2

Selecting and Grouping Students

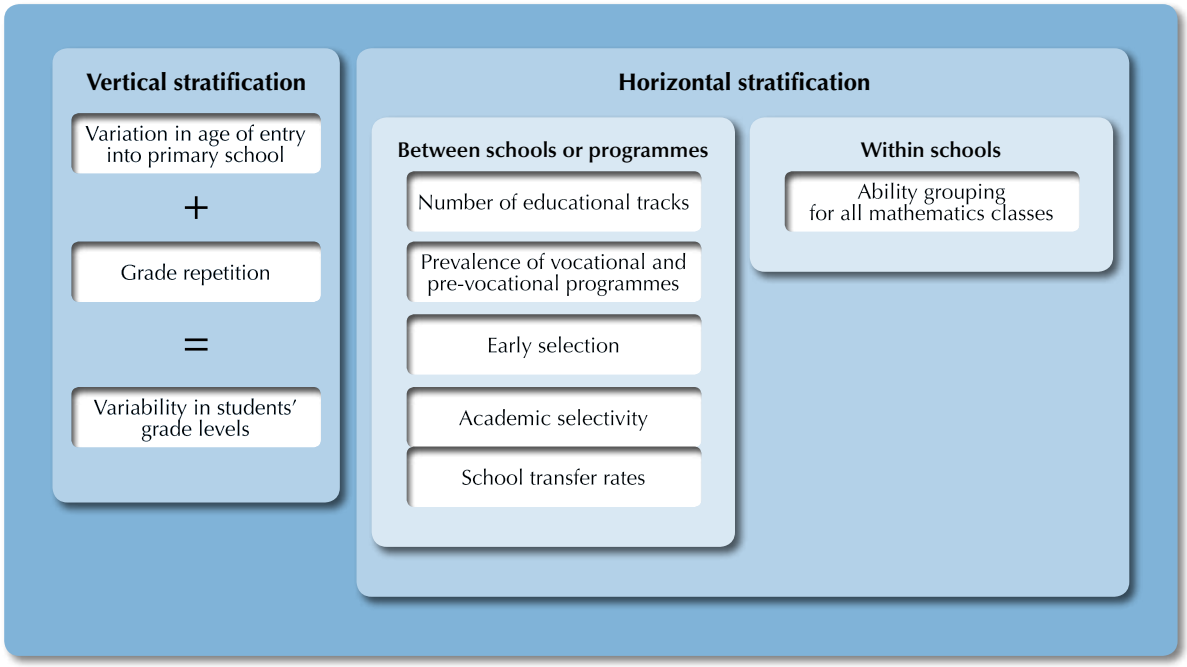
This chapter discusses the ways in which students are selected and grouped into certain education levels, grade levels, schools, programmes and different classes within schools based on their performance. It offers an analysis of whether students in school systems with similar degrees of stratification share similar dispositions for learning mathematics, and examines how stratification practices and policies have changed since 2003.

This chapter focuses on how 15-year-old students are selected and grouped into education levels, grade levels, different schools, programmes, and different groups within schools. The reason for this focus is that, as shown in Chapter 1, in highly stratified systems, education is less equitable.

This chapter first describes various ways of grouping and selecting students, hereafter referred to as vertical and horizontal stratification (Figure IV.2.1). Then comparisons are made across countries to examine which features related to social and academic inclusion are shared among school systems with similar degrees of stratification. This is followed by a section analysing whether students in school systems with similar degrees of stratification share similar dispositions for learning mathematics. The chapter concludes with a look at how systems' selection and grouping of students have changed since PISA 2003.

■ Figure IV.2.1 ■

Selecting and grouping students as covered in PISA 2012



What the data tell us

- Across OECD countries, an average of 12% of students reported that they had repeated a grade at least once. In Japan, Malaysia and Norway, no 15-year-old student had repeated a grade, while in Colombia and Macao-China over 40% of students had repeated a grade at least once. Among the 13 countries and economies with grade repetition rates of more than 20% in 2003, these rates dropped by an average of 3.5 percentage points by 2012, and fell sharply in France, Luxembourg, Macao-China, Mexico and Tunisia.
- When comparing two students with similar mathematics performance, the student who is more socio-economically disadvantaged than the other is more likely to have repeated a grade.
- Students in comprehensive school systems – those that do not separate students into different schools according to their performance, such as the systems in Australia, Canada, Iceland, New Zealand, the United Kingdom and the United States – tend to regard learning mathematics as important for their later life, regardless of the system's overall performance.

HOW STUDENTS PROGRESS THROUGH THE SCHOOL SYSTEM

One-room schools, where all students, regardless of age, shared the same classroom and were taught by the same teacher, were commonplace in many countries in the early 19th century. As student populations grew in size and diversity, schooling was increasingly differentiated "vertically": younger students would concentrate on basic studies, and as they progressed, they would enter more complex and differentiated study programmes. This vertical stratification resulted in the creation of different grades and education levels (Sorensen, 1970; Tyack, 1974). This section describes two of the main factors that have an impact on 15-year-old students' grade level: the age of entry into the school system and grade repetition. It then examines how school systems differ in the way 15-year-old students are distributed across grade and education levels.

Students' ages at entry into the school system

Most school systems establish an age of entry into formal schooling. However practical this may be, children do not necessarily develop cognitively or emotionally at the same rate, and certain parents may believe that their children could benefit from starting schooling earlier, or waiting an extra year before they start schooling, a practice known as academic redshirting (Graue and DiPerna, 2000).

In PISA 2012, students were asked at what age they entered primary school, in order to assess the degree of heterogeneity in the student population that schools and teachers have to manage. In general, most students will be within one year of each other when they enter school in education systems that enforce a specific starting age. 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 of entry. Thus, the proportion of students who entered school outside this modal two-year window indicates, approximately, the diversity of students' ages at entry into the school system.

Across OECD countries, an average of 51% of students reported that they started primary school at the age of six and 27% reported that they started at the age of seven. Some 20% of students started primary school at the age of five or earlier, while 2% started at the age of eight or older.[1] In 41 participating countries and economies, 90% or more of students started primary school within the national modal two-year window. In Japan and Poland, all students reported that they had started primary school within that window. By contrast, students in Brazil, Qatar, Canada, the United Arab Emirates, Peru and Colombia started primary school when they were younger or older. In Brazil, 67% of students started primary school at the age of six or seven, while 20% started at the age of eight or older and 13% started at the age of five or younger. At least one in two students in Ireland reported that they had started primary school at the age of four, but school is compulsory only at age six (Figure IV.2.2 and Table IV.2.1).

Grade repetition

Grade repetition is also a form of vertical stratification as it seeks to adapt curricula to student performance, thus creating more homogeneous classes. However, Chapter 1 explains that grade repetition is negatively related to equity in education: systems where more students repeat a grade tend to show a stronger impact of students' socio-economic status on their performance.

PISA asked 15-year-old students whether they had repeated a grade in primary, lower secondary or upper secondary school. Across OECD countries, an average of 12% of students reported that they had repeated a grade at least once: 7% of students had repeated a grade in primary school, 6% of students had repeated a lower secondary grade, and 2% of students had repeated an upper secondary grade. In Japan, Malaysia and Norway, no 15-year-old student reported to have repeated a grade, while in 24 countries and economies, over 0% but 5% of students or fewer reported that they had repeated a grade. In contrast, between 20% and 29% of students in France, the Netherlands, Peru, Chile and Germany had repeated a grade at least once; between 30% and 39% of students in Tunisia, Uruguay, Argentina, Belgium, Brazil, Luxembourg, Portugal, Costa Rica and Spain had repeated a grade at least once; and in Macao-China and Colombia over 40% of students had repeated a grade at least once (Figure IV.2.2 and Table IV.2.2).

Among these systems with high rates of grade repetition, over 20% of students in Portugal, Macao-China, Colombia, Uruguay, Luxembourg, the Netherlands, Brazil and Belgium had repeated a grade at least once in primary school. Over 20% of students in Tunisia, Macao-China, Colombia, Spain, Uruguay, Argentina and Costa Rica had repeated a lower secondary grade at least once; and over 10% of students in Turkey, Chile and Italy had repeated an upper secondary grade at least once (Table IV.2.2). Caution is required in comparing these results across systems, since the number of years in primary, lower secondary and upper secondary education differs according to the structure of the school systems.

■ Figure IV.2.2 ■

How students are grouped in a school system (vertical stratification)

		Age of entry into primary school		Repeaters	15-year-olds in different grades and education levels			
		Average age of entry into primary school	Percentage of students who started primary school at: (Age 5 or younger; Age 6; Age 7 or older)	Percentage of students who reported that they had repeated a grade at least once in primary, lower secondary or upper secondary school	Percentage of students in: (Grade below the modal grade; The modal grade; Grade above the modal grade)	Percentage of students in: Lower secondary education (%)	Percentage of students in: Upper secondary education (%)	Variation in student grade level: S.D.
OECD	Australia	5.2		7.5		81	19	0.55
	Austria	6.2		11.9		6	94	0.61
	Belgium	5.9		36.1		10	90	0.67
	Canada	5.2		8.0		14	86	0.42
	Chile	6.0		25.2		5	95	0.71
	Czech Republic	6.4		4.9		56	44	0.59
	Denmark	6.6		4.7		100	0	0.41
	Estonia	6.9		3.5		98	2	0.47
	Finland	6.7		3.8		100	0	0.39
	France	5.9		28.4		30	70	0.57
	Germany	6.2		20.3		98	2	0.67
	Greece	6.3		4.5		5	95	0.33
	Hungary	6.7		10.8		12	88	0.63
	Iceland	5.8		1.2		100	0	0.00
	Ireland	4.5		8.6		62	38	0.75
	Israel	6.2		1.9		13	87	0.41
	Italy	5.9		17.1		2	98	0.51
	Japan	6.0		0.0		0	100	0.00
	Korea	6.6		3.6		6	94	0.24
	Luxembourg	6.2		34.5		60	40	0.67
	Mexico	6.1		15.5		37	63	0.68
	Netherlands	6.1		27.6		70	30	0.57
	New Zealand	5.1		5.4		6	94	0.35
	Norway	5.8		0.0		100	0	0.08
	Poland	7.0		4.2		100	0	0.25
	Portugal	5.9		34.3		45	55	0.75
	Slovak Republic	6.3		7.6		45	55	0.69
	Slovenia	6.2		3.4		5	95	0.32
	Spain	5.8		32.9		100	0	0.67
	Sweden	6.8		4.0		98	2	0.25
	Switzerland	6.5		19.9		77	23	0.63
	Turkey	6.9		14.2		3	97	0.61
	United Kingdom	5.0		2.7		0	100	0.22
	United States	5.9		13.3		12	88	0.55
	OECD average	6.1		12.4		46	54	0.48
Partners	Albania	6.4		3.2		42	58	0.55
	Argentina	5.9		36.2		37	63	0.86
	Brazil	7.2		36.1		20	80	0.95
	Bulgaria	6.9		4.8		5	95	0.36
	Colombia	6.0		40.6		39	61	1.11
	Costa Rica	6.6		33.5		61	39	0.91
	Croatia	6.7		2.7		0	100	0.40
	Hong Kong-China	6.1		15.9		33	67	0.68
	Indonesia	6.3		15.5		48	52	0.80
	Jordan	6.0		7.9		100	0	0.32
	Kazakhstan	6.5		1.6		72	28	0.55
	Latvia	6.8		8.5		96	4	0.49
	Liechtenstein	6.6		18.9		88	12	0.69
	Lithuania	6.6		2.5		100	0	0.44
	Macao-China	6.2		41.2		55	45	0.90
	Malaysia	7.0		0.0		4	96	0.20
	Montenegro	6.6		1.3		0	100	0.40
	Peru	6.1		27.5		30	70	0.97
	Qatar	5.8		13.3		18	82	0.72
	Romania	6.8		4.5		100	0	0.37
	Russian Federation	6.7		2.5		82	18	0.53
	Serbia	6.9		1.6		2	98	0.19
	Shanghai-China	6.7		9.1		44	56	0.65
	Singapore	6.7		5.7		2	98	0.42
	Chinese Taipei	6.8		0.8		36	64	0.48
	Thailand	6.2		3.3		21	79	0.47
	Tunisia	5.9		38.7		37	63	0.95
	United Arab Emirates	6.0		12.0		15	85	0.75
	Uruguay	5.9		37.9		41	59	0.95
	Viet Nam	6.2		7.7		10	90	0.45

Source: OECD, PISA 2012 Database, Tables IV.2.1, IV.2.2 and IV.2.4.

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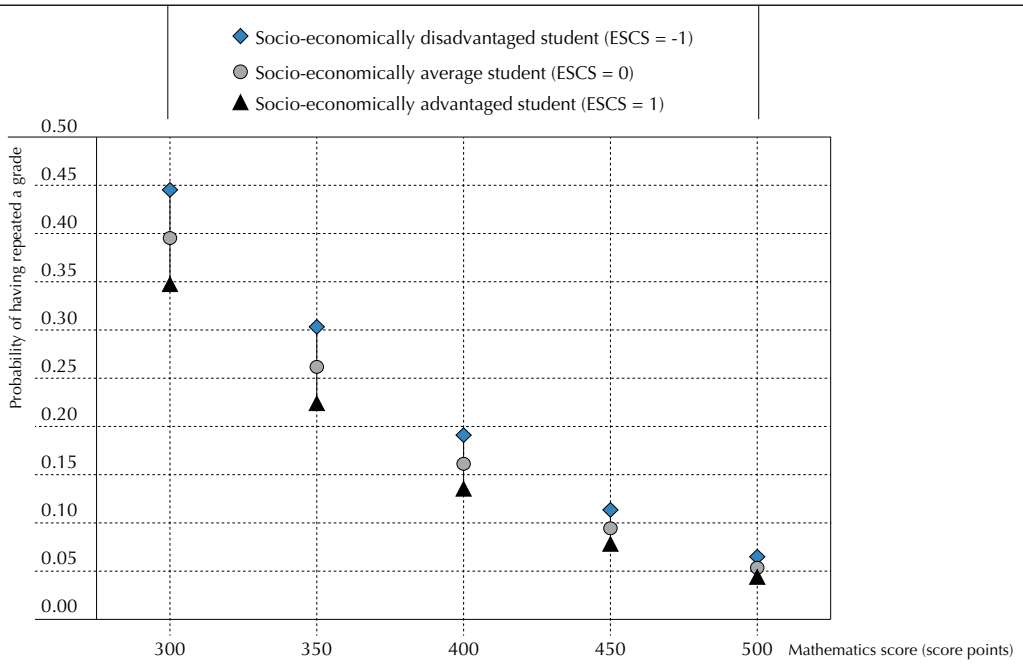
PISA 2012 shows that in 35 out of 61 countries and economies examined, disadvantaged students are more likely to have repeated a grade than advantaged students, even after accounting for student performance in mathematics (Table IV.2.3). This means that when comparing two students with similar mathematics performance, the student who is more socio-economically disadvantaged than the other is more likely to have repeated a grade. As shown in Figure IV.2.3, on average across OECD countries, if a student scoring 300 points in mathematics is socio-economically advantaged, the likelihood that he or she had repeated a grade is 35 out of 100, while the likelihood of repeating a grade is 45 out of 100 if this student is socio-economically disadvantaged. In general, the higher a student's score, the less likely it is that the student had repeated a grade. But disadvantaged students are still at higher risk of repeating a grade than their advantaged counterparts. For example, if a student who scores 400 points is advantaged, the likelihood that he or she had repeated a grade is 14 out of 100, while the likelihood is 19 out of 100 if this student is disadvantaged.

This finding is consistent with the results of other studies showing that the incidence of grade repetition is highest among students from socio-economically disadvantaged backgrounds (Gomes-Neto and Hanushek, 1994). A study based on PISA 2009 data found that, in about half of the countries examined, students' socio-economic status is related to the likelihood of repeating a grade, even after accounting for student academic performance (Monseur and Lafontaine, 2012). In fact, data from PISA 2009 revealed that, among OECD countries, 53% of the variation in the likelihood of a student repeating a primary grade is observed at the student level, 28% at the school level, and 19% at the system level (Goos et al., 2013).

■ Figure IV.2.3 ■

Probability of students having repeated a grade, by students' socio-economic status (OECD average)



Notes: ESCS is the *PISA index of economic, social and cultural status*.
Students having repeated a grade refers to students who have repeated a grade in primary, lower secondary or upper secondary school.
Source: OECD, PISA 2012 Database, Table IV.2.3.
StatLink http://dx.doi.org/10.1787/888932957308

Students' grade and education levels

As a consequence of the variations in the age of starting primary school and/or in grade repetition, students in the same age group can be found in different grade and education levels. This is particularly important for PISA as participation is based on students' age.

As shown in Figure IV.2.2, 15-year-old students tend to be enrolled at similar grade levels in Iceland, Japan, Norway, Serbia, Malaysia, the United Kingdom, Korea and Sweden, while there are relatively greater variations in the grade levels

in which 15-year-olds in Colombia, Peru, Uruguay and Tunisia are enrolled. The modal grade for 15-year-old students depends on the school system: in PISA-participating countries it is usually grade 9, 10 or 11. Depending on the timing of the start of the academic year and the PISA data collection, in some systems, about an half of all 15-year-old students are in one grade and another half are in another grade either just above or just below. Across OECD countries, 74% of students are at the modal grade, 9% are in grades above the modal grade, and 17% are in grades below the modal grade. All 15-year-old students in Japan and Iceland, and over 95% of them in Norway, Serbia, Malaysia and the United Kingdom, are at the modal grade, while fewer than one in two students is in the modal grade in Costa Rica, Colombia, Brazil, Macao-China, Peru, Indonesia and the Netherlands (Table IV.2.4).

As 15-year-olds are enrolled in various grades, some of them are in lower secondary education while others are in upper secondary education. Across OECD countries, 46% of 15-year-old students are in lower secondary education and 54% are in upper secondary education. Over 99% of 15-year-old students in Iceland, Jordan, Romania, Lithuania, Spain, Finland, Norway, Denmark and Poland are in lower secondary education, while over 99% of 15-year-old students in Croatia, Japan, the United Kingdom and Montenegro are in upper secondary education (Figure IV.2.2 and Table IV.2.4).

HOW EDUCATION SYSTEMS ORGANISE SCHOOL PROGRAMMES

Students with different socio-economic status, different levels of achievement and different interests are found in every grade. School systems address this diversity in different ways. Some seek to adapt curricula so that students with different interests and academic preparation are exposed to a curriculum and pedagogy that is better suited to them. 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 or basing entry into the school on academic achievement (Dupriez et al., 2008), or by decisions made at the school level, such as transferring students to other schools. Some schools group students based on their ability across classes. School-level policies are less relevant in systems with other types of grouping/sorting of students at the system level, as these education systems have already differentiated students to a large degree. The rationale behind using these differentiating mechanisms is to homogenise the student population so that its educational needs can be met more effectively. But there is some concern that tracking replicates existing social and economic inequities, as socio-economically disadvantaged students tend to be disproportionately grouped into lower tracks (Oakes, 2005). By contrast, other school systems seek to address the diversity in student populations by individualising education experiences within an established cohort of students over a longer period of time, and delay any type of stratification until the later years of secondary education or in higher education.

The number of study programmes and age of selection

In comprehensive school systems, all 15-year-old students follow the same programme, while in differentiated school systems, students are streamed into different programmes. Some of these programmes may be primarily academic, others offer primarily vocational components, and yet others may offer combinations of academic and vocational programmes (Kerckhoff, 2000; LeTendre et al., 2003). Differentiated systems must also decide at which age students will be sorted into these different programmes. Chapter 1 presents evidence 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. Education reforms in Poland shifted the age of selection to increase the amount of time students spend in comprehensive schools with evidence suggesting it has helped improve student performance in mathematics, reading and science (OECD, 2011a). Box IV.2.1 provides more details on Poland's trajectory in PISA and their recent education reforms.

On average across OECD countries, school systems begin selecting students for different programmes at the age of 14. However, this varies greatly across countries. Among OECD countries, the first age of selection varies from age 10 in Austria and Germany, to age 16 in Australia, Canada, Chile, Denmark, Finland, Iceland, New Zealand, Norway, Poland, Spain, Sweden, the United Kingdom and the United States. Among partner countries and economies, the first age of selection varies from around age 11 in Uruguay and 12 in Singapore, to age 16 in Jordan, Latvia, Lithuania and Peru (Figure IV.2.4 and Table IV.2.5).

The number of school types or distinct education programmes available to 15-year-old students also varies across countries. Among OECD countries, it varies from one distinct programme in Australia, Canada, Chile, 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, the Netherlands and the Slovak Republic. Among partner countries and economies with available data, it ranges from one programme in Indonesia and Jordan and two programmes in Brazil, Colombia,

Hong Kong-China, Macao-China, Romania and Thailand, to five or more programmes in Montenegro, Uruguay, Croatia, Malaysia, Shanghai-China, the United Arab Emirates, Latvia and Lithuania (Figure IV.2.4 and Table IV.2.5).

In PISA, students were asked to report on the kind of programme in which they were enrolled. Then their responses were categorised according to programme orientation. As shown in Figure IV.2.4, across OECD countries, an average of 82% of 15-year-old students are enrolled in a programme with a general curriculum, 14% are enrolled in a programme with a pre-vocational or vocational curriculum, and 4% are in modular programmes that combine any or all of these characteristics. In Brazil, Denmark, Finland, Hong Kong-China, Iceland, Jordan, Liechtenstein, New Zealand, Norway, Peru, Qatar, Romania, Singapore, Tunisia and the United States, all 15-year-old students are in a general programme. In Serbia, Croatia, Austria, Montenegro and Slovenia, more than one in two students are enrolled in a vocational or pre-vocational programme. In Canada, all 15-year-olds, and in the Slovak Republic one out of four students, are enrolled in a modular programme (Table IV.2.6).

Admission and placement policies establish frameworks for selecting students for academic programmes and for streaming students according to career goals, educational needs and academic performance. In countries with large differences in student performance between programmes and schools or where socio-economic segregation is firmly entrenched because of residential segregation, admission and grouping policies have high stakes for parents and students. The most effective schools may be those more successful in attracting motivated students and in retaining good teachers; conversely, a "brain drain" of students and staff can undermine schools. Once admitted to school, students become members of a community of peers and adults and, as shown in Volume II, the socio-economic context of the school in which students are enrolled tends to be much more strongly related to student performance than students' individual socio-economic status.

In some school systems, the school catchment area determines admission into school. The school catchment area is used as a criterion because of: administrative responsibilities to ensure adequate capacity for students in those areas and plan for future needs; formal institutional areas, such as official communities or neighbourhoods that require separate education administration for legal, historical, or economic purposes; and deliberate isolation of populations due to racial, ethnic or socio-economic differences with other populations. According to principals' reports, on average across OECD countries, 41% of students are in schools where residence in a particular area is always considered as part of the criteria for admission. In Poland, the United States, Greece, Canada and Finland, more than two in three students are enrolled in such schools. By contrast, fewer than 10% of students in Belgium, Serbia, Slovenia, Macao-China, Peru, Croatia, Montenegro, Singapore, Mexico, Japan and Romania are enrolled in schools that always consider residence in a particular area for admission (Table IV.2.7). Among these countries and economies, over 94% of 15-year-old students are at upper secondary education in Croatia, Japan, Montenegro, Serbia, Singapore Slovenia and Greece, while 100% of 15-year-old students are at lower secondary education in Romania (Table IV.2.4).

Some school systems are highly selective and base admission on students' academic performance. Across OECD countries, 43% of students are in academically selective schools whose principals reported that at least "students' records of academic performance" or "recommendations of feeder schools" is always considered for admission. In the Netherlands, Croatia, Hong Kong-China, Japan, Thailand, Serbia, Viet Nam, Hungary, Singapore and Bulgaria, over 80% of students are in academically selective schools, while in Finland, Spain, Norway, Greece, Sweden, Denmark, Argentina, Poland and Lithuania, fewer than 20% of students are enrolled in such schools (Figure IV.2.4 and Table IV.2.7).

As expected, systems in which schools tend to select their students based on residence in a particular area are generally less academically selective. However, in Switzerland and Liechtenstein, schools are selective according to both catchment area and students' academic performance and/or recommendations of feeder schools (Figure IV.2.5).

The criteria used for admitting students to schools differ between lower and upper secondary education in some school systems where lower and upper secondary education are not provided in the same school. Across OECD countries, an average of 49% of 15-year-old students in lower secondary education attend schools that use residence in a particular area as one of the criteria for admitting students, while 32% of 15-year-old students at the upper secondary level attend such schools. In contrast, academic selectivity is more prevalent at the upper secondary than the lower secondary level. Across OECD countries on average, 32% of lower secondary students attend schools whose principals reported that at least either "students' records of academic performance" or "recommendations of feeder schools" is always considered for admission, while 56% of upper secondary students attend such schools. The difference in academic selectivity between 15-year-old students at the lower and upper secondary levels is notable in Hungary, the Czech Republic, the Slovak Republic, Sweden, Bulgaria, Shanghai-China, Korea and Austria, where the difference is over 40 percentage points (Table IV.2.8).

■ Figure IV.2.4 [Part 1/2] ■

How students are grouped across and within schools (horizontal stratification)

		Number of education programmes available for students at age 15	Early selection (first age of selection in the education system)	Percentage of students who are enrolled in a programme whose curriculum is: General / Pre-vocational or vocational / Modular	Percentage of students in schools whose principals reported that "students' records of academic performance" or "recommendations of feeder schools" are considered for admission: At least one of these two factors is "always" considered
OECD	Australia	1	16		44
	Austria	4	10		71
	Belgium	4	12		27
	Canada	1	16		39
	Chile	1	16		39
	Czech Republic	6	11		58
	Denmark	1	16		15
	Estonia	1	15		38
	Finland	1	16		4
	France	3	15		31
	Germany	4	10		62
	Greece	2	15		8
	Hungary	3	11		85
	Iceland	1	16		21
	Ireland	4	15		27
	Israel	2	15		56
	Italy	4	14		66
	Japan	2	15		94
	Korea	3	14		67
	Luxembourg	4	13		72
	Mexico	3	15		51
	Netherlands	7	12		97
	New Zealand	1	16		59
	Norway	1	16		7
	Poland	1	16		19
	Portugal	3	15		37
	Slovak Republic	5	11		53
	Slovenia	3	14		29
	Spain	1	16		4
	Sweden	1	16		10
	Switzerland	4	12		73
	Turkey	3	11		43
	United Kingdom	1	16		28
	United States	1	16		36
	OECD average	3	14		43
Partners	Albania	3	15		60
	Argentina	3	15		15
	Brazil	2	15		21
	Bulgaria	3	13		81
	Colombia	2	15		43
	Costa Rica	m	m		51
	Croatia	5	14		96
	Hong Kong-China	2	15		94
	Indonesia	1	15		67
	Jordan	1	16		36
	Kazakhstan	m	m		46
	Latvia	5	16		29
	Liechtenstein	3	15		79
	Lithuania	5	16		20
	Macao-China	2	15		78
	Malaysia	5	15		55
	Montenegro	6	15		59
	Peru	3	16		30
	Qatar	4	15		50
	Romania	2	14		35
	Russian Federation	3	16		23
	Serbia	m	m		87
	Shanghai-China	5	15		53
	Singapore	4	12		82
	Chinese Taipei	3	15		50
	Thailand	2	15		88
	Tunisia	m	m		51
	United Arab Emirates	5	15		70
	Uruguay	6	11		27
	Viet Nam	4	15		87

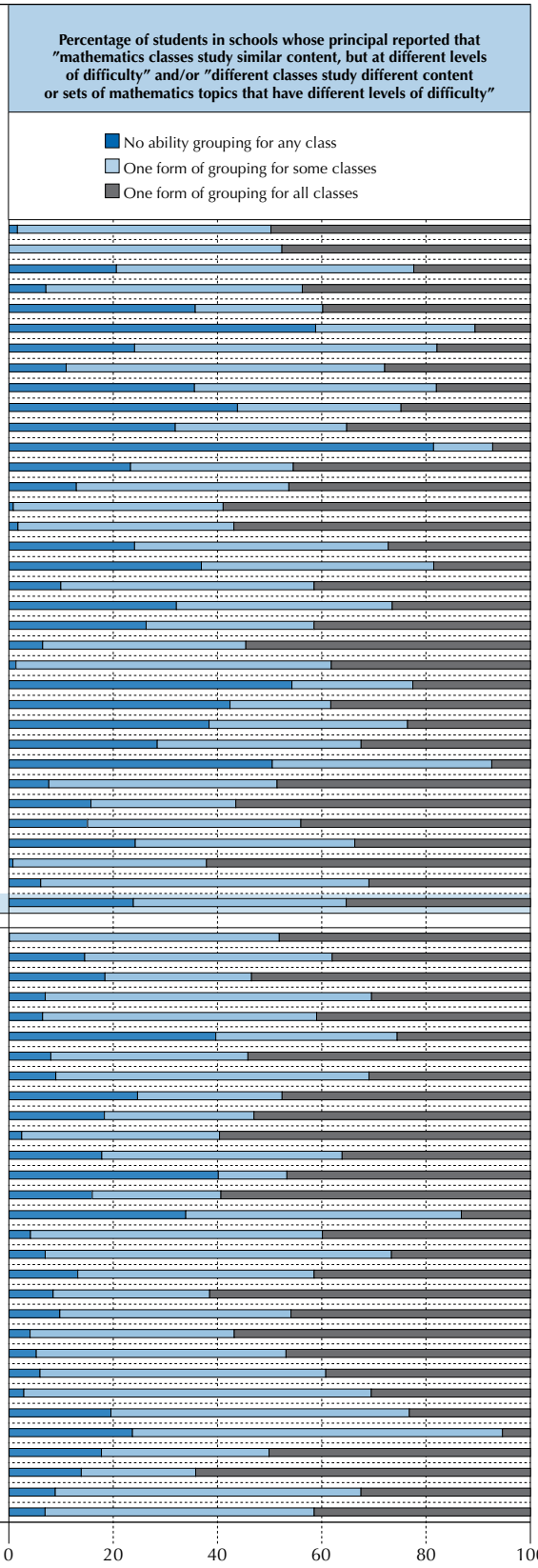
Source: OECD, PISA 2012 Database, Tables IV.2.5, IV.2.6, IV.2.7, IV.2.9 and IV.2.11.

StatLink http://dx.doi.org/10.1787/888932957308

■ Figure IV.2.4 [Part 2/2] ■

How students are grouped across and within schools (horizontal stratification)

		Percentage of students in schools whose principal reported that a student in the national modal grade for 15-year-olds would "very likely" be transferred to another school because of "low academic achievement", "behavioural problems" or "special learning needs"
OECD	Australia	3
	Austria	65
	Belgium	28
	Canada	5
	Chile	23
	Czech Republic	10
	Denmark	2
	Estonia	4
	Finland	0
	France	17
	Germany	6
	Greece	25
	Hungary	15
	Iceland	1
	Ireland	2
	Israel	20
	Italy	17
	Japan	6
	Korea	26
	Luxembourg	19
	Mexico	20
	Netherlands	10
	New Zealand	4
	Norway	1
	Poland	4
	Portugal	4
	Slovak Republic	24
	Slovenia	22
	Spain	3
	Sweden	3
	Switzerland	10
	Turkey	27
	United Kingdom	3
	United States	4
	OECD average	13
Partners	Albania	10
	Argentina	11
	Brazil	15
	Bulgaria	31
	Colombia	15
	Costa Rica	23
	Croatia	17
	Hong Kong-China	9
	Indonesia	35
	Jordan	43
	Kazakhstan	9
	Latvia	11
	Liechtenstein	46
	Lithuania	3
	Macao-China	36
	Malaysia	26
	Montenegro	10
	Peru	19
	Qatar	11
	Romania	22
	Russian Federation	5
	Serbia	20
	Shanghai-China	7
	Singapore	2
	Chinese Taipei	28
	Thailand	14
	Tunisia	24
	United Arab Emirates	16
	Uruguay	4
	Viet Nam	20

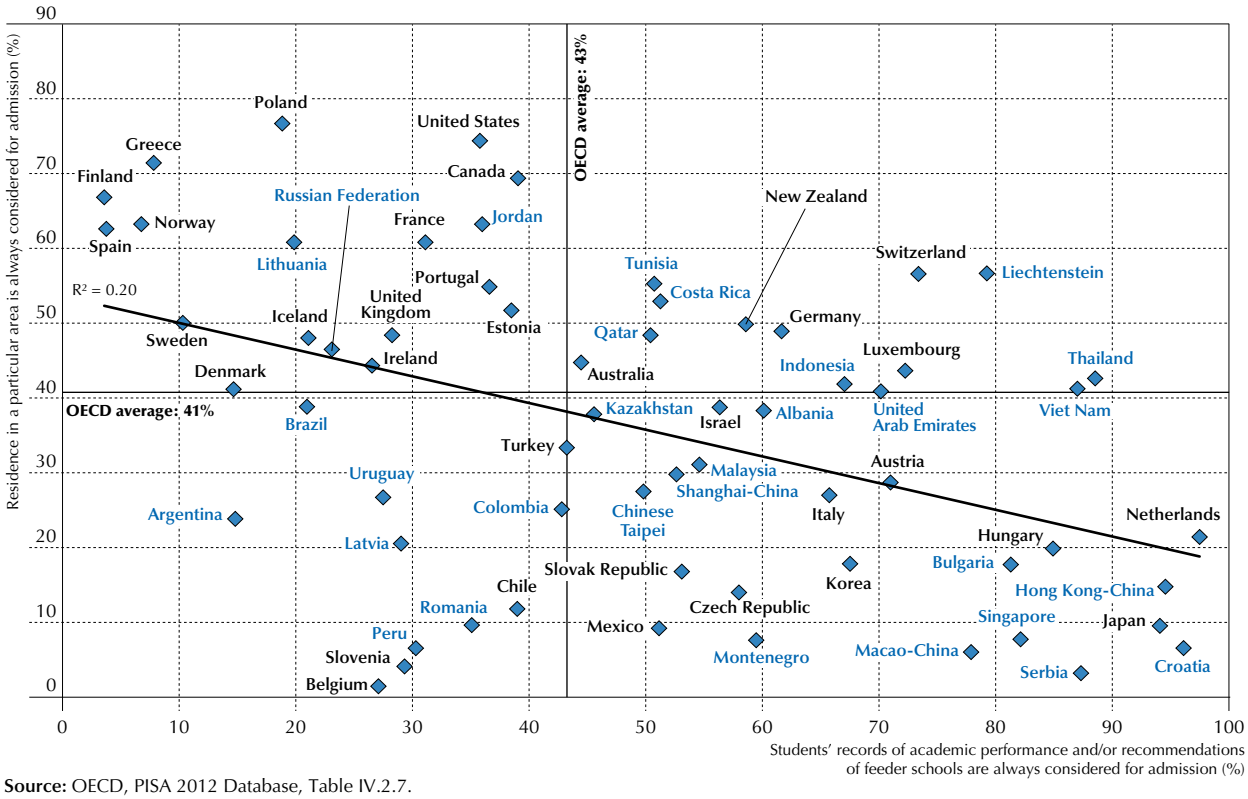


Source: OECD, PISA 2012 Database, Tables IV.2.5, IV.2.6, IV.2.7, IV.2.9 and IV.2.11.

StatLink http://dx.doi.org/10.1787/888932957308

■ Figure IV.2.5 ■

School admissions policies



Source: OECD, PISA 2012 Database, Table IV.2.7.

StatLink http://dx.doi.org/10.1787/888932957308

School transferring policies

Transferring students out of school because of low academic achievement, behavioural problems or special learning needs is one way that schools reduce the heterogeneity in the learning environment and facilitate instruction for the remaining students.

PISA 2012 asked school principals about policies governing student transfers, namely about the likelihood of transferring a student to another school because of low academic achievement, high academic achievement, behavioural problems, special learning needs, parents' or guardians' request, or other reasons. As shown in Figure IV.2.4, on average across OECD countries, 13% of students attend a school whose principal reported that the school would "very likely" transfer students because of low achievement, behavioural problems or special learning needs. In Austria, Liechtenstein, Jordan, Macao-China, Indonesia and Bulgaria, over 30% of students attend such schools, while in Finland, Norway, Iceland, Singapore, Denmark, Ireland and Australia, fewer than 3% of students attend such schools (Table IV.2.9).

In some systems, policies on transferring students to other schools differ between lower and upper secondary education. In the Slovak Republic, Slovenia, Indonesia, Israel, Hungary, Italy and Korea, students in upper secondary education are more likely – by 10 percentage points or more – to be transferred because of low achievement, behavioural problems or special learning needs than students in lower secondary education (Table IV.2.10).

Ability grouping within schools

Some school systems group students within the schools they attend. The rationale behind this practice is much the same as for other types of grouping or selecting of students, namely to better meet the students' needs by creating a more homogeneous learning environment and facilitating instruction. Because individual schools are nested within a broader organisation, the uses of ability grouping within schools is partly determined by the homogeneity/heterogeneity that results from other forms of stratification, such as school-admittance policies, grade retention or transfer policies.

Students can be grouped by ability across or within classes. Across OECD countries, 67% of students attend schools whose principal reported that students in mathematics classes study similar content, but at different levels of difficulty at least in some classes, and 54% of students attend schools whose principal reported that mathematics classes vary in content and level of difficulty at least in some classes. In sum, three out of four students are in schools whose principals reported that the school uses one of these forms of between-class ability grouping in at least some mathematics classes. Over 95% of students in Albania, the United Kingdom, Ireland, New Zealand, Australia, Israel, Kazakhstan, Singapore, the Russian Federation and Malaysia attend schools where students are grouped by ability across classes, while fewer than 50% of students in Greece, Austria, the Czech Republic, Norway and Slovenia attend such schools (Table IV.2.11).

Students are sometimes grouped according to ability within classes. Across OECD countries, 49% of students attend schools whose principal reported that students are grouped by ability within their mathematics classes at least in some classes, while 79% of students attend schools whose teachers use pedagogy suitable for students with diverse abilities at least in some classes. In Israel, the United Kingdom, New Zealand, Ireland, Australia, Singapore, the Russian Federation and Iceland, over 80% of students are in schools whose principals reported that students are grouped by ability within their mathematics classes. In these countries, students are also grouped across classes based on ability: 87% to 99% of students in these countries are in schools where principals reported having ability grouping across classes, at least in some classes. By contrast, in Greece, Montenegro, Uruguay, Turkey, Tunisia, Poland and Brazil, within-class ability grouping is not so common: in these countries, fewer than 20% of students are in schools whose principal reported having within-class ability grouping in mathematics classes, while no consistent pattern in between-class ability grouping is observed in these countries. In Uruguay and Montenegro, around 92% of students are in schools with between-class ability grouping; in Tunisia and Brazil around 82% of students are in such schools; in Turkey, 76% are in such schools; in Poland, 58% of students are; and in Greece, 19% of students are in such schools (Table IV.2.11).

Box IV.2.1. **Improving in PISA: Poland**

Poland has been building on progress made between PISA 2000 and PISA 2009 and continued to improve its mathematics, reading and science performance in 2012. Since 2003, mathematics performance has improved at an annual rate of 2.6 points, moving from a below-OECD-average score of 490 in 2003 to an above-OECD-average score of 518 in 2012. The country has reduced the percentage of low-performing students from 22% to 14% and increased that of high performers from 10% to 17% in a period of nine years. Improvement in mathematics is observed throughout the performance distribution, as both low-achieving and high-achieving students have improved at a similar rate. This improvement in average performance, coupled with an improvement among both high- and low-achieving students as well as top and low performers is also observed in reading (mean reading performance improved by an average of 2.8 points per year since 2000) and science (mean science performance improved by an average of 4.6 points per year since 2006). Because improvements in mathematics performance have touched all students alike, there has been no change in the relationship between students' socio-economic status and their mathematics performance. However, the overall improvement has meant that disadvantaged students have greater chances of being resilient and beating the odds against them: in 2003, 5.3% of students were considered resilient; by 2012, 7.7% of students were.

Education policy in Poland has been marked by two recent waves of reform: the structural reform of 1999 and the curricular and examination reform of 2009. In 1998, the Ministry of Education presented the outline of a reform agenda to raise the level of education by increasing the number of people with secondary and higher-education qualifications, ensure equal education opportunities, and support improvements in the quality of education. The reform was also part of a broader set of changes, including reform of the national administration that reduced the number of administrative regions from 49 to 16, health care reform and pension-system reform.

The education reform envisaged changes in the structure of the education system; giving more responsibility for education to local authorities; reorganising the school network; modifying administration and supervision methods; changing the curriculum; introducing a new central examination system with independent student assessments; reorganising school finances through local government subsidies; and offering new teacher incentives, such as alternative promotion paths and a revised remuneration system.

...

The structural changes resulted in a new type of school: the lower secondary "gymnasium", which offered the same general education programme to all students and became a symbol of the reform. The belief was that the lower secondary gymnasia would allow Poland to raise the level of education, particularly in rural areas. The previous structure, comprising eight years of primary school followed by four or five years of secondary school or a three-year basic vocational school, was replaced by a system described as 6+3+3. This meant that education at primary school was reduced from eight to six years. After completing primary school, a pupil would then continue his or her education in a comprehensive, three-year lower secondary school. Thus, the period of general education, based on a common core curriculum and equal standards for all students, was extended by one year. Only after completing three years of lower secondary education would the student move on to a three- or four-year upper secondary school that provided access to higher education or to a three-year basic vocational school. Coincidentally, students' experience in schools has shifted towards common exposure to content and content difficulty. In 2003, 19% of 15-year-old lower-secondary students who took part in PISA attended schools whose principal reported that students were not placed in different groups for mathematics classes (either through groups within a particular class or between different classes in the same school). In 2012, 42% of 15-year-old lower-secondary students attended schools whose principal reported so, further highlighting the increasing degree to which Polish students are incorporating a comprehensive approach to mathematics instruction, in particular, and teaching, in general.

A core curriculum and new assessments

In parallel, the concept of a core curriculum was adopted. This gave schools extensive autonomy to create their own curricula within a pre-determined general framework, balancing the three goals of education: imparting knowledge, developing skills and shaping attitudes. The curricular reform was designed not only to change the content of school-based education and to encourage innovative teaching methods, but also to change the teaching philosophy and culture of schools. Instead of passively following the instructions of the education authorities, teachers were expected to develop their own teaching styles, which would be tailored to the needs of their students.

Introducing a curricular reform that encouraged autonomy required implementing a system for collecting information and monitoring the education system at the same time. Under this new system, each stage of education ends with a standardised national assessment (in primary education) and examination (in lower and upper secondary education). These assessments and examinations provide students, parents and teachers with feedback; policy makers at the national, regional and local levels can also use the results of the assessment to monitor the performance of the school system. The results from the lower secondary examination are used, together with students' marks, for admission to upper secondary schools. The final upper secondary exam also serves as an entrance exam for universities. The national assessment at the end of primary school and lower secondary examinations were first administered in 2002. The *Matura* exam was first administered as an external national examination in 2005. All of these examinations are organised, set and marked by the central examination board and regional examination boards, the new institutions that had been set up as part of the reform.

Introducing the national assessment and examination system not only provided an opportunity to monitor learning outcomes, it also changed incentives for students and teachers. It sent a clear signal to students that their success depended directly on their externally evaluated outcomes, and made it possible to assess teachers and schools on a comparable scale across the whole country. It also provided local governments with information on the outcomes of schools that were now under their organisational and financial responsibility.

After the reform, local governments became an even more important part of the Polish school system. School funds were transferred to local governments using a per-pupil formula. Those funds now constitute a large share of their budgets. The reform also introduced a new system of teacher professional development and teacher appraisal. Initially, many teachers upgraded their levels of education and professional skills to meet those new requirements.

Studies suggest that the 1999 structural reforms helped reduce the differences in performance between schools and helped improve the performance of the lowest-achieving students. For example, the between-school variation in reading performance decreased substantially between 2000 and 2009. Additional analyses suggest that the reform improved outcomes for students who would have ended up in basic vocational schools under the old system, but were given a chance to acquire more general skills in newly created lower secondary schools (OECD, 2011a). Undoubtedly, Polish students in 2012 perform at higher levels in PISA than students did in 2003; they are, however, less likely to feel they belong at school, to hold positive attitudes towards school or to show intrinsic or instrumental motivation to learn mathematics.

...

Building on earlier reforms

Poland's reforms have also been flexible, adjusting to the needs of a more diverse student population and increased demand to participate in secondary and tertiary education. In this context, in 2009 the Ministry of National Education expanded the reforms initiated in the late 1990s by modifying the national core curriculum for general education and school vocational-training programmes. The new curriculum shifted the focus from the narrow, subject-related requirements to more general, transversal skills and competencies. The new curriculum would focus on experiments, scientific inquiry, problem solving, reasoning and collaboration. National standardised assessments and examinations were adjusted accordingly. The modified lower secondary examination, implemented for the first time in 2012, is the culmination of a three-year information campaign that communicated this new curricular focus to promote changes in teaching practice. The new regulations provided for further extension of schools' and teachers' autonomy. The new framework curriculum requires schools to develop their own sets of programmes instead of using the programmes (and textbooks) from the list accepted by the Ministry. School heads were given flexibility in managing, within a three-year cycle, the instruction time defined for subjects in the curriculum framework. They only have to ensure that the outcomes defined in the national curriculum are attained.

The Ministry granted more autonomy to schools and teachers, while maintaining a system of accountability via standardised assessments and examinations. The system of quality assurance, evaluation and accountability were modified as well. In 2009, the Ministry of Education defined three complementary functions of school supervision: evaluation, control and support. External evaluation is conducted by inspectors and is based on a school self-evaluation process as well as on evidence gathered from documents and the opinions of teachers, students, parents and other stakeholders (local employers, community and administration). Value-added models are used to a greater extent, and schools can use a web-based platform to compare improvements in student performance with other schools and against regional or national benchmarks. A value-added model approach promotes equal opportunities as the analysis focuses on student and school progress and not on the achievement level, so even schools with the lowest-performing students can demonstrate the quality of their teaching.

PISA offers an opportunity to follow the trajectory of the reform by measuring the performance of the age groups that were affected by the reform in different ways. The first group, those assessed in 2000, was not affected by the reform. The group of 15-year-olds assessed in 2003 had started primary school in the former system, but attended the new lower secondary gymnasia. Those students all had the same curricula and were not divided into different school types. The students covered by PISA 2006 had been part of the reformed education system for most of their school career, while those assessed in 2009 and 2012 had been part of that system for their entire school career. In addition, students assessed in 2012 also benefitted from the curricular reform of 2009.

Source:

OECD (2011a), "The Impact of the 1999 Education Reform in Poland", *OECD Education Working Papers*, No. 49, OECD Publishing.

SOCIAL AND ACADEMIC INCLUSION AND VERTICAL AND HORIZONTAL STRATIFICATION

As discussed above, school systems have developed different ways to manage the diversity of the student population. Analysis of PISA data can show how – and whether – these various forms of vertical and horizontal stratification are negatively associated with equity, as discussed in Chapter 1, and how these are associated each other and with the socio-economic profiles of systems. Caution is advised, however, when interpreting these results. The results do not imply any causality between the indicators, but merely show that there are some commonalities or differences. In addition, variables that are omitted in this analysis might affect the observed relationships.

As expected, systems where 15-year-old students are distributed across a wider range of grades tend to have higher rates of grade repetition (across OECD countries, the correlation coefficient is 0.71). These more vertically differentiated systems also tend to be highly differentiated horizontally, which means that they tend to have more programmes available to 15-year-old students, ($r = 0.50$) and they select and sort students in the students' early years at school ($r = 0.45$) (Figure IV.2.6 and Table IV.2.12).

The indicators measuring horizontal stratification between schools are inter-correlated. Systems with more education programmes available to 15-year-old students tend to select and sort students at the earlier stage of their education (r = 0.73 across OECD countries), also tend to have more students in vocational or pre-vocational programmes (r = 0.54) and have more students in academically selective schools (r = 0.60). Systems where students are selected and sorted early tend to have more students in vocational or pre-vocational programmes (r = 0.50) and have more students in academically selective schools (r = 0.53). These four indicators are also related to another indicator measuring horizontal stratification between schools. Across OECD countries, systems with more education programmes tend to have a greater incidence of school transfers (r = 0.41). Systems in which more students are enrolled in vocational programmes tend to have a greater incidence of school transfers (r = 0.75) as do systems in which students are selected and sorted early tend (r = 0.53) and systems with more academically selective schools (r = 0.32) (Figure IV.2.6 and Table IV.2.12).

There is no consistent pattern in the relationship between vertical stratification and ability grouping mathematics classes within schools. By contrast, indicators of between-school horizontal stratification are related to ability grouping within schools. For example, systems with more students in vocational or pre-vocational programmes tend to have less ability grouping within schools (r = -0.48 across OECD countries).

■ Figure IV.2.6 ■

System-level correlation between indicators of stratification

Correlation coefficients between two relevant indicators

Correlation coefficients range from -1.00 (i.e. a perfect negative linear association) to +1.00 (i.e. a perfect positive linear association). When a correlation coefficient is 0, there is no linear relationship between two indicators.

					Vertical stratification	Horizontal stratification: Between schools					Horizontal stratification: Within schools
Across OECD countries / Across all participating countries and economies					Variability in students' grade levels	Number of educational tracks	Prevalence of vocational and pre-vocational programmes	Early selection	Academic selectivity	School transfer rates	Ability grouping for all mathematics classes
				Mathematics performance	*-0.31*	0.10	0.04	0.10	0.20	-0.17	-0.07
			Mathematics performance	Inequity	**0.56**	0.26	0.00	*0.32*	0.15	0.29	-0.10
Vertical stratification		Variability in students' grade levels	**-0.36**	**0.26**		**0.50**	0.20	**0.45**	0.21	*0.29*	0.04
Horizontal stratification	Between schools	Number of educational tracks	0.04	0.20	**0.26**		**0.54**	**0.73**	**0.60**	**0.41**	-0.13
		Prevalence of vocational and pre-vocational programmes	0.09	-0.01	-0.12	**0.39**		**0.50**	**0.38**	**0.75**	**-0.48**
		Early selection	0.12	**0.42**	0.16	**0.49**	**0.28**		**0.53**	**0.53**	-0.17
		Academic selectivity	0.15	-0.09	0.05	**0.38**	**0.37**	**0.28**		*0.32*	0.08
		School transfer rates	-0.19	0.05	0.16	0.09	**0.37**	0.20	**0.30**		*-0.32*
	Within schools	Ability grouping for all mathematics classes	**-0.25**	-0.17	0.08	0.02	**-0.30**	*-0.22*	-0.02	-0.17	

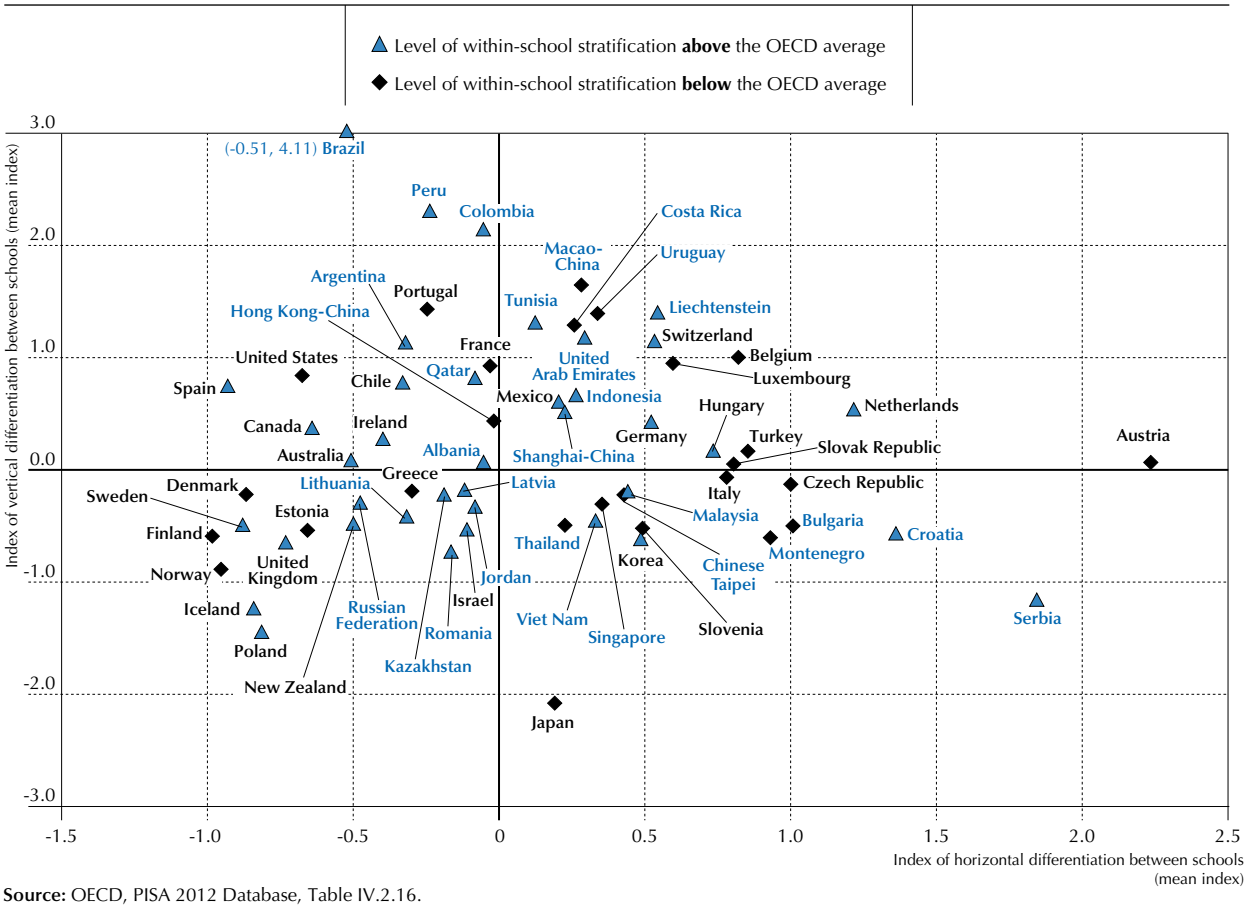
Notes: Correlation coefficients that are statistically significant at the 5% level ($p < 0.05$) are indicated in bold and those at the 10% level ($p < 0.10$) are in italics.
Inequity refers to variation in mathematics performance explained by the *PISA index of economic, social and cultural status of students*. Correlations with mathematics performance and inequity are partial correlation coefficients after accounting for per capita GDP.
Ability grouping for all mathematics classes is the system-level percentage of students in schools whose principal reports that students are grouped by ability in all classes.
Source: OECD, PISA 2012 Database, Tables IV.1.1 and IV.2.12.
StatLink http://dx.doi.org/10.1787/888932957308

As Figure IV.2.6 shows, some of these stratification methods are interrelated. In order to determine the extent to which the various methods of stratification are associated with the social and academic profiles of school systems, PISA developed three indices: an *index of vertical stratification*; an *index of between-school horizontal stratification;*[2] and an *index of ability grouping within schools*. The *index of vertical stratification* is based on the degree of variation in 15-year-old students' grade levels in the system, which also reflects the different starting ages for schooling and the prevalence of grade repetition. The *index of between-school horizontal stratification* is based on five interrelated indicators of horizontal stratification between schools. The *index of ability grouping within schools* is based on the prevalence of within-school ability grouping across the school system (Table IV.2.16). All of these indices are standardised.[3]

Countries and economies in the top right quadrant in Figure IV.2.7 are those that have higher levels of vertical and horizontal (between-school) stratification than the OECD average. Countries and economies in the bottom left quadrant in Figure IV.2.7 are those that have lower levels of vertical and horizontal (between school) stratification than the OECD average.

■ Figure IV.2.7 ■

Vertical and horizontal stratification



Source: OECD, PISA 2012 Database, Table IV.2.16.

StatLink http://dx.doi.org/10.1787/888932957308

Each of the three stratification indices is then compared with various socio-economic and academic profiles of the school systems. The socio-economic profile includes the variation in students' socio-economic status within the system, and the level of social inclusion in the system, which indicates how much of the variation in students' socio-economic status is attributable to differences within schools. The academic profile includes the variation in students' mathematics performance within a system, and the level of academic inclusion in the system, which indicates how much of the variation in students' performance in mathematics is attributable to differences within schools.

As shown in Figure IV.2.8, the degree of stratification is associated with different aspects of the socio-economic and academic profile of the system. Systems with a greater degree of vertical stratification also tend to have students from more diverse socio-economic status (r = 0.59 for OECD countries and r = 0.57 for all countries and economies) and tend to have lower levels of social inclusion (r = -0.43 for OECD countries and r = -0.43 for all participating countries and economies) (Table IV.2.13).

Across OECD countries, systems that use more between-school horizontal stratification tend to have lower levels of socio-economic inclusion (r = -0.36), greater variation in student mathematics performance (r = 0.34), and lower levels of academic inclusion (r = -0.83). The picture is similar when including partner countries and economies (r = -0.71). In contrast, the degree of within-school horizontal stratification in a system does not seem to be consistently associated with the system's socio-economic and academic profile (Figure IV.2.8 and Table IV.2.13).

■ Figure IV.2.8 ■

System-level correlation between indices of stratification and student characteristics

		Index of vertical stratification	Index of horizontal stratification (between schools)	Index of horizontal stratification (within schools)
OECD countries	**Variation in student socio-economic status (standard deviation of ESCS)**	**0.59**	0.11	-0.02
	Socio-economic inclusion index (1-rho)	**-0.43**	**-0.36**	0.03
	Variation in mathematics performance (standard deviation)	-0.03	*0.34*	0.06
	Academic inclusion index (1-rho)	-0.23	**-0.83**	0.19
All participating countries and economies	**Variation in student socio-economic status (standard deviation of ESCS)**	**0.57**	0.06	-0.05
	Socio-economic inclusion index (1-rho)	**-0.43**	-0.20	0.05
	Variation in mathematics performance (standard deviation)	*-0.21*	*0.21*	-0.14
	Academic inclusion index (1-rho)	*-0.24*	**-0.71**	0.10

Notes: Correlation coefficients that are statistically significant at the 5% level ($p < 0.05$) are indicated in bold and those at the 10% level ($p < 0.10$) are in italic.
ESCS refers to the *PISA index of economic, social and cultural status*.
Source: OECD, PISA 2012 Database, Table IV.2.13.
StatLink http://dx.doi.org/10.1787/888932957308

HOW SYSTEMS' GROUPING AND SELECTING OF STUDENTS IS RELATED TO STUDENTS' INSTRUMENTAL MOTIVATION

A student's aspiration can be defined as the "ability to identify and set goals for the future, while being inspired in the present to work toward those goals" (Quaglia and Cobb, 1996). Existing research on the impact of stratification on students' educational aspirations mainly focuses on the goal-setting aspects of aspiration. These studies used students' reports on the level of education they expected to attain at the end of their formal schooling as a measure of educational aspiration. They showed that in highly differentiated systems, the impact of a students' socio-economic status on his or her educational goals is stronger than in less differentiated systems (Buchmann and Dalton, 2002; Buchmann and Park, 2009; Monseur and Lafontaine, 2012). In highly differentiated systems, socio-economically disadvantaged students tend to be grouped into less academically orientated tracks or schools, and this has an impact on their educational aspirations, possibly because of the stigma associated with expectations of lower performance among students enrolled in these tracks and schools, or because less – and often poorer quality – resources are allocated to these schools.

In PISA 2012, students were asked about the extent to which they are motivated to work towards their goals. This is measured by students' instrumental motivation for mathematics. Both an *index of instrumental motivation for mathematics* and an *adjusted index of instrumental motivation for mathematics* are used in the analysis. Box IV.2.2 provides a description of these indices.

Box IV.2.2. PISA index of instrumental motivation

An *index of instrumental motivation for mathematics* is based on students' responses ("strongly agree", "agree", "disagree" or "strongly disagree") to the following four statements:

- Making an effort in mathematics is worth it because it will help me in the work that I want to do later on.
- Learning mathematics is worthwhile for me because it will improve my career prospects.
- Mathematics is an important subject for me because I need it for what I want to study later on.
- I will learn many things in mathematics that will help me get a job.

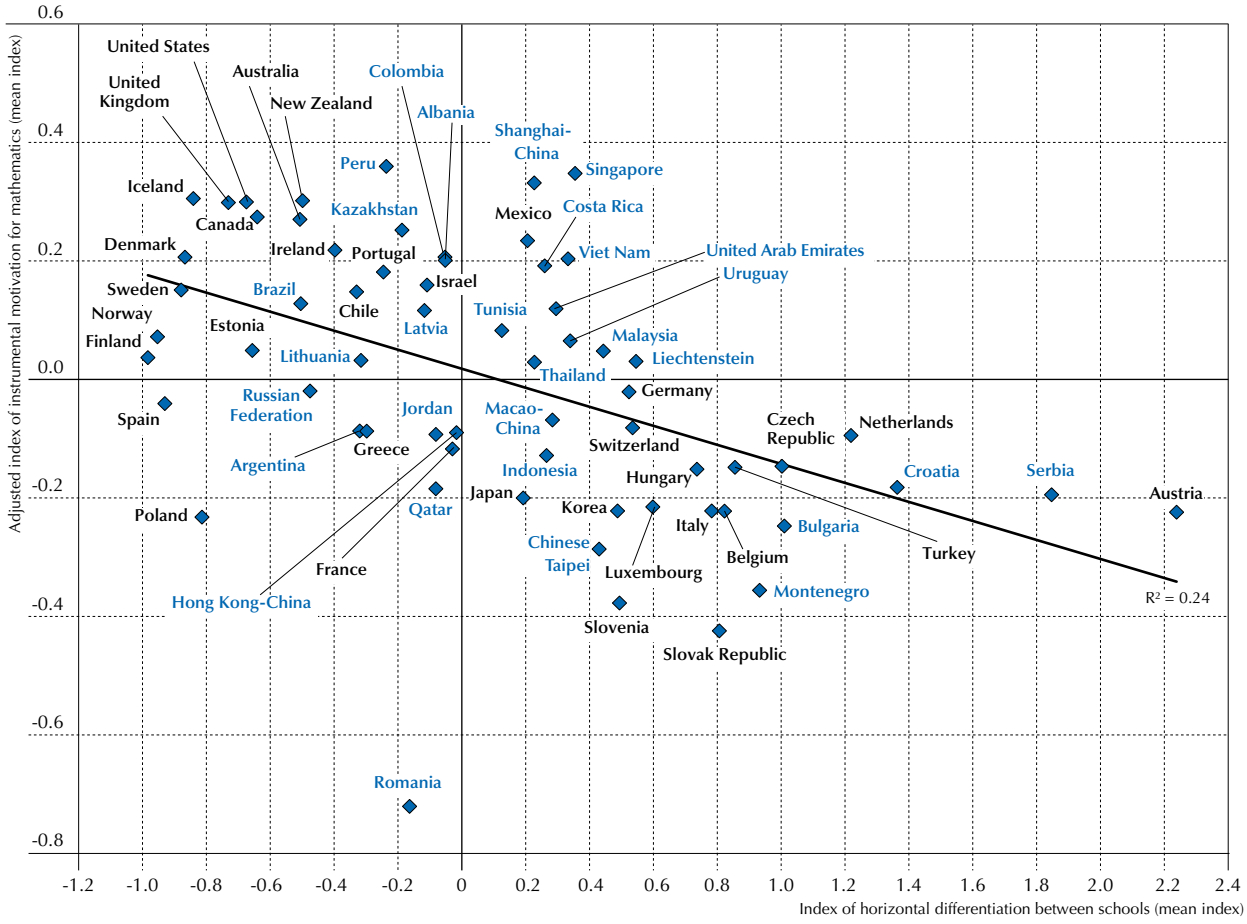
This index is scaled so that OECD countries have an average of 0 and a standard deviation of 1. Higher values on the index indicate greater student motivation. In order to allow for international comparisons, students' responses to these questions are also adjusted based on their responses to an anchoring vignette (see Annex A6).

Students tend to report their self-beliefs, motivation and attitudes within the context of what they expect to achieve. For example, if some schools expect their students to attain minimum performance standards and they are given fairly easy mathematics tasks, students would tend to report that they think they are good at mathematics. But if students want to be admitted into a very competitive university, they would tend to report that they are not good at mathematics unless they have shown excellent performance in very difficult mathematics classes. Without having information on the goals that students set for themselves, and the expectations that schools, teachers, parents and the students themselves have, it is difficult to compare differences in motivation between subgroups of students. Therefore, this section focuses solely on systems' overall level of students' motivation.

As shown in Figure IV.2.9, a negative relationship is observed between the levels of students' motivation and the degree to which systems sort and group students into different schools and/or programmes. In the systems that separate students into different schools or programmes more, students tend to report less instrumental motivation for mathematics than students in systems with less horizontal stratification between schools (Table IV.2.14). This relationship is observed for both non-adjusted and adjusted indices, across both OECD and partner countries and economies. This relationship is observed even after accounting for systems' overall performance levels (Table IV.2.15). In the highly stratified systems, the variation in students' motivation is not necessarily greater (see correlations for the standard deviation for the index in Table IV.2.14). Both unmotivated and motivated students reported less motivation than those in less stratified systems (see correlations for the 10th and 90th percentiles of the index in Table IV.2.14).

■ Figure IV.2.9 ■

Students' motivation and horizontal stratification



Source: OECD, PISA 2012 Database, Table IV.2.16.

StatLink http://dx.doi.org/10.1787/888932957308

When individual aspects of horizontal stratification between schools are examined:

- 15-year-old students in systems that offer a larger number of distinct education programmes tend to report less instrumental motivation than students in systems with fewer programmes or tracks (Table IV.2.14).
- Students in systems with larger proportions of students in vocational or pre-vocational programmes tend to report less instrumental motivation than students in systems with smaller proportions of students in non-academic programmes.
- Students in systems that group or select students early tend to report less instrumental motivation than students in systems that select students at a later age.
- Students in systems where a large proportion of students attends academically selective schools tend to report less instrumental motivation than students in systems where a smaller proportion of students attends selective schools.
- Students in systems where a large proportion of students attends schools that transfer problematic students to another school tend to report less instrumental motivation than students in systems that use school transfers less.

TRENDS IN STRATIFICATION SINCE PISA 2003

Since 39 of the 65 countries and economies that participated in PISA 2012 had also taken part in PISA 2003, it is possible to see how stratification practices evolved during the period. Overall, countries and economies that have high rates of grade repetition (i.e. where more than 20% of students have repeated a grade) have tended to reduce the rate of grade repetition. Trends in horizontal stratification show that, among OECD countries, a similar share of students attends schools where students are grouped by ability in at least some classes.[4]

The PISA 2003 and PISA 2012 questionnaires share many common questions, allowing for trends to be identified. However, some forms of stratification were not included in the PISA 2003 questionnaire, including transferring policies and students' programme orientation, so it is impossible to identify trends in these areas. Although questions relating to the use of academic criteria in selecting students into schools were asked in both questionnaires, the question and response options changed, rendering comparisons unreliable.

Grade repetition

Grade repetition is a policy through which school systems try to meet students' educational needs. By repeating a grade, slower students are given a second chance to master their coursework. Grade repetition also serves a motivational purpose because it is sometimes also used as a way to penalise students who do not perform well or do not put forth the necessary effort in school. With the prospect of repeating a grade – and thus not moving forward with their peers – students at risk may decide to put more effort into their studies to avoid retention. In practice, however, grade repetition has not been shown to benefit student learning (Allen et al., 2010; Alexander et al., 2003). Moreover, grade repetition may have adverse system-level effects as retained students are more likely to drop out, stay longer in the school system, or spend less time in the labour force (Rumberger, 2011; OECD, 2011b). As a result, some countries that had used grade repetition extensively have rejected that policy in favour of early support for struggling students.

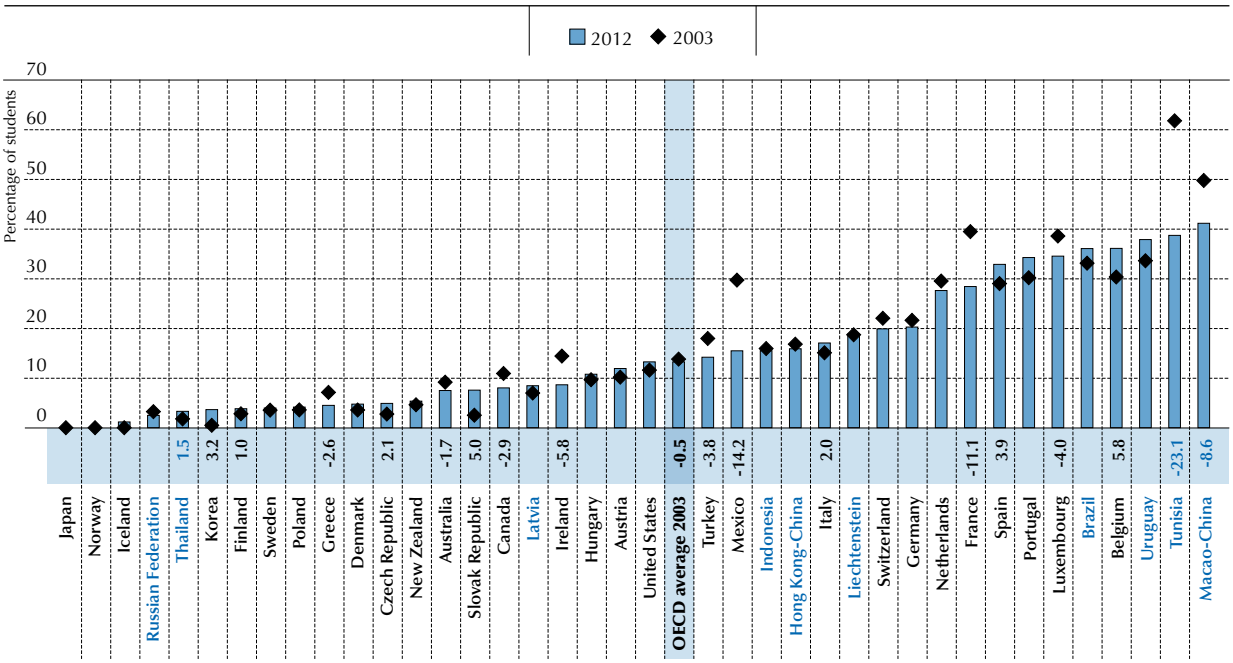
The percentage of students who had repeated a grade in primary, lower secondary or upper secondary school fell significantly (by 0.5 percentage points) between 2003 and 2012 among the OECD countries that have comparable data. Yet not all school systems rely on grade repetition as a mode of stratification (Dupriez et al., 2008). Among the 13 countries and economies that had grade repetition rates of more than 20% in 2003, these rates dropped by an average of 3.5 percentage points during the period, and fell sharply in Tunisia, Mexico, France, Macao-China and Luxembourg. In 2012 in Tunisia, Mexico and France, the percentage of 15-year-olds who reported that they had repeated a grade in primary, lower secondary or upper secondary school was at least ten percentage points lower than it was in 2003. Grade repetition rates increased in Belgium and Spain during the same period. Among countries with lower overall repetition rates (those with repetition rates below 20% in 2003), an important increase in the grade repetition rate was observed in the Slovak Republic (moving from a grade repetition rate of 2.5% in 2003 to 7.6% in 2012) while an important reduction in the repetition rate was observed in Ireland (moving from a grade repetition rate of 14% in 2003 to 9% in 2012) (Figure IV.2.10 and Table IV.2.18).

Schools in the Russian Federation, Hungary, Australia, Greece and Mexico seem to have moved away from grade repetition. In these five countries and economies, the percentage of students attending schools that have no grade repetition increased by at least ten percentage points between 2003 and 2012. This increase could also signal that schools in these countries and economies have begun to differentiate themselves into those with high and low rates of grade repetition. However, this does not seem to be the case, as the percentage of students who attend schools with a large proportion of students who had repeated a grade has also shrunk (Table IV.2.19).

■ Figure IV.2.10 ■

Change between 2003 and 2012 in grade repetition rates

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



Notes: Only countries and economies with comparable data from PISA 2003 and PISA 2012 are shown.
The percentage-point difference in the share of students who repeated a grade in 2012 and 2003 (2012 - 2003) is shown above the country/economy name. Only statistically significant differences are shown.
OECD average 2003 compares only OECD countries with comparable grade repetition measures since 2003.
Countries and economies are ranked in ascending order of the percentage of students who reported having repeated a grade in primary, lower or upper secondary school in 2012.
Source: OECD, PISA 2012 Database, Table IV.2.18.
StatLink http://dx.doi.org/10.1787/888932957308

Ability grouping within schools

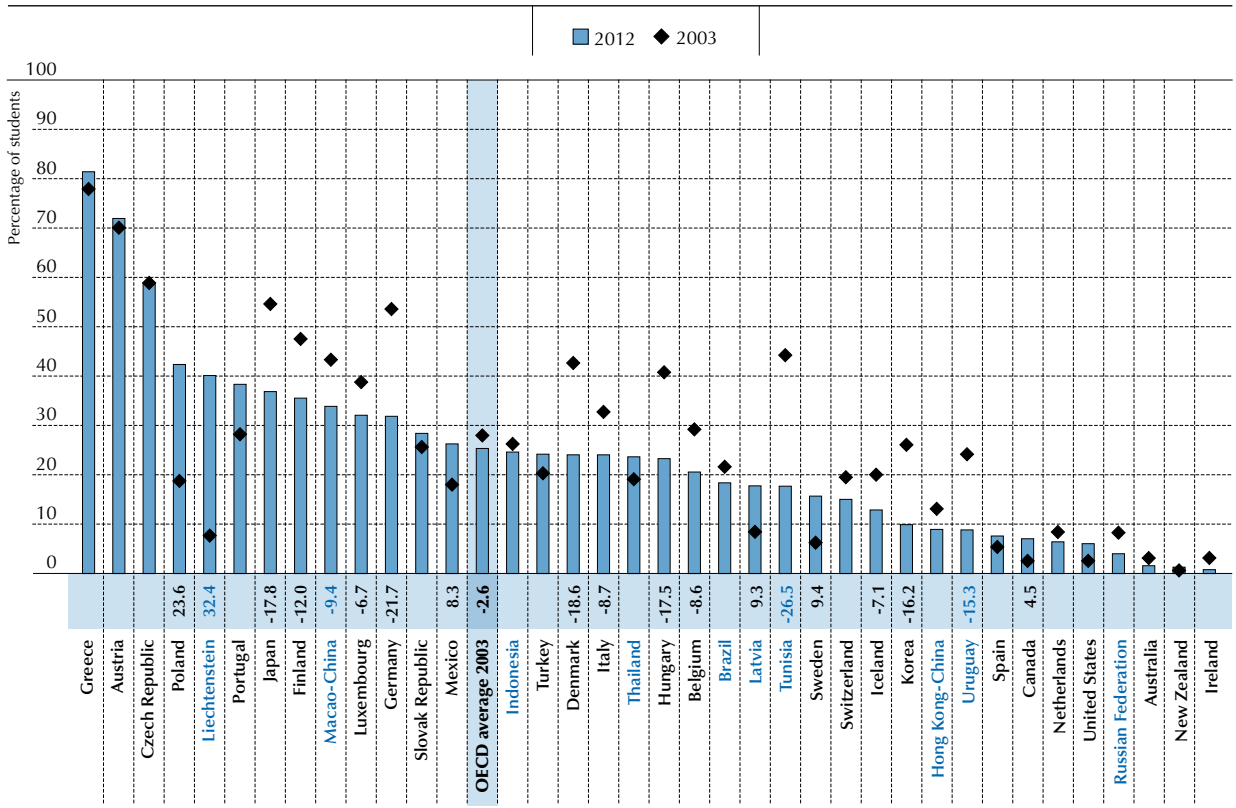
One form of horizontal stratification is ability grouping within the school. In organising mathematics instruction, for example, schools can differentiate their students according to their performance to create more homogeneous learning environments; other schools may opt to gather all students – irrespective of their academic performance – in the same classes to ensure that all students are granted the same opportunities to learn and thus have the same opportunities to succeed. Between 2003 and 2012, the share of students in schools where ability grouping is or is not practiced did not change, on average across countries with comparable data (Figure IV.2.11 and Table IV.2.21).

Although on average across OECD countries the share of students attending schools where no ability grouping is used for any class remained relatively stable, eight countries and economies saw an increase of more than ten percentage points in the share of students attending schools where ability grouping is used. In Tunisia and Germany, for example, the share of 15-year-old students attending schools that do not group by ability decreased by more than 20 percentage points; in Denmark, Japan, Hungary, Korea and Uruguay this share was reduced by more than 15 percentage points. Among these countries, different school systems shifted towards different forms of ability grouping. In Germany, for example, more students attended schools that group by ability in some classes or that group by ability in all classes in 2012 than in 2003. This could be the result of broader changes in Germany's school system. As described in Box II.3.2, the practice of between-school ability grouping that characterised German school system in the past has been replaced with a more comprehensive approach to schooling in which students with a greater diversity academic abilities are admitted to the same school. In order to adapt to these changes, some schools may choose to group students by ability in some or all classes. By contrast, in Denmark ability grouping in some classes has become more common, while the shares of students attending schools where ability grouping is not used in any class or is used in all classes has decreased. In Korea, ability grouping in all classes has become more common than both ability grouping in some classes and in no classes (Figure IV.2.11 and Table IV.2.21).

■ Figure IV.2.11 ■

Change between 2003 and 2012 in ability grouping

Percentage of students attending schools with no ability grouping for any mathematics class



Notes: Only countries and economies with comparable data from PISA 2003 and PISA 2012 are shown.
The percentage-point difference in the share of students in schools with no ability grouping in 2012 and 2003 (2012 - 2003) is shown above the country/economy name. Only statistically significant differences are shown.
OECD average 2003 compares only OECD countries with comparable ability grouping measures since 2003.
Countries and economies are ranked in descending order of the percentage of students who were in schools where no ability grouping in mathematics was used in 2012.
Source: OECD, PISA 2012 Database, Table IV.2.21.
StatLink http://dx.doi.org/10.1787/888932957308

In seven countries and economies, a comprehensive approach to mathematics instruction within schools has become more common. In Poland, for example, ability grouping in some or all classes also became less common: the share of students in schools where no ability grouping is used for any class increased by 24 percentage points between 2003 and 2012. In Mexico there was a 29 percentage-point drop in the share of students in schools where ability grouping is practiced in some classes. These schools seem to have shifted either towards a comprehensive approach to mathematics (8 percentage-point increase) or to ability grouping in all classes (20 percentage-point increase) (Figure IV.2.11 and Table IV.2.21).