016 over 24,000 children were on childcare waiting lists across the country. The problem is concentrated in major cities.
- However, Japan is also culturally different to other OECD nations. Unlike some countries, many women in Japan aspire to be a full-time housewife. A survey by Japan's Health, Labor and Welfare Ministry in 2013 found that 34% of unmarried Japanese women aged 15-39 did not want to work when they settle down and 28% of women had no firm opinion either way.¹ However, these responses may be a by-product of the high cost of childcare and the culture of working long hours.
- It has long been known that the economy would benefit from higher female participation in the labour force. One step may be targeting higher female participation in vocational education and training. The OECD published its own recommendations in 2017² that included:
 - Further increasing childcare capacity
 - Reform aspects of the tax and social security system that act as disincentives for second earners
 - Promote a culture of work-life balance, beginning in the government, and introduce ceilings on overtime work.

Of students who undertake vocational training in the OECD, there are striking gender differences in enrolment by subject

- Across the OECD, females make up only 12% of the engineering, manufacturing and construction student population, but 82% of that in health and welfare
- The top performers have the same trends as the OECD average, if not even starker differences.
 - Engineering, manufacturing and construction is a particularly important sector, as it includes 34% of all vocational courses across the OECD and 30-40% of all vocational courses across the top performers.
 - Wide variation between subject areas can lead to exaggerated income differences between genders if the professions pay significantly differently.

Percentage of students in upper secondary vocational training by major subject area and gender for each of the top 3 YEI performers and the average across OECD countries (2015)



Sources: OECD, PwC analysis
 1Huyer and Halfkin (2013) "Brazilian women lead in science, technology and innovation"

Brazil

Brazil has a high proportion of females studying engineering, manufacturing and construction, at 32%

- Brazil is the largest national investor in science and technology in Latin America and the Caribbean, at 1.4% of GDP. Female have been heavily involved thorough the availability of scholarship awards¹.
- Gender equality has also improved in through stronger women’s rights, increased education participation and better access to contraceptives.

Poland

Poland has the highest proportion of males studying health and welfare of all OECD countries, at 49%

Poland has one of the lowest gender pay gaps of the OECD at 7%, owing to rising female employment – see our Women in Work Index.

Top performers in the Youth Employment Index have policies to look after their most vulnerable, such as Japan's improved provision of education to children with special needs

Germany

Germany has generous welfare benefits for people out of work, but the system is skewed in favour to those who have recently lost their job, especially if they had a high income

- Unlike most OECD countries model of centrally provided welfare, Germany has an insurance-based model where benefits are provided by a range of public, private and voluntary institutions via a network of national and regional agencies. Entitlements are strongly linked to past contributions, and thus, related to past earnings via the tax system. Germany has a two-tier benefit system for job-seekers:
 - **Unemployment benefit:** Only available to workers who contributed to employment insurance for at least one of the previous 2 years and is paid for up to 2 years. The rate is set at 60% (67% for those with children) of the net wage a worker received over the previous year up to a maximum of €6,500/month.
 - **Basic job-seekers' allowance:** In addition to accommodation, heating and health insurance, all people out of work are provided with €416/month for a “decent existence” including:
“Nutrition, clothing, household goods, decent accommodation, heating, health and hygiene, as well as the possibility of maintaining interpersonal relationships and at least a minimum involvement in social, cultural and political life”
Additional payments are made for those with children.
- Although the system is generous to those losing their job, women are generally at a disadvantage as the model reflects the fact that men have historically been breadwinners. This means that women raising children will face inequalities in accruing benefits and divorced women and widows will have lower pensions.

Japan

Prior to 2006, Japan primarily taught children with disabilities in special schools rather than trying to integrate them with other students. Two policies were introduced in 2011 that marked a shift in attitudes

- High schools were instructed to create special-needs classes for pupils with disabilities and to as best as they can put pupils that share the same disability together. Some classes are shared with children without disabilities.

As a result, the growth in separate special needs schools halted, remaining at facilitating about 50,000 pupils during from 2008 to 2015, while the number of children with special needs being taught at standard schools doubled from 100,000 to 200,000 over the same period.

- Students with less severe disabilities were to be taught in regular classes, but receive additional private or small group lessons for up to eight hours a week.

Consequently, the number of students taught in private classes rose from 50,000 in 2008 to 70,000 in 2015. The recognition of disabilities has also improved, with 3.5% of children being classified as having a disability in 2012, from 2.5% in 2008, without evidence of an increase in prevalence.

Iceland provides young people who have been unemployed for over a year with education and training grants, and work in operating and production centres

Norway provides training to young people with reduced working capabilities if they have been out of work for over six months

Denmark invests in policies such as compulsory rehabilitation programmes before granting disability benefit

Japan has a low NEET rate, but those without a job, education or training risk being left behind

Japan

Japan has a low NEET rate, but provisions to NEETs are not generous. Over time this could result in the most disadvantaged being 'left behind'. Moreover, there is already a relatively high youth poverty rate of 20% and it is likely that most NEETs rely on informal networks for income support, such as their friends and family.

Schools provide support to disadvantaged young people

- Schools are a prominent provider of social services to young people.
- School counsellors are present at most schools for about half a day per week to provide support to pupils and families, in conjunction with training to teachers.
- Some schools also have access to a social worker for a few hours per week. This can help introduce 'at-risk students' to the appropriate services (from welfare organisations to hospitals). In 2014, there were about 7,300 school counsellors at 22,000 educational institutions.

Financial support for job-seekers operates under a two-tier structure

- **Earnings-related unemployment benefit:** Available for young workers who have worked for at least a year is set between 50-80% of previous earnings, which is relatively generous compared to most OECD countries (such as Germany's rate of 60%). However, it is only available for three months, a shorter period than in most OECD countries (such as Germany which provides the benefit for up to two years).
- **Means-tested public assurance benefit:** Low-income households can apply and it is designed to guarantee a minimum standard of living. The current rate is near two-thirds of median earnings.

Shakaiteki Hikikomori (acute social withdrawal) has become an increasingly common social phenomenon

- Young people suffering from hikikomori often isolate themselves to their bedroom, infrequently leaving the house or engaging with people, even their families. Children with hikikomori are often withdrawn from school as a result of their anxiety.
- The OECD reported that 1.8% people aged under 30 had hikikomori at some point in their lives for a period lasting at least six months. Furthermore, a Japanese cabinet report estimated that 541,000 people aged 15-39 had the condition in 2016. A 2010 community-based survey estimated the figure to be higher, at 1.2% of the entire population, equating to over 1.5 million people.
- Until recently, the condition was believed to only affect young people from lower socio-economic cohorts. However, new research showed this was not accurate, with evidence from all strata of the population.

New policies have been introduced to help youth with Hikikomori

- The government established Community Hikikomori Support Centres run by prefectural (devolved administrative regional) governments and designated cities in 67 locations. These centres are designed to be the first point of contact for hikikomori and their families.
- Once a Community Hikikomori Support Centre is made aware of a person with hikikomori, they can provide free counselling and referrals to specialist mental health services. A similar non-profit organisation called Node launched in 2018. There is limited data available to determine the success rate of these centres.
- It is important to note that the condition is not limited to Japan. A 2015 study found documented cases of similar social reclusion in the US, China and Spain.

7

Implications for
business



People are attracted to work for a variety of reasons, such as development opportunities, workplace diversity and new incentives

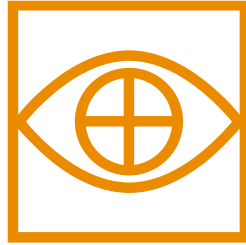
This section examines three ways businesses can improve prospects for their workforce, such as through the provision of training and development opportunities without discrimination or bias, and exploring desirable compensation packages.

Three ways firms can attract and retain talented people



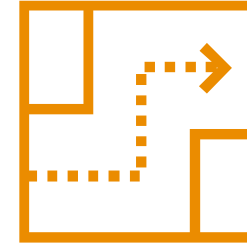
Offering high-quality training opportunities

According to hrzone, businesses that offer high-quality training opportunities attract better talent and have better staff retention. In the UK, firms have the opportunity to start making a good impression on people from the age of 15 onwards through work experience placements.



Achieving a diversity of perspective

In the UK, in addition to complying with the Equality Act 2010, firms should prevent discrimination of all kinds and ensure opportunities are open to workers from disadvantaged backgrounds to gain a diversity of opinion. Our research found that 86% of women consider prospective employers' policies on diversity, equality and inclusion before applying to a firm.



Incentivising workers through means other than financial compensation

Many people are interested in other forms of compensation beyond their basic wage. Examples include businesses moving away from a strict uniform policy to being able to choose the amount of holiday to take each year.

Offering high-quality training and development opportunities can improve employee acquisition and retention

Engaging youth early via work experience

Rolls Royce's work experience

- Offers 600 week-long work placements a year to students studying STEM subjects, with specific targets:
 - 50-50 gender balance
 - A 20% increase in black, Asian and ethnic minority students.
- Firm notes that proportion of female applicants has risen to 27%, double what it was at the launch of the current programme.

Only 60% of organisations cover travel costs for their work experience placements

Bryan Cave Leighton Paisner & Career Kick-Start Work Experience

- Offers 20 1-week work experience places for Year 12 students from less-fortunate backgrounds.
- Holds open days for approximately 80 students, who cannot be accommodated in the programme, in order to provide them with an insight into a legal career.

Apprenticeship schemes

Morrisons' Chartered Manager Degree Apprenticeship

- Morrisons offers young workers several career routes: degree apprenticeships, apprenticeships, graduate roles and industrial placements.
- In 2019, Morrisons is hiring 60 apprentices who will earn a chartered manager degree.
- The supermarket has partnered with the University of Bradford and Sheffield Hallam University to create a tailored programme.

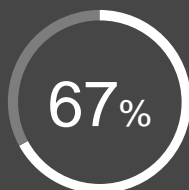
Whitbread's WISE programme

- Focuses on educating, engaging and employing young people so that they stay within Whitbread and advance up the career ladder.
- 25% of hotel managers either are or have been an apprentice and, across Whitbread's workforce, apprentices are over 5% more likely to progress to a higher role than non-apprentices

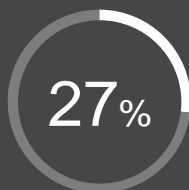
Sky Apprenticeships

- Apprenticeships are offered in a range of disciplines including technology, customer service, business and media.

PwC UK launched a technology apprenticeship programme in September 2018, which is designed to attract people from a broad range of backgrounds to apply to the firm



PwC research reveals that over two-thirds (67%) of UK CEOs find it difficult to recruit people with digital skills.



Recruiting women with these skills is particularly challenging – a separate PwC study found that only 27% of female A-level and university students would consider a career in technology, compared with 62% of males.

Six facts about PwC's technology degree apprenticeship in the UK

1

PwC UK has created a new technology degree apprenticeship to give people from a broad range of backgrounds the opportunity to work in technology.

2

The programme started in **September 2018**, and saw 80 students combine university life with practical work-based technology projects at PwC.

3

The four-year course has been developed in partnership with the universities of Birmingham and Leeds, and participants will be based in their city of study.

4

It will be one of the first and largest examples of the new **Level 6 Degree Apprenticeships** in action. Students became PwC employees on their first day and will receive a salary throughout.

5

At the end of the programme they will graduate with a degree in Computer Science and a job at PwC if they meet performance criteria.

6

PwC will target its technology degree apprenticeship at females interested in technology careers, as well as using its Back to School programme to raise awareness of the programme with among students from more disadvantaged areas.



Kevin Ellis, Chairman and Senior Partner, PwC UK, shares his thoughts on the new programme:

Why is the technology apprenticeship important?

Kevin Ellis

'For the UK to prosper post-Brexit we need to invest in creating a vibrant tech sector right across the country and more people with the skills needed to help businesses transform. The demand for technology advice is rapidly increasing, while the pool of available tech talent is shrinking. Our technology degree apprenticeship is an exciting way for us to start to grow the future of the UK's technology industry and to open up these careers to a wide range of students across the UK'.



Professor Jon Binner, College of Engineering and Physical Sciences at the University of Birmingham, said:

Jon Binner

'At the University of Birmingham, we are passionate about providing our students with the best opportunities and experiences possible to prepare them for the world of employment. We are delighted to develop this four-year course with PwC, which will provide our students with the skills set, expertise and experience that are highly in-demand from industry. Like PwC, we too believe in addressing the UK's technology skills gap and improving the industry's diversity, and are proud to be instrumental in educating the industry's future talent'.

Businesses should prevent discrimination and ensure equal opportunities – they will then benefit from diversity of perspective

Reducing the gender gap

MasterCard's Girls4Tech™ (China & Singapore)

- MasterCard has launched an initiative providing students access to STEM subjects with the ambition of creating future problem-solvers.
- Susan Warner, internal communications at MasterCard: "When we first talk with the girls, they're not thinking about a career in fraud detection, cryptology or technology, but when they leave, they're thinking just that."

MasterCard's target is to provide STEM education to 200,000 girls (aged 10-12) by 2020

Microsoft and GirlsSpark (Hong Kong)

- Addresses under-representation of female leaders and talent shortage in the ICT industry.
- Microsoft organises GirlSpark Camp annually to train and inspire women, with the aim that some become future leaders across tech.

Improving opportunities for under-represented groups

Sky partnership with Mama Youth Project

- Sky has partnered with the Mama Youth Project to train people aged 18-25 from under-represented groups, challenging backgrounds or those with low educational or employment opportunities to secure jobs in the television and media industry.

City Solicitors Horizons

- City Solicitors Horizons is a pilot social mobility initiative to improve access to the legal profession for people from disadvantaged backgrounds. It is supported by the City of London Law Society (CLLS) and leading law firms.
- Students can apply to take part in a programme alongside their undergraduate degrees which involves classroom and one-to-one training sessions, mentoring from lawyers and work experience from sponsoring firms.
- Applicants are required to have been educated at a state funded school and be the first generation of their immediate family to attend university, or have been eligible for free school meals or some other form of financial assistance, or have been in care.

Providing equal opportunities to people from disadvantaged backgrounds

PwC UK UCAS tariff changes

- There is strong correlation between social class and academic performance.
- Too strong a focus on UCAS scores can indirectly exclude those from disadvantaged backgrounds.
- As such, PwC in the UK no longer uses the UCAS tariff as an assessment tool for the majority of our undergraduate and graduate programmes.

Ministry of Justice & "STEP into Justice"

- Offers an apprenticeship scheme for applicants from lower socio-economic backgrounds from the age of 16.

Compensation isn't everything: 34% of survey respondents say that benefits other than pay are the most important consideration before accepting a job¹

Both workers and businesses can benefit from a relevant employee benefit package

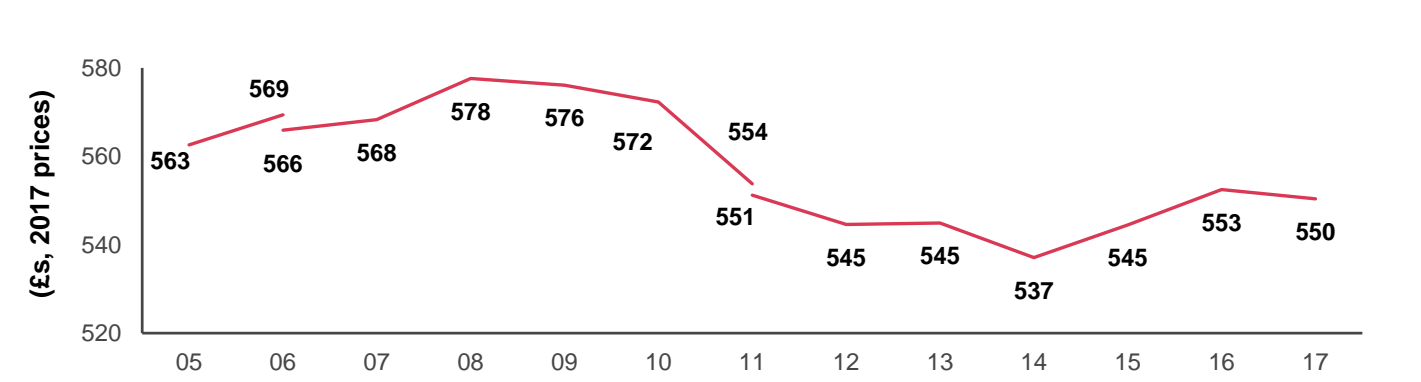
Traditionally, workers have provided labour in return for salary and some additional compensation such as pensions, expenses, holiday and training.

Over time, additional benefits have become more common, such as signing-on bonuses, interest-free loans for travel tickets, private medical and personal accident insurance, stock options and discounts on an employer's products. Businesses can use economies of scale to provide benefits at a lower cost than otherwise available to the employee. If well organised, they have the potential to save an employee time and money.

However, in exchange, employers can reduce total employee compensation by reducing real salary rises and/or attracting better talent into their businesses.

In the UK median real wages in 2017 remained some way below the level prior to the global financial crisis, as the chart below shows. Real wages have started to rise again in 2018, but other types of benefits may also be valuable to many employees.

Real median UK weekly earnings, 2005 - 17²



¹ Survey conducted in UK by Harris Poll on behalf of Glassdoor in 2015 on 1,043 adults ages 18 and older of which 601 were employed full time/part time/self-employed or not employed but looking for a job.

² Breaks chart in 2006 and 2011 represent change in methodology in the ASHE, and the value under both the old and new method

³ Eventbrite's research of millennials in the USA, conducted by Harris

⁴ Department of Work and Pensions, Automatic enrolment opt out rates: Findings from qualitative research with employers in 2014

Sources: ONS, DWP, Harris Poll for Glassdoor.

Workers are more likely to be incentivised by experience-driven benefit schemes

According to a recent study in the US, 78% of millennials (those born between 1980 and 1996) would choose to spend their money on desirable experience over a desirable object.³ Companies are beginning to reflect this in their benefits packages with some examples below:



Transferwise organises a free holiday to all of its staff each year



Virgin offers staff unlimited annual leave



PwC allow their employees to work at home or vary their working hours

Government has a role in improving workplace incentives such as pensions

In 2012 the UK government changed the pension system from opt-in to opt-out, resulting in an increase of 32 percentage points in pension participation rate, which rose to 76% by 2014.⁴ From April 2019, the minimum total pension contribution is to also increase from 2% (prior to April 2018) to 8%. Given a decline in generous defined-benefit pensions schemes, it is vital that young workers start saving early. This means that their pensions are more likely to have time to accumulate to provide a comfortable standard of living in retirement.

Governments can use tax nudges to improve workers' lives in other means. For example, health outcomes may be improved by the tax relief from cycle-to-work schemes, but may be worsened by the withdrawal of such relief for gym memberships from April 2018.



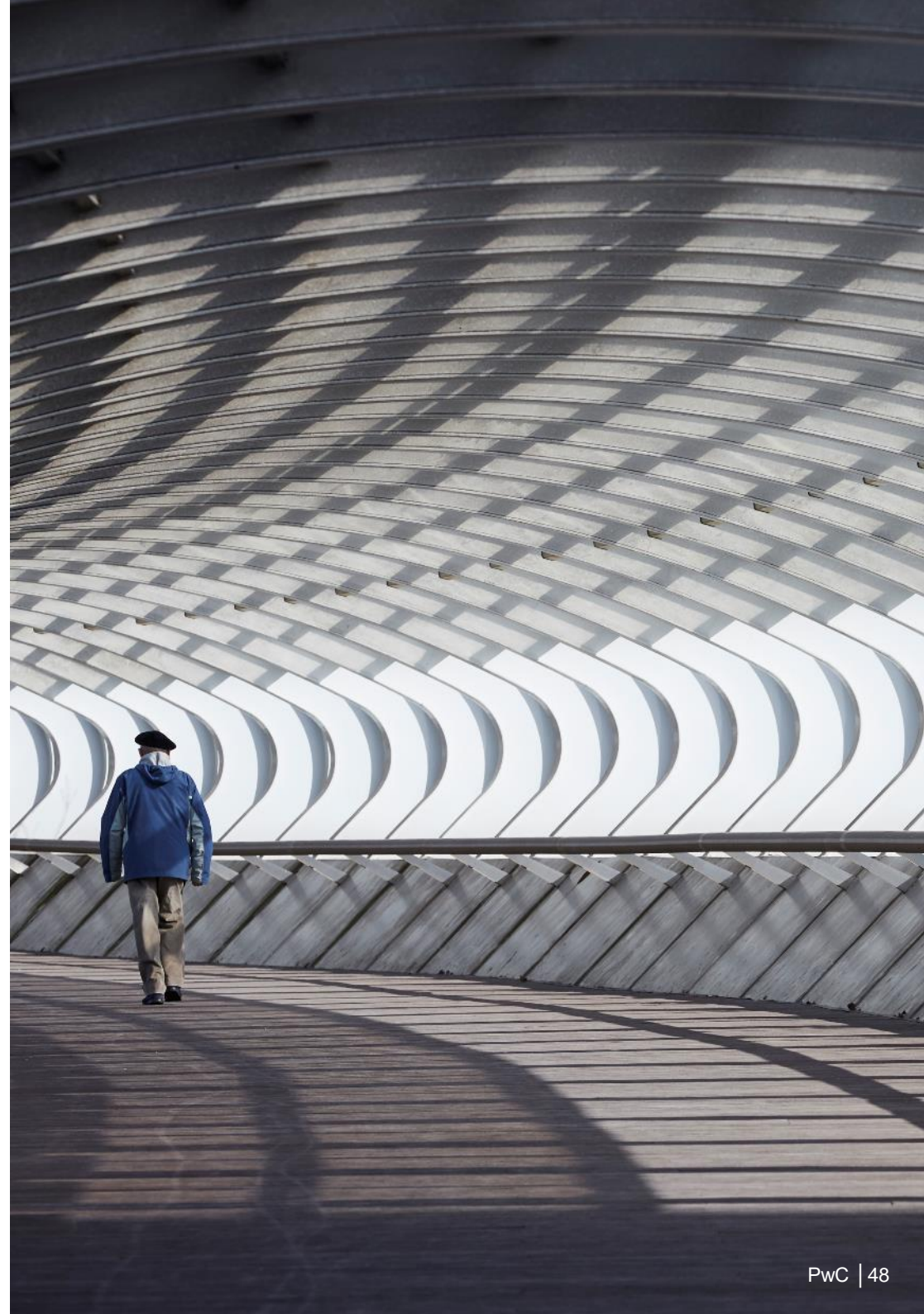
A1

Individual labour
market indicators

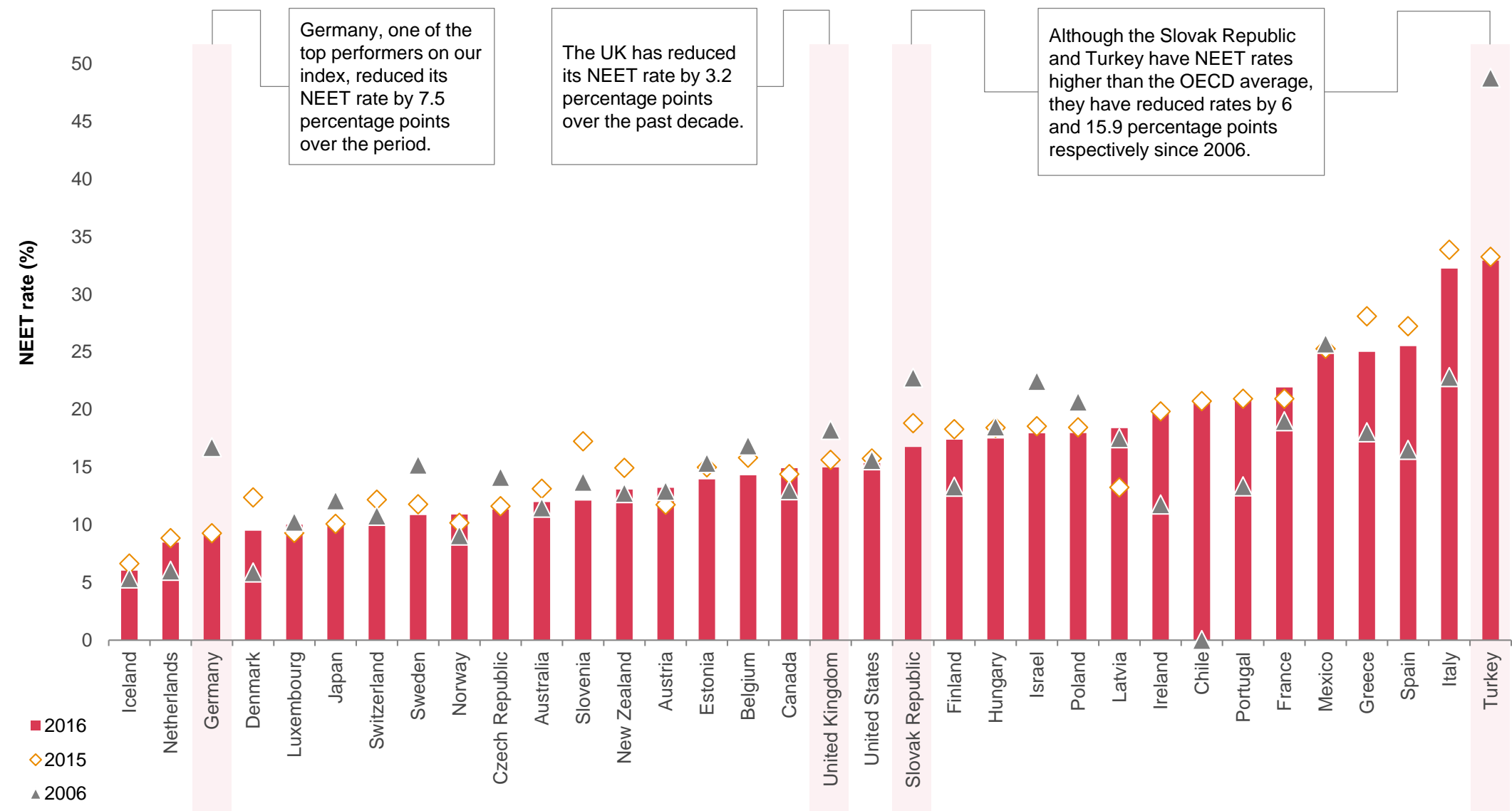
Our Youth Employment Index is a weighted average of 8 key measures that reflect labour market activity and educational participation

	Weights
NEET rates	20%
Employment	20%
Unemployment	10%
Relative youth unemployment ratio	10%
Part-time employment	10%
Long-term unemployment	10%
School drop-out rates	10%
Educational enrolment rates	10%

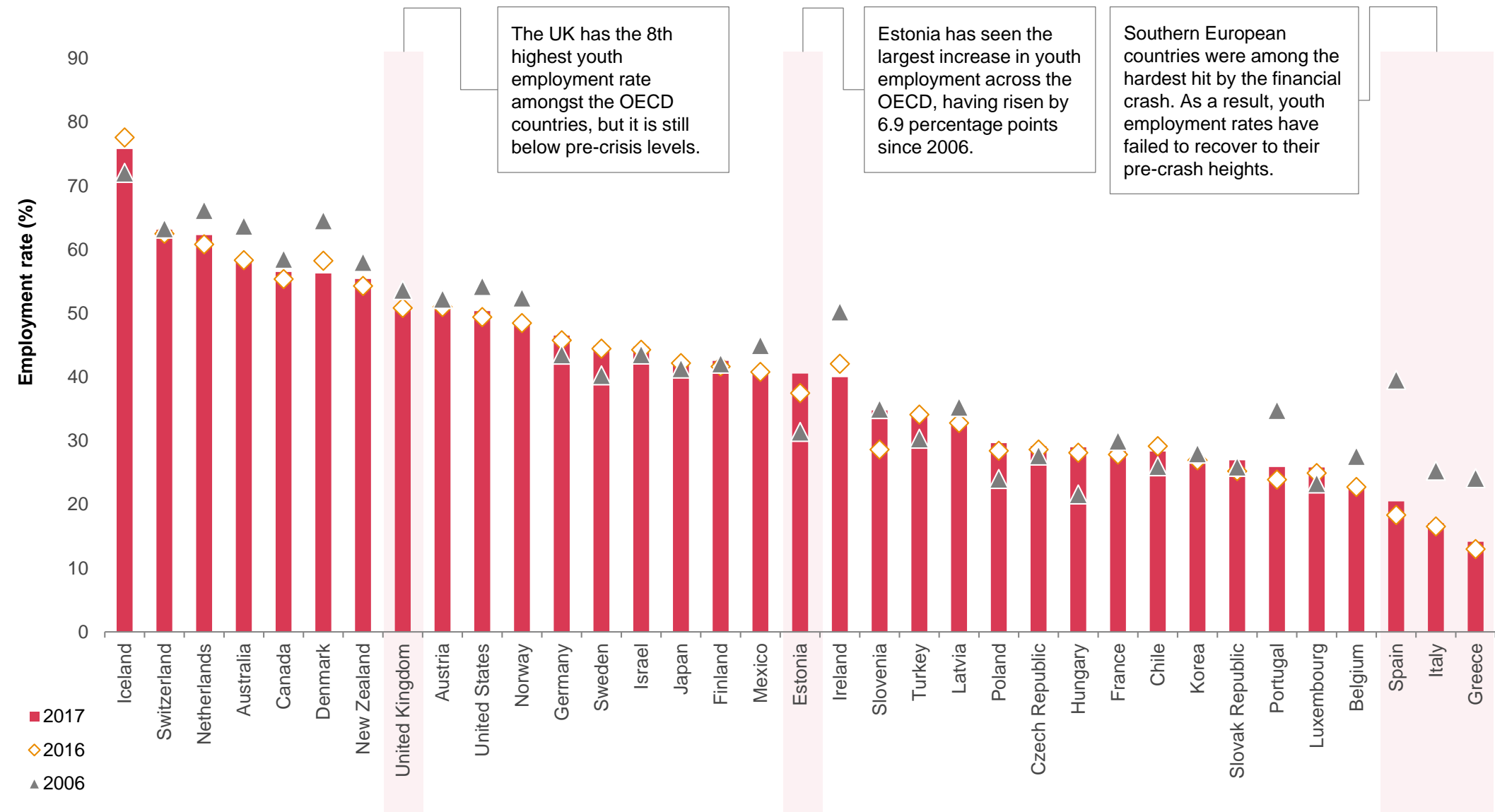
In the following slides, we show how each of the 35 OECD countries perform on these labour market indicators.



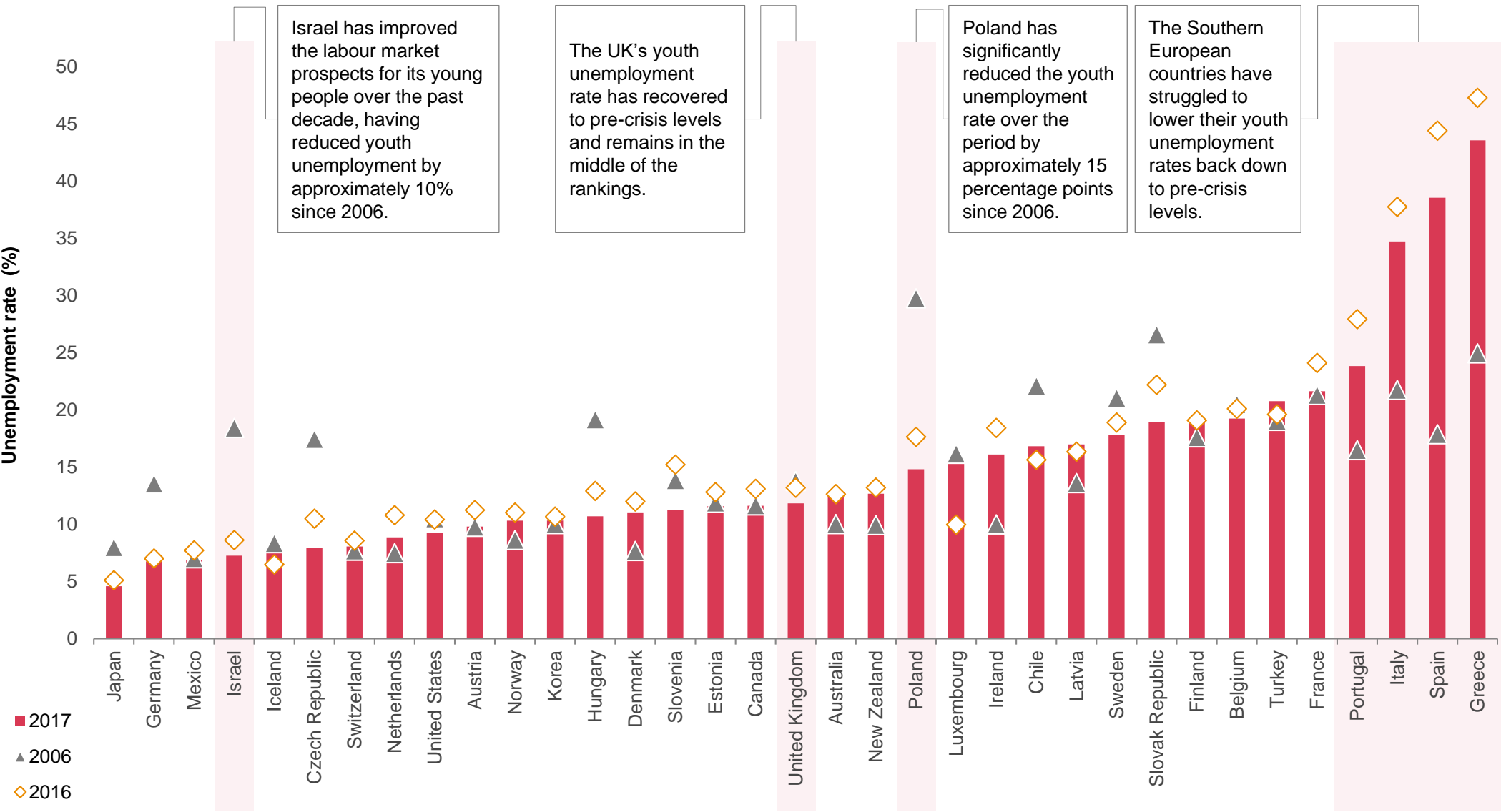
NEET rate 20-24 year olds (% of age group)



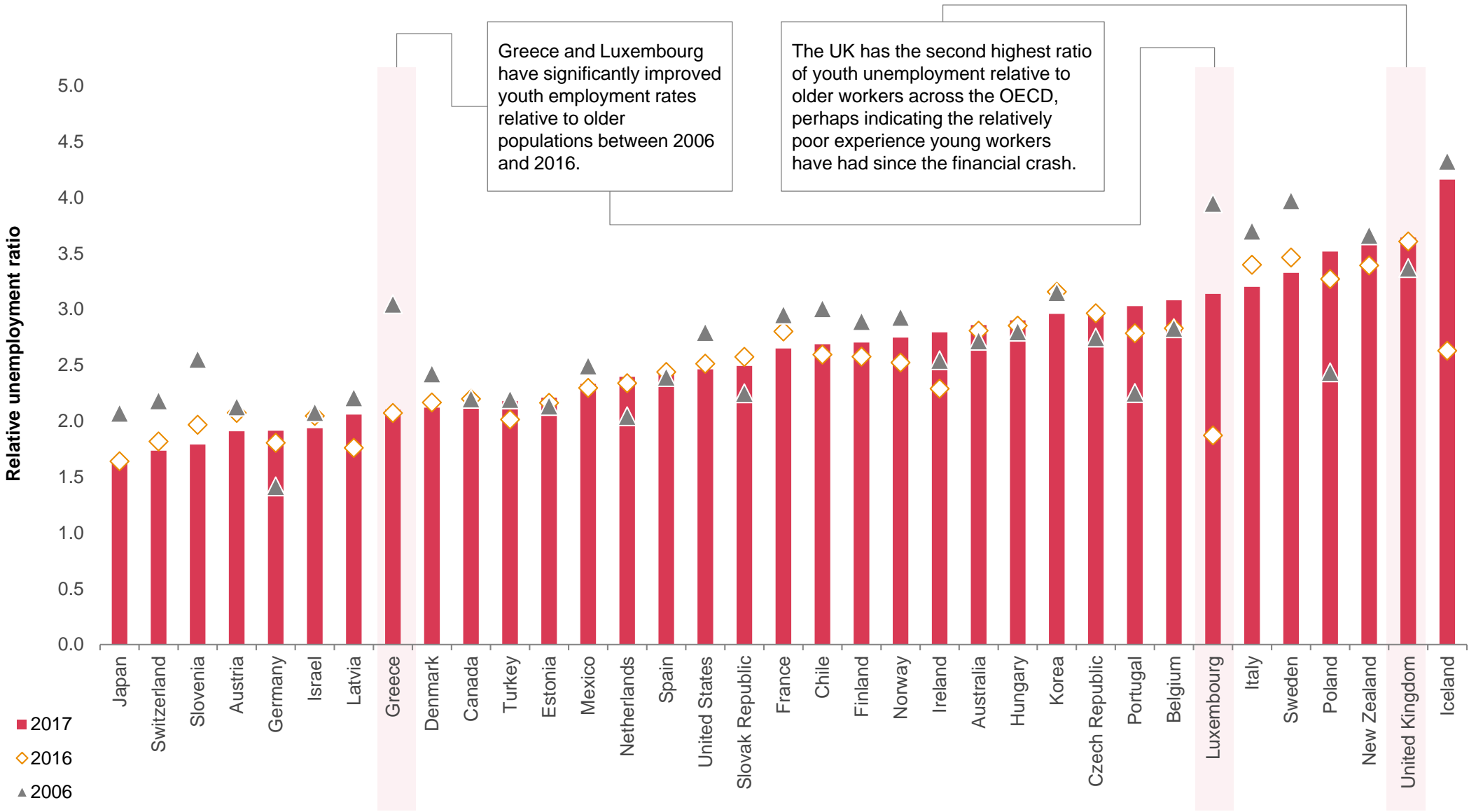
Employment rate of 15-24 year olds (%)



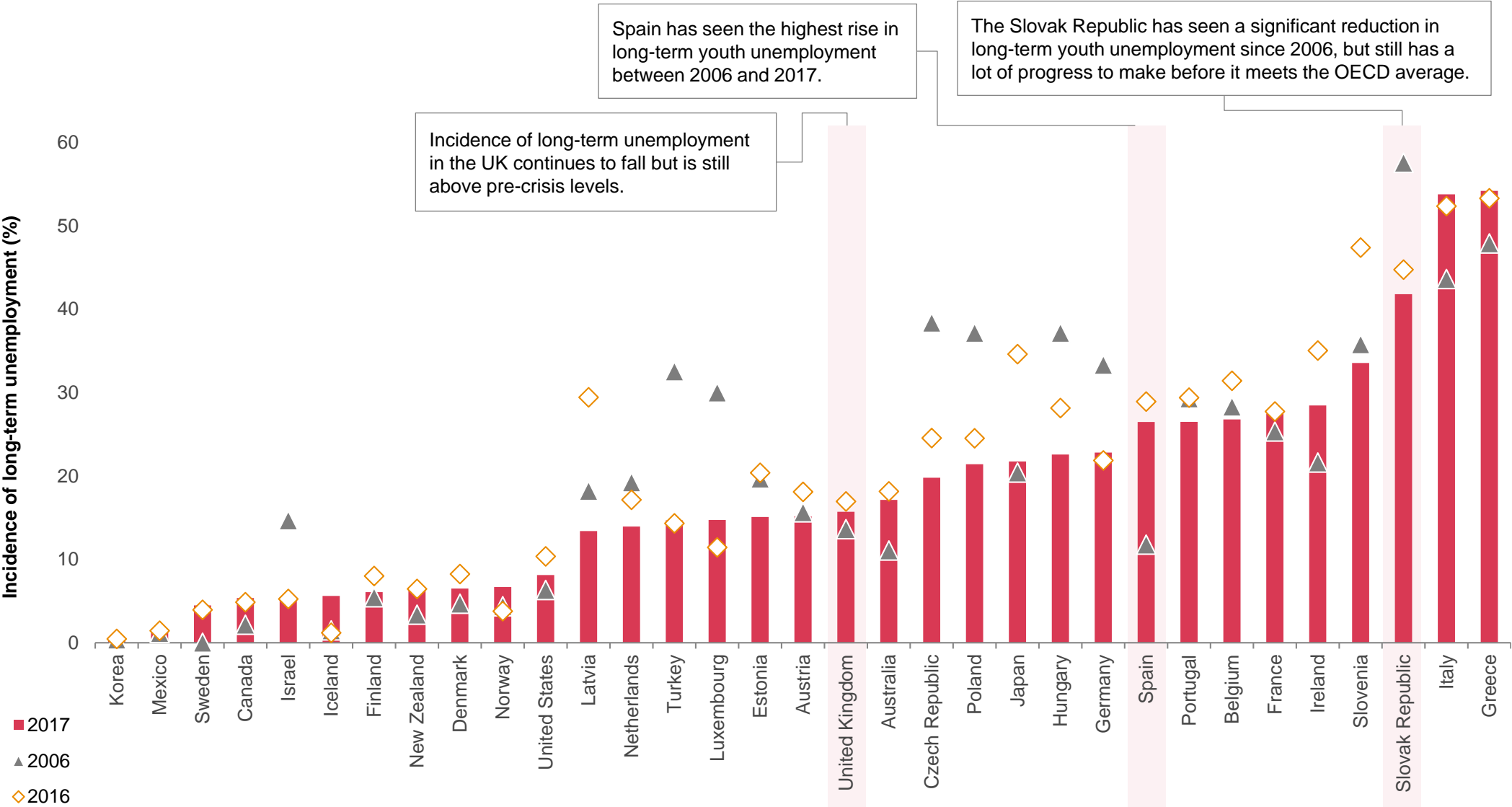
Unemployment rate of 15-24 year olds (%)



Relative unemployment ratio, youth/adult (15-24)/(25-54)



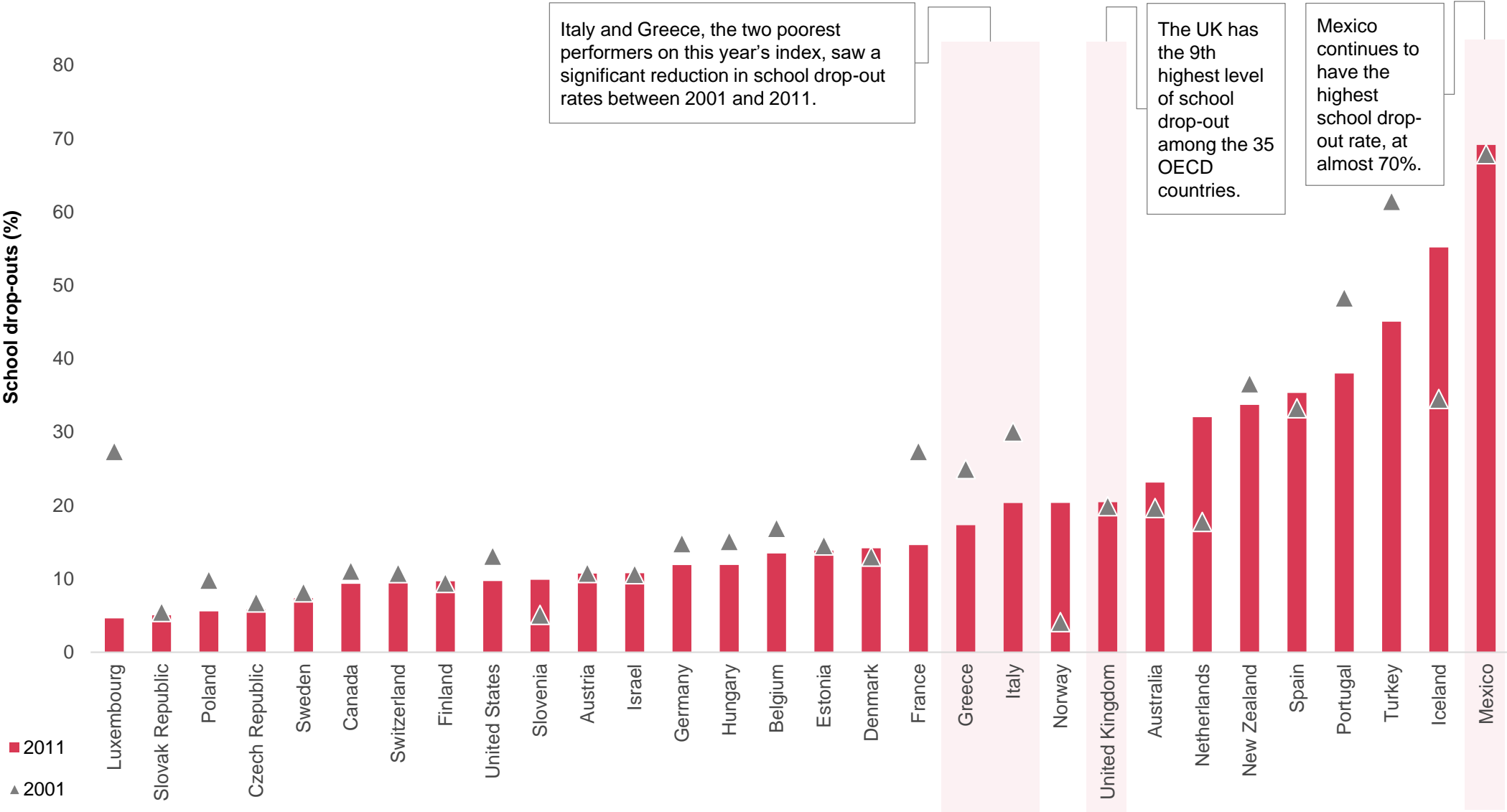
Incidence of long-term unemployment for 15-24 year olds (% of unemployment)



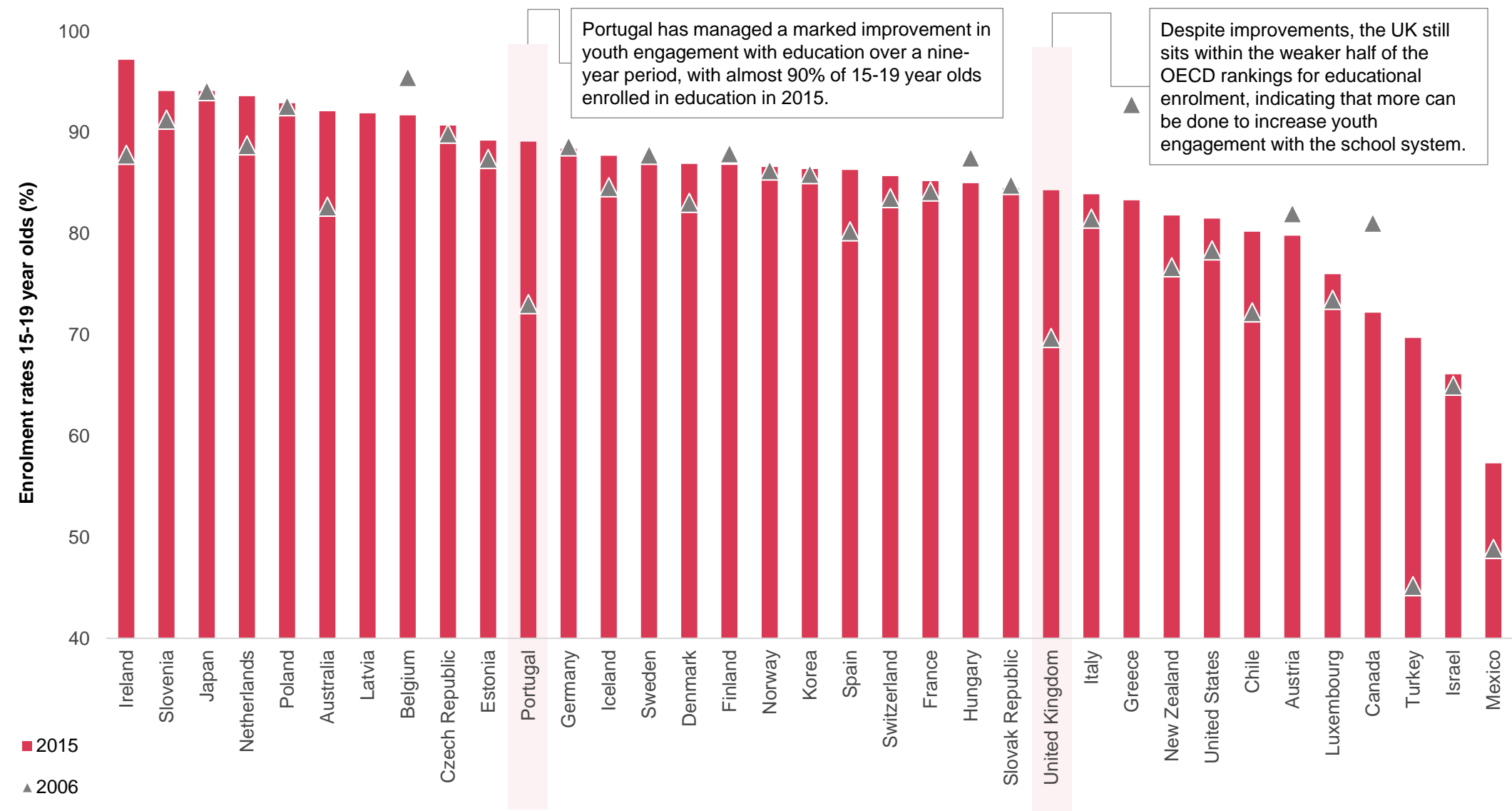
Incidence of part-time work (% of employment)



School drop-out rates (% of the age group)



Educational enrolment rates for 15-19 year olds (%)



The background of the image is a dense, repeating pattern of blue, pyramid-shaped acoustic foam. The perspective is from a low angle, looking down at the foam, which creates a strong sense of depth and perspective. The lighting is soft, highlighting the texture and three-dimensional nature of the foam.

A2

Methodology

PwC Youth Employment Index methodology

Variables included in the index

Variable	Weight	Factor*	Rationale
NEET rate 20-24 (% of the age group)	20%	-	This measure can imply a wider range of vulnerabilities among youth, including unemployment, early school leaving and labour market discouragement. It can also represent economic and social costs. We use it as the basis for estimating the potential boost to UK GDP in the long run if NEET rates could be reduced to German levels for this age group.
Employment rate 15-24 (% of the age group)	20%	+	The proportion of 15-24 year old workers in employment is an important measure in our index and so has quite a high weight of 20%. But it is less critical for younger than older workers as for young workers education and training is a valid alternative to employment.
Unemployment rate (UR) (% of the labour force)	10%	-	This is the proportion of the labour force that is unemployed but actively seeking employment (as opposed to in education or inactive). This represents a cost to both young people and to the wider economy as there could be social costs to having a large number of unemployed young people (e.g. increased crime and drug use).
Relative UR youth/adult (15-24)/(25-54)	10%	-	The relative unemployment rate is included to reflect how young people fare in the labour market relative to older members of the labour force. Equality would imply equal opportunities across age groups but in many countries young people are more likely to be unemployed, reflecting the difficulty of getting into the workforce in the first place.
Incidence of long-term unemployment (% of unemployment)	10%	-	The youth long-term unemployment rate reflects the economic vulnerability of young people. Being unemployed for over a year can have longer-term impacts in the form of skills erosion and increased reliance on benefits. This could also damage confidence and lead to long-term detachment from the labour force, increased crime rates and drug use.
Incidence of part-time work (% of employment)	10%	-	Part-time employment may adversely affect earnings, pensions and job security, but this is given a lower weight in the index since some younger workers (e.g. students or young parents) may prefer part-time work due to its greater flexibility.
Enrolment 15-19 (% in education)	10%	+	This indicator recognises that young people may still be in education or training and therefore are still contributing to the economy and enhancing their productivity even if not yet employed.
School drop-outs (% of the age group)	10%	-	This is an indication of the number of young people becoming detached from school at an early age, which will also tend to worsen their job prospects in the short and long term.

* Indicates whether higher values of an indicator are positively or negatively scored in the index.

PwC Youth Employment Index methodology

How does it work?

We used a standard method to construct this index, similar to the one used in the PwC Women in Work and Golden Age indices, and by many other researchers constructing such indices.

Calculating the PwC Youth Employment Index

Step 1

Normalise

Indicators are standardised using the z-score method, based on the mean and standard deviation of the sample of 34 countries in a base year of 2006, to allow for comparisons both across countries and across time.

Step 2

Apply positive/negative factor

Positive/negative factors are applied so each variable enters the index with the correct sign (e.g. positive for employment rates, negative for NEET rates).

Step 3

Calculate the scores

The scores are constructed as a weighted average of normalised labour market indicator values.

Step 4

Scale the index

Scores are rescaled to values between 0 and 100 with the average value across all 34 countries set, by definition, to 50 in 2006.

Drivers of youth unemployment rates in the OECD

Econometric methodology

- We used a dynamic panel approach in our analysis which exploits cross-country differences in unemployment rates for the 15-24 age group across the OECD.
- We used the existing academic literature to inform our specification of drivers that explain variations across countries and time in youth unemployment rates. We narrowed our selection using the step-wise model selection technique in order to avoid the problems associated with multicollinearity, such as variables being individually insignificant and at times with unreliable coefficient signs.
- Our specification also contains fixed effects for each country to account for country-specific characteristics that explain the youth unemployment rate. This unemployment rate is also likely to be driven by structural factors – to account for this we included a lagged term for the youth unemployment rate in our overall specification to account for the persistence in this rate over time.
- To ensure robustness under a serially correlated dependent variable (in this case the youth unemployment rate), we used a system generalised method of moments (GMM) estimator (Blundell and Bond, 2000). The GMM approach involves using an instrumental variable-based approach where higher lag values of the lagged dependent variable are used as instruments. This approach also serves to eliminate any potential omitted variable bias and unobserved heterogeneity, which means country fixed effects are accounted for.
- The key results from our analysis are shown in the table to the right.
- We find that our preferred specification pass all standard robustness tests – (i) Robust Hansen test for validity of instruments (p-value = 0.346) (ii) Hausman test for the relevance of fixed effects (p-value = 0.01) and (iii) Arellano-Bond autocorrelation test for one (p-value = 0.008). We also checked normality of the model with quantile plots.

Table of coefficients

Dependent variable: Unemployment rate, 15-24 year old	Coefficient (standard error)
Lagged unemployment rate, 15-24 age group	0.73 (0.05)***
GDP growth	-0.63 (0.07)***
Lagged economic crisis dummy variable	1.40 (0.42)***
Employment rate, 55-64 age group	-0.10 (0.03)***
Expenditure on out of work income as a share of GDP	1.91 (0.86)***
Log of real minimum wage	-1.55 (1.03)
Expenditure on public employment services as a share of GDP	-7.60 (5.50)
Gender employment gap	-0.07 (0.08)

Source: PwC analysis

*significant at 10% level **significant at 5% level ***significant at 1% level.

Drivers of youth unemployment rates in the OECD

List of model variables used and other variables considered but not statistically significant

Variables used in the econometric model	Definition	Source
GDP growth	Annual gross domestic product growth (%)	OECD
Lagged economic crisis dummy variable	Dummy variable where 1 = indicator for the year in which a country is experiencing an economic crisis as defined by a contraction in GDP and continuing until the previous peak level of GDP prior to the economic contraction, and 0 = otherwise.	OECD
Employment rate, 55-64 age group	Percentage of the 55-64 age group in employment	OECD
Expenditure on out-of-work income as a share of GDP	Public expenditure on out-of-work income maintenance and support as a percentage of GDP, which includes full unemployment benefits, unemployment insurance, unemployment assistance, partial unemployment benefits, part-time unemployment benefits, redundancy and bankruptcy compensation.	OECD
Log of real minimum wage	Natural logarithm of real minimum wage, measured in USD, at constant prices and 2017 PPP terms	OECD
Expenditure on public employment services as a share of GDP	Public expenditure on public employment services as a percentage of GDP, which includes placement and related services, benefit administration and other expenditure.	OECD
Gender employment gap	Male youth employment rate minus female youth employment rate (15-24 age group)	OECD
Other variables considered but not statistically significant	Definition	Source
Consumer price index	Consumer price index (percentage change on the same period of the previous year)	OECD
Minimum wage relative to average wage	Minimum wage relative to median average wages of full-time workers	OECD
Employment protection for temporary contracts	Strictness of employment protection for temporary contracts	OECD
Public spending on training as share of GDP	Public expenditure on training as a percentage of GDP, which includes institutional, workplace and alternate/integrated training, as well as special support for apprenticeship.	OECD
Income tax	Average personal income tax and social security contribution rates on gross labour income	OECD
Participation rate, 15 to 24 age group	Labour force participation rate for 15-24 age group	OECD
Part-time employment, 15 to 24 age group	Part-time employment rate for 15-24 age group	OECD
Value added by services, industry, manufacturing sectors	Value added by each sector calculated by dividing the value added in each sector by total value added	OECD
Ratio of 15-24 population to 25-64 population	Percentage of population in the 15-24 age group divided by the percentage of population in the 25-64 age group	UN Population Division



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Our Youth Employment Index is one of a series of related PwC labour market indices. Please take a look at our other indices for older workers and women at the links below:

PwC's Golden Age Index

How well are the OECD economies harnessing the power of an older workforce?
www.pwc.co.uk/services/economics-policy/insights/golden-age-index.html

PwC's Women in Work Index

What's driving the gender pay gap and what gains can be made from closing it?
www.pwc.co.uk/services/economics-policy/insights/women-in-work-index.html



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Bibliography

Bibliography

- Betcherman, G., Godfrey, M., Puerto, S., Rother, F. and Stavreska, A., 2007. A review of interventions to support young workers: Findings of the youth employment inventory. World Bank Social Protection Discussion Paper, 715, pp.461653-1253133947335.
- Boldrin, M., García-Gómez, P. and Jiménez-Martín, S., 2010. Social Security incentives, exit from the workforce and entry of the young. In Social Security Programs and Retirement around the World: The Relationship to Youth Employment (pp. 261-294). University of Chicago Press.
- Brada, J.C., Marelli, E. and Signorelli, M., 2014. Introduction: Young people and the labor market: Key determinants and new evidence. Comparative Economic Studies, 56(4), pp.556-566.
- Bruno, G.S., Marelli, E. and Signorelli, M., 2014. The rise of NEET and youth unemployment in EU regions after the crisis. Comparative Economic Studies, 56(4), pp.592-615.
- Bruno, G.S., Choudhry Tanveer, M., Marelli, E. and Signorelli, M., 2017. The short-and long-run impacts of financial crises on youth unemployment in OECD countries. Applied Economics, 49(34), pp.3372-3394.
- Caporale, G.M. and Gil-Alana, L., 2014. Youth unemployment in Europe: Persistence and macroeconomic determinants. Comparative Economic Studies, 56(4), pp.581-591.
- CIPD (2015), 'Over qualification and skills mismatch in the graduate labour market – Policy report'.
- City & Guilds (2016), 'Skills Plan: is it a flash in the pan or lasting vocational reform?'
- Department for Work and Pensions (2014), 'European Social Fund (ESF): 2007 to 2013'
- Dunsch, S., 2016. Okun's law and youth unemployment in Germany and Poland. International Journal of Management and Economics, 49(1), pp.34-57.
- Gov.uk (2018) "A-Z of apprenticeships"
- Guardian (2015) "Starbucks plan business hire young unemployed"
- Harris Polls (2015)
- House of Commons (2017), 'Reforms to Technical Education'
- House of Lords (2016), 'Overlooked and left behind: improving the transition from school to work for the majority of young people'
- Huyer and Halfkin (2013) "Brazilian women lead in science, technology and innovation"
- Japantoday.com (2013) "1 in 3 Japanese women want to be housewives: poll"
- Kluve, J., 2006. The effectiveness of European active labor market policy.
- Marelli, E., Choudhry, M.T. and Signorelli, M., 2013. Youth and total unemployment rate: The impact of policies and institutions. Rivista internazionale di scienze sociali, 121(1), pp.63-86.
- Manning, A., 2016. The elusive employment effect of the minimum wage.
- Neumark, D. and Wascher, W., 2004. Minimum wages, labor market institutions, and youth employment: a cross-national analysis. ILR Review, 57(2), pp.223-248.
- OECD Japan Policy Brief (2017) "Improving the labour market outcomes of women"
- OECD (2018) Statistics.
- OFSTED (2017), <https://public.tableau.com/profile/ofsted#!/vizhome/DataView/Viewregionalperformancevertime>
- ONS (2017) "The UK contribution to the EU budget"
- ONS (2018) Survey of Personal Incomes
- Social Mobility Commission (2017): 'Social Mobility Barometer Poll'.
- Social Mobility Commission (2017), 'Time for Change: An assessment of government policies on social mobility 1997 to 2017'.
- State of the Nation Report (2016)
- Tanveer Choudhry, M., Marelli, E. and Signorelli, M., 2012. Youth unemployment rate and impact of financial crises. International journal of manpower, 33(1), pp.76-95.
- Tomić, I., 2017. What drives youth unemployment in Europe? Economic vs. non-economic determinants. International Labour Review.
- UK Commission for Employment and Skills (2015)
- UNESCO (2009) "The changing Status of Vocational Higher Education in Contemporary Japan and the Republic of Korea"
- Our report also relies on data from/provided by ASHE, Europa, FE Data Library, gov.uk, IFS, Labour Force Survey, the OECD and the ONS.

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