

## A common strategy steered by the European Commission

ZOOM

The education and training policies have assumed a new place in the European Union (EU) since the adoption in 2000 of the Lisbon Strategy identifying “knowledge” as a central focal point. A year later the member-States of the European Commission defined a co-operation framework in this field which was reinforced in 2009 with the Education and Training 2020 programme and included in the Europe 2020 Strategy. The EU has the competence to support, co-ordinate and complement the action of the member-States. Although each of them maintains policy sovereignty by applying the principle of subsidiarity, the effects are considerable on the national guidance of education and training systems.

## SEVEN REFERENCE CRITERIA WERE DEFINED

Each of the following benchmarks have been set by the European Union for 2020:

1. Early leavers: the proportion of young people from 18 to 24 who have left the school system without a degree and without training after their leaving the school system should be below 10% (cf. 5.2, p. 50);
2. Graduates of tertiary education: the proportion of people from 30 to 34 with tertiary education degrees should be at least 40% (cf. 5.3, p. 50);
3. Early childhood education: participation in pre-primary education of children between 4 and the compulsory school age should be at least 95%;
4. Achievement in reading, mathematics and science: the proportion of under-skilled 15-year-olds, as measured by PISA, should be less than 15% in each of these subjects (cf. 5.4; p. 52);
5. Lifelong learning: at least 15% of adults (25 to 64) should participate in lifelong education and training;
6. Learning mobility: two benchmarks have been set, *i.e.* **a.** at least 20% of tertiary-education graduates should study or train abroad for a time in areas linked to their education (including internships), representing a minimum of 15 ECTS credits or a minimum length of three months; and **b.** at least 6% of the 18 to 34 year-olds with initial vocational qualification and training degrees should study or train abroad in this kind of education or training (including internships) for a minimum of two weeks. These two benchmarks will provide a Eurostat measurement beginning in 2018;

7. The employability of young graduates: the employment rate of 20 to 34 year-old graduates of upper secondary and tertiary education having left the education and training system for a maximum of three years should be at least 82%.

In addition to these common objectives, countries have sometimes set national objectives that are more or less demanding than the joint benchmarks. For example, concerning early school leavers, France has set a more demanding benchmark of 9.5% instead of 10%, whilst Spain has set a less demanding benchmark of 15%.

## THE EUROPEAN UNION COUNTRIES WITH REGARD TO THE SEVEN REFERENCE BENCHMARKS

Although these targets are set for the European Union as a whole, they are monitored by the European Commission for each member state.

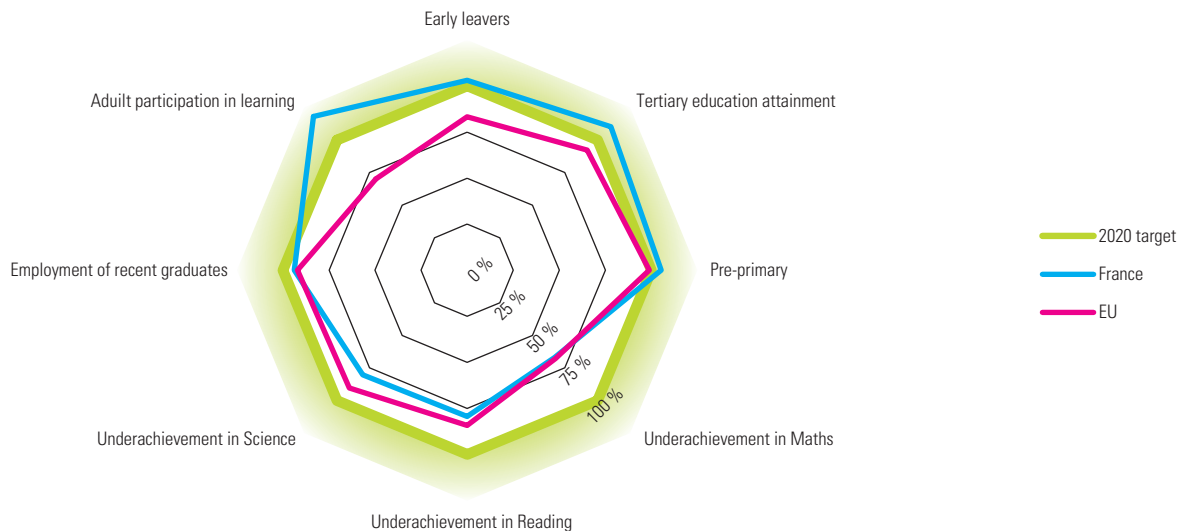
In 2014 the objective of containing the proportion of 18 to 24 year-olds leaving school early to a limit of 10% was attained by 18 countries (including France) of the 28 European-Union member countries. The benchmark of raising the proportion of tertiary graduates in the 30 to 34 year-old age group above 40% was attained by 17 countries (including France) (5.1.2). France had already attained and even surpassed 4 of the 7 benchmarks set by the Education and Training 2020 strategy (5.1.1). The Netherlands was the only EU country to attain or surpass all of the quantified benchmarks. 17 of the European-Union countries attained at best three of the seven benchmarks. ■

### Labour Force Survey and benchmarks

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Early leavers, the proportion of tertiary education graduates and the proportion of adults in life long learning are measured in the **European Labour Force Survey (EU-LFS)**<sup>12</sup>. Even though this survey allows it, it hasn't been designed to record education attainment levels, which thus require caution while doing international comparisons. Moreover, due to the restricted sample size, numbers after the comma are not reliable enough to be taken into account in comparisons.

### 5.1.1 Relative position of France and of the EU-28 with respect to Education and Training 2020 targets, as of 2014



Note: As of 2014, France achieved and went beyond 4 targets of Education and Training 2020 framework: Adult participation in learning, Early leavers of education and training, Tertiary education achievement and Early childhood education and care. The Early leavers objective, with a 9 % score for France, (which is below the 10 % threshold), is translated on the figure by a 10/9\*r radius, if r is the European target's radius.

### 5.1.2 The 28 countries of the European Union's situation regarding each Education and Training 2020 headline target, as of 2014

↳ Eurostat.

2014	Early leavers	Tertiary education attainment	Pre-primary	PISA underachievement			Employment rate of recent graduates	Adult participation in learning
				Reading	Maths	Science		
<b>EU 28-2020 targets</b>	<b>10</b>	<b>40</b>	<b>95</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>82</b>	<b>15</b>
<b>EU 28</b>	11,2	37,9	93,9	17,8	22,1	16,6	76,1	10,7
<b>BE</b>	<b>9,8</b>	<b>43,8</b>	<b>98,1</b>	16,1	19	17,7	79	7,1
<b>BG</b>	12,9	30,9	87,8	39,4	43,8	36,9	65,4	1,8
<b>CZ</b>	<b>5,5</b>	28,2	85,7	16,9	21	<b>13,8</b>	81,3	9,3
<b>DK</b>	<b>7,8</b>	<b>i</b>	<b>98,3</b>	<b>14,6</b>	16,8	16,7	<b>83,8</b>	<b>31,7</b>
<b>DE</b>	<b>9,5</b>	31,4	<b>97</b>	<b>14,5</b>	17,7	<b>12,2</b>	<b>90</b>	7,9
<b>EE</b>	11,4	<b>46,6</b>	90,4	<b>9,1</b>	<b>10,5</b>	<b>5</b>	81	11,5
<b>IE</b>	<b>6,9</b>	<b>52,2</b>	<b>97,2</b>	<b>9,6</b>	16,9	<b>11,1</b>	73,9	6,7
<b>EL</b>	<b>9</b>	37,2	76,4	22,6	35,7	25,5	44,3	3
<b>ES</b>	21,9	<b>42,3</b>	<b>97,1</b>	18,3	23,6	15,7	65,1	9,8
<b>FR</b>	<b>9</b>	<b>44,1</b>	<b>100</b>	18,9	22,4	18,7	75,4	<b>18,6</b>
<b>HR</b>	<b>i</b>	32,2	71,4	18,7	29,9	17,3	62	2,5
<b>IT</b>	15	23,9	<b>98,7</b>	19,5	24,7	18,7	45	8
<b>CY</b>	<b>6,8</b>	<b>52,5</b>	84,3	32,8	42	38	68,7	6,9
<b>LV</b>	<b>8,5</b>	39,9	94,1	17	19,9	<b>12,4</b>	77	5,5
<b>LT</b>	<b>5,9</b>	<b>53,3</b>	86,5	21,2	26	16,1	80,7	5
<b>LU</b>	<b>6,1</b>	<b>52,7</b>	<b>99,4</b>	22,2	24,3	22,2	<b>83,8</b>	14
<b>HU</b>	11,4	34,1	94,7	19,7	28,1	18	78,5	3,2
<b>MT</b>	20,3	26,6	<b>100</b>				<b>91,7</b>	7,1
<b>NL</b>	<b>8,7</b>	<b>44,6</b>	<b>99,5</b>	<b>14</b>	<b>14,8</b>	<b>13,1</b>	<b>87,3</b>	<b>17,8</b>
<b>AT</b>	<b>7</b>	<b>40</b>	93,9	19,5	18,7	15,8	<b>87,2</b>	14,2
<b>PL</b>	<b>5,4</b>	<b>42,1</b>	83,8	<b>10,6</b>	<b>14,4</b>	<b>9</b>	75,6	4
<b>PT</b>	17,4	31,3	93,9	18,8	24,9	19	69,4	9,3
<b>RO</b>	18,1	25	86,4	37,3	40,8	37,3	66,2	1,5
<b>SL</b>	<b>4,4</b>	<b>41</b>	89,8	21,1	20,1	<b>12,9</b>	70,1	11,9
<b>SK</b>	<b>6,7</b>	26,9	77,5	28,2	27,5	26,9	72,7	3
<b>FI</b>	<b>9,5</b>	<b>45,3</b>	84	<b>11,3</b>	<b>12,3</b>	<b>7,7</b>	77	<b>25,1</b>
<b>SE</b>	<b>6,7</b>	<b>49,9</b>	<b>95,7</b>	22,7	27,1	22,2	<b>85</b>	<b>28,9</b>
<b>UK</b>	11,8	<b>47,7</b>	<b>96,1</b>	16,6	21,8	15	<b>83,2</b>	<b>15,8</b>

Note: Figures in bold represent the cases where the country already reached the objective of the Education and Formation 2020 framework. For instance, as of 2014, with 5.5 % of Early leavers, Czech Republic already reached the common target of 10%. The letter "i" designates statistically inconsistent data due to the size of the sample. Malta did not take part in PISA 2012.

### What is meant by the term early school leaving? **ZOOM**

Young persons are considered as an early leavers when they have a low level of education, when they have left the school system and when they are not in training (**formal or non-formal education**<sup>[1]</sup>). What is defined as a “low level of education” (ISCED 0-2) are degrees that are less than or equivalent to the end of the first cycle of secondary education or those that are attended beyond this first cycle but the duration of which is strictly inferior to two years.

### A MEASUREMENT DEPENDENT ON THE DEGREE CLASSIFICATION

There are two examples to illustrate the difficulty of ranking degrees per country. The first derives from the existence of degrees that intervene in the middle of ISCED 3 and not at its end, e.g. Malta, the education system of which is very similar to that of the United Kingdom, did not use the same classification of holders of the General Certificate of Secondary Education (GCSE) because it was late in applying the 1997 ISCED. A Eurostat simulation for the years 2010 and 2011 made it possible to show that just the re-classification of holders of GCSE (cf. 2.2, p. 20) from ISCED 2 to ISCED 3 made the indicator of early leavers in Malta fall by more than 10 points. The second example concerns the vocational training degrees obtained in under two years that exist in numerous eastern European countries. It appears difficult for these countries to define the holders of such degrees, which traditionally give access to the labour market, as early leavers.

### THE GAPS BETWEEN COUNTRIES REMAIN CONTRASTED DESPITE AN OVERALL DECREASE

In the European Union in 2014 the rate of early leavers was 11%, which represents approximately 4,600,000 young adults between 18 and 24 years-old. Italy, Malta, Portugal, Romania and Spain had very high rates, ranging from 15 to 22% (5.2.1). In contrast most of the northern and eastern EU member-States had rates of under 8%. The United Kingdom was an exception in northern Europe with a 12% rate of early leavers. Finally, a last group of countries (including France) were in an intermediary position (between 8 and 10%).

It is worth noting that there has been a general fall in early-leaver rates in the EU since the early 2000s. The European average fell from 16% to 11% between 2004 and 2014. Numerous breaks in the survey series (European Labour Force Surveys) weaken comparisons over time. By 2014, 19 countries had already attained the Europe 2020 benchmark of 10% of early leavers. With the exception of Italy, the countries with difficulties with regard to the EU’s benchmark had not attained their own national objectives as well, even though less demanding.

Voluntary and co-ordinated policy interventions seem to lead to results. In the Netherlands, for example, the policy revolves around three paths, *i.e.* the law now obliges degreeless students to take one or two additional part-time educational year to the age of 18 and requires the school to report any possible early leavers; early detection of absenteeism and possible early leaving enable an individual follow-up of those students involved; contracts between the State, the municipality and the school stimulates the co-ordination of players on a local level (social, medical and legal services, employment promotion centres) and make it possible to better guide early leavers to a vocational stream in close association with the economic players. Finally, a financial incentive is set towards schools that manage to reduce their early leavers’ figures.

### WOMEN: LESS FACED WITH EARLY LEAVING BUT MORE PENALISED ON THE LABOUR MARKET

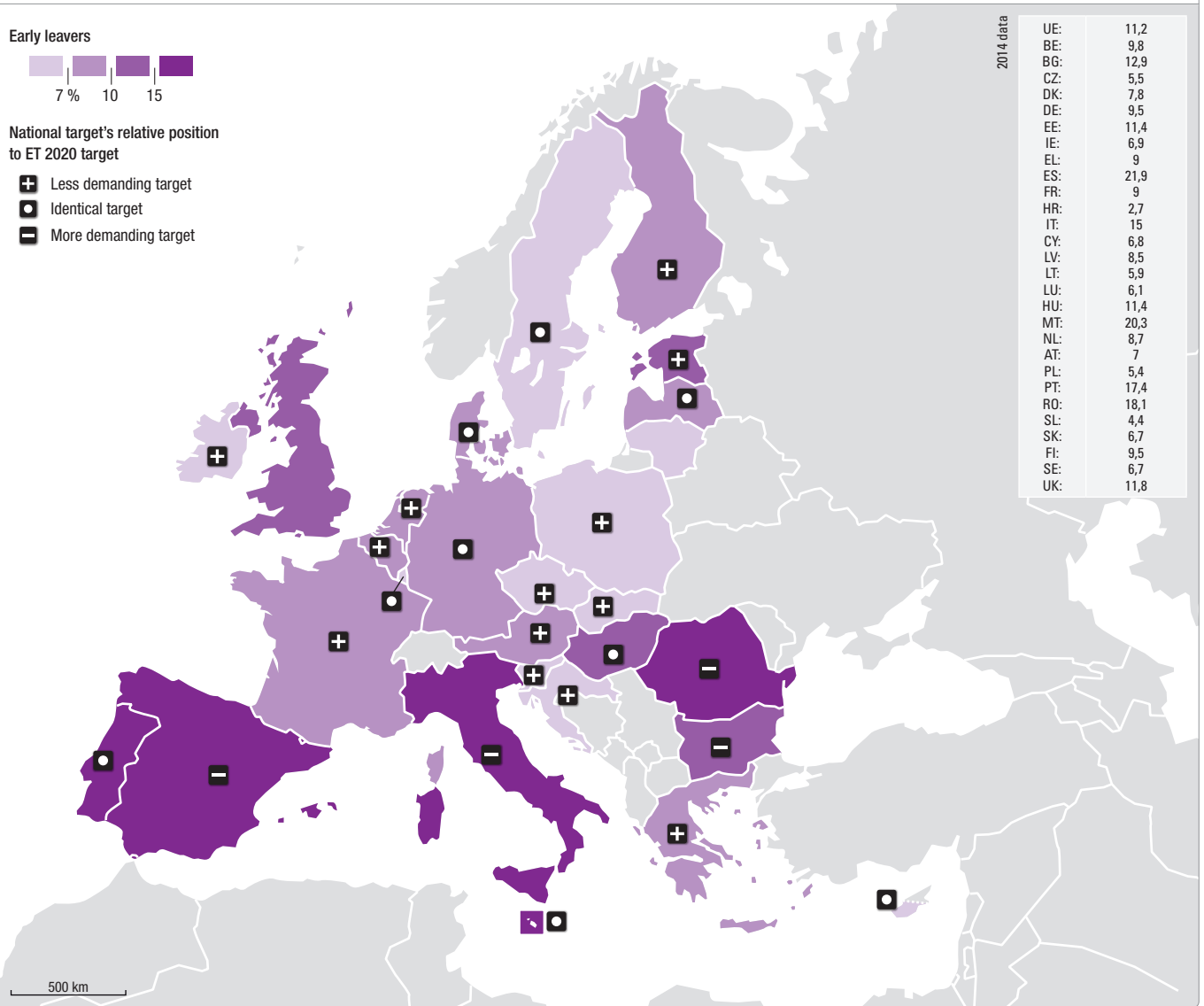
Women are less often early school leavers than men. In 2013 in the EU-28 this difference was 3,5 percentage points (5.2.2 and 5.2.3). There were only two countries with lower rates for men than women (the Czech Republic and Bulgaria). In 8 countries (including Italy, Portugal and Spain) the gap between men and women was higher than 5 points (11 points in Cyprus). In contrast 12 other countries (including France, Germany, Finland, Sweden and the United Kingdom) had a difference of less than 3 points.

Although men are more involved than women in early leaving, women are more often faced with inactivity than their male counterparts, which indicates that women are further from the labour market. The higher rate of employment among male early leavers does not, however, portend anything about the quality of these jobs. ■

<sup>[1]</sup> See definition p. 68.

### 5.2.1 Proportion of early school leavers among 18-24 year olds and national targets as of 2014

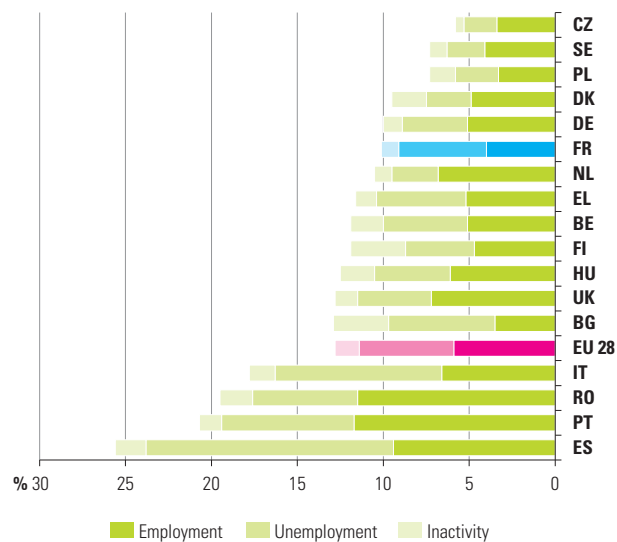
Source: Eurostat, edat\_lfse\_14.



Note: As of 2014, there are 9% of early leavers among the 18-24 years old while the national target is 9.5%. The United Kingdom did not set a national target.

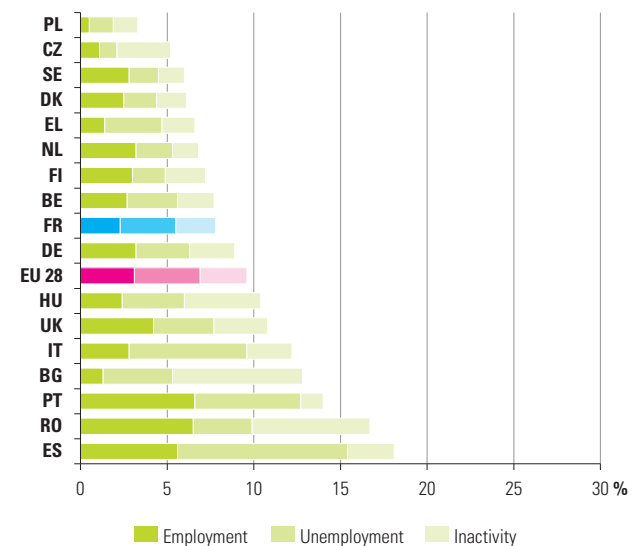
### 5.2.2 Early school leavers (males) by labour status as of 2014

Source: Eurostat, edat\_lfse\_14.



### 5.2.3 Early school leavers (females) by labour status as of 2014

Source: Eurostat, edat\_lfse\_14.



Note: As of 2014, in France, 10% of the males between 18 and 24 years old are early school leavers; 4% of males of the same age group are both early school leavers and in employment; 5% of males of the same age group are both early school leavers and unemployed; 1% of males of the same age group are both early school leavers and inactive.

## 5.3 THE DEGREE LEVEL OF THE 25 TO 34 YEAR-OLDS

### MORE AND MORE SECONDARY EDUCATION DIPLOMAS

The proportion of the 25 to 34 year-old population with at least a second-cycle certificate of secondary education (ISCED 3) has seen a general increase within the European Union. Between 2004 and 2014, the rate of ISCED-3 qualifications rose from 78% to 83% in the EU-28. Spain (66%), Portugal (65%) and Malta (60%) were the only EU-28 countries with qualification rates in secondary education lower than 70% in 2014 (5.3.1). As for early leavers (c.f. 5.2, p. 48), countries of southern Europe have seen a lower percentage of ISCED 3 qualified-individuals in the 25 to 34 population. Nonetheless between 2004 and 2014 this percentage saw a sharp rise in Portugal (60%) and in Malta (48%), whilst in Spain it rose only 5%.

### AN APPRECIABLE INCREASE IN TERTIARY EDUCATION

One of the priority objectives of the Europe 2020 strategy is to attain or surpass the 40% threshold of qualification holders in tertiary education in the 30 to 34 year-olds by 2020. The EU-28 average in 2014 was 38% (5.3.2). Since 2003 this average has grown by 25% with some countries increasing two-fold their proportion of young qualification holders as in Latvia (rising from 18 to 40%) and Slovakia (from 12 to 27%). 16 countries in all either attained or surpassed the target. The highest rates in the EU-28 are for the most part located in northern Europe (Lithuania, 53%, Ireland, 52% and Sweden, 50%). The lowest rates were seen in Italy (24%), Romania (25%), Malta (27%) and

#### Why choose the 30 to 34 year-old age group?

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In some countries, such as the Nordic countries, the earning of degrees may occur late because of frequent interruption then resumption of tertiary education. The measurement deals with the highest level of degree obtained. In countries, such as France, where the age for obtaining the first tertiary degree is usually at 20 or 21, the indicator mainly takes into account the degrees awarded some ten years earlier and provides little visibility on recent changes.

Slovakia (27%). France surpassed the European target with 44%. Some countries set objectives more or less ambitious than the common objective, e.g. Greece set a target of 32%, which it surpassed in 2013 (37%); whilst Ireland set a 60% rate that has not yet been attained.

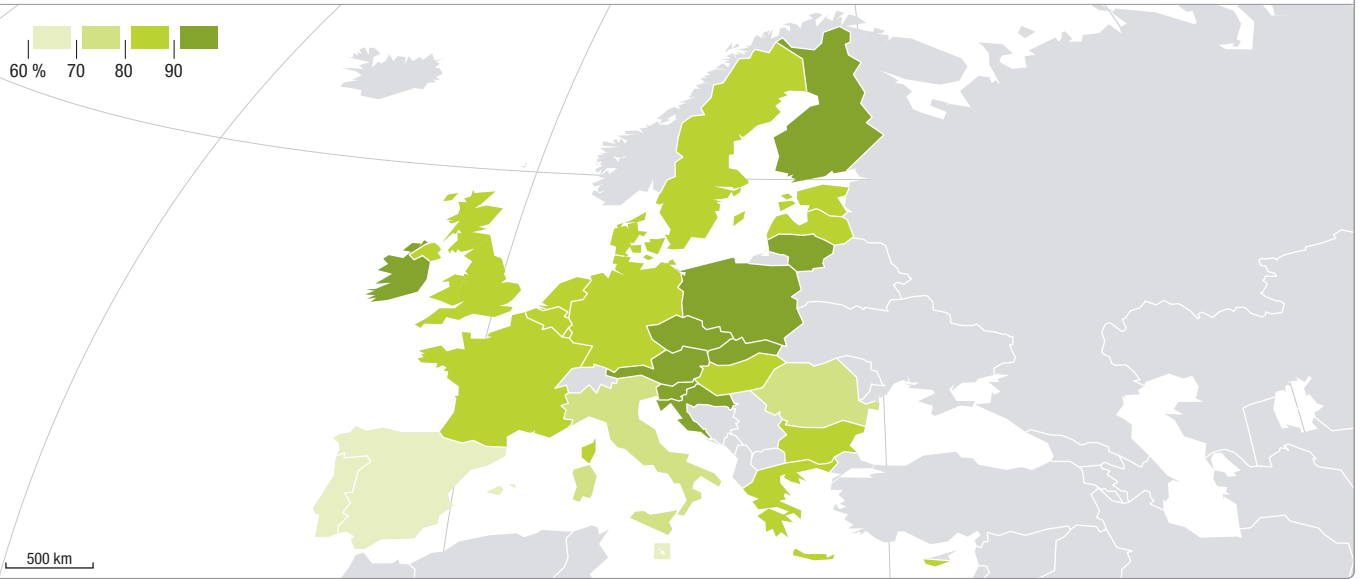
The rates of tertiary education graduates do not always reflect the performance of a national education system. The brain gain/drain, for example, which is the migration of highly qualified individuals, influences this rate upwards or downwards depending on the country receiving the already trained individual or else training them, then seeing them emigrate (cf. 5.2, p. 48). In certain countries, the sway of the apprenticeship system (as in Germany) or the system of professional streams in secondary education (eastern Europe) may “compete with” on-going tertiary education. Lastly, in general, countries that have a high rate of early leavers also have lower tertiary education attainment levels. Spain, on the other hand, illustrates a situation where the two indicators did not follow this logic in 2014 with 42% of tertiary graduates despite an early-leaver rate of 22%.

### MORE WOMEN GRADUATES BUT LESS PRESENCE IN THE SCIENCES

Except in Germany, women everywhere are more often higher education graduates than men (5.3.3). The central European countries with the lowest rates of graduates among the EU-28 are the same ones where the gap between men and women is also the lowest. In contrast these gaps between the genders can be greater than 20% in the countries where the tertiary degree rates are higher. With a majority of women in training leading to the teaching or health professions, the literary and artistic fields, the social sciences, the economy and management, women are much less numerous in the sciences, engineering and the manufacturing industry. Although tertiary degrees may indeed constitute relative protection from unemployment and the risk of poverty, the orientation of women into secondary and tertiary education contributes in part to explaining the inequalities between men and women, in particular in terms of salaries and status (c.f. 6.4, p. 64). ■

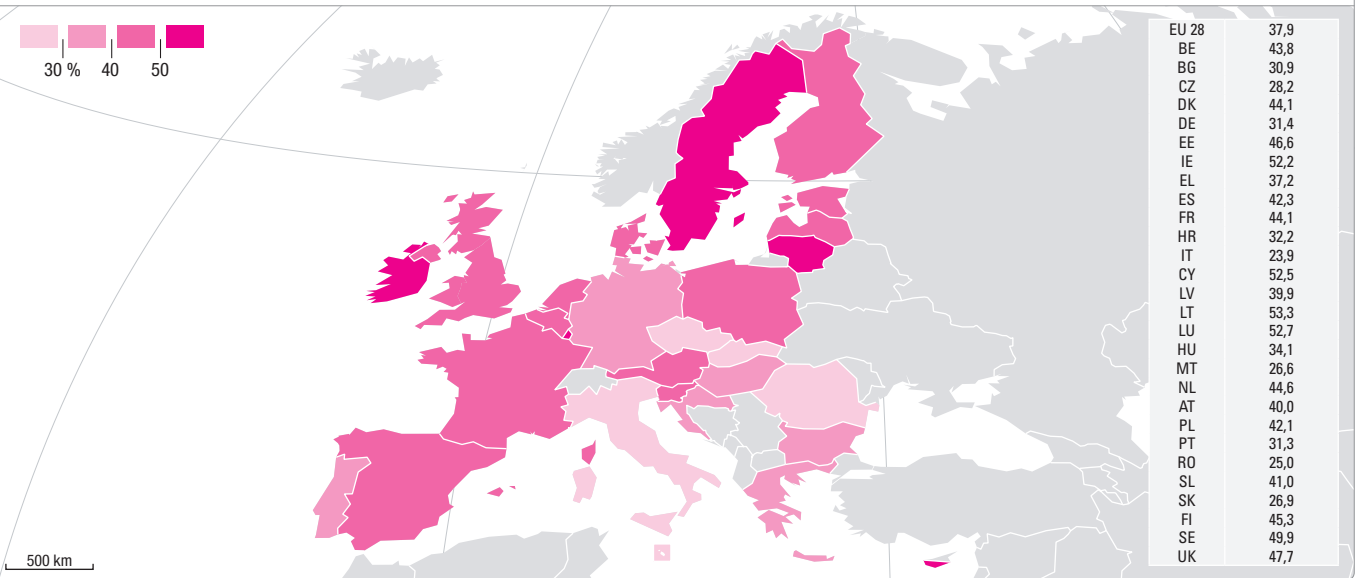
### 5.3.1 Proportion of 25-34 year olds with at least a upper secondary degree in 2014

↳ Eurostat, edat\_lfse\_03.



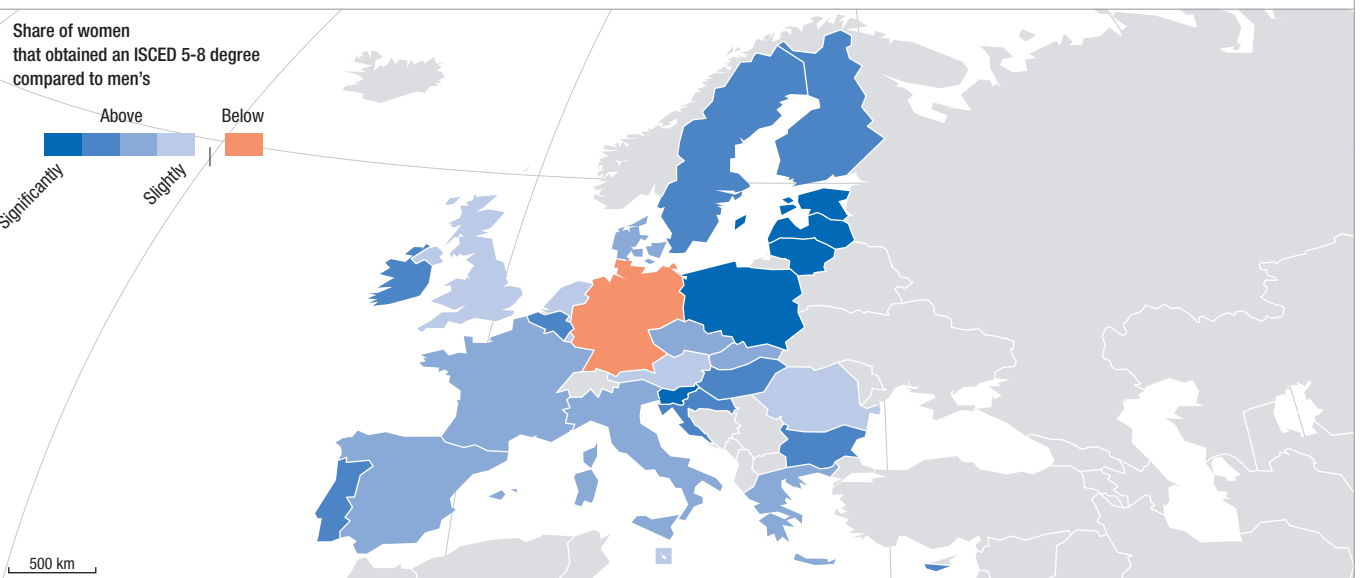
### 5.3.2 Proportion of 30-34 year olds with a Tertiary education degree in 2014

↳ Eurostat, edat\_lfse\_03.



### 5.3.3 Gender difference in Tertiary education achievement in 2014

↳ Eurostat, edat\_lfse\_03.



Every three years since 2000, the **PISA**<sup>□</sup> survey (Programme for International Student Assessment), under the authority of the OECD, assesses the skills of 15-year-old students in three subjects, *i.e.* writing, mathematics and scientific literacy. PISA is aimed at the age group that arrives at the end of compulsory education in most of the OECD countries, whatever their past and future educational careers. In France this mostly means students in 10<sup>th</sup> grade in *lycée* (general and technological or vocational) and students in 9<sup>th</sup> grade in *collège* (a quarter of the students for PISA 2012). Students are not assessed on knowledge in the strict sense but on their ability to mobilise and apply their knowledge in a variety of situations, sometimes removed from those encountered in the educational framework. The survey covered a sample of 510,000 students of the 65 PISA 2012 countries/economies [source: MENESR-DEPP, *Note d'information*, 13-30 and 13-31, 2013].

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### A DECREASE IN MATH-LITERACY TEST PERFORMANCES SINCE 2003

In 2012 the survey mainly focused on mathematics literacy (the aptitude of a person to formulate, use and interpret mathematical reasoning in a range of real-life situations) in 65 countries or “economic partners”, including 34 OECD member-countries and 27 countries of the European Union (Malta alone did not participate). Each PISA survey contains one major subject and two minor subjects. To be fully relevant, comparison must be done per major subject in nine-year cycles. So mathematics literacy in PISA 2012 should only be compared to PISA 2003.

The mean mathematical literacy scores of the 34 OECD member-countries was 496. It was 500 in 2003. Of the 19 EU-member countries participating in PISA in 2003 and 2012, a general downward trend of scores can be observed (5.4.1). In that period 9 EU countries (including Finland, France, the Netherlands and even Sweden) saw a considerable fall in their mean scores, whilst 4 other countries saw a rise (Germany, Italy, Poland and Portugal). Although Sweden and Finland recorded biggest falls in scores (respectively 31 and 26 points) between the two PISA surveys, the former falls below the OECD average, while the latter stays significantly above. Portugal, which recorded a very sharp rise in its score between 2003 and 2012, managed to hoist itself up to the OECD mean (+21 points with 487 in 2012).

### Can we rank countries in PISA?

The PISA scores are subject to statistical uncertainty connected in particular to measurement error due to the size of the sample used. The use of rankings is therefore not relevant, for two countries that follow one another in the ranking rarely have significantly different scores. In mathematical literacy therefore France in 2012 can be considered to rank between 13<sup>th</sup> and 23<sup>rd</sup> of the OECD countries [source: MENESR-DEPP, *Note d'information*, 13-31].

ZOOM

### BOYS PERFORM BETTER THAN GIRLS IN THE MATHEMATICAL LITERACY TEST

For the mean of the countries taking part 11 points is the mean difference in scores between boys and girls (5.4.2). Five countries (Austria, Ireland, Italy, Luxembourg and Spain) saw the gap in scores between boys and girls surpass 15 points for this test. Ten other countries (including France, the Netherlands and the United Kingdom) saw a gap in the scores of the genders of between 8 and 12 points, near the mean for the OECD countries. The difference in scores between the two genders in France was among the lowest of the EU-27, which was, moreover, the same as in 2003. Finland, Sweden and Latvia were the only countries where the score differences were to the advantage of the girls. These statistically insignificant data, however, have not been presented here.

### FRANCE HAS MORE WEAK STUDENTS IN READING THAN THE OECD MEAN

Reading literacy was assessed by PISA 2012 as a minor subject. The distribution profile of the **level groups**<sup>□</sup> in the reading literacy test was highly contrasting depending on the country (5.4.3). The OECD considers level 2 as a baseline above which students possess skills enabling them to participate effectively and productively in the life of society. In the average of the OECD-member countries, the proportion of students not yet attaining these skills (levels strictly below baseline level 2) was 18% (19.7% for the UE-27 mean). In 2012 Bulgaria was the EU-27 country with the greatest proportion of under-performing students in reading with nearly 40% of students at a low level. At the other extreme two countries had the highest rates in Europe of highly performing students (France and Finland at 13%). France had a unique profile with both Europe's highest rate of highly-performing students and the a high rate of under-performing students (19%) both higher than the OECD mean. ■

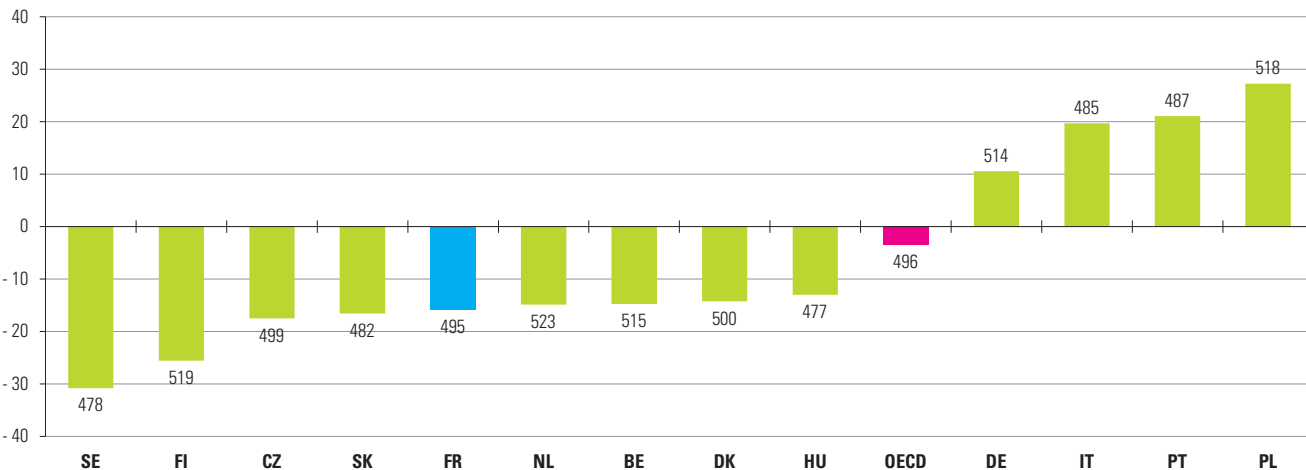
<sup>□</sup> See definition p. 68.



### 5.4.1 Evolution of the mean score in mathematics between PISA 2003 and PISA 2012

↳ MENESR-DEPP, OECD, « Résultats PISA 2012 en culture mathématique », Note d'information, 13-31, 2013.

Score difference

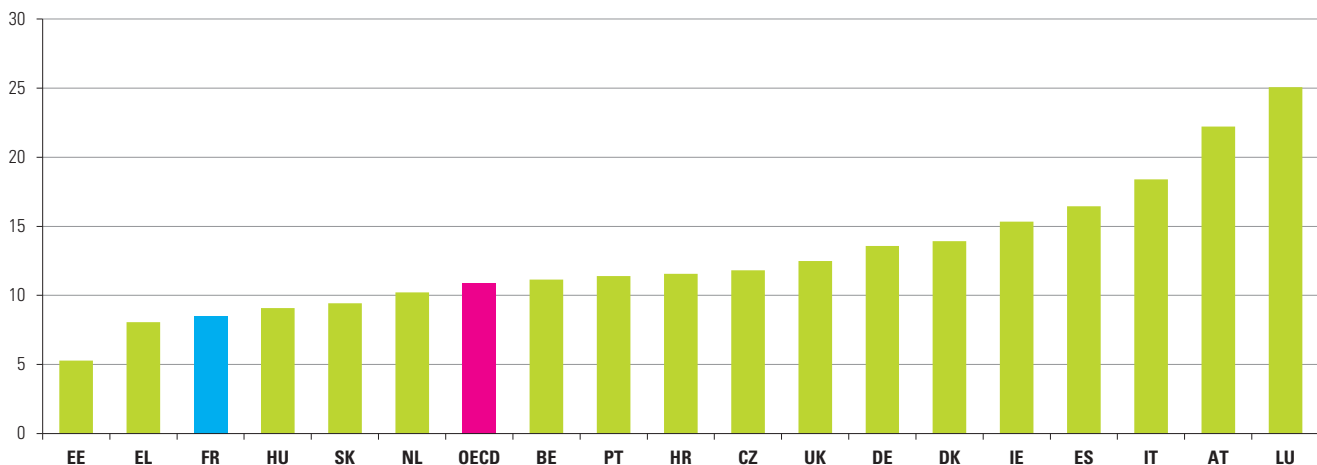


Note: Between 2003 and 2012, the mean score of performance of 15 year old students at the PISA mathematics assessment in France went down by 16 points and reached 495 in 2012.

### 5.4.2 Gender difference in mean score in mathematics in PISA 2012

↳ MENESR-DEPP, OECD, « Résultats PISA 2012 en culture mathématique », Note d'information, 13-31, 2013.

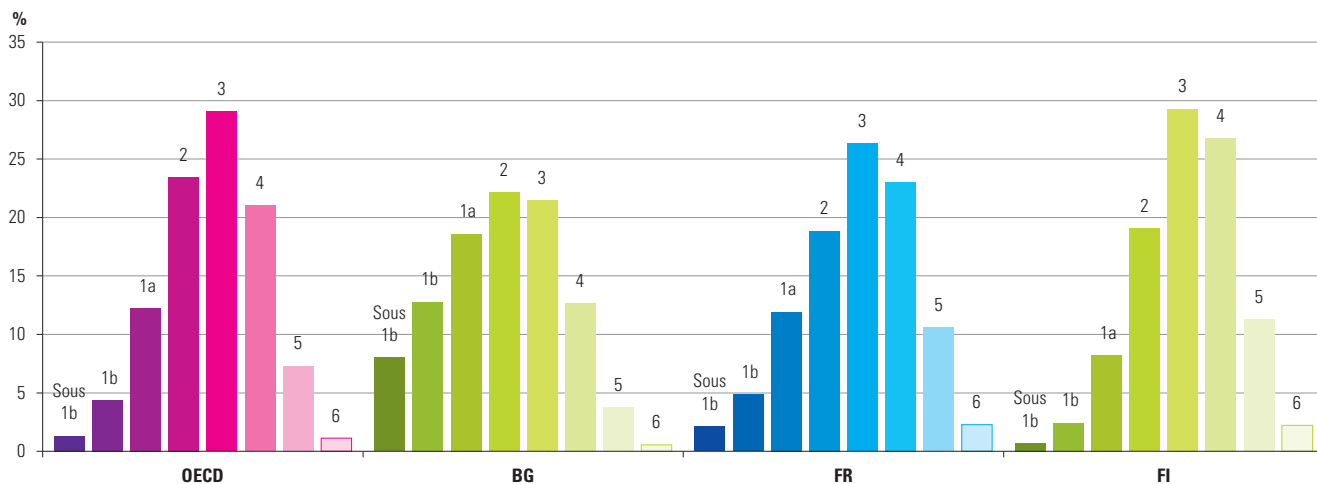
Score difference



Note: In 2012, in France, male students obtained on average a superior mean score by 9 points than girls at the PISA mathematics assessment. The scores presented on the figure are only the ones that are statistically significant.

### 5.4.3 Distribution of students between each proficiency level in reading in PISA 2012

↳ MENESR-DEPP, OECD, 2013.



Note: In 2012, in the OECD, in the reading literacy test, 23% of the students are in the group "2".



### The measure of the impact of the student's socioeconomic environment

ZOOM

So as to measure the impact of the student's socioeconomic environment on their results in the PISA<sup>68</sup> test scores, the OECD has created an Index of Economic, Social and Cultural Status (ESCS) based on a set of information about the student's parents' background (educational attainment and the father and mother's occupational status) and on the student's access to certain study materials and conditions (individual room, work desk, internet connection, the number of books at home, etc.). The students are then ranked in four like-numbered groups, the "disadvantaged" containing 25% of the students with the lowest ESCS index (bottom quarter), and the "advantaged" containing 25% of the students with the highest ESCS index (top quarter) [source: MENESR-DEPP, *Note d'information*, 13-31, 2013].

### PISA 2012: PERFORMANCE INEQUALITIES DUE TO SOCIAL ENVIRONMENT

In 2012 the mean score of all OECD students was 496 in the mathematics literacy test (cf. 5.4, p. 52). The "disadvantaged" students of the OECD scored a mean of 452 points, whilst the "advantaged" students scored a mean of 542 (5-5-1). In the 27 EU-member countries (only Malta did not take part in the survey) the mean score of all students was 489. Estonia was the country where the "disadvantaged" children had the highest score of the EU-27 (496), whereas Belgium and Poland had the highest scores of the "advantaged" (575 and 571 respectively). In contrast, Cyprus, Bulgaria and Romania recorded the lowest scores both for their "advantaged" students (492, 501 and 501 respectively) and their "disadvantaged" students (398, 384 and 407 respectively).

Estonia and France showed two contrasting profiles (5-5-1). Estonia was characterised by a high mean student score – among the best of the EU-27 countries – but also with little score differences between the "advantaged" students and the "disadvantaged" students. The reverse was true of France where its "disadvantaged" students achieved scores below the OECD mean (and those of the EU-27), and its "advantaged" students one of the highest. This strong relationship between the students' socio-economic status and their performances, otherwise known as the "social determinism" of performances, was, moreover, greater in 2012 than in 2003.

<sup>68</sup> See definition p. 68.

### PERFORMANCE AND EQUITY: CONTRASTING CONFIGURATIONS WITHIN THE EUROPEAN UNION

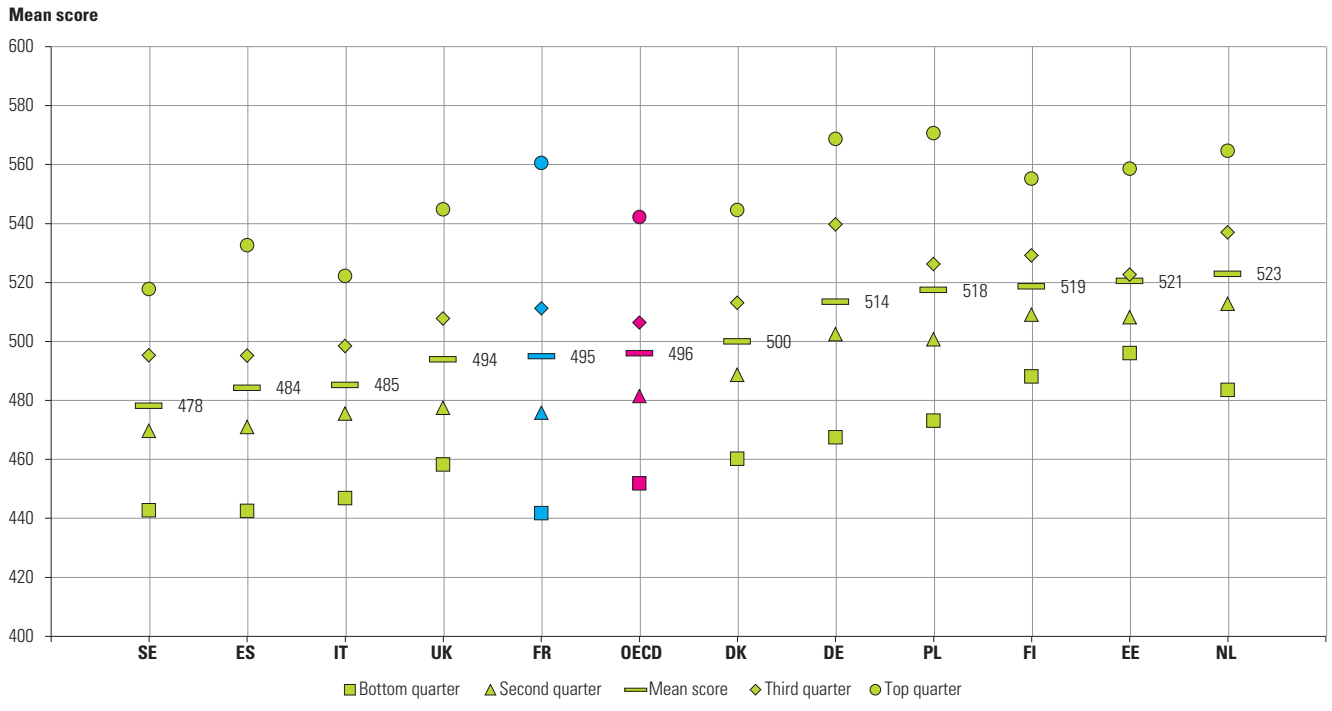
Graph 5-5.2 makes it possible to compare **social equity of performances**<sup>69</sup> (the horizontal axis) and the students' mean scores in PISA 2012 (the vertical axis). Although all the EU-27 countries are distributed in equal numbers above and below the mean performance score of the OECD countries, only 8 EU-27 countries show an equity score higher than that of the OECD. France combined a low equity score (comparable to Hungary and Bulgaria) and a performance score similar to the OECD mean. The United Kingdom, also achieving a performance score identical to the OECD mean, had an equity of results higher than the OECD mean. Bulgaria, Hungary and Romania showed both low performance scores and low equity. Only 3 European countries combined high performances and equity greater than the OECD mean (Estonia, Finland and the Netherlands).

### MULTIPLE FACTORS INFLUENCING PERFORMANCE

The factors increasing the probability for 15-year-old students to be strictly below the baseline skills level (level 2) of PISA mathematics literacy were not limited to the disadvantaged socioeconomic environment but included other family and individual factors. On average in the OECD countries, a male student from an advantaged socioeconomic background, living in a two-parent, native family and speaking the same language at home as at school, living in an urban area, having had more than one year of pre-primary schooling, never having repeated a class and enrolled in a stream/general school, had a 5% chance of under-performing in maths. In contrast a female student from a disadvantaged socio-economic background, living in a single-parent immigrant family, speaking a different language at home than at school, living in a rural area, never having been to preschool, already having repeated a class and following a vocational stream, had an 83% chance of under-performing [OECD, *PISA in Focus*, n° 60, February, 2016]. ■

### 5.5.1 Mean score in mathematics by PISA index of student's economic, social and cultural status (ESCS) in PISA 2012

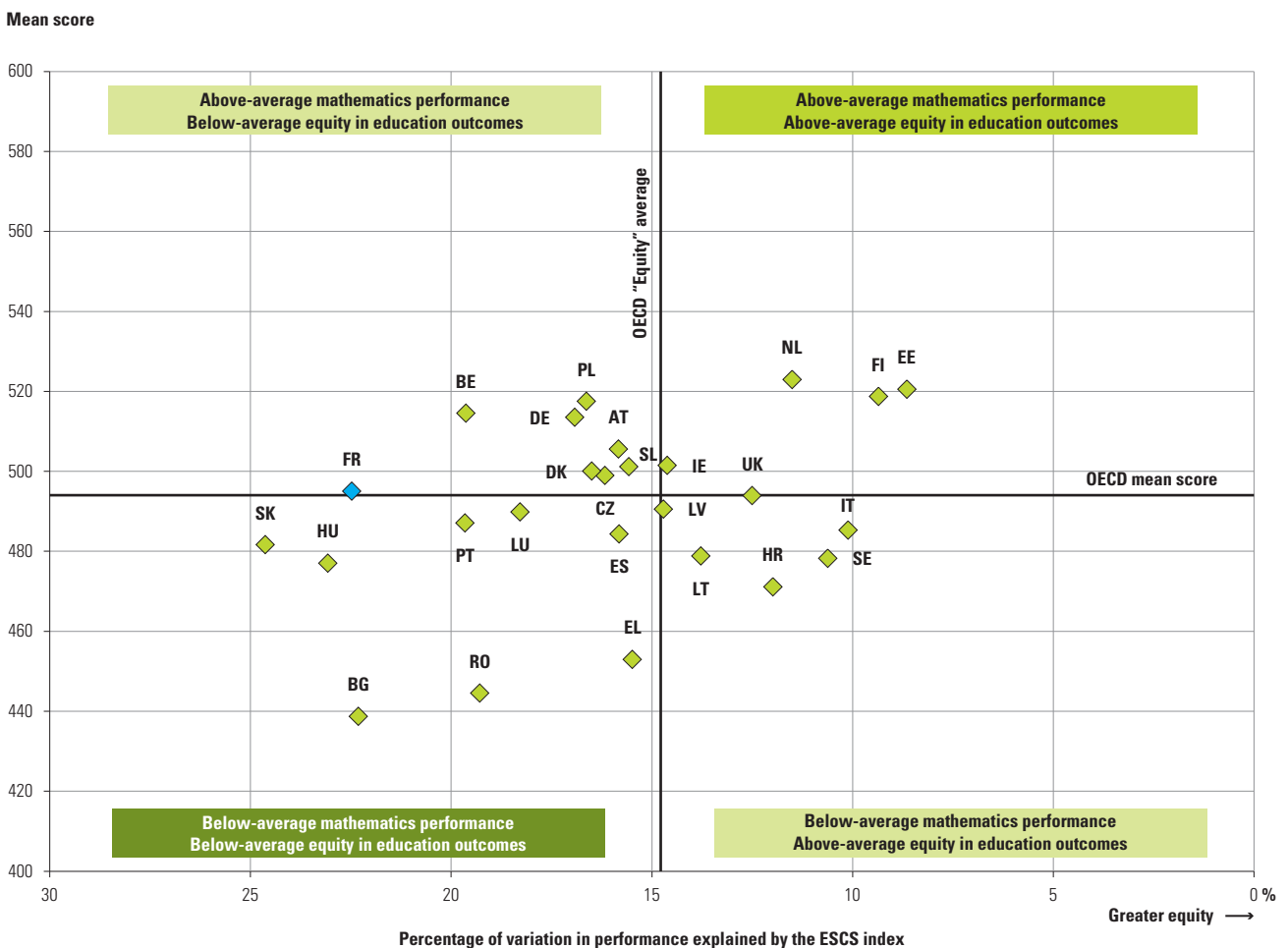
© MENESR-DEPP, OECD, « Résultats PISA 2012 en culture mathématique », Note d'information, 13-31, 2013.



Note: In 2012 in France, the mean score in mathematics for students of the bottom quarter in the ESCS index is 442, while the mean score of the students of the top quarter of the index is 561. The mean score for the entirety of the sample is 495. Only a panel of the EU-27 countries participating in PISA is presented above.

### 5.5.2 Student performance and equity in mathematics in PISA 2012

© OECD, PISA 2012, Results, Excellence through equity, vol. 2, figure II.1.2, 2014.



Note: In 2012 in France, the mean score in mathematics of the students is 495, while the percentage of variation explained by the social and economic status of the student is 22% (see annex "social equity in performances").

The PISA<sup>64</sup> 2012 survey (cf. 5.4, p. 52) was done with paper-based assessments that lasted two hours. **ZOOM**  
 In a certain number of countries and economies, students, given forty additional minutes, also sat computer-based assessments in maths, reading comprehension (also called “computer-based reading”) and problem solving.

## DIGITAL ASSESSMENTS IN MATHEMATICS: A CLEAR ADVANTAGE FOR BOYS

In 2012 the OECD’s students did not achieve better results in computerised assessments in maths than in paper-based assessments on average. Nonetheless some countries saw their scores tangibly improve (e.g. France, Italy and Sweden), whilst other countries saw their scores fall (e.g. Estonia, Ireland, Poland, Slovenia and Spain).

Boys enjoyed greater success than girls in mathematics literacy (cf. 5.4, p. 52), and the computerised assessment in maths increased this difference in success between the genders in all of the OECD countries participating in the survey. Boys achieved 15 points more than in the paper-based assessment, whilst girls lost 9 points (5.6.1). In the 12 countries presented here, girls generally attained better scores in paper-based assessments, whereas such was the case for boys in only two countries (Poland and Slovenia). Of the European-Union countries participating in the survey, the boys in France, Italy and Slovakia recorded the largest score differences between the digital-based assessment and the paper-based assessment (25, 32 and 26 points respectively).

## COMPUTER-BASED READING: BOYS CATCHING UP WITH GIRLS

Although computer-based assessment of mathematics literacy accentuates the difference in success between girls and boys, the digital-based assessment of reading tends inversely to reduce them. Whatever the medium for assessing reading literacy, girls performed better than boys. Yet in all of the OECD countries participating in the survey, the girl-boy differences in computer-based reading assessment were tangibly less than in

the paper-based assessment, i.e. respectively 26 points difference (5.6.2) against 38 points, even though the mean score of all students was no different (497 in the digital-based assessment against 496 on paper). Within the EU, the difference favouring girls in the digital-based assessment remained tangible (more than 30 points) in five countries (Hungary, Sweden, Poland, Estonia and Slovenia). Inversely, Portugal, Slovakia, Italy and France were the countries where the difference between girls and boys in the digital-based reading assessment was lower.

## GREATER EQUITY IN THE PROBLEM-SOLVING ASSESSMENTS

**PISA’s problem-solving assessment** **ZOOM**  
 Of the 65 countries/economies participating in PISA 2012, 44 (including 28 OECD-member countries and 22 EU countries) participated in the problem-solving assessment. Exercises were given to a sub-sample of students drawn from the main sample. Problem-solving assessment aims at assessing a student’s ability to explore and understand given information, visualise a problem, formulate theories, plan and execute a strategy and, finally, assess the results obtained. The items are designed so as to elicit a student’s knowledge in PISA’s three main fields [source: MENESR-DEPP, *Note d’information*, 14.08, 2014].

In 2012 in all OECD countries participating in the survey, 15-year-old students’ mean scores in the problem-solving assessment was 500 (5.6.3). Within the EU this score ranged from 402 for Bulgaria (not presented in the graph) to 523 for Finland. With an mean score of 511, France was above the OECD mean and that of the 22 EU countries participating in the survey. France’s results were comparable to Germany’s, the Netherlands’ and Estonia’s, these three countries being among the best in the other 2012 PISA tests. In France, moreover, as in most of the other European countries, the impact of the students’ socioeconomic status (cf. 5.5, p. 54) was tangibly lower here than in the other subjects. The difference in scores between the “advantaged” and the “disadvantaged” nonetheless remained distinct in France but drew closer to Germany’s (86 points against 87 in France), whilst the difference was 52 points in Estonia. ■

<sup>64</sup> See definition p. 68.

### 5.6.1 Mean score difference between paper-based and computer-based assessments in mathematics in PISA 2012, by gender

OECD, *Students, computer and learning, making the connection*, 2015

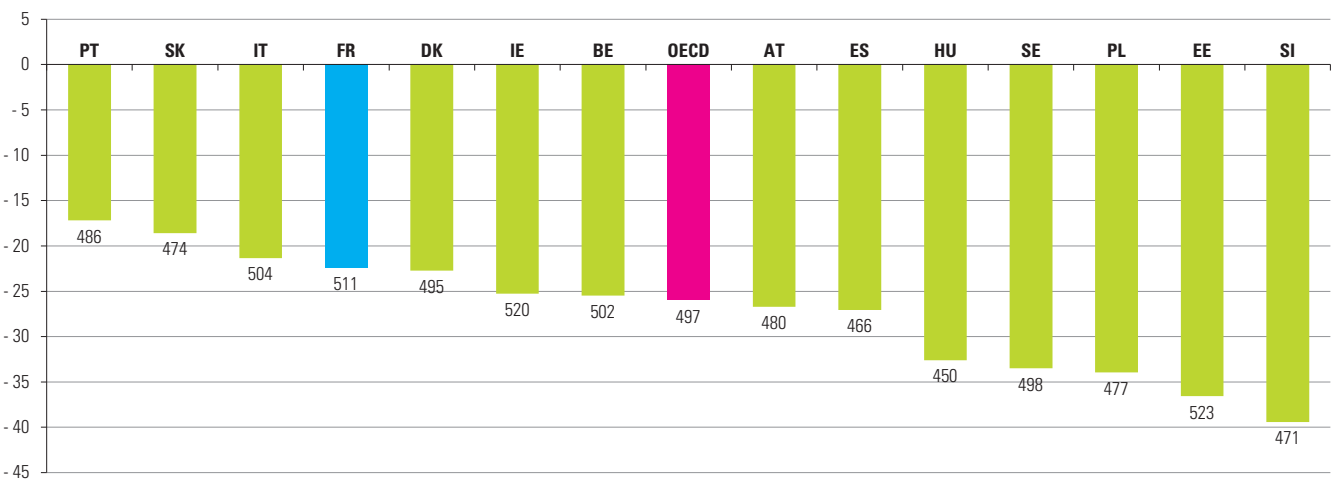


Note: In 2012, in Poland, boys obtained an average score in computer-based mathematics 21 points lower than in paper-based mathematics, when girls obtained an average score 36 points lower between the two tests. The score difference between paper-based and computer-based assessments for the whole sample of students is not the simple addition for of the score differences by gender. To be able to compare the scores, each gender score has been standardized on another scale.

Results that are not statistically significant are shown in grey, boys and girls alike.

### 5.6.2 Gender score difference in digital reading in PISA 2012

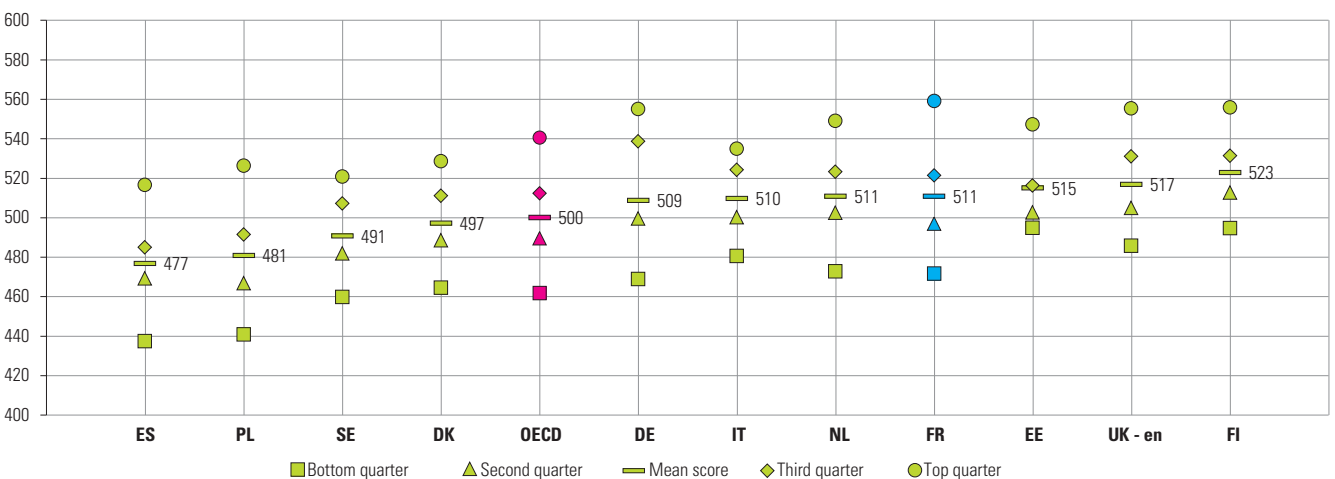
OECD, *Students, computer and learning, making the connection*, 2015



Note: In 2012, in France, the 15 year old boys' mean score in the PISA digital reading test is 22 points below the one of the girls. In France, the mean score for the whole sample of students is 511. In the countries that did take part in this test, all score differences are statistically significant and are to the benefit of the girls.

### 5.6.3 Mean score in problem solving test by PISA index of student's economic, social, cultural status (ESCS) in PISA 2012

OECD, *PISA 2012, volume V*, 2014



Note: In France, in 2012, the mean score in problem solving for students of the bottom quarter in the ESCS index is 472, while the mean score for students of the top quarter of the index is 559 and the mean score for the whole sample of students is 511.