

of European countries offer a form of free ECEC. During the last year before compulsory primary education, free places are almost universal in Europe. Many countries provide targeted measures regarding availability or affordability, to facilitate ECEC access for children living in poverty. Price reductions (through lower fees and/or free meals) and priority admission are the most common measures for young children. Measures tackling inequalities by increasing affordability, through fee reductions, are more common than those that increase availability. Targeted groups are children living in poverty, children of single parents, children whose parents' work situation puts them at a disadvantage, number of siblings, children with disabilities/difficulties (SEN), children from migrant backgrounds and those from regional or ethnic minorities.

2.4 Underachievement in basic skills in the digital age

Key findings

The EU has scored no progress on the acquisition of basic skills since 2009. Reducing underachievement among 15 year-old pupils still represents a challenge. More than one in five pupils in the EU has insufficient proficiency in reading, mathematics or science. On average across the EU, the EU2020 target – an underachievement rate of less than 15% – has not been reached in any of the three areas tested by PISA 2018. The underachievement rate stands at 22.5% in reading¹, 22.9% in mathematics, and 22.3% in science. The persisting large share of underachievers across the three subjects is a burden on the EU economy and society.

Marked gender differences in underachievement levels only persists in reading – with higher shares of underachievers among boys. Overall, the results for top performance largely mirror the picture of underachievement: the countries with low shares of underachievers tend to have a high proportion of top performers.

Socio-economic differences persist and pupils with a migrant background achieve lower scores. The performance gap between urban and rural areas is also wide in many countries. Reduction of underachievement in basic skills has remained an unreach goal of the outgoing strategy and a persisting challenge.

2.4.1 The 2018 PISA study

The strategic framework for European cooperation in education and training (ET 2020) set a 15% target for 15 years-olds' underachievement⁸⁷ in reading, mathematics and science. The results from PISA 2018 show that the majority of EU Member States perform below the ET2020 target. As highlighted in the sections below, since 2009, the EU share of underachievement has increased in both science and reading, while remaining stable in mathematics. More than one in five 15 year-olds in the EU cannot complete even simple tasks in the three subject areas tested under PISA. Specifically, PISA 2018 shows that 22.5% of pupils in the EU-27 underachieve in reading⁸⁸, 22.9% in mathematics and 22.3% in science. Underachieving in basic skills implies not being equipped to thrive in the labour market and the broader society. Therefore the cost of underachievement is significant both for the individual and for society at large.

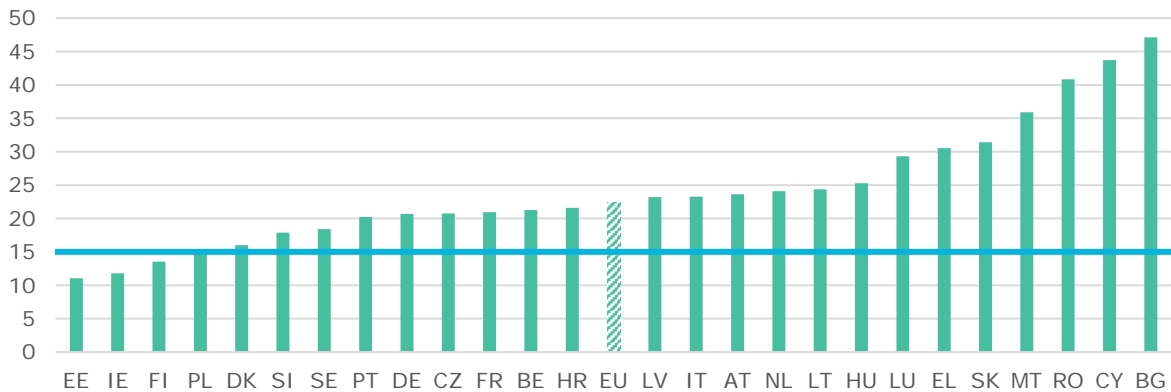
⁸⁷ Underachievers in PISA are those pupils who fail to reach proficiency Level 2, i.e. the minimum level necessary to participate successfully in society.

⁸⁸ All EU averages in reading exclude Spain, because Spanish data are not available at the time of writing.

2.4.2 Underachievement in reading

Reading literacy was a PISA 2018 core subject⁸⁹ and reading performance shows a large variation between EU Member States (Figure 27).

Figure 27 – Underachievement rate in reading, 2018 [%]



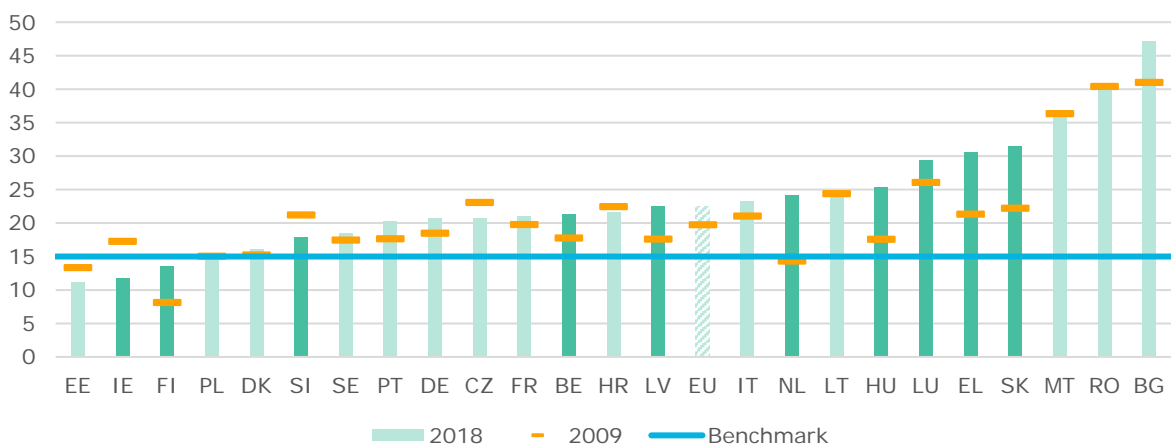
Source: PISA 2018, OECD.

Note: Data not available for ES.

Four EU countries met the 15% ET2020 target for underachievement: Estonia (11.1%), Ireland (11.8%), Finland (13.5%) and Poland (14.7%) and were in fact among the 10 best OECD performers globally⁹⁰. Within the EU, Denmark was just above the target (16.0%). By contrast, the underachievement rate exceeded 30% in Malta (35.9%), Slovakia (31.4%) and Greece (30.5%), and even 40% in Bulgaria (47.1%), Cyprus (43.7%) and Romania (40.8%).

Since 2009, performance has not significantly changed in most countries, signalling that no improvement has been registered since the ET2020 framework was adopted (Figure 28).

Figure 28 – Long-term change in underachievement rate in reading, 2009-2018 [%]



Source: PISA 2018 and 2009, OECD.

Note: Darker vertical bars denote statistically significant changes between 2009 and 2018. Data not available for AT, CY and ES.

⁸⁹ OECD defines reading literacy, the core subject for PISA 2018, as 'understanding, using, evaluating, reflecting on and engaging with texts in order to achieve one's goals, to develop one's knowledge and potential, and to participate in society'. OECD, PISA 2018 Results (Volume I) – What Students Know and Can Do, 2019, p. 15.

⁹⁰ OECD, PISA 2018 Results (Volume I) – What students know and can do, 2019, p. 57.

In eight countries (the Netherlands, Slovakia, Greece, Hungary, Finland, Latvia, Belgium and Luxembourg), the underachievement rate increased in a statistically significant way. Only Ireland and Slovenia experienced a statistically significant decline. Overall, EU reading performance deteriorated, with an average underachievement rate of 19.2% in 2009.

Box 14 – Equity and inclusion – Estonia

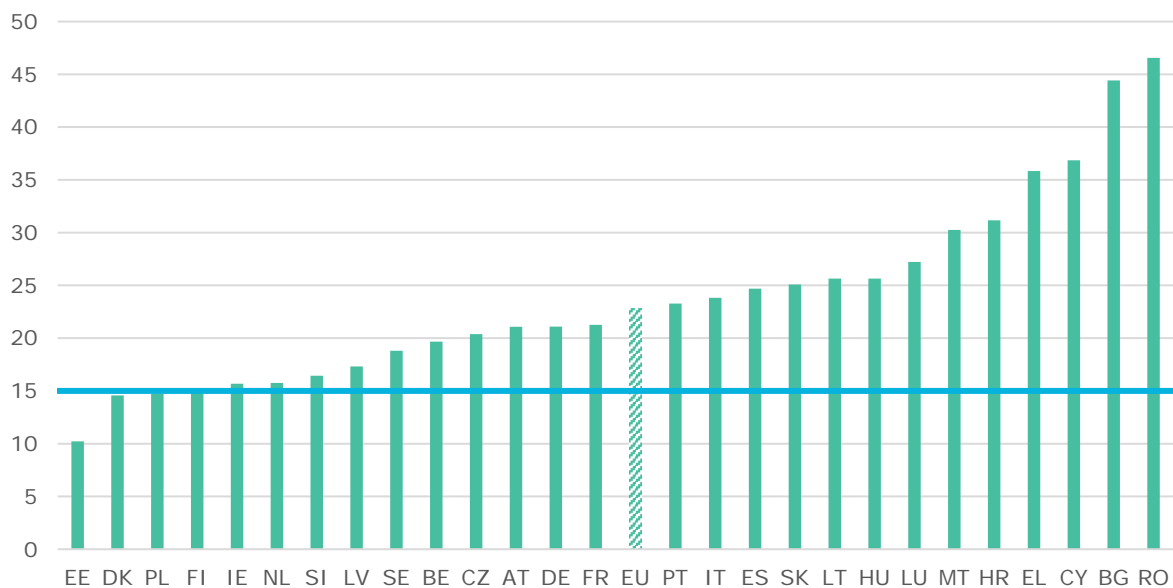
Estonia’s success can be explained by a continuing willingness to modernise, in a society where education is highly valued. Despite its good results, the country has kept questioning and addressing its weaknesses in order to improve its performance, basing its education on evidence-based policy making and making effective use of European funds. Estonia pays particular attention to equity and inclusiveness: every school has coordinators who provide services to pupils with special needs, and have a mandate to give additional personalised support to prevent pupils from dropping out of education, so that no one is left behind. Compulsory attendance at school until completion or until the pupil is 17 years-old, coupled with the high autonomy of schools, which must conduct self-evaluations every 3 years, contribute to the strong performance.

Source: European Commission (2019). *PISA 2018 and the EU – Striving for social fairness through education*.

2.4.3 Underachievement in mathematics and science in the EU

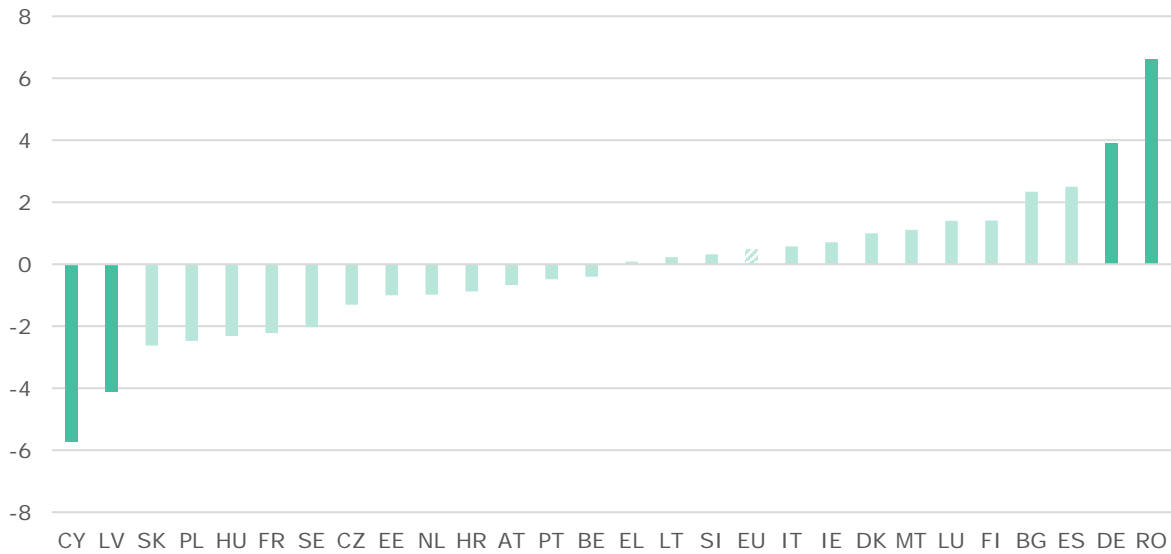
The 2018 pattern of underachievement in mathematics is similar to that of reading.

Figure 29 – Underachievement rate in mathematics, 2018 [%]



Source: PISA 2018, OECD.

Four countries met the 15% ET2020 target: Estonia (10.2%), Denmark (14.6%), Poland (14.7%) and Finland (15.0%). Ireland (15.7%), the Netherlands (15.8%) and Slovenia (16.4%) were just above the target. The underachievement rate exceeded 30% in Romania (46.6%), Bulgaria (44.4%), Cyprus (36.9%), Greece (35.8%), Croatia (31.2%) and Malta (30.2%). Performance remained rather stable in many Member States between 2015 and 2018.

Figure 30 – Change in underachievement rate in mathematics, 2015-2018 [pps]


Source: PISA 2018 and 2015, OECD.

Note: Darker vertical bars denote statistically significant changes between 2015 and 2018.

A slight majority of countries experienced a decline in the underachievement rate, but it was statistically significant⁹¹ only in Cyprus (-5.7 pps) and Latvia (-4.1 pps). The only statistically significant increases took place in Romania (+6.6 pps) and Germany (+3.9 pps). Consequently, the EU average, at 22.9%, remained stable compared to 2015, when it stood at 22.2%.

Box 15 – Irish initiatives for equality in education

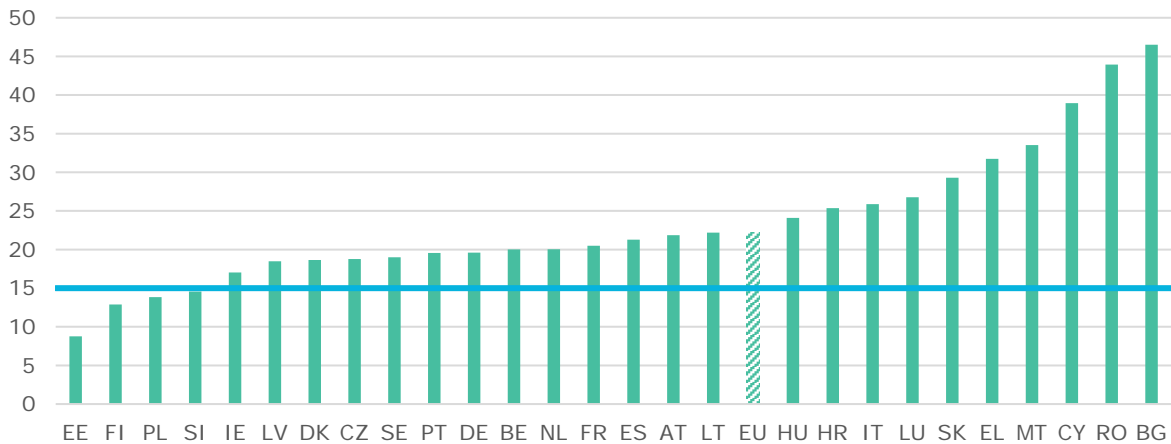
A strong focus on equity is also one of the main features of the Irish education system. Over the past decade, Ireland has continued to improve the quality of education at all levels, expand participation in early childhood education and care and reduce educational inequalities from early years. Pupil performance has benefited from the 'Strategy to Improve Literacy and Numeracy', the 'Delivering equality of opportunity in schools' programme and from extensive support for special educational needs. These initiatives have made Irish secondary schools positive forces for inclusion: the impact of pupils' socio-economic background on their performance has been reduced, and this extends to pupils from an immigrant background. Teachers are recruited from among high academic performers, and they benefit from extensive professional development. Committed to continuous quality improvement, Ireland is continuing its reform momentum and updating its methods to focus on pupil-centred learning, a competence-based approach and cross-discipline collaboration.

Source: European Commission (2019). *PISA 2018 and the EU – Striving for social fairness through education*.

⁹¹ The results of the PISA assessments are estimates, because they are based on samples of pupils, rather than on the total pupil population, and on a limited set of assessment tasks rather than all possible ones. An observed difference between two estimates based on samples is called 'statistically significant' if it is likely that a real difference exists in the populations from which the samples are drawn.

Similarly, underachievement in science also shows a mixed picture across EU countries.

Figure 31 – Underachievement rate in science in 2018 [%]



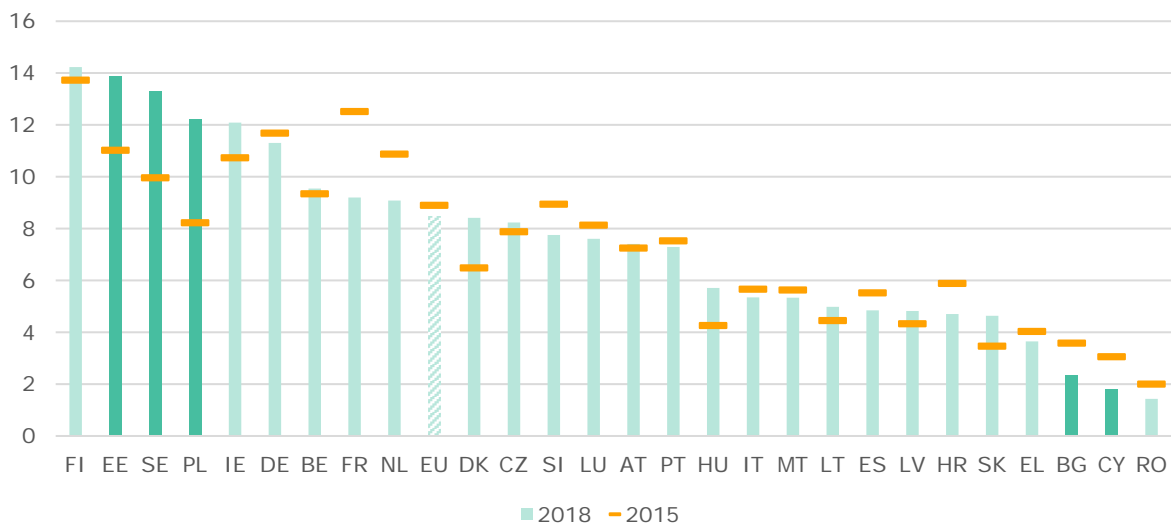
Source: PISA 2018, OECD.

Four countries met the 15% ET2020 target in 2018: Estonia (8.8%), Finland (12.9%), Poland (13.8%) and Slovenia (14.6%). In contrast, the underachievement rate was higher than 30% in Bulgaria (46.5%), Romania (43.9%), Cyprus (39.0%), Malta (33.5%) and Greece (31.7%). In a few Member States the underachievement rate had increased in a statistically significant way since PISA 2015 (+8.6 pps in Bulgaria, +3.0 pps in Spain, +2.8 pps in Denmark), while Cyprus and Poland experienced a statistically significant decline (-3.2 pps and -2.4 pps, respectively).

2.4.4 Top performers

PISA also provides an important insight into top performers' share. This indicator captures the extent to which a school system can produce excellent results in basic skills. Top performers are pupils who reach PISA Level 5 or above. For instance, top performers in reading are able to distinguish between facts and opinions, while the ability to discern the source of information is emerging as a crucial skill in the digital age. PISA 2018 has shown that top performers in reading ranged from 14.2% in Finland to 1.4% in Romania.

Figure 32 – Top performers in reading, 2018 and 2015 [%]



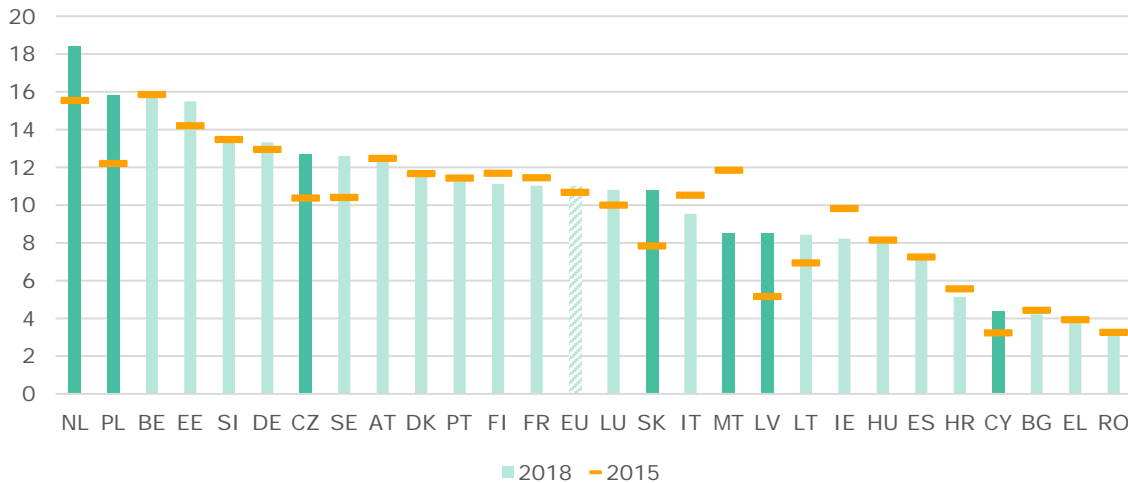
Source: PISA 2018 and 2015, OECD.

Note: Darker vertical bars denote statistically significant changes between 2015 and 2018. Data for ES not available.

In only six countries did the proportion of top performers exceed 10%: Finland (14.2%), Estonia (13.9%), Sweden (13.3%), Poland (12.2%), Ireland (12.1%), and Germany (11.3%).

For mathematics, the proportion of top performers is somewhat higher than for reading in most countries.

Figure 33 – Top performers in mathematics, 2018 and 2015 [%]



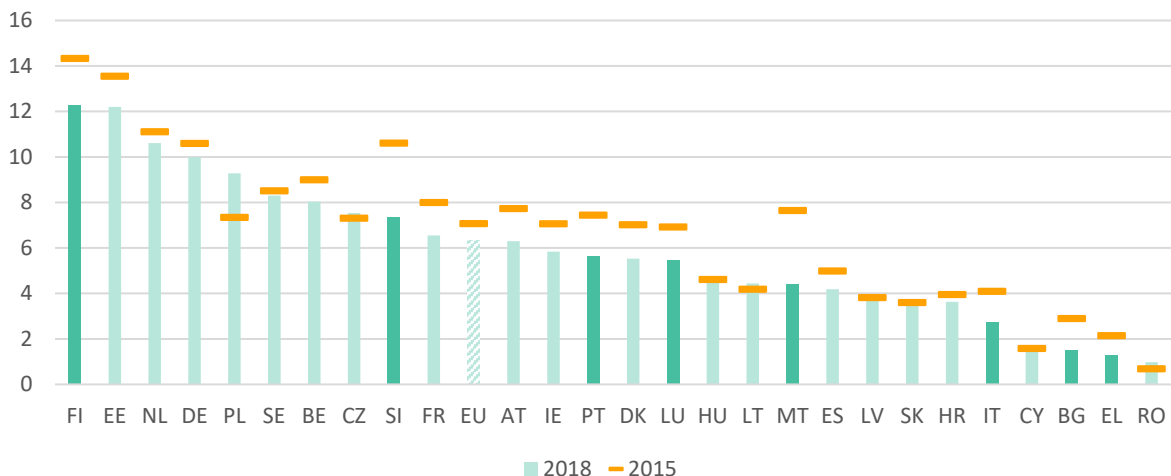
Source: PISA 2018, OECD.

Note: Darker vertical bars denote statistically significant changes between 2015 and 2018.

In the Netherlands (18.4%), Poland (15.8%), Belgium (15.7%) and Estonia (15.5%), more than 15% of pupils are top performers. Compared to 2015, this percentage increased significantly in Poland (+3.6 pps), Latvia (+3.3 pps), the Netherlands (+2.9 pps), Slovakia (+2.9 pps), Czechia (+2.3 pps), and Cyprus (+1.2 pps), while it decreased significantly in Malta (-3.4 pps).

In science (Figure 34 below), the proportions of top performers are the lowest among the three subject areas. The countries with the highest proportions are Finland (12.3%), Estonia (12.2%), the Netherlands (10.6%) and Germany (10%). In many countries, the percentage decreased between 2015 and 2018. This decline was statistically significant in Slovenia (-3.3 pps), Malta (-3.2 pps), Finland (-2.1 pps), Portugal (-1.8 percentage point), Luxembourg (-1.5 percentage point), Bulgaria (-1.4 pps), Italy (-1.3 pps) and Greece (-0.8 pps). No country experienced a statistically significant increase.

Figure 34 – Top performers in science, 2018 and 2015 [%]



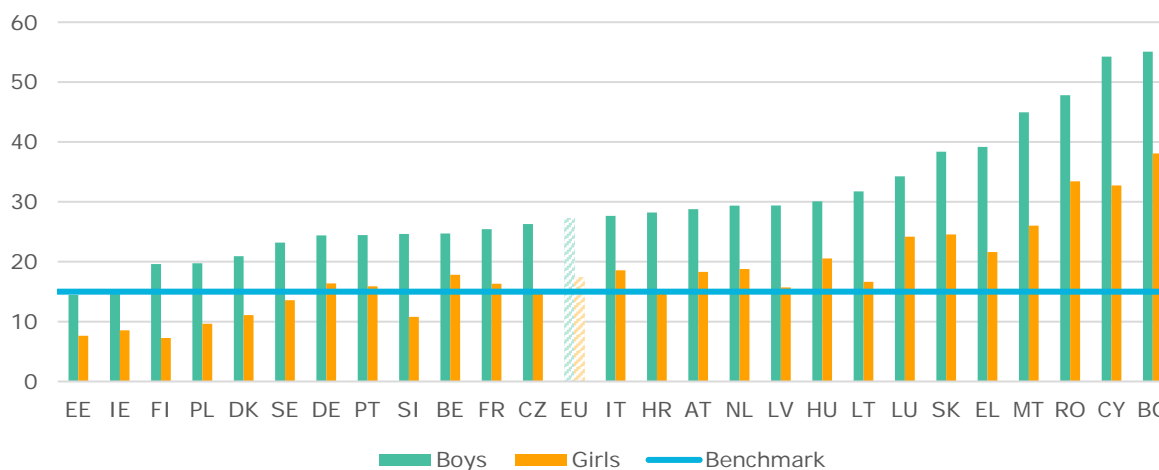
Source: PISA 2018, OECD.

Note: Darker vertical bars denote statistically significant changes between 2015 and 2018.

2.4.5 Underachievement by sex

As in previous PISA cycles, and in line with the OECD global trend, girls significantly outperform boys in reading in all EU countries⁹². The gap in underachievement between boys and girls ranges from 6.6 pps in the Ireland to 21.5 pps in Cyprus. The EU average is 27.3% for boys and 17.4% for girls (Figure 35). Specifically, the gender gap increased by 1.7 pps at EU level between 2015 and 2018⁹³.

Figure 35 – Underachievement rates of boys and girls in reading, 2018 [%]



Source: PISA 2018, OECD.

Note: Data not available for ES. All gender differences in 2018 are statistically significant.

No innate gender-related ability explains gender differences in reading literacy. These differences rather depend on the social and cultural context, pupils' non-cognitive abilities (motivation and self-esteem), and gender stereotypes that translate into parents', teachers' and pupils' gender-oriented expectations⁹⁴. These factors play their role as early as during the first grades of primary education⁹⁵. Disengaged adolescent boys suffer from a lack of male role models, both in school and outside. In European schools, women account for the large majority of teachers. Outside schools, boys may perceive reading as a female activity, not fitting a young man's self-image⁹⁶. Attracting more men into the educational professions, and promoting reading styles that are appealing to boys and that involve male reading partners, are all effective measures to close the gender gap in reading⁹⁷. Finally, it is important to highlight the potential of integrating of digital technologies in European curricula in closing the gender gap. In fact, evidence suggests that the combination of digital tools, social interaction and formative feedback effectively reduces both learning gender gaps and underachievement trends in literacy (and mathematics)⁹⁸.

⁹² OECD, PISA 2018 Results (Volume II) – Where all students can succeed, 2019, p. 142.

⁹³ European Commission, (2019). PISA 2018 and the EU: Striving for social fairness through education.

⁹⁴ Pansu, P., Regner, I. Max, S. Cole, P., Nezlek, J. B. and Huguet, P. (2016). A burden for the boys: Evidence of stereotype threat in boys' reading performance. *Journal of Experimental Social Psychology*, 65, pp. 26-30. Marcenaro-Gutierrez, O. Lopez-Agudo, L. Roperio-Garcia, M. (2018). Gender Differences in Adolescents' Academic Achievement. *Young*, 26 (3), pp. 250-270. Smith, M. and Wilhelm, J. (2012). 'Reading don't fix no Chevys': Literacy in the lives of young men, Portsmouth: Boynton/Cook. Freedman, B. (2003). Boys and literacy: Why Boys? Which boys? Why now? Paper presented at the Annual Meeting of the American Educational Research Association.

⁹⁵ OECD (2010). Learning to Learn: Student Engagement, Strategies and Practices.

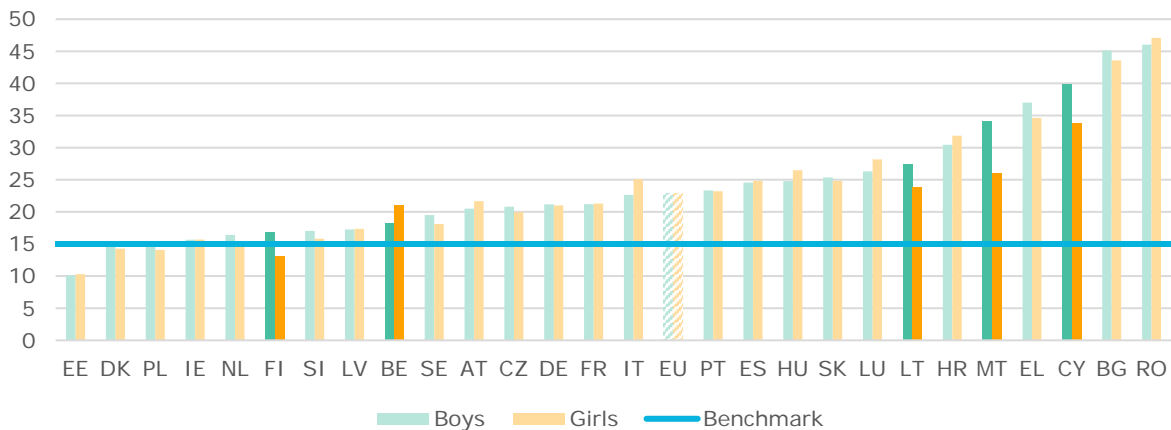
⁹⁶ Freedman, B. (2003). Boys and literacy: Why Boys? Which boys? Why now? Paper presented at the Annual Meeting of the American Educational Research Association.

⁹⁷ European Commission (2012). EU high level group of experts on literacy. Final report.

⁹⁸ Genlott, A. A. Gronlund, A. (2016). Closing the gaps – Improving literacy and mathematics by ICT-enhanced collaboration. *Computers & Education*, 99, pp. 68-80.

The picture in mathematics is more mixed than in reading. The differences between boys and girls are much smaller than in reading and vary from country to country. Only a few countries stand out as having statistically significant differences: girls perform better than boys in Malta (8.2 pps), Cyprus (6.0 pps), Finland (3.8 pps) and Lithuania (3.6 pps), while the opposite is the case in Belgium (2.7 pps). Underachievement at EU level is similar among girls (22.9%) and boys (22.8%), while in 2015 boys still outperformed girls⁹⁹

Figure 36 – Underachievement rates of boys and girls in mathematics, 2018 [%]

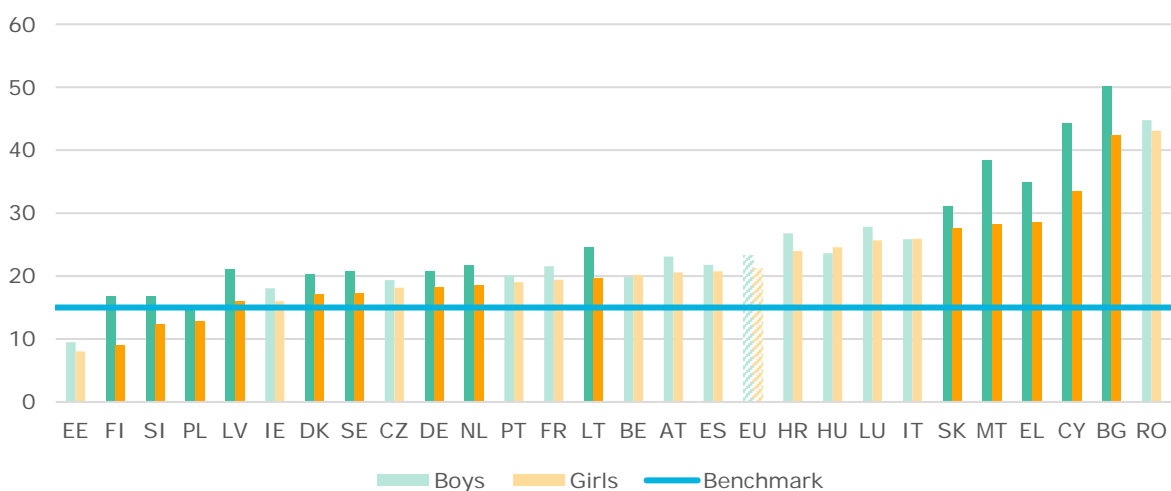


Source: PISA 2018, OECD.

Note: Darker vertical bars denote that the gender difference in 2018 is statistically significant.

The picture for science is quite similar to mathematics (Figure 37). Gender differences are rather small, with the proportion of underachievement generally higher among boys than girls. This gender gap (in favour of girls) is statistically significant in Cyprus (10.7 pps), Malta (10.2 pps), Bulgaria (7.8 pps), Finland (7.7 pps), Greece (6.3 pps), Latvia (5.1 pps), Lithuania (5.0 pps), Slovenia (4.4 pps), Slovakia (3.5 pps), Sweden (3.5 pps), the Netherlands (3.2 pps), Denmark (3.1 pps), Germany (2.6 pps) and Poland (2.2 pps). At EU level, the advantage of girls over boys stood at 2.0 pps in 2018, with an increase of 1.6 pps compared to 2015.

Figure 37 – Underachievement rates of boys and girls in science, 2018 [%]



Source: PISA 2018, OECD.

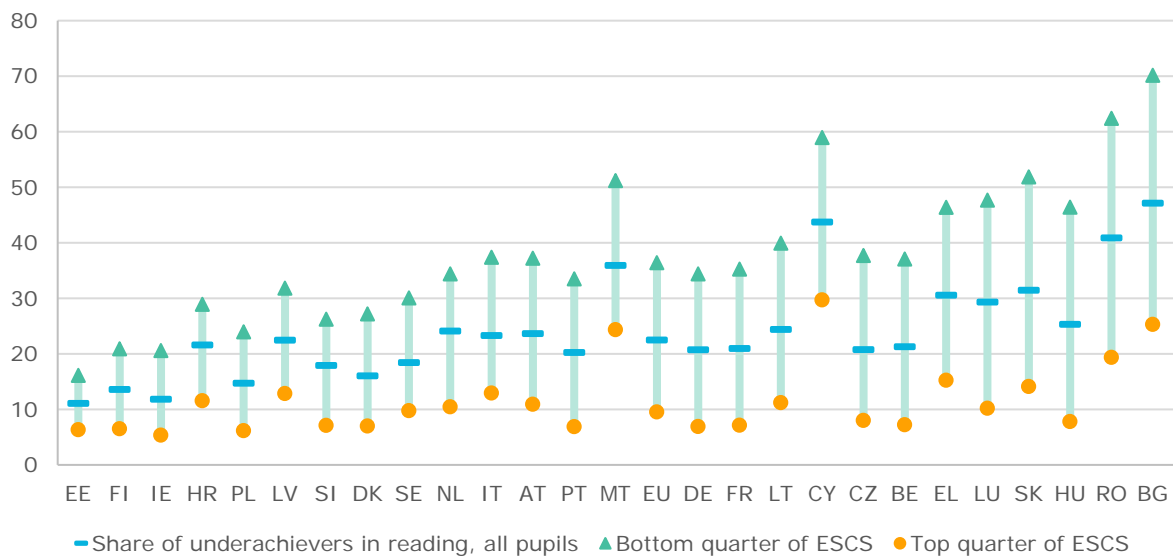
Note: Darker vertical bars denote that the gender difference in 2018 is significant.

⁹⁹ European Commission, (2019). PISA 2018 and the EU: Striving for social fairness through education.

2.4.6 Pupils' performance and socio-economic context

Education systems can be one of the main drivers in breaking negative social heritage and equipping pupils with the skills necessary to achieve their full potential in life. However, this does not happen in most EU Member States, where socio-economic background is a strong predictor of educational attainment. In PISA, pupils' socio-economic background is estimated by the PISA index of economic, social and cultural status (ESCS)¹⁰⁰, which is based on information about the pupils' home and background. As Figure 38 shows, the proportion of underachievers in reading in most countries is much larger in the bottom quarter of the ESCS index compared with pupils in the top quarter, rising to more than 40 pps in Romania and Bulgaria.

Figure 38 – Underachievers in reading [%] by socio-economic status (ESCS), 2018



Source: PISA 2018, OECD.

Note: Countries are sorted in ascending order according to the underachievement gap between the bottom and top quarter of the socio-economic index. Data not available for ES.

On the other hand, some countries seem better able to counter the impact of socio-economic background on the educational success of pupils: for example, Estonia, Ireland, Finland, Poland, Croatia and Latvia. Overall, countries with a low share of underachievers in reading also tend also to have a smaller difference in the proportions of underachievers at the top and bottom of the ESCS scale. Cyprus is an exception to this pattern. It has a very high share of underachievers, but socio-economic background seems to have a smaller impact on educational attainment compared to other similar Member States.

Addressing underachievement among socio-economically disadvantaged pupils is key to improving the overall performance of EU education systems. This requires a concerted effort involving many actors and resources. Any successful strategy should start from early childhood education and care. In fact, social inequalities affect pupils' academic outcomes from the early stages of their schooling. Lack of intervention in the early years will likely widen the performance gap throughout school, eventually resulting in underachievement and lack of social mobility across generations¹⁰¹.

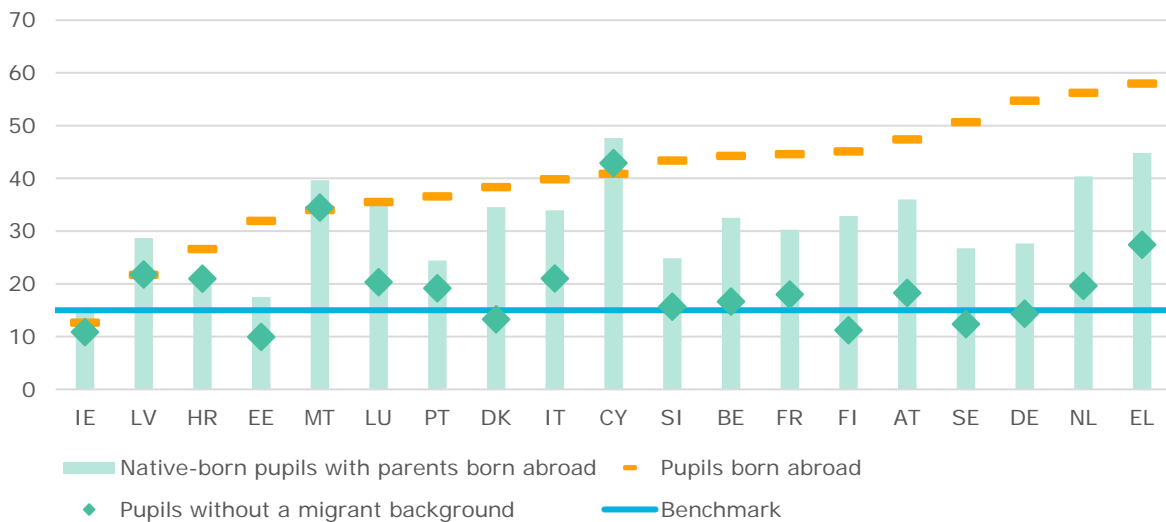
¹⁰⁰ The OECD measures the ESCS index taking into consideration multiple variables related to pupils' family background, namely: parents' education, parents' occupation, home possessions, number of books and educational resources available at home.

¹⁰¹ Emma Garcia, Elaine Weiss, 'Education inequalities at the school starting gate, Gaps, trends, and strategies to address them', Economic Policy Institute, September 27, 2017. Duckworth, K. et al. (2009). Influences and leverage on low levels of attainment: a review of literature and policy initiatives. Centre for Research on the Wider Benefits of Learning Research Report 31, London, DCSF.

2.4.7 Pupils' performance by migrant background

The proportion of underachievers in reading¹⁰² among pupils with a migrant background is much higher than for pupils without a migrant background in many EU Member States¹⁰³. Not speaking the language of instruction at home can play a negative role in the reading performance of pupils with a migrant background, to a greater extent than for the other two tested subjects. The situation is usually worse for pupils born abroad (their underachievement rate exceeds 50% in Greece, Germany, the Netherlands and Sweden) than for native-born pupils with parents born abroad¹⁰⁴. Greece has the highest underachievement rate in the EU among foreign-born pupils (58%), while Germany has the widest gap in underachievement rates in reading between pupils born abroad and pupils without a migrant background (40 pps).

Figure 39 – Underachievers in reading [%] by migrant background, 2018



Source: PISA 2018, OECD.

Note: The countries are sorted in the ascending order of the underachievement rate among the pupils born abroad. Data is not available for ES. Countries where less than 5% of the pupils have a migrant background are not included in the chart.

Being born and growing up in the country of assessment is an advantage compared to moving there as a child or as a young person. It may help with learning the language of instruction and getting familiar with the country and its education institutions, but it is not usually sufficient to reach the same levels as pupils with a non-migrant background. However, patterns are quite different among EU Member States. A few countries (Germany, Sweden, Slovenia, France and Estonia) face a large gap between pupils born abroad and non-migrant pupils, but native-born pupils with parents born abroad largely catch up. In Finland, Austria, the Netherlands and Greece there is some catching up, but the gap remains wide also between native-born pupils with parents born abroad and non-migrant pupils. In countries like Italy, Denmark and Luxembourg there is little variation between the two groups of pupils with a migrant background. Finally, only in Ireland, Croatia, Latvia, Malta and Cyprus are the differences small between both groups with a migrant background and pupils with a non-migrant background. A possible explanation is the specific composition of migrant populations in those countries (related to e.g. knowledge of the language of instruction or cultural similarities).

¹⁰² Results by migrant background are available only in the main subject area tested in each PISA round.

¹⁰³ The proportion of pupils with a migrant background varies widely between EU Member States. To avoid calculations based on very small sample sizes, this report shows results only for EU Member States where the percentage of pupils with a migrant background is at least 5%.

¹⁰⁴ The definition of pupils 'born abroad' and pupils 'native-born with parents born abroad' employed in this report corresponds to what the OECD defines respectively as 'first-generation immigrant students' and 'second-generation immigrant students'.

Member States can use a variety of education policies to promote inclusion of migrant pupils, ranging from language support for pupils whose mother tongue differs from the language of instruction, to education and career guidance, to increasing the flexibility and permeability of educational pathways. Participation in high-quality ECEC is crucial for achieving better educational outcomes. It is also important to promote a culture of inclusion in schools where diversity is increasing, and the availability of high quality resources and extracurricular activities has proved beneficial in this respect. Finally, equipping teachers with the skills they need to teach multicultural and multilingual classrooms requires appropriate initial teacher education and continuing professional development¹⁰⁵.

2.4.8 The urban-rural divide

PISA 2018 shows that the difference in reading performance between pupils attending schools in cities and those enrolled in schools in rural areas¹⁰⁶ is statistically significant and rather large in many Member States. In Hungary, Bulgaria, Romania, Slovakia and Portugal it even exceeds 100 PISA score points, corresponding to approximately 3-4 years of schooling.

Schools in rural areas often struggle to provide quality education due to their geographical isolation and small size, which increase the risks of suffering from insufficient infrastructure, a limited educational offer and a lack of experienced teachers. Policies to counter these risks may include adjusting the school network, making effective use of technology and better preparing teachers and school leaders to work in rural locations¹⁰⁷.

2.5 Employability of recent graduates

Key findings

In 2019, the EU-27 was 1 percentage point short of the ET2020 target of 82%. The latest data for the employment rates of recent graduates shows only a moderate improvement compared with recent years, but at the same time it is the highest value since the financial crisis of a decade ago. There is a clear education level gradient among the recent graduates: the higher the level achieved, the higher the employment rates. The level of wages also rises consistently with the level of educational attainment.

2.5.1 The target on the employment rate of recent graduates

While the employment rate of recent graduates (80.9% in 2019) has still not reached the ET2020 target of 82%, it was still at its highest level since 2008 (it stood at 81.8%, just before the financial crisis). Compared to 2010, the situation has improved in most countries, particularly Poland, Hungary, Ireland, Slovakia, Estonia and Latvia – all of which have surpassed the EU target value of 82%. That said, the situation is likely to worsen in the wake of the COVID-19 crisis. However, the situation in Spain, Greece and Italy has improved only to a limited extent, while it has deteriorated in France and Portugal. Separating employment rates of higher education graduates from other graduates gives allows us to see more change over time. There was a positive evolution of the employment rate among recent graduates from higher education (ISCED 5-8), from 77.8% in 2016 to 85.3% in 2019. The employment rate of recent higher education graduates is 85.2%, being above the EU-28 average (85%) and currently representing 9.5% more than in 2016.

¹⁰⁵ OECD (2018). The resilience of students with an immigrant background, OECD Reviews on Migration Education.

¹⁰⁶ According to PISA 2018, cities have over 100 000 inhabitants, while rural areas have fewer than 3 000 inhabitants.

¹⁰⁷ Echazarra, A. and Radinger, T. (2019). *Learning in rural schools: insights from PISA, TALIS and the literature*, OECD Education Working Paper No. 196.