5

Selecting and grouping students

This chapter discusses the ways in which students are selected and grouped into different grade levels, schools, programmes and classes within schools, based mainly on their performance – policies and practices known as vertical and horizontal stratification. The chapter offers an analysis of how different forms of stratification are used in combination and how they are associated with science performance in PISA 2015. It also examines how stratification policies and practices have changed since 2006.

A note regarding Israel

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

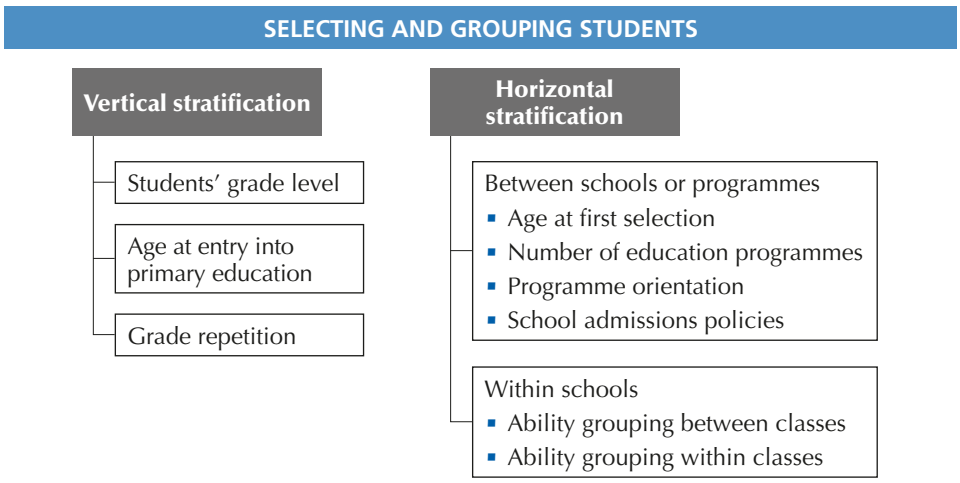
Stratification in education refers to the various ways in which schools and education systems organise instruction for students of varying ability, behaviour, interests and pace of learning (Dupriez et al., 2008). In comprehensive systems, all students follow a similar path through education, regardless of their abilities, behaviour and interests. In vertically stratified systems, students of similar age are enrolled in different grade levels, mainly as a result of grade repetition. In horizontally stratified systems, students of different abilities, behaviour or interests are separated into different schools, classes or groups (Figure II.5.1). The more stratified an education system is, the more varied the pathways through which students progress through school, and the more likely it is that disadvantaged students are placed in the least academically-oriented or demanding learning environments (Van de Werfhorst and Mijs, 2010). The effect of stratification on student outcomes is the subject of ongoing debate.

What the data tell us

- Grade repetition is more prevalent in school systems where students score lower in the PISA science assessment. However, in some countries and economies, such as Algeria, Belgium, Colombia, Luxembourg, Macao (China), Portugal and Spain, the incidence of grade repetition is considerably greater than would be expected given their mean scores in science.
- Thirty countries and economies used grade repetition less frequently in 2015 than in 2009; in only 5 countries did the incidence of grade repetition increase during the period. The use of grade repetition decreased by at least 10 percentage points in Costa Rica, France, Indonesia, Latvia, Macao (China), Malta, Mexico and Tunisia.
- Across OECD countries, socio-economically disadvantaged students, students with an immigrant background and boys are more likely to have repeated a grade, even after accounting for their academic performance, and their self-reported motivation and behaviour.
- On average across OECD countries, students in pre-vocational or vocational programmes score 22 points lower in science than students in general/academic and modular programmes, after accounting for the socio-economic profile of students and schools. However, in Brazil, Colombia, Costa Rica, the Dominican Republic, Japan, Luxembourg, Mexico and Switzerland, students in these programmes score higher than students in general and modular programmes.
- The later students are first selected into different schools or educational programmes and the less prevalent the incidence of grade repetition, the more equitable the school system or the weaker the association between students' socio-economic status and their performance in science.

This chapter examines how education systems handle diversity in students' abilities, behaviour and interests, and the policies and practices that are most conducive to high performance and equity in education. An in-depth analysis also examines the factors that are associated with grade repetition.

Figure II.5.1 ■ **School system stratification as covered in PISA 2015**



VERTICAL STRATIFICATION: HOW STUDENTS PROGRESS THROUGH THE SCHOOL SYSTEM

Vertical stratification is the extent to which students of a similar age are enrolled in different grade levels. In PISA, the distribution of 15-year-old students across grade levels is the main measure of vertical stratification. Greece, Iceland, Japan, Norway, Sweden and the United Kingdom have the least diversity in grade levels, as the probability that two 15-year-old students selected at random are enrolled in different grades is below 10% (Table II.5.3).[1] By contrast, in other countries, there is substantial heterogeneity in the grades in which 15-year-olds are enrolled. For example, in Algeria, Brazil, Colombia, Costa Rica, the Dominican Republic, Indonesia, Peru and the United Arab Emirates, there is at least a 60% probability that two 15-year-old students selected at random will be enrolled in different grades.

The grade level in which students were enrolled at the time they sat the PISA test largely depends on three factors:[2] their age, the age at which they started primary education and, above all, whether or not they have repeated a grade. On average across OECD countries, 28% of the variation in students' grade level is explained by whether or not they have repeated a grade in primary or secondary education, 13% by students' age[3] (some students are enrolled in higher/lower grades just because they were born earlier/later), and 4% by the age at which they entered primary education (Figure II.5.2). The countries and economies where the age at entry into primary education is most strongly associated with students' grade level are Croatia, Georgia, Indonesia, Moldova and the Russian Federation (hereafter "Russia"). In some countries, notably Belgium, France, Poland, Portugal, Spain, Tunisia and Uruguay, students' grade level is mainly explained by grade repetition, whereas in Chinese Taipei, students' age explains 66% of the variation in the grade level in which students were enrolled at the time they sat the PISA test (Table II.5.8). This section examines the grade in which students are enrolled, the age at which they started primary school, and grade repetition in primary and secondary education.

Students' grade level

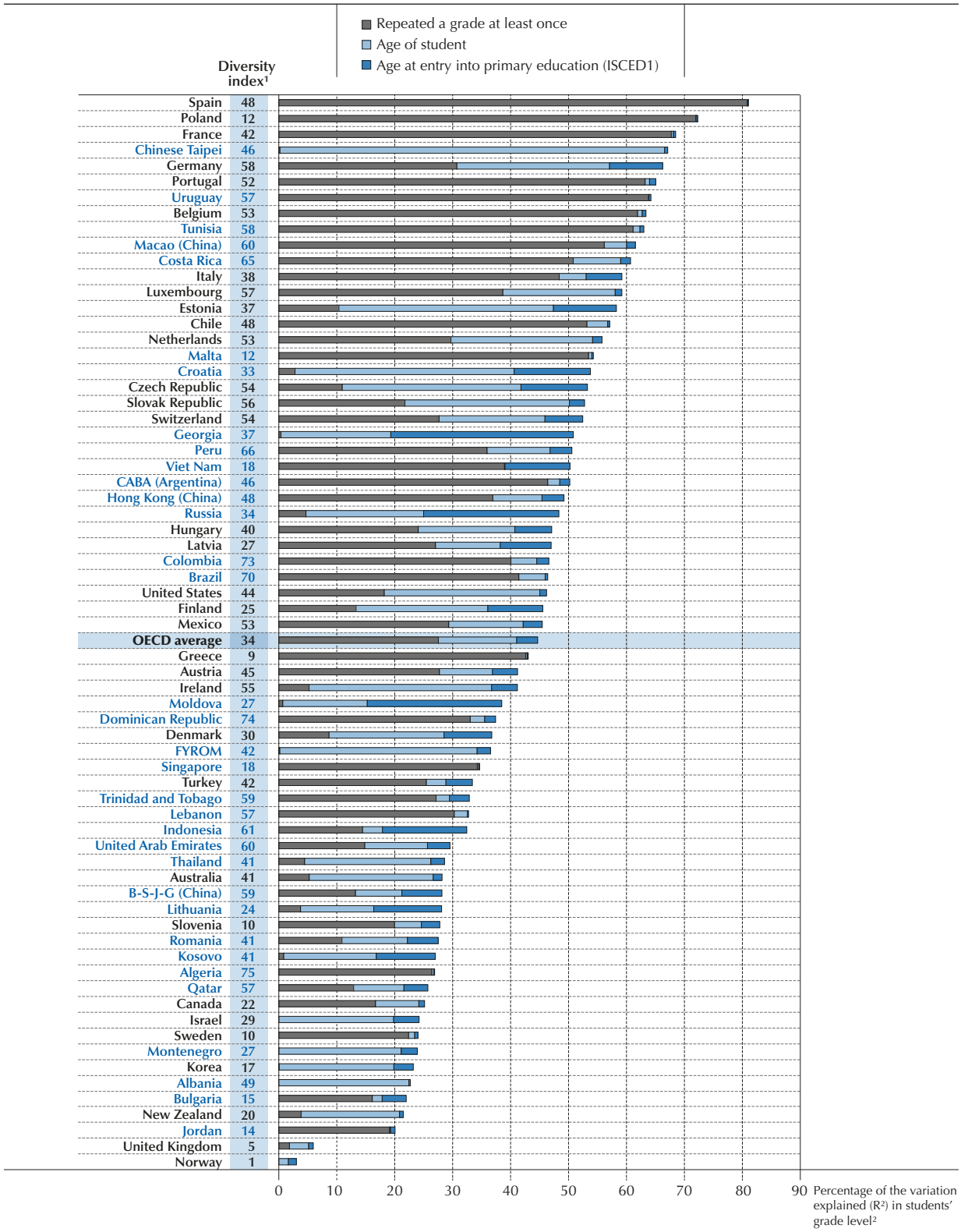
Both within and between countries, students in the same age cohort can be enrolled in different grades. These grades may, in turn, correspond to either lower or upper secondary education, depending on how the education system in each country/economy is structured. This is important for PISA, given that participation in the assessment is based on students' age, and the grade in which the student is enrolled is associated with students' performance.

Despite the varying degrees of vertical stratification across countries, PISA's age-based sampling design yields remarkable consistency in the grade in which students were enrolled when they sat the PISA test (Figure II.5.3 and Table II.5.3). In 45 countries and economies, the modal grade of enrolment is grade 10, whereas in 22 other countries the modal grade is grade 9. The only exceptions to this are Malta, New Zealand and the United Kingdom, where the modal grade is grade 11. On average across OECD countries, in PISA 2015, 76% of students are enrolled in the modal grade in their respective country or economy, 17% are enrolled below that modal grade and 7% of students are enrolled above that modal grade. In Greece, Iceland, Japan, Norway and United Kingdom, at least 95% of students are enrolled in the modal grade (Figure II.5.3). These are countries and economies where grade repetition rates tend to be low and where most students enter primary school at the same age. Consequently, a large share of students in these countries and economies progresses through schooling at the same pace.

The incidence of enrolment in grades above or below the modal grade varies, depending on student and school characteristics.[4] Across OECD countries, the proportion of students enrolled below the modal grade is larger in disadvantaged schools than in advantaged schools, in rural than in urban schools and, to a lesser extent, in public than in private schools. In Belgium, France, Indonesia, Tunisia and Uruguay, the proportion of 15-year-olds enrolled below the modal grade is at least 50 percentage points larger in disadvantaged schools than in advantaged schools (Tables II.5.6). The reverse pattern is observed when considering enrolment above the modal grade. In Algeria and Beijing-Shanghai-Jiangsu-Guangdong (China) (hereafter "B-S-J-G [China]"), the proportion of students in grades above the modal grade is 50 percentage points larger in advantaged schools than in disadvantaged schools (Table II.5.7).

Placement in grades above or below the modal grade is most often related to student performance. Students might be either retained or invited to skip a grade in the course of their schooling; or they might be better suited to the content and pace of the curriculum that they have been exposed to if they had started school at a different age than most of their peers. Not surprisingly then, enrolment in a grade above or below the modal grade is significantly associated with performance in science at age 15. Among students enrolled below the modal grade, this association is negative and significant in most countries and economies. After accounting for students' and schools' socio-economic profile, and on average across OECD countries, 15-year-old students below the modal grade score 48 points lower in science than students enrolled in the modal grade. In Poland, Portugal, Spain and Sweden, this difference amounts to 80 score points or more (Table II.5.6). By contrast, students enrolled above the modal grade tend to outperform students in the modal grade by an average of 32 points across OECD countries, after accounting for socio-economic status (Table II.5.7).

Figure II.5.2 ■ Factors associated with students' grade level



1. Probability (in percentage) that two students selected at random are enrolled in different grade levels (100 – Herfindahl index).
2. Joint effects are not shown.

Countries and economies are ranked in descending order of the total variance in grade levels explained by the three factors.

Source: OECD, PISA 2015 Database, Tables II.5.3 and II.5.8.

StatLink http://dx.doi.org/10.1787/888933436085

Figure II.5.3 ■ **Grade level, age of entry into primary education and grade repetition**

		15-year-olds age at entry into primary education	Repeaters	15-year-olds in different grades and education levels	
		Percentage of students who started primary school at:	Percentage of students who reported that they had repeated a grade at least once in primary, lower secondary or upper secondary school[1]	Modal grade	Percentage of students in:
		Age 5 or younger; Age 6; Age 7 or older			Grade below the modal grade; The modal grade; Grade above the modal grade
OECD	Australia		7.1	10	
	Austria		15.2	10	
	Belgium		34.0	10	
	Canada		5.7	10	
	Chile		24.6	10	
	Czech Republic		4.8	10	
	Denmark		3.4	9	
	Estonia		4.0	9	
	Finland		3.0	9	
	France		22.1	10	
	Germany		18.1	9	
	Greece		5.0	10	
	Hungary		9.5	9	
	Iceland		1.1	10	
	Ireland		7.2	9	
	Israel		9.0	10	
	Italy		15.1	10	
	Japan		0.0	10	
	Korea		4.7	10	
	Latvia		5.0	9	
	Luxembourg		30.9	9	
	Mexico		15.8	10	
	Netherlands		20.1	10	
	New Zealand		4.9	11	
	Norway		0.0	10	
	Poland		5.3	9	
	Portugal		31.2	10	
	Slovak Republic		6.5	10	
	Slovenia		1.9	10	
	Spain		31.3	10	
	Sweden		4.0	9	
	Switzerland		20.0	9	
	Turkey		10.9	10	
	United Kingdom		2.8	11	
	United States		11.0	10	
	OECD average		11.3		
Partners	Albania		2.6	10	
	Algeria		68.5	9	
	Brazil		36.4	10	
	B-S-J-G (China)		20.8	9	
	Bulgaria		4.8	9	
	CABA (Argentina)		19.1	9	
	Colombia		42.6	10	
	Costa Rica		31.4	10	
	Croatia		1.6	9	
	Dominican Republic		33.9	10	
	FYROM		3.1	9	
	Georgia		1.5	10	
	Hong Kong (China)		17.2	10	
	Indonesia		16.2	10	
	Jordan		7.6	10	
	Kosovo		3.8	10	
	Lebanon		26.5	10	
	Lithuania		2.5	9	
	Macao (China)		33.8	10	
	Malta		7.0	11	
	Moldova		3.0	9	
	Montenegro		1.6	9	
	Peru		25.6	10	
	Qatar		17.4	10	
	Romania		5.9	9	
	Russia		1.5	9	
	Singapore		5.4	10	
	Chinese Taipei		0.6	10	
	Thailand		6.0	10	
	Trinidad and Tobago		33.4	10	
	Tunisia		34.3	10	
	United Arab Emirates		11.8	10	
	Uruguay		35.3	10	
	Viet Nam		7.2	10	

1. The questions on grade repetition were not administered in Japan and Norway. A value of zero has been set in agreement with countries since there is a policy of automatic grade progression.

Source: OECD, PISA 2015 Database, Tables II.5.1, II.5.3 and II.5.9.

StatLink http://dx.doi.org/10.1787/888933436097

Students' age at entry into the school system

One of the determinants of the variation in students' grade levels is the variation in their age at entry into the school system. Children are expected to start compulsory school at a certain age, typically between the ages of five and seven. In practice, however, not all students do. There is no consensus on what is the best age for children to start their formal education. Some argue that staying at home or in early childhood education and care for a longer period might allow children to learn through play and to develop more fully before they enter school; others say that the early years are crucial for acquiring the foundations for later stages of education.

PISA 2015 asked students about their age at entry into primary education (ISCED 1).[5] This question yields important information to assess the degree of age-related heterogeneity in student populations in the early stages of schooling. Students were also asked to report whether they had participated in pre-primary education (ISCED 0)[6] and how old they were when they started doing so. Results about the variation across countries in pre-primary education participation rates are discussed in Chapter 6.

In education systems with a compulsory starting age, most students will be within one year of each other when they enter school. In countries where parents have more freedom to choose the age at which their children enter school, children may be two or more years above or below the modal age at entry. Thus, the proportion of students who started schooling outside this modal two-year window gives an approximate indication of the diversity of students' ages at entry into the school system.

Considerable differences across countries are observed in students' age at entry into primary education (ISCED 1), according to students' self-reports. On average across OECD countries, 49% of the students participating in PISA 2015 started primary school at age 6, while another 25% started at age 7, and 22% started before they were 6. In 36 PISA-participating countries/economies, a majority of students started primary school when they were 6 years old; in 18 countries/economies, at least half of the students started primary education when they were 7 years old. In Ireland, Malta, New Zealand, Trinidad and Tobago and the United Kingdom, more than eight in ten students had started primary school at age 5 or earlier, while in Bulgaria, Estonia, Poland and Turkey, more than three out of four students had started primary education when they were 7 or older (Table II.5.1).

Variations in the age at entry into primary school are associated with some characteristics of the schools attended by the 15-year-olds who participated in PISA. On average across OECD countries, 15-year-old students in socio-economically advantaged schools were slightly younger than their counterparts in disadvantaged schools when they entered primary school (Table II.5.2).

At the same time, starting primary school at a younger age is positively associated with performance in science at age 15. On average across OECD countries, and after accounting for both students' and schools 'socio-economic profile, for each year that entry into primary education is delayed, students' science scores decline by six score points. In Austria, Korea and Viet Nam the decline is of at least 15 score points. By contrast, in Jordan, Singapore, Sweden and the United Kingdom, each year of entry later into primary school is associated with an increase of at least five score points in science (Table II.5.2).

Grade repetition

The second factor with a major influence on the distribution of 15-year-olds across different grades is grade repetition over the course of compulsory schooling. Grade repetition is the practice of requiring students who have been in a grade level for a full school year to remain in the same grade for an additional school year (Jimerson, 2001; Jackson, 1975). Grade repetition is usually a non-reversible decision, in that repeaters will thereafter be a grade below other students of the same age for the rest of their progress through school. School leaders and teachers, sometimes in consultation with parents, are responsible for decisions on who will be promoted or retained, sometimes within guidelines or regulations coming from national or other levels of government (European Commission, 2011). Grade repetition can be a costly policy, as it generally requires greater expenditure on education and delays students' entry into the labour market (OECD, 2013).

In theory, repeating a grade gives students whose teachers believe are not yet ready for more advanced coursework time to "catch up" with their peers. If the curriculum is cumulative and further learning depends on a solid understanding of what had been previously learned, then promoting students regardless of their mastery of the content might put low-performing students in an increasingly difficult position at higher grades. If the practice is widespread, it might compromise performance in the school or school system as a whole.

But reviews of research encompassing different disciplines and time periods have mainly found negative effects of grade repetition on academic achievement (Jimerson, 2001). Students who have repeated a grade often also show more negative attitudes and behaviours towards school (Finn, 1989; Gottfredson, 1994; Ikeda and García, 2014) and are more likely to drop out of school (Jacob and Lefgren, 2004; Manacorda, 2012). In addition, any positive short-term effects of grade repetition appear to decline over time (Allen et al., 2009).

PISA uses a self-reported measure of grade repetition based on students' responses to questions in the student questionnaire that ask at which education level (primary or secondary) and how often (never, once, or more than once) they had repeated a grade.

The incidence of grade repetition varies considerably across countries, reflecting the wide range of policies, cultural traditions and societal beliefs about the benefits of grade repetition (European Commission, 2011; Goos et al, 2012). For example, Japan and Norway have established policies whereby students in compulsory schooling are promoted automatically to the next grade at the end of each school year, a practice known as "social promotion". In these two countries, grade repetition rates have traditionally been negligible. The incidence of grade repetition is also minimal in Iceland and Chinese Taipei (Table II.5.9). However, in 13 countries and economies, at least 30% of students had repeated a grade at least once in primary or secondary education by the age of 15. For example, in Algeria, 69% of 15-year-old students had repeated a grade at least once, and in Colombia, 43% of students had done so. In Brazil, 36% of students had repeated a grade; in Uruguay 35% of students had done so; in Belgium, the Dominican Republic, Macao (China) and Tunisia, 34% of students had repeated a grade; in Trinidad and Tobago, 33% of students had done so; and in Costa Rica, Luxembourg, Portugal and Spain, 31% of students had repeated a grade.

Box II.5.1. **Interpreting school results and grade repetition**

PISA assesses students who were between 15 years and 3 (complete) months and 16 years and 2 (complete) months at the beginning of the assessment period, and who were enrolled in an educational institution in grade 7 or higher. This age-based sampling has obvious advantages over grade-based sampling for international comparisons since age is strictly comparable across school systems. However, an age-based sampling means that students are tested regardless of the grade level or type of institution in which they are enrolled. In PISA, students are not sampled to be representative of their schools. Interpreting differences between schools correctly therefore requires specific knowledge about how school systems are structured.

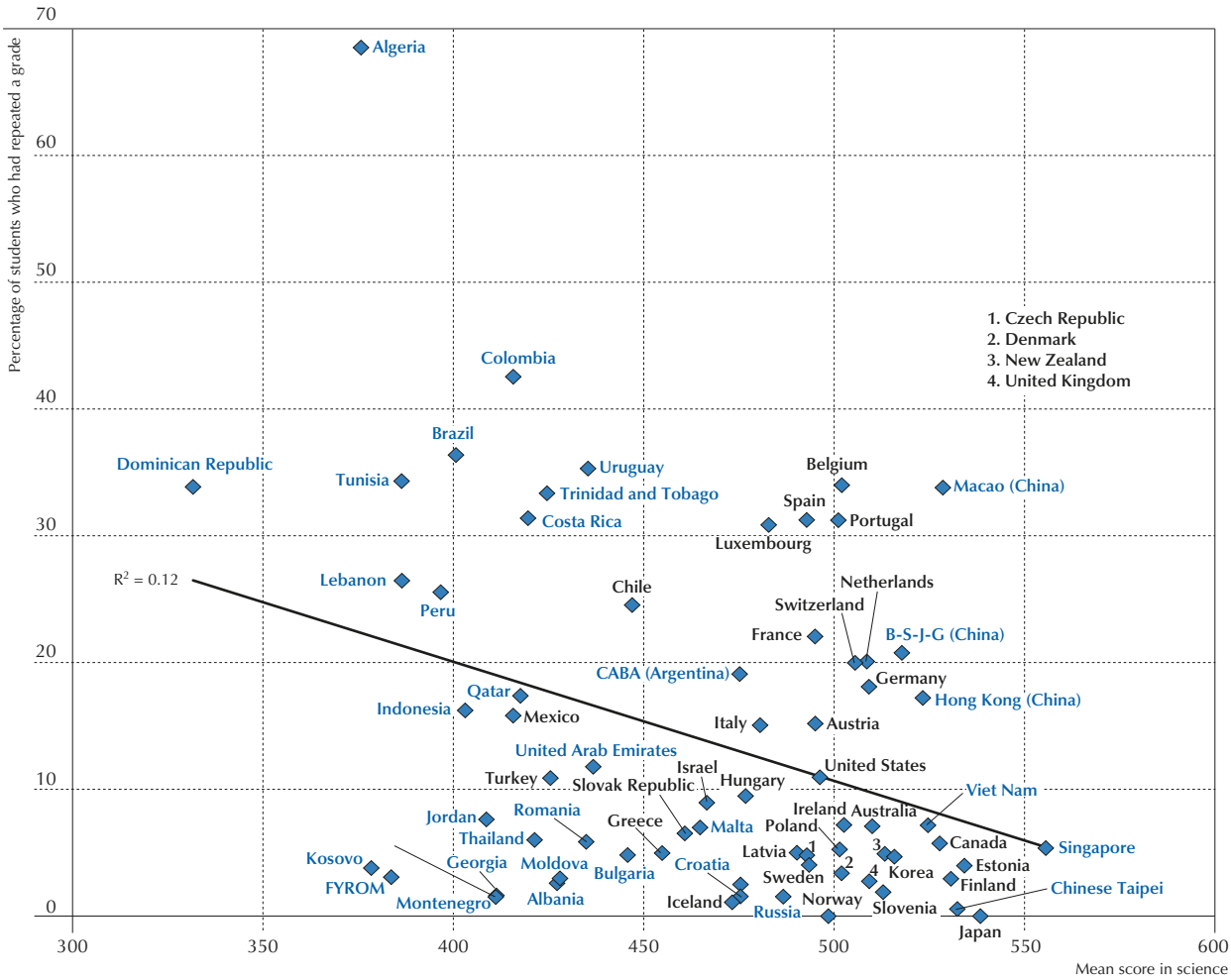
For example, in France, as in some other countries, one of the complexities in interpreting school-level results is that a majority of 15-year-old students enrolled in lower secondary education had repeated a grade. PISA 2015 data show that, in France, approximately 24% of 15-year-old students are enrolled in lower secondary education (ISCED 2), 92% of whom had repeated a grade at least once; 76% of 15-year-old students are enrolled in upper secondary education (ISCED 3), only 1% of whom had repeated a grade at least once (Tables II.5.3 and II.5.12). When interpreting school-level results, it is important to bear in mind that differences in results between lower and upper secondary schools mainly reflect differences in student characteristics between those who had repeated a grade and those who had not, or differences in the characteristics of the schools attended by those two groups of students.

Portugal, Tunisia and Uruguay are in similar situations. In these countries, approximately 90% or more of students enrolled in lower secondary education reported that they had repeated a grade at least once, while 3% of less of students in upper secondary education reported so (Table II.5.12). In a few school systems, all or almost all 15-year-old students are enrolled in the same level of education, even if grade repetition is prevalent. For example, in Spain, while 31% of 15-year-olds reported that they had repeated a grade at least once, both those who had repeated a grade and those who had not are enrolled in lower secondary education. There are other school systems, such as those in the Czech Republic, Ireland and the Slovak Republic, where grade repetition is not the main reason why students are enrolled in different levels of education (Tables II.5.3, II.5.9 and II.5.12).

In countries where grade repetition was less prevalent in 2015 than before, there are fewer complications and challenges, compared with previous cycles of PISA, in interpreting differences in school-level results for some analyses, but the fundamental issue persists. For example, in France, the incidence of grade repetition decreased by 16 percentage points between 2009 and 2015. Consequently, the percentage of 15-year-old students enrolled in lower secondary education fell from 37% to 24% over the past six years (Tables II.5.3 and PISA 2009 Volume IV).

Grade repetition is more prevalent in school systems where students score lower in the PISA science assessment (Figure II.5.4). However, in some countries and economies, such as Algeria, Belgium, Colombia, Luxembourg, Macao (China), Portugal and Spain, the incidence of grade repetition is considerably greater than would be expected given their mean scores in science. Conversely, in other education systems, like those in the Former Yugoslav Republic of Macedonia (hereafter "FYROM"), Georgia, Kosovo, Moldova and Montenegro (and of course in countries with automatic progression, such as Japan and Norway), fewer students had repeated a grade than would be expected given these countries' mean scores in science.

Figure II.5.4 ■ **Science performance and grade repetition**



Source: OECD, PISA 2015 Database, Tables I.2.3 and II.5.12.

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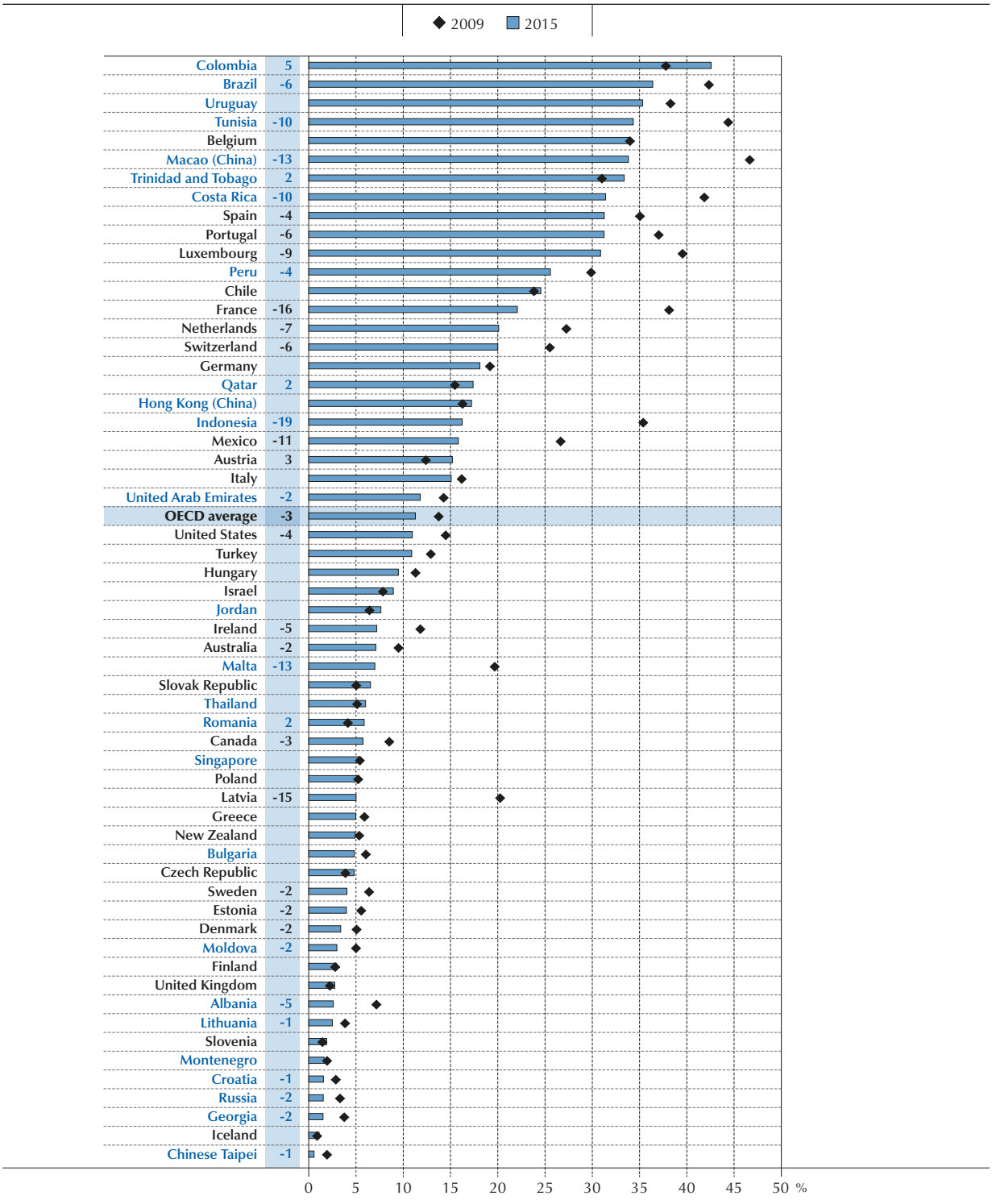
At what point, over the course of students' school careers, are grade repetition rates greater? Results from PISA show that the prevalence of grade repetition is about the same in primary and secondary education, regardless of whether the country's/economy's repetition rate is high or low.[7] On average across OECD countries, 7% of students in PISA 2015 had repeated a grade in primary education, whereas 6% had repeated a grade in lower secondary school and 2% had repeated a grade in upper secondary school at least once. At any of the three levels, those who had repeated a grade were usually retained for one grade only; multiple repetitions (i.e. more than once) affected less than 1% of students (Table II.5.9).

The incidence of grade repetition in primary education is highest in Algeria, Brazil, Colombia, the Dominican Republic and Trinidad and Tobago, where it affects more than one in five students at that level. In Algeria, Brazil, Colombia, Costa Rica, Macao (China), Portugal, Spain, Tunisia and Uruguay, more than one in five students had repeated a grade at least once in lower secondary school.

Figure II.5.5 ■ **Change between 2009 and 2015 in grade repetition rates**

Percentage of students who had repeated a grade in primary, lower secondary or upper secondary school



Notes: Statistically significant differences are shown next to the country/economy name (see Annex A3).
Only countries and economies with comparable data from PISA 2009 and PISA 2015 are shown.
For Costa Rica, Georgia, Malta and Moldova, the change between the PISA 2009 and PISA 2015 represents change between 2010 and 2015 because these countries implemented the PISA 2009 assessment in 2010 as part of PISA 2009+.
Countries and economies are ranked in descending order of the percentage of students who had repeated a grade, in 2015.
Source: OECD, PISA 2015 Database, Tables II.5.9, II.5.10 and II.5.11.

StatLink http://dx.doi.org/10.1787/888933436111

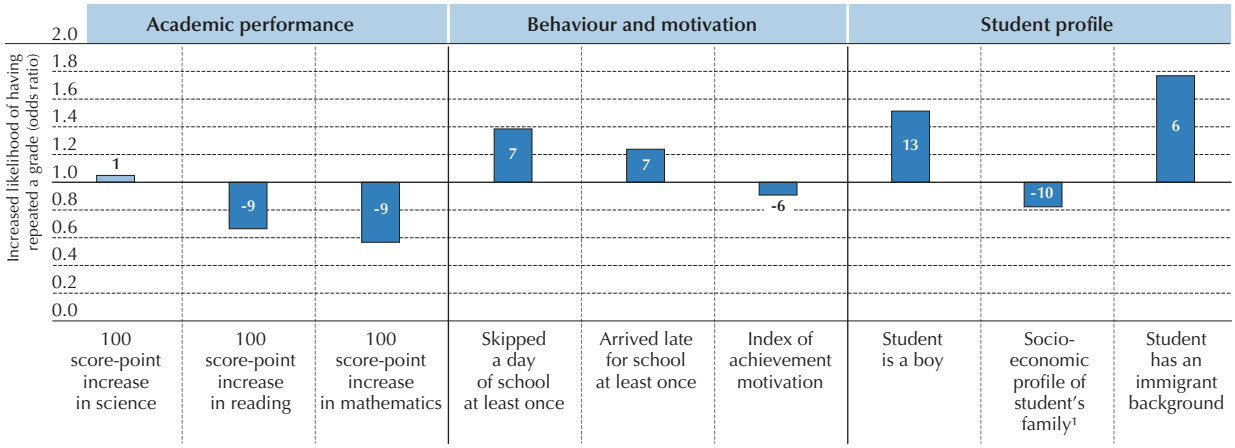
Across OECD countries, the percentage of students who reported that they had repeated a grade at least once decreased by almost 3 percentage points between 2009 and 2015 (Figure II.5.5). A reduction in the incidence of grade repetition was observed across all education levels. The percentage of students who had repeated a grade in either primary, lower secondary or upper secondary school dropped significantly and by a margin of 10 percentage points or more in Costa Rica, France, Indonesia, Latvia, Macao (China), Malta, Mexico and Tunisia. By contrast, in Ausrtia, Colombia, Qatar, Romania and Trinidad and Tobago, the percentage of students who reported that they had repeated a grade was higher in 2015 than it was in 2009.

Which students are more likely to have repeated a grade?

Grade repetition is most often and explicitly decided on the basis of academic performance; but previous studies suggest that students' behaviour and other factors can also influence the decision to retain students at a grade (Willson and Hughes, 2009; OECD, 2015a). Figure II.5.6 shows that, across OECD countries, students with poorer academic performance are more likely to have repeated a grade. For instance, an increase of 100 score points on the PISA mathematics assessment is associated with a 43% decrease in the likelihood of having repeated a grade; and an increase of 100 score points in reading is associated with a 34% decrease in the likelihood of repeating a grade.[8]

Figure II.5.6 ■ **Factors associated with grade repetition**

Student-level analysis, OECD average



1. The socio-economic profile is measured by the PISA index of economic, social and cultural status.

Notes: Statistically significant coefficients are marked in darker tone (see Annex A3).

All nine explanatory variables are included jointly in a logit regression model explaining grade repetition.

The level of confidence that a relationship exists measured in z-scores is shown inside the bars.

Source: OECD, PISA 2015 Database, Table II.5.13.

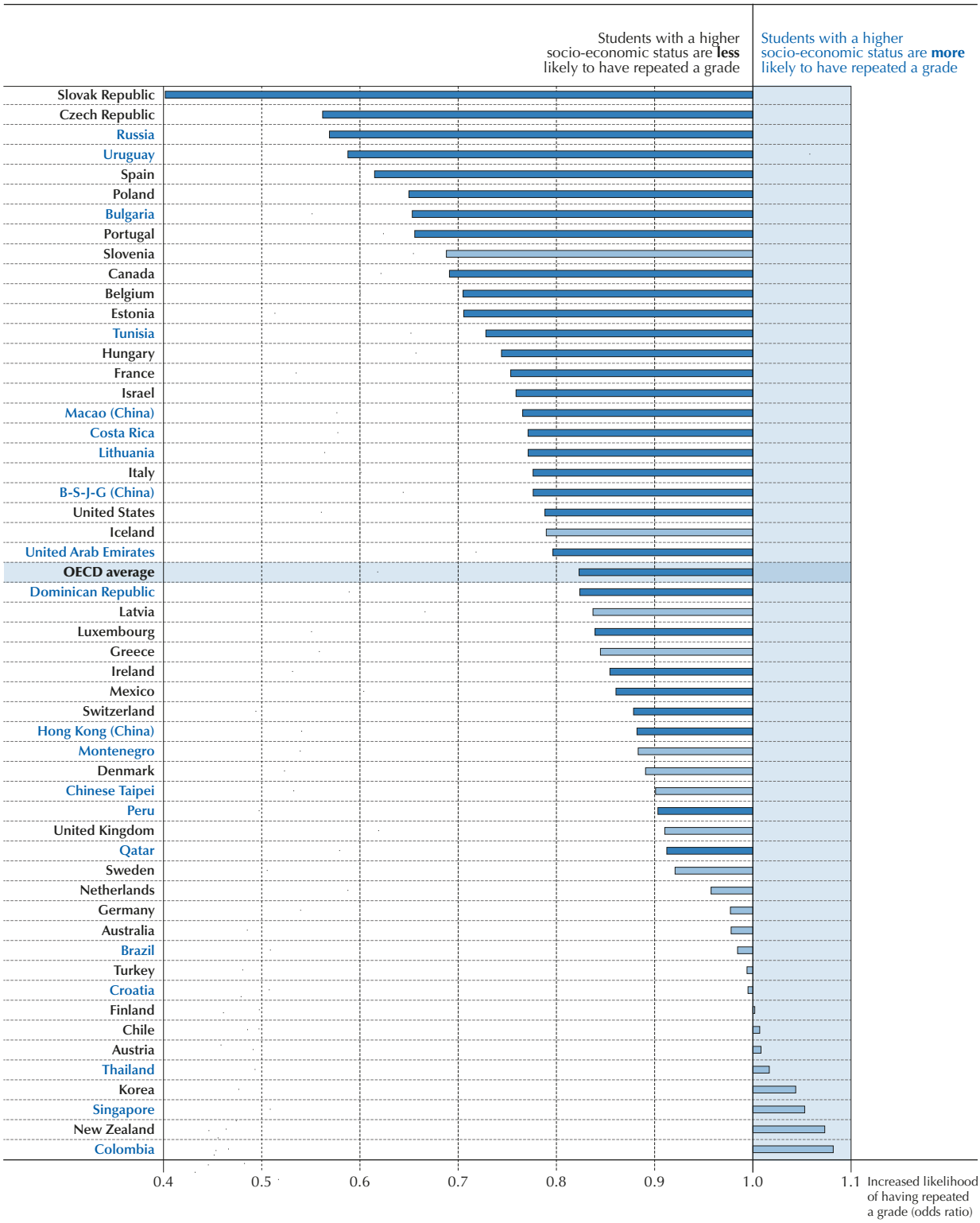
StatLink http://dx.doi.org/10.1787/888933436121

In addition to student performance, the behaviour and motivation of students are also related to grade repetition. Students who reported that they had skipped a day of school or arrived late for school at least once in the two weeks prior to the PISA test are 38% and 24% more likely, respectively, to have repeated a grade than students who reported that they had not done so. Students who agreed with statements such as "I want top grades in most or all of my courses", "I see myself as an ambitious person" or "I want to be one of the best students in my class" – all components of the index of achievement motivation – are less likely to have repeated a grade than students who did not agree with such statements (Figure II.5.6).

Many people would agree that performance, behaviour and motivation are legitimate reasons for deciding which students repeat a grade. However, what is more troubling is that, even after accounting for students' academic performance, and self-reported behaviour and attitudes, in many education systems, a student with certain characteristics is more likely to have repeated a grade than other students. For instance, across OECD countries, boys are more likely than girls, socio-economically disadvantaged students are more likely than advantaged students, and students with an immigrant background are more likely than students with no immigrant background to have repeated a grade. In some countries, like Austria, Colombia, Korea, New Zealand, Singapore or Thailand, advantaged and disadvantaged students are equally likely to have repeated a grade, after accounting for their academic performance, behaviour and motivation (Figure II.5.7). However, in others, such as Bulgaria, Canada, the Czech Republic, Poland, Portugal, Russia, the Slovak Republic, Spain or Uruguay, disadvantaged students are more likely to have repeated a grade than advantaged students.

Figure II.5.7 ■ **Students' socio-economic profile[1] and grade repetition**

Increased likelihood of having repeated a grade associated with socio-economic status



1. The socio-economic profile is measured by the PISA index of economic, social and cultural status.

Notes: The logit regression model accounts for students' performance, truancy, motivation, gender and immigrant background.

Statistically significant coefficients are marked in a darker tone (see Annex A3).

Countries and economies are ranked in ascending order of the likelihood of having repeated a grade at least once in primary or secondary school.

Source: OECD, PISA 2015 Database, Table II.5.13.

StatLink http://dx.doi.org/10.1787/888933436132

HORIZONTAL STRATIFICATION: HOW EDUCATION SYSTEMS ORGANISE SCHOOL PROGRAMMES

Students with different abilities and interests are found in every grade and school. School systems address this diversity in different ways. They can offer a single, comprehensive programme in which students of different abilities and aspirations are exposed to similar content, pedagogy and peers, delaying any type of sorting and giving more time for "late bloomers". They can also group students of similar abilities, interests and motivation into the same schools or classes so that what is learned (content and difficulty) and how it is taught (pedagogy and instruction) can be tailored to better meet students' skills and interests. This type of stratification, referred to as "horizontal" stratification in this report, is the product of decisions made at the system level, such as offering the choice of general/academic and vocational programmes; of decisions made at the school level, such as admitting students based on their academic records, interests or social background, or grouping students by ability between classes (Dupriez et al., 2008); and of decisions made by parents, such as choosing a place to live and a school for their children.

Despite some potential advantages of this type of stratification, such as creating more homogeneous classes or preparing less academically-oriented students for the labour market, there is some concern that tracking replicates socio-economic disparities (Oakes, 2005) and increases inequalities in education (Hanushek and Woessmann, 2006; Maaz et al., 2008). Sorting students into different schools also seems to be particularly negative for disadvantaged and low-performing students (Epple et al., 2002; Pekkarinen et al., 2009), unless there is a greater emphasis on vocational skills in these schools (Heisig and Solga, 2015).

Differentiation among education programmes: Age at selection, and the number and types of study programmes

In comprehensive school systems, all 15-year-old students follow the same programme; in differentiated school systems, students are streamed into different programmes. Some of these programmes may be primarily academic, others primarily vocational, and others still may be combinations of academic and vocational elements (Kerckhoff, 2000; LeTendre et al., 2003). Differentiated systems must determine the age at which students will be sorted into these different programmes. Evidence from PISA 2012 shows that in countries and economies that sort students into different education programmes at an early age, the impact of students' socio-economic status on their performance is stronger than in systems that select and group students later (OECD, 2013).

On average across OECD countries, school systems begin selecting students for different programmes at the age of 14 (Figure II.5.8).[9] Some OECD countries, including Austria and Germany, start selecting students as early as age 10; but the most common age at selection is 16, the practice followed in Australia, Canada, Chile, Denmark, Estonia, Finland, Iceland, Latvia, New Zealand, Norway, Poland, Spain, Sweden, the United Kingdom and the United States. Among the 31 partner countries and economies with available data, the most common practice, observed in 18 education systems, is to start selection into different programmes at the age of 15. A few countries select students earlier: Argentina, Croatia and Romania begin selecting students for different programmes at age 14, Bulgaria begins at age 13, and Singapore starts as early as age 12. The Dominican Republic, Jordan, Lithuania, Malta, Peru and Qatar delay selection into different study programmes until students are 16 years old (Table II.5.27).

The number of school types or distinct education programmes available to 15-year-old students also varies across countries (Figure II.5.8). Among OECD countries, it ranges from a single school type or programme in Australia, Canada, Denmark, Estonia, Finland, Iceland, New Zealand, Norway, Poland, Spain, Sweden, the United Kingdom and the United States, to five or more programmes in the Czech Republic, Latvia, the Netherlands and the Slovak Republic. Among partner countries and economies with available data, Croatia, Indonesia and Jordan offer a single programme. Most frequently, students attend two or three programmes (in 17 out of 31 countries and economies), but B-S-J-G (China), Montenegro, Singapore and Viet Nam offer four programmes; FYROM, Hong Kong (China), Lithuania, Malaysia and the United Arab Emirates offer five programmes; and students in Kazakhstan can choose from eight distinct education programmes or school types at the age of 15.

PISA 2015 asked students to report on the kind of programme in which they are enrolled. Students' responses were then classified into three categories of programme orientation: general, pre-vocational or vocational, or modular. In 2015, across OECD countries, an average of 82% of 15-year-old students were enrolled in a programme with a general curriculum, 14% were enrolled in a programme with a pre-vocational or vocational curriculum, and 4% were in modular programmes that combine characteristics of the other two programmes (Figure II.5.8). In 27 countries, including OECD countries Chile, Denmark, Estonia, Finland, Iceland, Ireland, Israel, Latvia, New Zealand, Norway, Poland, Spain, Sweden, the United Kingdom, and the United States, more than 99% of 15-year-old students were enrolled in a general programme.

Figure II.5.8 ■ **Education programmes and ability grouping**

		Horizontal differentiation between schools		Horizontal differentiation within schools	
		Number of education programmes available	First age at selection in the education system (early selection)	Percentage of students who are enrolled in a programme whose curriculum is:	Percentage of students in schools where students are grouped by ability **into different classes**	Percentage of students in schools where students are grouped by ability **within their classes**
				General / Pre-vocational or vocational / Modular	No ability grouping for any subject / One form of grouping for some subjects / One form of grouping for all subjects	
OECD	Australia	1	16			
OECD	Austria	4	10			
OECD	Belgium	4	12			
OECD	Canada	1	16			
OECD	Chile	3	16			
OECD	Czech Republic	6	11			
OECD	Denmark	1	16			
OECD	Estonia	1	16			
OECD	Finland	1	16			
OECD	France	3	15			
OECD	Germany	4	10			
OECD	Greece	2	15			
OECD	Hungary	3	11			
OECD	Iceland	1	16			
OECD	Ireland	4	15			
OECD	Israel	2	15			
OECD	Italy	4	14			
OECD	Japan	2	15			
OECD	Korea	3	15			
OECD	Latvia	5	16			
OECD	Luxembourg	4	13			
OECD	Mexico	3	15			
OECD	Netherlands	7	12			
OECD	New Zealand	1	16			
OECD	Norway	1	16			
OECD	Poland	1	16			
OECD	Portugal	3	15			
OECD	Slovak Republic	5	11			
OECD	Slovenia	3	14			
OECD	Spain	1	16			
OECD	Sweden	1	16			
OECD	Switzerland	4	12			
OECD	Turkey	3	11			
OECD	United Kingdom	1	16			
OECD	United States	1	16			
OECD	**OECD average**	2.7	14.3			
Partners	Albania	3	15			
Partners	Algeria	m	m			
Partners	Brazil	2	15			
Partners	B-S-J-G (China)	4	15			
Partners	Bulgaria	3	13			
Partners	CABA (Argentina)	m	m			
Partners	Colombia	2	15			
Partners	Costa Rica	3	15			
Partners	Croatia	1	14			
Partners	Dominican Republic	3	16			
Partners	FYROM	5	15			
Partners	Georgia	2	15			
Partners	Hong Kong (China)	5	15			
Partners	Indonesia	1	15			
Partners	Jordan	1	16			
Partners	Kosovo	m	m			
Partners	Lebanon	m	m			
Partners	Lithuania	5	16			
Partners	Macao (China)	2	15			
Partners	Malta	3	16			
Partners	Moldova	m	m			
Partners	Montenegro	4	15			
Partners	Peru	3	16			
Partners	Qatar	3	16			
Partners	Romania	2	14			
Partners	Russia	3	16			
Partners	Singapore	4	12			
Partners	Chinese Taipei	3	15			
Partners	Thailand	2	15			
Partners	Trinidad and Tobago	m	m			
Partners	Tunisia	m	m			
Partners	United Arab Emirates	5	15			
Partners	Uruguay	2	15			
Partners	Viet Nam	4	15			

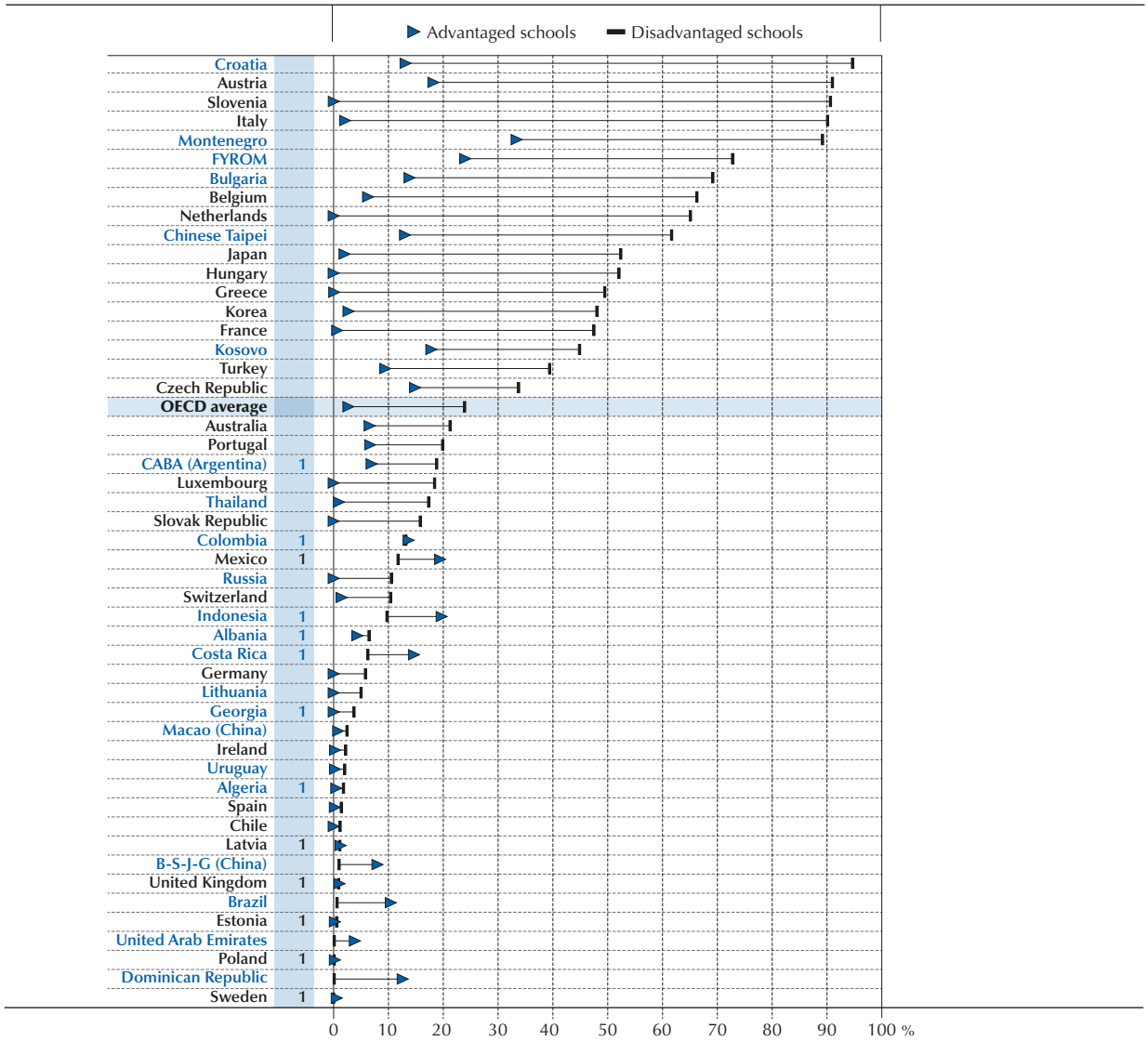
Source: OECD, PISA 2015 Database, Tables II.5.14, II.5.22, II.5.27.

StatLink http://dx.doi.org/10.1787/888933436141

Enrolment in vocational or pre-vocational programmes is largest in Austria, Croatia, FYROM, Montenegro and Slovenia, where more than one in two students follow this curricular orientation at the age of 15. The largest proportions of students enrolled in modular programmes are found in Canada, with all students enrolled in such programmes, and the Slovak Republic with one in four students enrolled in such programmes.

On average across OECD countries, the percentage of students enrolled in vocational or pre-vocational programmes decreased by 1 percentage point between 2009 and 2015. This modest change masks much more substantial trends in some countries. For example, in Romania, the Slovak Republic, and Trinidad and Tobago, the percentage of students enrolled in these programmes dropped by more than 10 percentage points over the period. In the Slovak Republic, the reduction of 35 percentage points in the share of students enrolled in vocational or pre-vocational programmes is mostly explained by a much larger enrolment in modular programmes. Students in Bulgaria and France were more likely – by eight percentage points or more – to attend programmes with a pre-vocational or vocational curriculum in 2015 than their counterparts were in 2009 (Table II.5.16).

Figure II.5.9 ■ **Enrolment in pre-vocational or vocational programmes, by schools' socio-economic profile**



1. Differences between advantaged and disadvantaged schools are not statistically significant (see Annex A3).

Countries and economies are ranked in descending order of the percentage of students in disadvantaged schools who are enrolled in a pre-vocational or vocational programme.

Source: OECD, PISA 2015 Database, Table II.5.17.

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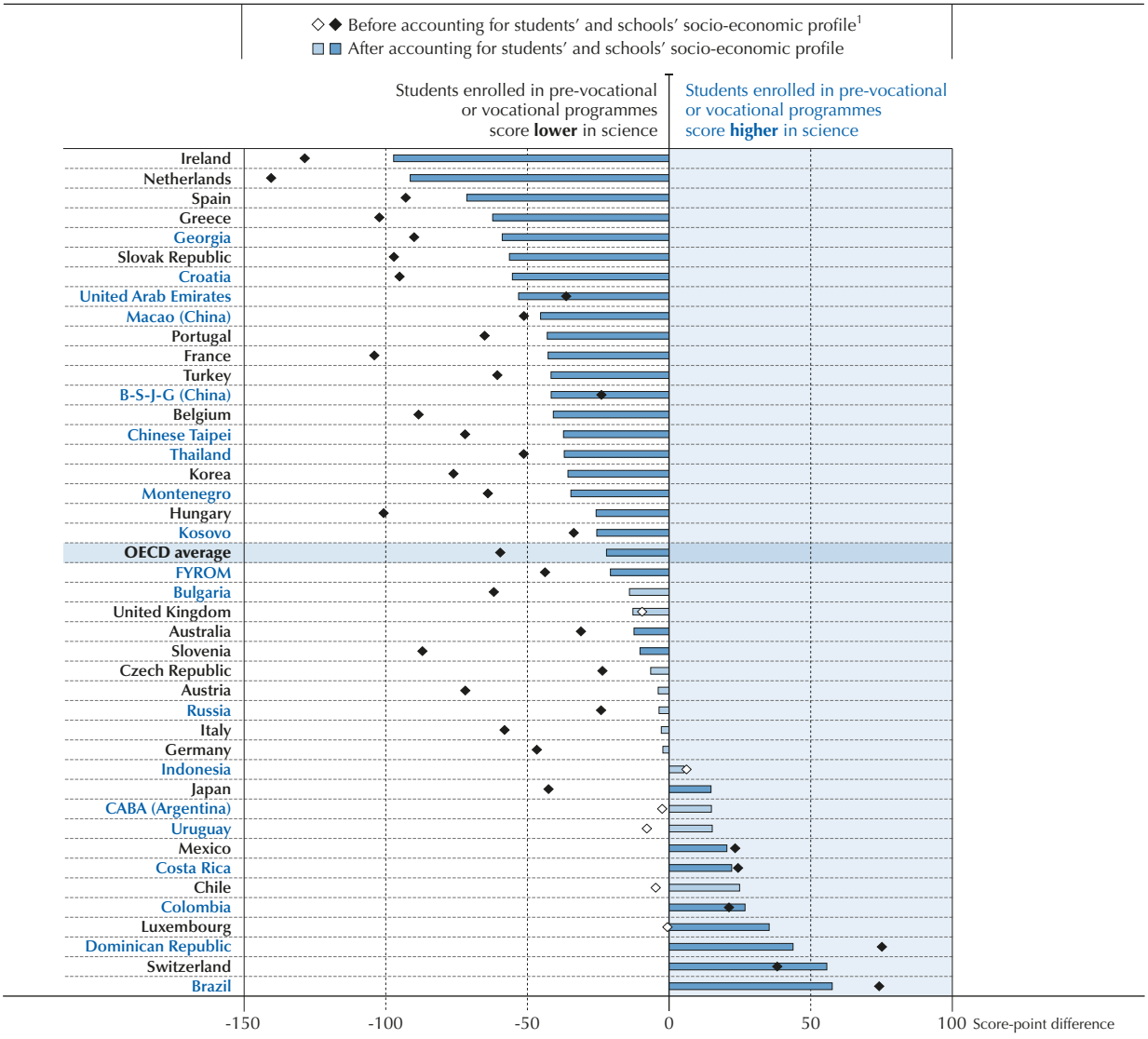
In countries and economies with large enrolments in pre-vocational or vocational programmes, these enrolments vary markedly according to schools' socio-economic profiles. On average across OECD countries, the proportion of 15-year-old students enrolled in a vocational track is 21 percentage points smaller among students in advantaged schools than among students in disadvantaged schools. The difference in enrolment in pre-vocational or vocational programmes related to schools' socio-economic profile is largest in Austria, Croatia, Italy, the Netherlands and Slovenia (Figure II.5.9). In these countries, the difference in enrolment in these programmes between students in advantaged and disadvantaged schools is 60 percentage points or larger. In Austria and Italy, the incidence of enrolment in vocational programmes is also significantly higher, by a margin of 15 percentage points or more, among students attending rural schools than among their peers in urban schools; however, there is no significant difference, on average, across OECD countries. In Austria, Croatia, FYROM and Slovenia, public school students are over 25 percentage points more likely than private school students to enrol in vocational or pre-vocational programmes. Across OECD countries, the difference is a statistically significant 3 percentage points.

Figure II.5.10 ■ **Enrolment in pre-vocational or vocational programmes and science performance**



1. The socio-economic profile is measured by the PISA index of economic, social and cultural status.

Note: Statistically significant differences are marked in a darker tone (see Annex A3).

Countries and economies are ranked in ascending order of the change in science score when students are enrolled in a pre-vocational or vocational programme, after accounting for students' and schools' socio-economic profile.

Source: OECD, PISA 2015 Database, Table II.5.17.

StatLink http://dx.doi.org/10.1787/888933436162

When considering the performance of students enrolled in general, modular and vocational programmes, students in general or modular programmes score 22 points higher on the PISA 2015 science assessment than students in pre-vocational or vocational programmes, on average across OECD countries after accounting for students' and schools' socio-economic profile (Figure II.5.10). However, among countries and economies where enrolment rates in vocational programmes are higher than 10%, these performance differences can amount to as much as 91 score points, as in the Netherlands, approximately 60 score points, as in Greece, or between 40 and 60 score points, as in Belgium, Croatia, France, Portugal and Turkey. In some school systems, such as Brazil, Colombia, Costa Rica, the Dominican Republic, Japan, Luxembourg, Mexico and Switzerland, students in pre-vocational or vocational programmes score higher in science than students in general or modular programmes.

School admissions policies

Admissions and placement policies establish frameworks for selecting students for academic programmes and for streaming students according to career goals, education needs and academic performance. In countries with large differences in student performance between programmes and schools, admissions and grouping policies have high stakes for parents and students. The most effective schools may be those more successful in attracting motivated students; conversely, a "brain drain" of students can undermine schools that cannot attract or retain high-performing students.

PISA 2015 asked school principals to report on the extent to which different criteria are considered for admitting students to their schools. Six potential and not mutually exclusive criteria for admissions were considered: students' academic performance, based on past records, placement tests or both; recommendations of feeder schools; parental endorsement of the instructional or religious philosophy of the school; students' requirement of or interest in a special programme offered by the school; preference to family members of current or former students; and families' residence in a particular area (Table II.5.18).

According to principals' reports, on average across OECD countries, 41% of students attend schools where residence in a particular area is always considered as part of the criteria for admission. In Canada, Greece, Norway, Poland and Switzerland, more than two in three students are enrolled in such schools, whereas in Belgium, Bulgaria, Chile, FYROM, Macao (China), Mexico, Macao (China), Montenegro and Slovenia, the same proportion of students attends schools where residential location is never used to determine admissions.

Students' prior academic performance is another widely used criterion for admissions in PISA-participating countries and economies. On average across OECD countries, 38% of students attend schools where prior academic performance is always considered as a factor in the admissions process. In Bulgaria, Croatia, Hong Kong (China), Hungary, Japan, Singapore, Thailand and Viet Nam, more than eight in ten students attend schools that consider this criterion; but in Finland, Greece, Norway, Spain and Sweden, at least seven out of ten students attend a school that never bases admission on student performance.

Students' requirement of or interest in a special programme is the third criterion most commonly cited by school principals as always used in admissions decisions. On average across OECD countries, 28% of students are in schools where this consideration is always applied. By contrast, fewer than one in five students, on average across OECD countries, attends a school that always considers the recommendation of feeder schools, parental endorsement of the instructional or religious philosophy of the school, or whether an applicant's family members have attended or are attending the school during the admissions process.

On average across OECD countries, the percentage of students in schools where prior academic performance is always considered for admission remained the same between 2012 and 2015; in Chile, Korea and the Netherlands, this percentage shrank by over 15 percentage points. By contrast, the percentage of students in schools that always select students based on their prior academic achievement increased by 35% in Turkey and by 22% in Romania during the period (Table II.5.20).

According to principals' reports, on average across OECD countries, the percentage of students in schools that always use residence in a particular area as part of their selection criteria remained the same between 2012 and 2015. However, in several countries and economies, the importance of residential criteria for school admissions changed significantly over the period. In Lithuania and Turkey, the percentage of students in schools that always select students on the basis of residence decreased by approximately 15 percentage points over the period, while students in Russia and Switzerland were more likely in 2015 than their counterparts were in 2012 (by 15 percentage points or more) to attend schools that always take into account residential rules for admissions.

On average across OECD countries, the percentage of schools that always consider recommendations of feeder schools did not change over the period. By contrast, schools were more likely in 2015 than in 2012 to always consider whether

the parents endorse the philosophy of the school or whether the student requires or is interested in a special programme. On average, schools were also slightly more likely in 2015 than in 2012 to afford special treatment to family members of current or former students.

Are selective admissions policies related to student performance? Results from PISA 2015 suggest that, on average across OECD countries, the association between different school admissions criteria and student performance in science is modest, after accounting for students' and schools' socio-economic profile. For instance, students attending schools that consider prior academic performance as a criterion for admission tend to score five points higher on the science assessment than students enrolled in schools that never use this criterion. But score-point differences in performance related to this policy can be as large as 20 points or more in Austria, B-S-J-G (China), Hungary, Qatar, Turkey and the United Arab Emirates (Table II.5.21).

Three other admissions policies, namely parental endorsement of the instructional or religious philosophy of the school, preference for family members of current or former students, and residential location, are negatively associated with student performance across OECD countries. The performance differences between students in schools that apply and do not apply these criteria are small, ranging between three and five score points, on average.

However, in some countries and economies, selection based on these criteria is more strongly associated with performance. In France, Japan and Uruguay, for example, students attending schools where affinity with the instructional or religious philosophy of the school is considered score 20 points or more below their peers who attend schools that disregard this consideration. In Japan, Kosovo and Chinese Taipei, students attending schools that always or sometimes give priority in admissions to family members of current or former students score more than 20 points below students in schools that do not consider this criterion. And in Qatar, Singapore, Slovenia, Turkey and the United Arab Emirates, students attending schools that apply a catchment area criterion in their admissions policy score 20 or more points below students who attend schools that do not apply this criterion. Overall, the results suggest that, even after accounting for the socio-economic profile of both students and schools, admissions policies at the school level are associated with student performance, although these associations tend to be weak and are observed in less than half of the countries and economies that participated in PISA 2015.

Other policies and practices that sort students between schools

School transfer policies can also affect the extent of horizontal stratification between schools. Transferring students out of school because of low academic achievement, behavioural problems or special learning needs is one way that schools reduce heterogeneity in the learning environment and facilitate instruction for the remaining students. While PISA 2015 did not collect information about school transfers, prior PISA assessments asked school principals about policies governing student transfers, namely about the likelihood of transferring a student to another school for different reasons, including low or high academic achievement, behavioural problems, or special learning needs. In 2012, on average across OECD countries, 13% of students attended schools whose principals reported that the school would "very likely" transfer students because of low achievement, behavioural problems or special learning needs.

Another policy with a potentially substantial impact on horizontal stratification is allowing families to choose their child's school. School choice and its relation to science performance and school characteristics are examined along with other school governance issues in Chapter 4.

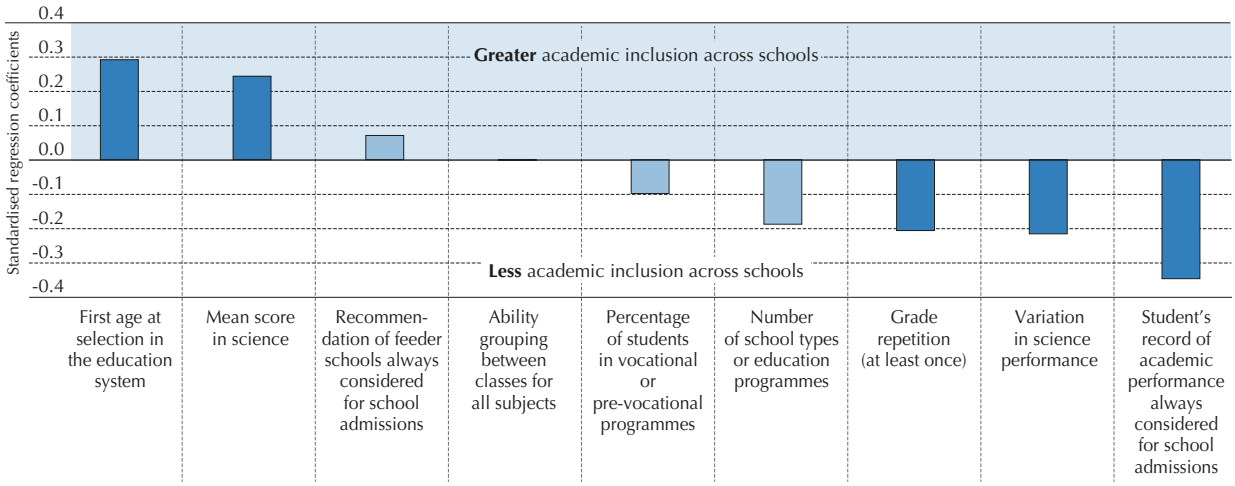
Are stratification policies related to academic inclusion across schools?

One way in which the academic inclusion of an education system can be measured is the extent to which student performance varies between and within schools, in relation to the total variation in student performance. According to the index of academic inclusion, in a perfectly inclusive education system (i.e. a value of "100"), all schools would have the same academic performance, whereas the students within these schools would perform differently. Conversely, a completely exclusive system (i.e. a value of "0") would be one where schools have marked differences in their academic performance, but all the students attending these schools have exactly the same academic performance (see Volume I, Chapter 6 for further details). Many of the horizontal stratification policies described in this section are expected to contribute to the academic inclusion of an education system; but how exactly are these policies associated with academic inclusion?

The system-level analysis in Figure II.5.11 shows that considering students' record of academic performance as a criterion for admission to school, the first age at selection into different academic programmes (i.e. early tracking), and grade repetition are the policies most strongly associated with academic inclusion across schools. The less selective school admissions policies are, the later students are selected into different academic programmes, and the fewer the students who had repeated a grade, the greater the academic inclusion across schools (meaning that student performance varies more within schools than between schools).

Figure II.5.11 ■ **Factors associated with academic inclusion in science performance**

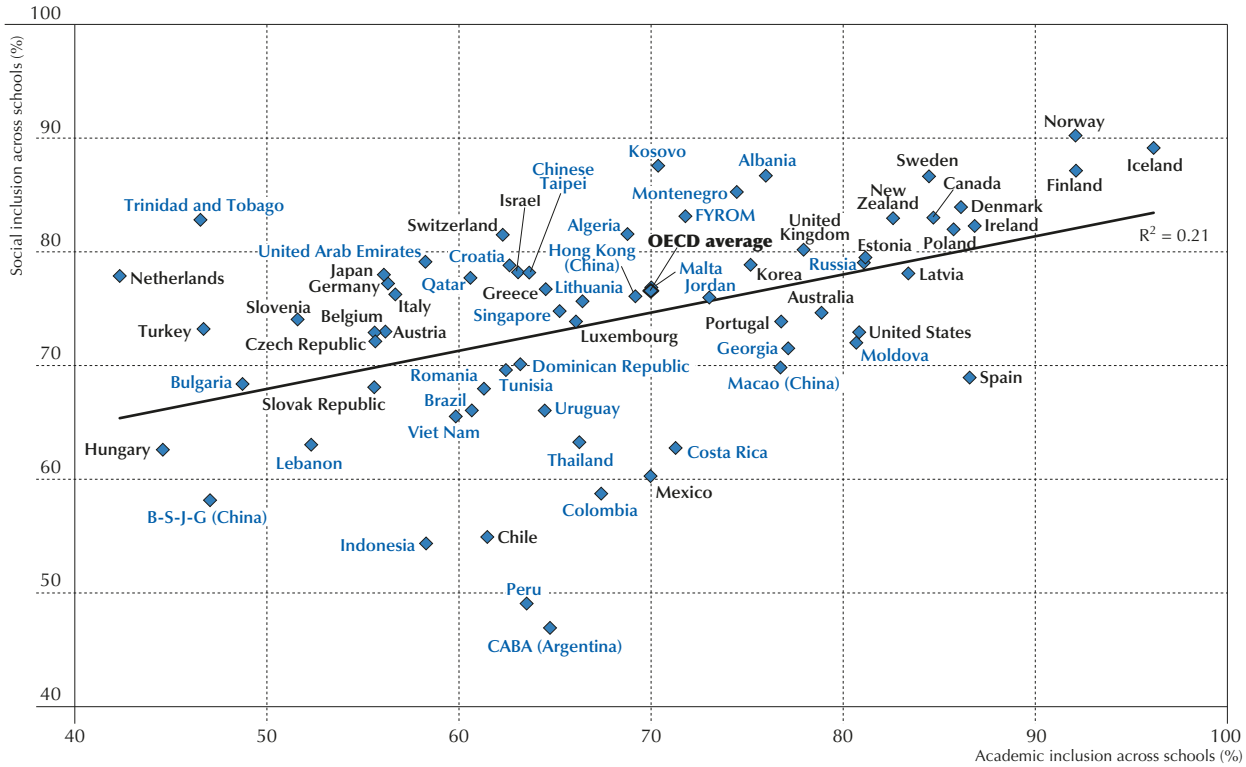
System-level analysis



Notes: All variables are included in the same regression model and explain 62% of the variance in the index of academic inclusion (R^2).
Statistically significant coefficients are marked in a darker tone.
Analysis based on 64 countries and economies.
Source: OECD, PISA 2015 Database.

StatLink http://dx.doi.org/10.1787/888933436172

Figure II.5.12 ■ **Academic and social inclusion across schools**



Notes: The index of academic inclusion is calculated as 100*(1-rho), where rho stands for the intra-class correlation of performance. The intra-class correlation, in turn, is the variation in student performance between schools divided by the total variation in student performance.
The index of social inclusion is calculated as 100*(1-rho), where rho stands for the intra-class correlation of socio-economic status. The intra-class correlation, in turn, is the variation in students' socio-economic status between schools divided by the total variation in students' socio-economic status. The socio-economic status is measured by the PISA index of economic, social and cultural status.
Source: OECD, PISA 2015 Database, Tables I.6.9 and I.6.10.

StatLink http://dx.doi.org/10.1787/888933436189

Interestingly, the percentage of students in pre-vocational or vocational programmes, considering the recommendations of feeder schools as a criterion for school admission, and grouping students by ability between classes (within schools) are not associated with academic inclusion.

Social cohesion may be at a greater risk in education systems where students are both academically and socio-economically segregated across schools (i.e. low academic and social inclusion). Figure II.5.12 shows that school systems that are more socio-economically inclusive (meaning that students' socio-economic status varies more within schools than between schools) also tend to be more academically inclusive. However, some countries and economies, such as the Netherlands, have low academic inclusion (performance varies considerably between schools) and high social inclusion (advantaged and disadvantaged students are relatively evenly distributed across schools), whereas others, like Spain, have high academic inclusion and low socio-economic inclusion (see Box II.5.2 for further information on the Netherlands).

Box II.5.2 **Stratification policies in the Netherlands: Context matters**

The education system in the Netherlands provides an opportunity to consider stratification policies from an equity perspective. The Dutch system makes extensive use of early tracking (horizontal stratification; Figure II.5.8) and school choice (OECD, 2012) and is above the OECD average in grade repetition rates (vertical stratification; Figure II.5.3). Yet the country is a consistently high performer in international assessments and shows satisfactory levels of academic equity. In particular, the Netherlands has policies and practices in place to mediate the effects of early tracking.

As in many other countries, most students in the Netherlands start secondary education at the age of 12. What distinguishes their path through education from that of their counterparts in many other countries is that, after completing primary school, they no longer follow a unified curriculum. Instead, they are selected into one of eight[1] different programmes that will prepare them for vastly different occupations later in life. For those who are educated in comprehensive systems, these choices are typically made much later, at the age of 15 or 16, once students have had more time to develop and explore their academic potential and their career interests (OECD, 2016a).

The eight programmes available to Dutch students are largely organised within four orientations: practical training, which lasts four years; pre-vocational programmes, which also last four years; senior general education, which lasts five years and prepares students for applied studies at the university level; and pre-university secondary education, which lasts six years and prepares students for tertiary education. Nearly half of students enrol in pre-vocational programmes, 28% in general education, 19% in the pre-university track and 2% in practical training. Special secondary education is also available; in 2010, 3% of primary school leavers enrolled in special programmes (OECD, 2016a; Nusche, D. et al., 2014).

Given the high number of education tracks available in the country and the early age at selection into them, one would expect to see considerable discrepancies in academic performance between schools. In fact, the Netherlands' score on the PISA 2015 measure of academic inclusion across schools confirms this: 58% of the variation in students' science performance is attributable to the variation between schools – the highest percentage among all PISA-participating countries and economies (the OECD average is 30%; Figure II.5.12). But these results are not entirely surprising, given students' early selection into tracks based on their performance, the different curricula they follow in distinct tracks and likely peer effects.

However, the country's score on the PISA 2015 index of social inclusion is near the OECD average (Figure II.5.12). Specifically, 22% of the variation in students' socio-economic status lies between schools, compared to the OECD average of 23%. The low academic inclusion in the Netherlands is not associated with greater socio-economic segregation of students across schools. This could be one of the reasons why, despite using grade repetition and placing students in different academic programmes at an early age, only 12.5% of the variation in science performance is attributed to students' socio-economic status (Table I.6.12a), compared to 12.9% on average across OECD countries. It may also explain why the proportion of low performers in science (those who score below proficiency Level 2) among disadvantaged students is smaller in the Netherlands than the OECD average. Specifically, in the Netherlands, 30% of students in the bottom quarter of the PISA index of economic, social and cultural status are low performers in science compared with 34% on average across OECD countries. ...

Almost universal pre-primary education. Although compulsory education begins at age 5, enrolment in early childhood education and care at age 4 is nearly universal in the Netherlands. Unlike many other countries, a substantial proportion (nearly one-third) of spending on pre-primary education comes from public funds. Day care centres and pre-kindergartens also offer free supplementary programmes for disadvantaged children between the ages of 2.5 and 6 years for up to four days per week. These programmes, called VVE (*voor en vroeg schoolse educatie*), focus on Dutch language development and are publicly funded.

Compulsory education with autonomy and accountability. Education is compulsory from the age of 5 to 18. Primary school lasts 8 years, typically from the age of 4 to 12. There is no national curriculum; instead, there are national attainment targets and reference levels for literacy and numeracy, which gives schools and teachers considerable freedom in selecting content and teaching methods. At the end of primary school, students are selected into one of the education tracks offering practical training, pre-vocational, general and pre-university secondary education. Students are assigned to various tracks based on their performance on a national examination at the end of primary school and on their primary teachers' recommendation. Responsibility over national education policy, examinations and standards of quality lies with central authorities while matters concerning school management and school policies are largely decided at the local level by school boards and schools. Teachers are evaluated every three or four years, and the results of their appraisal can have an impact on their career advancement.

School choice. Parents have considerable freedom in selecting their child's school, but schools may also establish their selection criteria, especially at the secondary level. School choice is valued and abundant, particularly in densely populated areas, where nearly 90% of primary school children live within one kilometre of their school (OECD, 2016a).

Equitable allocation of funds. Public funds account for most of the spending on educational institutions at all levels. With the exception of some schools funded entirely by private sources, public funds are allocated equitably between public and private schools, provided that certain criteria are met. This may help prevent serious imbalances in school resources and in schools' socio-economic profile. The Netherlands is one of the PISA-participating education systems where principals in socio-economically disadvantaged schools are not more concerned than principals in advantaged schools about the resources at their school (see Tables II.6.2 and II.6.15 in Chapter 6). It is also one of the education systems where principals in public schools are equally concerned about the material and human resources at their school as principals in private schools.

Additional funding mechanisms. Schools receive block grants based on their student population, and special funds are available to schools that serve disadvantaged students as well as those with special needs. At the primary level, schools receive grants from the government based on the educational background of the parents. At the secondary level, schools also receive extra funds for disadvantaged students; those funds, however, are not based on the educational background of the parents, but on school location. Targeted funding is also available to schools for special purposes (e.g. dropout prevention) and weighted formulas are used to ensure social diversity in schools. At the tertiary level, even though students pay a tuition fee, they are entitled to grants and loans based on their family's socio-economic status. Performance-based budgeting is another option for schools to help boost the performance of students, teachers and school leaders at these levels.

Higher-than-OECD-average spending on secondary education. Expenditure per student in general programmes is USD 10 804 compared to the OECD average of USD 9 484. In vocational programmes, annual spending per student is more than twice the OECD average: USD 16 002 (the highest amount among countries with available data) compared to the average of USD 7 380 (OECD, 2015).

Wide range of vocational education programmes. The entry point of vocational training is the pre-vocational secondary education programme that is offered from grades 7 to 10 and prepares students for further vocational training or general education. Pre-vocational programmes consist of four types of schooling, each with a special emphasis: theoretical; combined (mixing theoretical and practical subjects); middle-management (for those interested in further vocational training); and basic vocational (a mixture of general education and practical experience). Upper secondary vocational education (starting at grade 11) is also diversified, but well-structured. Training is available at four different levels: training to become an assistant (level 1) lasts one year or less; basic training (level 2) requires between 2 and 3 years; professional training (level 3) lasts 2 to 4 years; and middle management

...

training (level 4) lasts about 4 years. Upper secondary vocational education operates on two parallel structures: apprenticeship and school-based tracks, both of which combine learning and working. The vocational system has strong ties to the labour market: in 2012, more than half of the labour force had a vocational qualification (OECD, 2016a). Relatively few young people in the Netherlands are neither employed nor in education or training (NEET).

General education. Two secondary programmes prepare students for higher education. Students in the general education track typically pursue their university-level education in applied sciences, while those in the pre-university track can gain access to all universities. Even though a considerable proportion of students is selected into vocational tracks, the share of 25-34 year-olds who attain tertiary education is larger in the Netherlands than the OECD average: 44% compared to the average of 41% (OECD, 2016b). But the pre-university track appears to be relatively inaccessible to certain groups of students: in the 2008/09 school year, students from the most advantaged families were four times more likely to be enrolled in that track than those from the most disadvantaged backgrounds (OECD, 2016a).

Track mobility and access to tertiary education. The risk of placing such young students in secondary programmes that do not correspond to their current or potential performance can, in principle, be offset by some built-in mechanisms in the system. First, students are allowed to transfer between programmes, although in reality, practical barriers may discourage such mobility. Second, in the first years of secondary school, teachers can use their discretion and, when needed, delay the selection of students by placing them in "bridge classes". Third, a legal framework of "scaffolding" diplomas allows students, upon graduation from their track level, to automatically proceed to the next level. This enables graduates from every programme to pursue tertiary education, although graduates from vocational programmes will be on a longer route.

Career guidance. Extensive counselling and career guidance is available at critical transition points (from primary to secondary education and from secondary to tertiary education) to help guide students through the various choices of programmes available.

Teaching, a valued profession. Teachers' salaries are higher than the OECD average, but relatively lower when compared to similarly educated professionals in the country (OECD, 2016b). Compared to the OECD average, a larger proportion of teachers in the Netherlands considers teaching to be a valued profession in society. Renewed efforts are underway to attract high-performing students into teaching, improve pre-service training, provide support to teachers at various stages of their career, and strengthen a results-oriented culture (OECD, 2016a).

While early tracking generally exacerbates existing social and economic disparities among students, the Netherlands example shows that it can be mitigated to some extent. As students progress into secondary education, even those placed in the lower tracks are unlikely to be in schools that suffer from a shortage or lack of resources or staff. The rigidity of the tracking system may also be softened by the possibility of transfers. In short, the education system behind early tracking is well-structured, well-resourced, and includes various opportunities along students' path through education to correct some obvious socio-economic imbalances, starting from early childhood all the way up to tertiary education.

Note

1. The eight programmes available to 12-year-old students include: practical training (PRO), pre-vocational education (VMBO; 4 levels), senior general secondary education (HAVO), pre-university education (VWO), and special secondary education (VSO). The seven programmes available to 15-year-old students (Table II.5.27) include all the programmes above except the special secondary education, which varies in duration.

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Nusche, D., et al. (2014), *OECD Reviews of Evaluation and Assessment in Education: Netherlands 2014*, OECD Reviews of Evaluation and Assessment in Education, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264211940-en.

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Horizontal stratification within schools: Ability grouping

Nearly all schools have to decide how to handle diversity in students' learning abilities and interests. Ability grouping refers to the practice of sorting students within the schools they attend based on ability or prior performance, most often with the objective of better meeting students' needs by creating a more homogeneous learning environment. Ability grouping may occur within or between classes in a given school.

Some schools mix students of all levels of performance into the same classrooms and teach them the same curriculum. This approach relies heavily on teachers' capacity to engage students with a wide range of abilities, which can be challenging, but can create greater opportunities for students to learn from each other. Other schools sort their lowest-performing and highest-performing students into different classrooms, and offer them different curricula or the same curriculum, but at different levels of difficulty ("ability grouping"). While grouping by ability creates more homogeneous classes, students in lower-ability groups often do not benefit as much as those in the higher-ability groups from this way of sorting students, partly because underachieving students cannot learn from or be inspired by their higher-performing peers if they are not sitting in the same classroom (Lucas, 1999).

Ability grouping within the same school appears to be becoming popular again (Garelick, 2013). A recent field experiment conducted by Duflo, Dupas and Kremer (2011) in Kenya observed significant academic gains from separating students by achievement, including low-performing students, into different classes. These gains persisted one year after the programme ended. Similar beneficial effects of sorting students by achievement were observed by Borman and Hewes (2002), Collins and Gan (2013) and Zimmer (2003) in the United States. However, correlational evidence at the system level suggests that there is only a weak relationship between ability grouping within schools and the share of low/top performers in an education system (OECD, 2016c).

PISA 2015 asked school principals whether their schools organise instruction differently for students with different abilities. Principals reported separately on whether students were grouped by ability into different classes or within the same classes, and whether this happened for all, some or none of the subjects.

Ability grouping between classes

Across OECD countries, 46% of students attend schools whose principal reported that students are grouped by ability into different classes (Table II.5.22). This comprises 38% of students who are grouped for some subjects, and 8% of students who are grouped for all subjects. However, the incidence of ability grouping between classes varies widely among countries. In Austria, Brazil, Georgia, Greece, Italy, Latvia, Moldova, Norway, Portugal and Uruguay, less than 20% of students are grouped by ability into different classes. By contrast, in Australia, Canada, Hong Kong (China), Ireland, Israel, Malta, New Zealand, Singapore, Thailand, the United Kingdom, the United States and Viet Nam, at least three in four students receive instruction in at least one subject in an ability-grouped class.

Sorting students into different classes for all subjects based on their ability is most common in Algeria, Jordan, Luxembourg, Montenegro, the Netherlands, Thailand and Tunisia, where this practice affects between 30% and 60% of students (Table II.5.22). A substantial proportion of students in these countries is also grouped by ability for some subjects.

Between 2006 and 2012, the percentage of students who are grouped into different classes increased by 1.1% across OECD countries (Table II.5.24). This slightly higher incidence of ability grouping reflects a 4 percentage-point increase in the percentage of students who are grouped for only some subjects and a 3 percentage-point decrease in the percentage of students grouped for all classes. Hong Kong (China) had the largest increase in the incidence of ability grouping between classes (43 percentage points), reflecting a wider use of subject-specific ability grouping. Principals in Brazil, Korea and Romania reported a reduction in ability grouping of more than 20 percentage points. In Brazil, this largely reflects less ability grouping for all subjects, while in Korea the reduction was almost entirely due to reduced subject-specific ability grouping.

Ability grouping within classes

Ability grouping within classes is more common than ability grouping between classes. On average across OECD countries, 55% of students attend classes in at least one subject where there is ability grouping (Table II.5.22). This comprises 50% of students who are instructed in some subjects in classes where ability grouping is used and 5% of students where ability grouping within a class is used for all subjects.

In 24 countries and economies, more than one in two students attend schools that sort students by ability, within classes, for some but not all subjects. This proportion is highest in Denmark, Hong Kong (China), Hungary, Israel, the Netherlands, New Zealand, Poland, Singapore and the United Kingdom, where between 70% and 80% of students attend such schools. Within-class sorting for all school subjects is most common in Algeria, B-S-J-G (China), Costa Rica, Jordan, Qatar, Tunisia and the United Arab Emirates, where between 30% and 55% of students are systematically sorted by ability within their classes. By contrast, in Ciudad Autónoma de Buenos Aires (Argentina) (hereafter "CABA [Argentina]"), Belgium, Brazil, Georgia, Greece, Portugal, Trinidad and Tobago, Turkey and Uruguay, fewer than one in three students attends a school that groups students by ability within their classes (Table II.5.22).

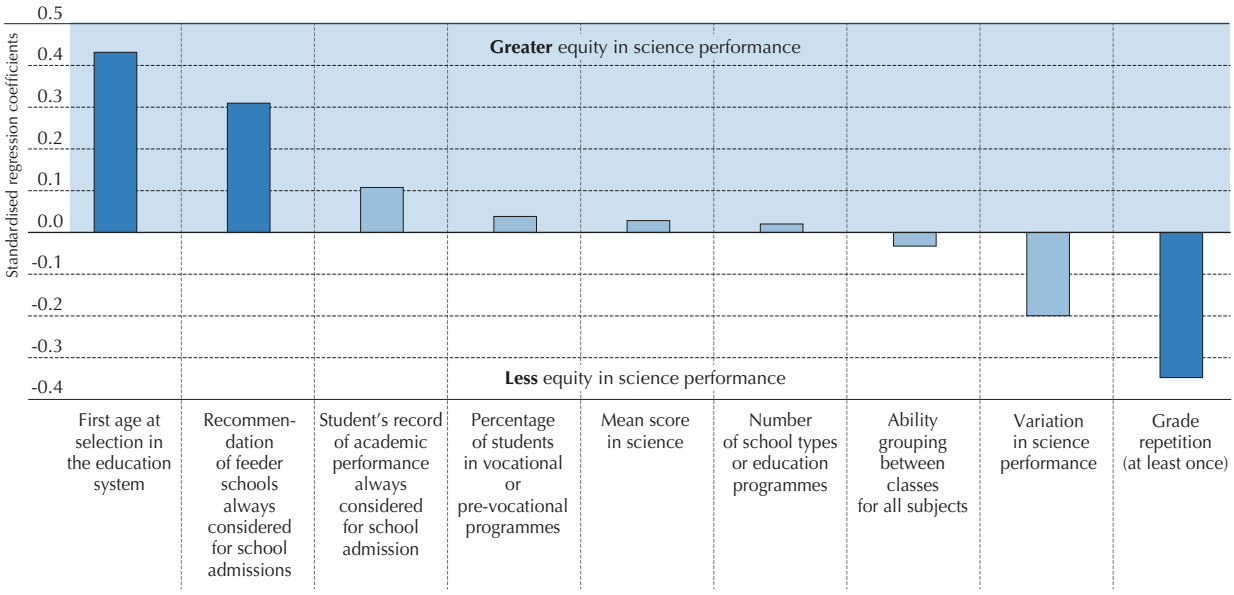
Grouping students by ability for specific subjects became more common between 2006 and 2015. On average across OECD countries, the share of students in schools where students are grouped by ability within classes for some subjects increased by 4 percentage points over the period, while there was no significant change in the percentage of students who are sorted within their classes for all subjects (Table II.5.24). In Hong Kong (China), Luxembourg, Macao (China), Poland and the United States, more than one in two students in 2015 attended classes where there is ability grouping for at least for one subject, while this practice involved fewer than one in two students in 2006. The proportion of students subject to within-class ability grouping increased by more than 25 percentage points in each of these countries during this time. By contrast, ability grouping for some subjects became much less common in Brazil, Indonesia and Jordan, where the percentage of students grouped for at least some subjects shrank by more than 25 percentage points over the period.

HOW POLICIES ON GROUPING AND SELECTING STUDENTS ARE RELATED TO EQUITY IN SCIENCE PERFORMANCE

Policies on stratification, such as grade repetition or placing students into different programmes or schools at an early age, are related to equity in science performance (or the extent to which students' socio-economic status is associated with student performance in science). Comparing 64 education systems with data for all 9 variables analysed, equity in science performance is most strongly associated with the age at first selection into the education system, grade repetition, and whether schools always consider the recommendations of feeder schools for school admissions (Figure II.5.13).

Figure II.5.13 ■ **Factors associated with equity in science performance**

System-level analysis



Notes: Statistically significant coefficients are marked in a darker tone (see Annex A3).
All variables are included in the same regression model and explain 44% of the variance in equity in science performance (R^2).
Analysis based on 64 countries and economies.
Source: OECD, PISA 2015 Database.

StatLink http://dx.doi.org/10.1787/888933436198

Figure II.5.14 ■ Use of selected stratification policies in PISA-participating countries

Countries/economies are **above** the OECD average
Countries/economies are not statistically different from the OECD average
Countries/economies are **below** the OECD average

		Grade Repetition	Tracking	School Admission based on Academic Performance	Between Classroom Ability Grouping
		Percentage of students who have repeated a grade at least once in primary, lower secondary or upper secondary school	Age of selection into different programmes	Percentage of students in schools whose principals reported that "students' records of academic performance (including placement tests)" are "always" considered for admittance	Percentage of students in schools where students are grouped by ability into different classes for all subjects
		%		%	%
	OECD average	11.3	14.3	38.4	7.8
OECD	Australia	7.1	16	34.0	1.6
OECD	Austria	15.2	10	73.8	4.0
OECD	Belgium	34.0	12	28.4	13.1
OECD	Canada	5.7	16	30.5	6.8
OECD	Chile	24.6	16	17.3	5.6
OECD	Czech Republic	4.8	11	53.6	3.5
OECD	Denmark	3.4	16	9.0	0.2
OECD	Estonia	4.0	16	27.5	6.6
OECD	Finland	3.0	16	5.5	2.3
OECD	France	22.1	15	33.9	3.4
OECD	Germany	18.1	10	47.8	8.0
OECD	Greece	5.0	15	6.3	0.3
OECD	Hungary	9.5	11	81.3	0.0
OECD	Iceland	1.1	16	15.7	0.0
OECD	Ireland	7.2	15	22.3	2.0
OECD	Israel	9.0	15	52.0	9.3
OECD	Italy	15.1	14	49.2	7.6
OECD	Japan	0.0	15	92.3	10.1
OECD	Korea	4.7	15	44.7	4.7
OECD	Latvia	5.0	16	30.5	5.4
OECD	Luxembourg	30.9	13	74.9	33.0
OECD	Mexico	15.8	15	59.6	10.0
OECD	Netherlands	20.1	12	74.5	56.1
OECD	New Zealand	4.9	16	37.8	3.2
OECD	Norway	0.0	16	5.6	0.5
OECD	Poland	5.3	16	16.8	2.7
OECD	Portugal	31.2	15	30.9	4.3
OECD	Slovak Republic	6.5	11	57.0	12.9
OECD	Slovenia	1.9	14	32.6	0.2
OECD	Spain	31.3	16	5.3	6.0
OECD	Sweden	4.0	16	6.0	0.6
OECD	Switzerland	20.0	12	57.9	29.2
OECD	Turkey	10.9	11	77.0	4.2
OECD	United Kingdom	2.8	16	21.1	8.5
OECD	United States	11.0	16	30.7	7.1
Partners	Albania	2.6	15	59.9	3.4
Partners	Algeria	68.5	m	62.2	40.3
Partners	Brazil	36.4	15	23.6	7.4
Partners	B-S-J-G (China)	20.8	15	40.2	17.6
Partners	Bulgaria	4.8	13	83.1	7.6
Partners	CABA (Argentina)	19.1	a	32.2	0.0
Partners	Colombia	42.6	15	49.9	13.6
Partners	Costa Rica	31.4	15	47.8	21.4
Partners	Croatia	1.6	14	95.4	11.7
Partners	Dominican Republic	33.9	16	31.1	12.8
Partners	FYROM	3.1	15	69.1	21.4
Partners	Georgia	1.5	15	29.7	1.9
Partners	Hong Kong (China)	17.2	15	93.7	15.9
Partners	Indonesia	16.2	15	64.6	21.9
Partners	Jordan	7.6	16	27.7	31.9
Partners	Kosovo	3.8	m	77.8	11.2
Partners	Lebanon	26.5	m	77.9	15.1
Partners	Lithuania	2.5	16	27.1	14.5
Partners	Macao (China)	33.8	15	79.3	12.5
Partners	Malta	7.0	16	35.4	6.8
Partners	Moldova	3.0	m	47.7	2.9
Partners	Montenegro	1.6	15	60.0	34.2
Partners	Peru	25.6	16	21.2	7.5
Partners	Qatar	17.4	16	50.9	22.1
Partners	Romania	5.9	14	53.0	18.7
Partners	Russia	1.5	16	18.9	14.6
Partners	Singapore	5.4	12	87.4	12.2
Partners	Chinese Taipei	0.6	15	43.5	5.2
Partners	Thailand	6.0	15	90.0	32.7
Partners	Trinidad and Tobago	33.4	m	69.1	8.5
Partners	Tunisia	34.3	m	62.1	52.1
Partners	United Arab Emirates	11.8	15	67.6	9.6
Partners	Uruguay	35.3	15	26.4	6.7
Partners	Viet Nam	7.2	15	80.2	17.8

Source: OECD, PISA 2015 Database, Tables II.5.9, II.5.18, II.5.22 and II.5.27.

StatLink http://dx.doi.org/10.1787/888933436200

The later students are selected into different academic programmes/schools and the lower the percentage of students who had repeated a grade, the greater the equity in science performance, even after accounting for the school's mean score in science and the variation in student performance. Also, the higher the percentage of students enrolled in schools where the recommendations of feeder schools are considered for school admissions, the greater the equity in science performance. Other policies on selecting and grouping students, including grouping students between classes by ability, the percentage of students in vocational programmes, or the number of school types or education programmes, are not associated with equity in science performance.

This chapter concludes with a snapshot of selected stratification policies used by PISA-participating countries (Figure II.5.14).

Notes

1. Analysis based on the Herfindahl index. See Annex A3 for further clarification.

2. Other factors, for which PISA does not have detailed information, might be responsible for differences in the grade levels of 15-year-old students. These factors include special education (these students often follow a different timeframe for progression than average students) or different regulations about age at entrance across regions within countries.

3. Although the term "15-year-olds" is used to describe the students who sit the PISA test, in fact the students may be between 15 years and 3 months and 16 years and 2 months old at the time of assessment. The exact cut-off date for registering a child (in primary education) could therefore result in different grade levels for children within this one-year age range.

4. See Boxes II.2.1, II.2.2 and II.2.3 in Chapter 2 for a description of how PISA defines socio-economically disadvantaged and advantaged schools, public and private schools, and urban and rural schools.

5. Level 1 in the 1997 ISCED classification corresponds to primary education or the first stage of basic education. Usually, children begin this level of education between the ages of 5 and 7.

6. Level 0 in the 1997 ISCED classification corresponds to the initial stage of organised instruction, and is typically designed to introduce very young children to a school-like environment. This level of education is aimed at children from age 3 to the typical age at which they start primary education in each country/economy.

7. The results between primary and secondary education are not strictly comparable since students who sat the PISA test generally have a few more school years until they finish secondary education.

8. All the variables mentioned in this section have been included in the same regression model.

9. System-level data that are not derived from the PISA 2015 student or school questionnaire are extracted from the OECD's annual publication, *Education at a Glance*, for those countries and economies that participate in that periodic data collection. For other countries and economies, a special system-level data collection was conducted in collaboration with PISA Governing Board members and National Project Managers.

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