6

Learning time during and after school hours

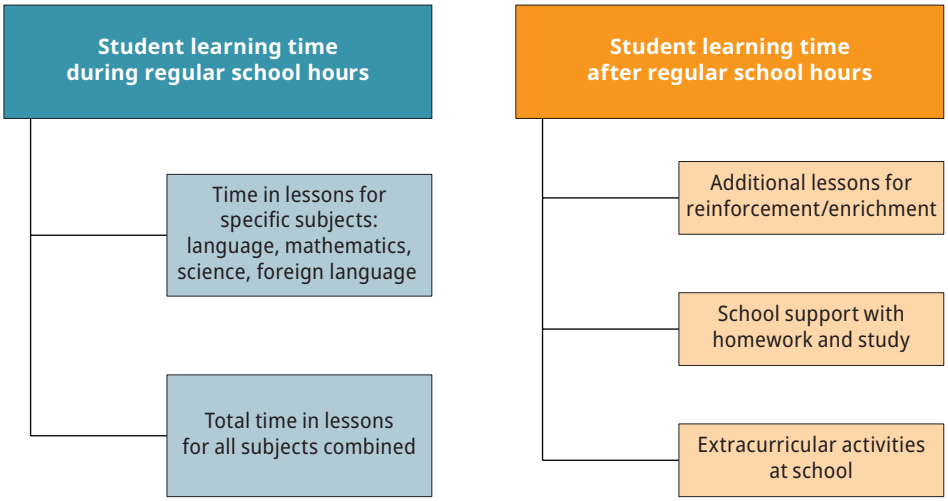
This chapter describes how much time students devote to learning, both in school and after school hours. In addition to time spent learning the core PISA subjects of reading, mathematics and science, for the first time, PISA has data on the time students spend learning foreign languages in school. The chapter also examines the types of extracurricular activities that are available to students at school, from remedial or enhancement classes, to art clubs and orchestras. These findings are then related to student performance and equity in education systems.

Learning takes time, and time is limited. Thus, time is a key education resource that must be used effectively in and outside of school. Investing in and optimising the use of students' learning time has the potential to improve the quality and equity of education outcomes (OECD, 2011[1]). However, the relationship between learning time and academic achievement is complex: additional learning time does not translate automatically into better outcomes (Gromada and Shewbridge, 2016[2]).

This chapter examines two ways in which students spend time learning (Figure V.6.1). First, the chapter covers learning that takes place during regular school hours. It compares countries in terms of the amount of learning time allocated for lessons in key subjects, such as language-of-instruction (language-of-instruction refers to the main language that teachers use in their lessons, which is usually the same as the language of the PISA assessment),[1] mathematics and science. It also considers how this time is allotted within countries, across students and schools, and how that allocation is related to student achievement. For the first time, PISA 2018 collected information about learning time in foreign-language lessons, and the results are reported here.

Second, the chapter examines learning that takes place after regular school hours. In this case, the emphasis is not on the amount of time invested, but on the opportunities that schools offer to their students. The chapter examines additional lessons offered at school for reinforcement and enrichment purposes, school support with homework and study, and extracurricular activities, such as sporting teams, volunteering or art clubs and music bands.

Figure V.6.1 **Student learning time as covered in PISA 2018**



What the data tell us

- On average across OECD countries, performance in reading improved with each additional hour of language-of-instruction lessons per week, up to 3 hours. However, this positive association between learning time in regular language-of-instruction lessons and reading performance weakened amongst students who spent more than three hours per week in these lessons.
- In 28 countries and economies, students spent more time in foreign-language lessons than in language-of-instruction lessons; the opposite was observed in 47 countries and economies.
- On average across OECD countries, students who have access to a room for homework at school scored 14 points higher in reading than students without access to a room for homework; after accounting for socio-economic status, they scored 5 points higher. Education systems with larger shares of students in schools that offer a room(s) for homework tended to show better mean performance in reading, mathematics and science, even after accounting for per capita GDP.
- Students who were enrolled in schools that offer more creative extracurricular activities (including music and art activities) performed better in reading, on average across OECD countries (by 4 score points) and in 32 countries and economies, after accounting for students' and schools' socio-economic profile. At the system level, countries and economies whose schools offer more creative extracurricular activities tended to show greater equity in student performance.

LEARNING TIME DURING REGULAR SCHOOL HOURS

Research on the relationship between learning time and student achievement offers mixed evidence. The relationship is hard to observe empirically because a number of factors, including the quality of the curriculum, teachers' instructional practices, students' aptitudes and motivation to learn, and even countries' level of economic development, can mediate or condition the effectiveness of learning time (Carroll, 1989[3]; Baker et al., 2004[4]; Scheerens and Hendriks, 2014[5]). Key findings in recent research show that additional learning time has positive but diminishing effects on student performance, and that the benefits of additional learning time can be heterogeneous, depending on the type of student (e.g. low performing or socio-economically disadvantaged) (Cattaneo, Oggenfuss and Wolter, 2017[6]; Patall, Cooper and Allen, 2010[7]; Gromada and Shewbridge, 2016[2]; Bellei, 2009[8]).

PISA measures learning time as the number of hours per week that students are required to attend regular school lessons. To create measures of learning time, PISA 2018 asked each student to report the number of class periods she or he is required to attend for specific subjects (language-of-instruction, mathematics, science and foreign language); the total number of class periods per week she or he is required to attend in all subjects; and the average number of minutes per class period.

On average across OECD countries in 2018, students spent about 3.7 hours per week in language-of-instruction lessons and in mathematics lessons, 3.4 hours per week in science lessons, and 3.6 hours per week in foreign-language lessons. The total learning time in regular school lessons (in all subjects) was 27 hours per week, on average across OECD countries (Table V.B1.6.1).

Learning time in language-of-instruction lessons varied across countries (Figure V.6.2). In 18 countries and economies, students attended language-of-instruction classes for more than 2 but less than 3 hours per week. The least learning time, on average, was observed in Belarus (2.3 hours) and Finland (2.5 hours). In these two countries, and also in Bosnia and Herzegovina, Croatia, Montenegro, Serbia and Slovenia, almost 9 out of 10 students attended language-of-instruction classes for 3 hours per week or less. In 32 countries/economies, they attended such classes for 3 or more, but less than 4, hours per week; in 20 countries and economies, they attended such classes for 4 or more, but less than 5, hours per week; and in 6 countries/economies, students attended language-of-instruction classes for 5 or more hours per week. Amongst the latter group, average learning time, per week, in language-of-instruction lessons was the longest in Chile (6.8 hours), Denmark (5.8 hours), Canada (5.4 hours) and Peru (5.4 hours). In these countries, and in Hong Kong (China) and Beijing, Shanghai, Jiangsu and Zhejiang (China) (hereafter "B-S-J-Z [China]), at least 30% of students attended language-of-instruction lessons for more than 5 hours per week (Table V.B1.6.2).

The average amount of time that students in a country or economy spent in language-of-instruction lessons tended to be similar to the average time they spent in mathematics lessons and in science lessons.[2] This was not the case, however, with regard to foreign-language lessons.

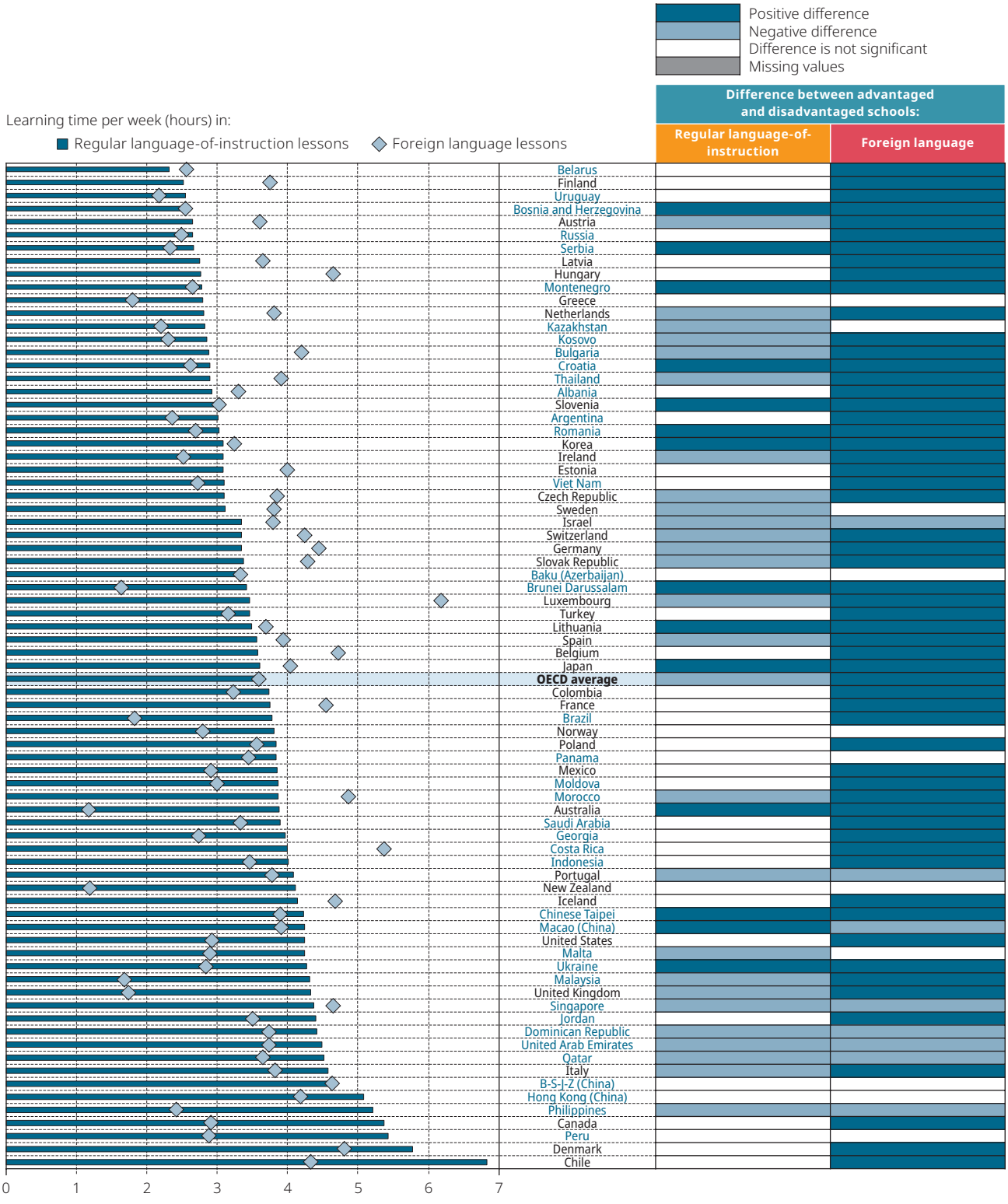
As shown in Figure V.6.2, in 47 countries and economies, the time students spent in language-of-instruction lessons in 2018 was greater than the amount of time they spent in foreign-language lessons;[3] but in 28 countries and economies the opposite was true. In Luxembourg, 15-year-old students attended foreign-language lessons for three hours per week more than language-of-instruction lessons.[4] In Hungary, students spent two hours more per week in foreign-language lessons than in language-of-instruction class. And in Austria, Belgium,[5] Bulgaria, Costa Rica, the Czech Republic, Estonia, Finland,[6] France, Germany, Latvia, Morocco, the Netherlands, the Slovak Republic, Sweden, Switzerland[7] and Thailand, students spent about one hour more per week in foreign-language class than in language-of-instruction lessons.

Disparities in students' learning time related to schools' socio-economic profile are relatively small. On average across OECD countries, students in disadvantaged schools spent 6 minutes more per week in language-of-instruction lessons than did their counterparts in advantaged schools (Table V.B1.6.3). In 26 countries and economies, students in disadvantaged schools spent more learning time in language-of-instruction lessons than students in advantaged schools; but in only 8 countries (the Dominican Republic, Germany, Morocco, the Netherlands, the Philippines, Singapore, the Slovak Republic and the United Kingdom) was the difference greater than 40 minutes per week (Figure V.6.2). By contrast, in 14 countries and economies students in advantaged schools spent more time in language-of-instruction lessons than did students in disadvantaged schools, but only in Japan and Chinese Taipei was the difference greater than 40 minutes per week.

Variations in students' learning time related to schools' socio-economic profile are also small when considering mathematics and science lessons (Table V.B1.6.3), but they are much greater when it comes to foreign-language lessons, and are in favour of students in advantaged schools, on average (Figure V.6.2). On average across OECD countries, students in advantaged schools spent almost one hour more per week in regular foreign-language lessons than did students in disadvantaged schools. In 57 countries and economies, students in advantaged schools spent more time in foreign-language classes than did students in disadvantaged schools. In Austria, Belgium, Costa Rica, Germany, Hungary, Morocco, the Netherlands and the Slovak Republic, advantaged schools offered at least two additional hours of foreign-language lessons per week than did disadvantaged schools. Only in the Dominican Republic, Israel, Macao (China), the Philippines, Portugal, Qatar, Singapore and the United Arab Emirates did disadvantaged students spend more time in foreign-language lessons at school than did advantaged students.

Figure V.6.2 **Learning time in language-of-instruction and foreign language lessons, by schools' socio-economic profile**

Based on students' reports



Countries/economies with a positive difference	14	57
Countries/economies with no difference	36	11
Countries/economies with a negative difference	26	8

Countries and economies are ranked in ascending order of the learning time per week in regular language-of-instruction lessons.

Sources: OECD, PISA 2018 Database, Tables V.B1.6.1 and V.B1.6.3.

StatLink https://doi.org/10.1787/888934131481

Differences in students' learning time related to school location (i.e. urban versus rural schools), school type (i.e. public versus private schools) and level of education (i.e. lower versus upper secondary schools) were small, on average across OECD countries.

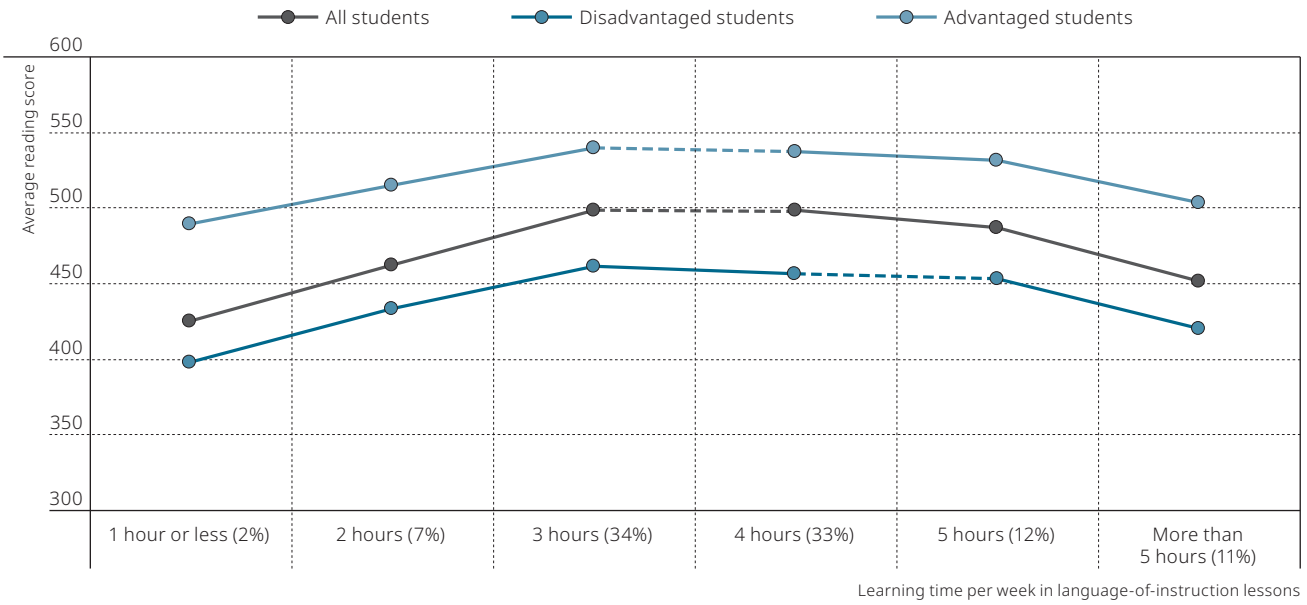
Learning time and student outcomes

The most common way PISA summarises the relationship between school practices and student achievement is by fitting a straight line to model the observed data (i.e. linear regression approach). For example, in 2018 an increase of one unit in the PISA index of socio-economic status was associated with an increase of 37 score points in reading, on average across OECD countries (OECD, 2019[10]). In some cases, however, the relationship between two variables is not well summarised by a straight line. This is the case with learning time in regular school lessons and student achievement. As shown in Figure V.6.3, the relationship between reading performance and learning time in regular language-of-instruction lessons is non-linear; instead, it is hump-shaped.

On average across OECD countries, performance in reading improved with each additional hour of language-of-instruction lessons per week, up to 3 hours. Students who spent an hour or less per week in language-of-instruction lessons scored 425 points in reading; those who spent two hours per week scored 463 points (36 points higher than the prior group); and those who spent three hours per week scored 499 points (37 points higher than the prior group). This strong positive association between more time in language-of-instruction lessons and reading performance was evident amongst both disadvantaged and advantaged students (Figure V.6.3).

Figure V.6.3 **Learning time in language-of-instruction lessons, socio-economic status and reading performance**

Based on students' reports; OECD average



Notes: For each learning time displayed, the time range covered starts where it ends for the previous one; for example, for 2 hours, learning time could be 2 hours or less but more than 1 hour.

Differences between categories that are not statistically significant are marked with dotted lines (see Annex A3).

The share of students per average learning time in language-of-instruction lessons is indicated next to each category.

Sources: OECD, PISA 2018 Database, Tables V.B1.6.2 and V.B1.6.5.

StatLink https://doi.org/10.1787/888934131500

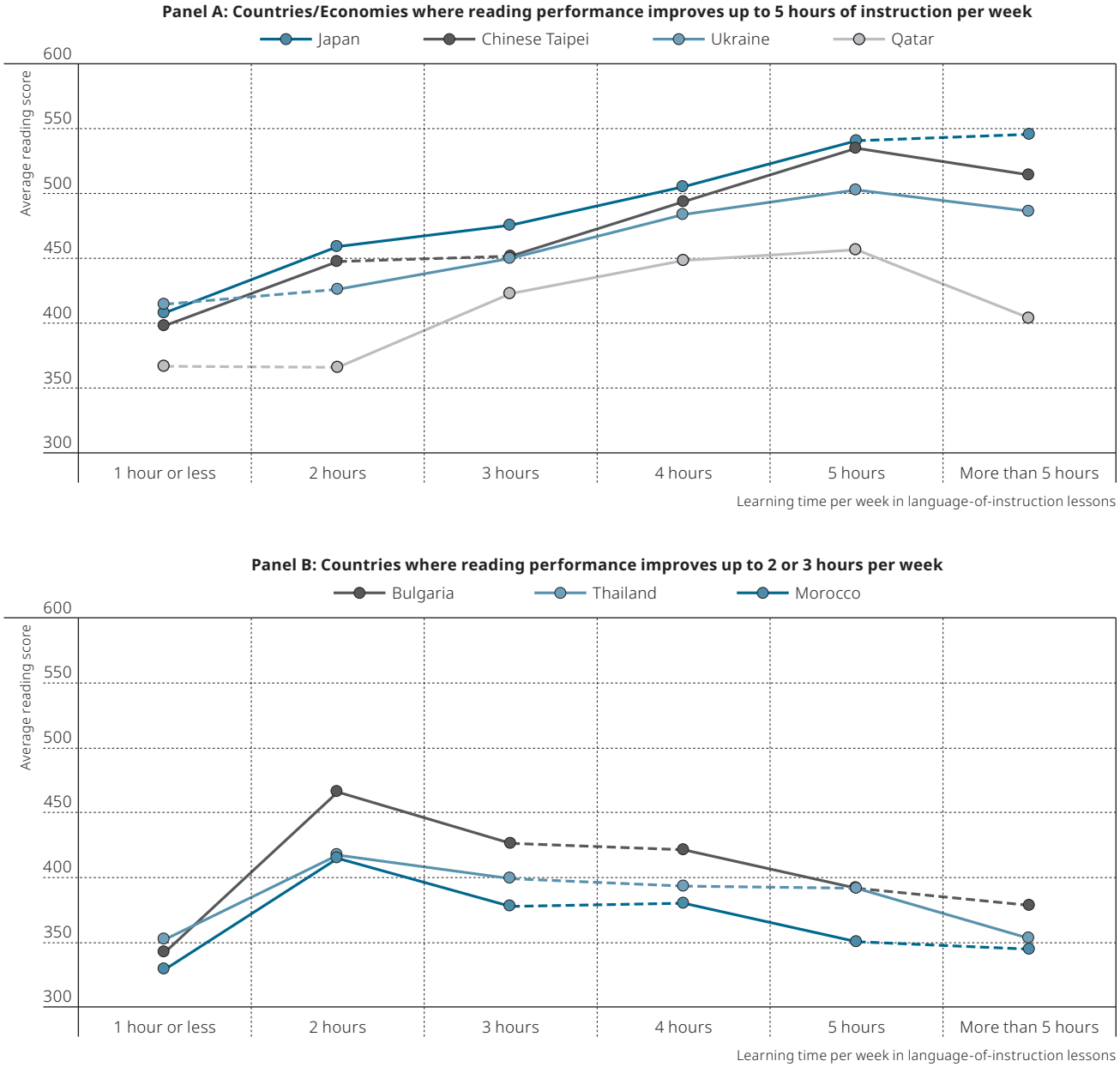
After accounting for students' and schools' socio-economic profile, on average across OECD countries, there were large gains in reading achievement associated with attending language-of-instruction lessons for two or three hours per week (Table V.B1.6.6). More than 40% of students attended language-of-instruction lessons for two or three hours per week, on average across OECD countries (Table V.B1.6.2).

However, this positive association between learning time in regular language-of-instruction lessons and reading performance weakened amongst students who spent more than three hours per week in these lessons. On average across OECD countries, students who spent 4 hours per week in language-of-instruction lessons had an average mean reading score of 499 points, which is almost identical to the score of students who spent one hour less in class (Figure V.6.3).

The same pattern (i.e. a positive slope that becomes flat after three hours of instruction per week) was observed amongst advantaged students. Amongst disadvantaged students, the slope did not flatten but instead became slightly negative. Disadvantaged students who spent four hours per week in language-of-instruction lessons scored five points lower than disadvantaged students who spent three hours per week in language-of-instruction lessons, on average across OECD countries. These results do not necessary suggest that spending more time in class results in lower scores; some low-performing students may take more classes for remedial purposes.

Figure V.6.4 **Learning time in language-of-instruction lessons and reading performance**

Based on students' reports; selected cases



Notes: For each learning time displayed, the time range covered starts where it ends for the previous one; for example, for 2 hours, learning time could be 2 hours or less but more than 1 hour.

Differences between categories that are not statistically significant are marked with dotted lines (see Annex A3).

Sources: OECD, PISA 2018 Database, Table V.B1.6.5.

StatLink https://doi.org/10.1787/888934131519

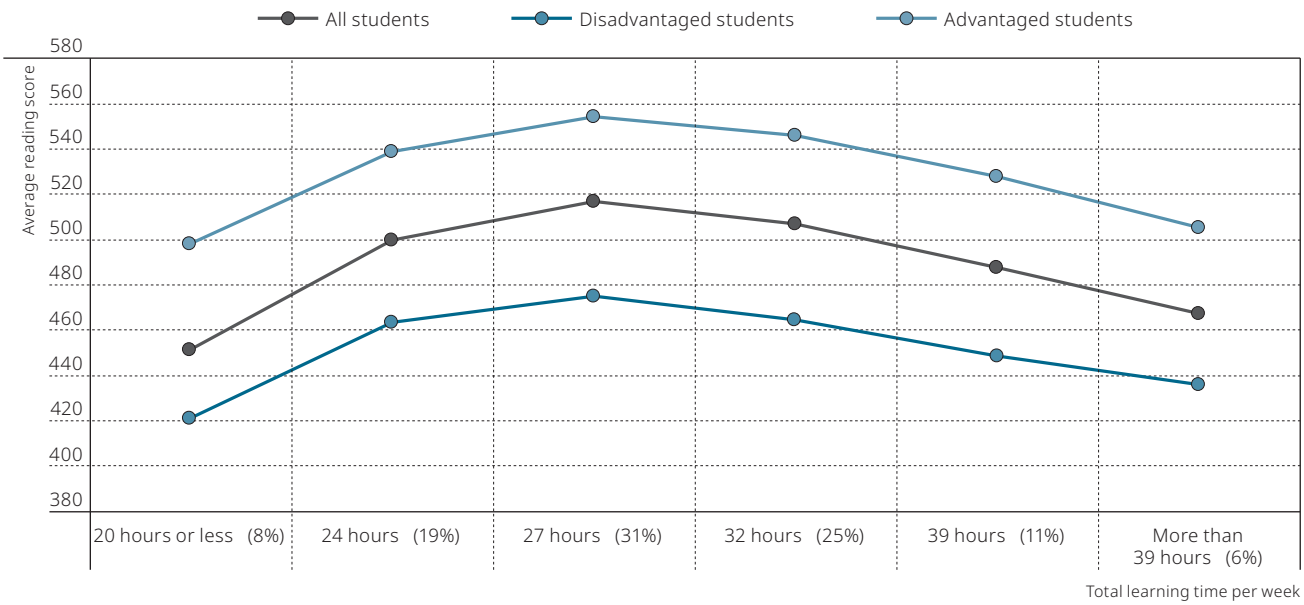
Nonetheless, after accounting for students' and schools' socio-economic profile, on average across OECD countries, students who spent four hours per week in language-of-instruction lessons scored better in reading by two points than students who spent three hours per week in those lessons (Table V.B1.6.6). In 2018, about a third of students attended language-of-instruction lessons for four hours per week, on average across OECD countries (Table V.B1.6.2).

Reading performance started to decline amongst students who attended language-of-instruction lessons for longer amounts of time. On average across OECD countries, students who spent more than five hours per week in language-of-instruction lessons scored worse in reading than students who spent between three and five hours per week in class. The same pattern was observed amongst both disadvantaged and advantaged students. After accounting for students' and schools' socio-economic profile, on average across OECD countries, attending language-of-instruction lessons for 5 hours per week was associated with a 9-point decline in reading scores (compared to students who attended class for 4 hours per week); attending for more than 5 hours per week was associated with a 28-point drop in reading scores (compared to students who attended class for 5 hours per week) (Table V.B1.6.6). Almost one in four students attended language-of-instruction lessons for more than four hours per week, on average across OECD countries (Table V.B1.6.2).

The average hump-shaped pattern observed across OECD countries, as shown in Figure V.6.3 (i.e. positive changes in performance up to three hours of instruction per week, no difference after one additional hour of instruction per week, then negative changes after five or more hours per week), was consistent across most PISA-participating countries and economies. In countries as diverse as Croatia, Estonia, Finland, Luxembourg, Montenegro, Portugal, Serbia and the United Arab Emirates, the relationship between learning time in language-of-instruction lessons and reading performance was similar to the average pattern observed across OECD countries (Table V.B1.6.5).

Figure V.6.5 **Total student learning time, socio-economic status and reading performance**

Based on students' reports; OECD average



Notes: For each learning time displayed, the time range covered starts where it ends for the previous one; for example, for 24 hours, learning time could be 24 hours or less but more than 20 hours.

All differences between categories are statistically significant (see Annex A3).

The share of students per average total learning time is indicated next to each category.

Sources: OECD, PISA 2018 Database, Tables V.B1.6.14 and V.B1.6.15.

StatLink https://doi.org/10.1787/888934131538

However, some countries differed from the average OECD pattern in the point at which the slope of the relationship changed direction. In 29 countries and economies, students who spent 4 hours per week in language-of-instruction lessons scored better than students who spent 3 hours per week. In 9 countries and economies, students who spent 5 hours per week in

language-of-instruction lessons scored better than students who spent 4 hours per week in class (Table V.B1.6.5). Japan, Qatar, Chinese Taipei and Ukraine were amongst the countries where additional hours of study, up to five hours, tended to be associated with improvements in reading performance (Figure V.6.4, Panel A).

By contrast, in 17 countries and economies students who spent 4 hours per week in language-of-instruction lessons in 2018 scored worse than students who spent 3 hours per week in instruction; in 4 countries, students who spent 3 hours in language-of-instruction lessons scored lower than students who spent 2 hours in instruction. In Bulgaria, Morocco and Thailand, an additional hour of class time after two hours per week tended to be associated with declines in reading performance, even though students who spent two hours per week in language-of-instruction lessons scored higher in reading than students who spent only one hour or less in language-of-instruction lessons (Figure V.6.4, Panel B).

Similar curvilinear patterns of association between learning time and student performance were observed for mathematics (Table V.B1.6.8), science (Table V.B1.6.10) and foreign-language lessons (i.e. associated with reading performance in the test language; Table V.B1.6.12), on average across OECD countries. Furthermore, when the total amount of learning time per week in regular lessons (in all subjects) was considered, the same hump-shaped pattern emerged (Figure V.6.5).

ADDITIONAL LESSONS AT SCHOOL AFTER REGULAR SCHOOL HOURS

Offering additional lessons on curricular subjects after regular hours at school is a common practice across PISA-participating countries and economies. These activities typically aim to reinforce or enrich instruction and learning that has taken place during regular school hours. Sometimes, after-school lessons specifically target low-performing students, socio-economically disadvantaged students or language-minority students (Park et al., 2016[11]; Jacob and Lefgren, 2002[12]; Curwen and Colón-Muñiz, 2013[13]). In contexts where socio-economically advantaged students have privileged access to private tutoring after school, public schools offer after-school lessons to expand learning opportunities for disadvantaged students (Bae et al., 2010[14]). Some after-school programmes target high-performing students from low-income families (Miller and Gentry, 2010[15]).

PISA 2018 asked school principals whether their school offers additional language-of-instruction lessons after school hours. It also asked about the purposes of these additional lessons.

On average across OECD countries, 46% of students were in schools where additional language-of-instruction lessons are offered. There was wide variation across PISA-participating countries and economies in the extent to which schools offer additional language lessons after regular school hours. In 12 countries and economies, 3 out of 4 students were in schools that offer additional language lessons, but in another 10 countries, only 1 out of 4 students attended such schools.

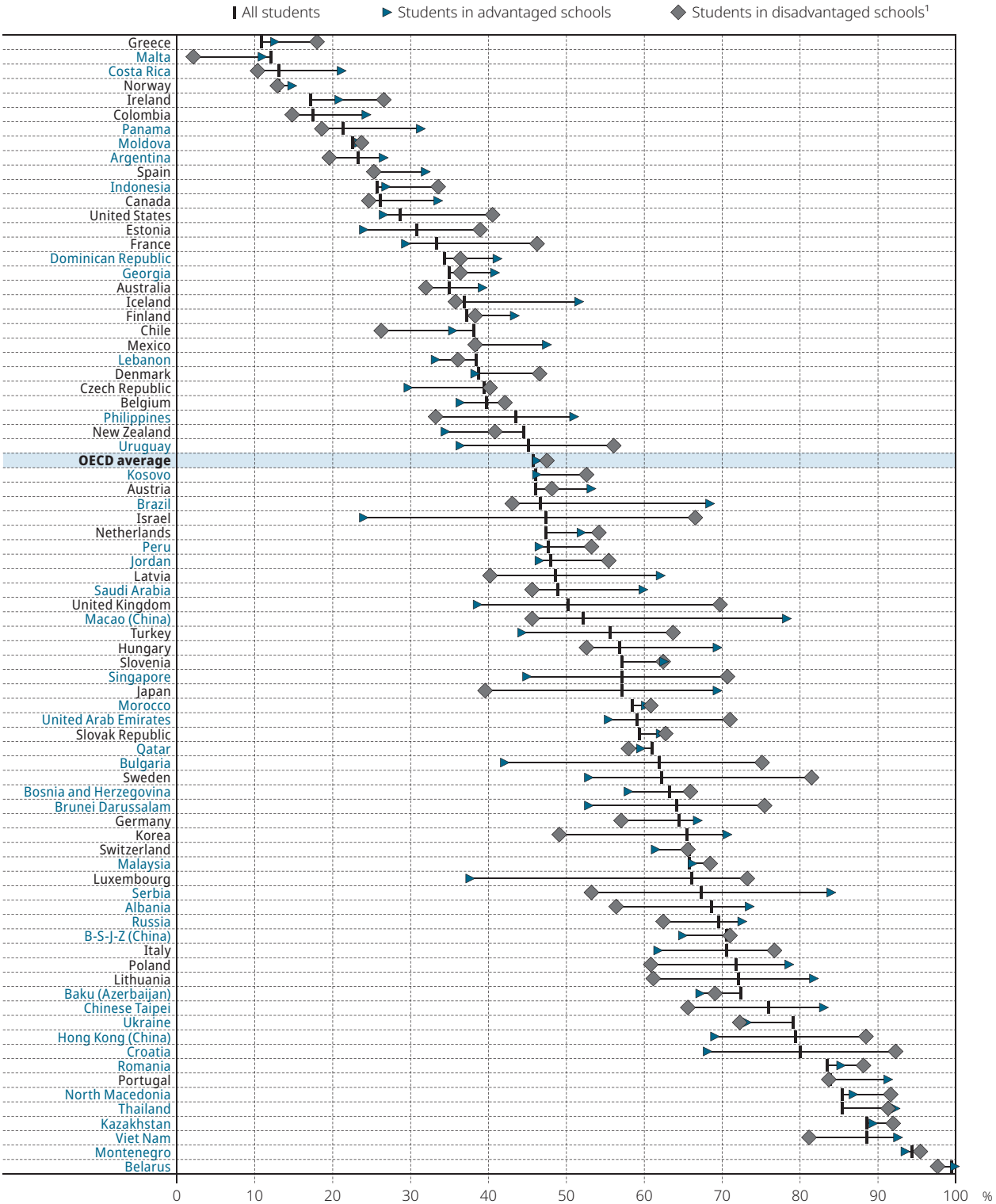
In 14 countries and economies, students in advantaged schools were more likely than students in disadvantaged schools to be in schools that offer additional language lessons after regular school hours; but in another 12 countries and economies, students in disadvantaged schools were more likely than students in advantaged schools to have these kinds of lessons available to them at school.

After-school lessons can have different purposes. On average across OECD countries in 2018, 52% of students attended schools that offer after-school lessons for both remedial and enrichment purposes; 31% attended schools that offer these lessons for remedial purposes only; 12% were in schools that offer these lessons integrating remedial and enrichment purposes; and only 5% of students attended schools that offer these lessons for enrichment purposes only (Table V.B1.6.18).

Students in schools that offer additional language-of-instruction lessons did not score better or worse in reading than students who do not have these kinds of lessons available to them at school, on average across OECD countries (Table V.B1.6.17).

Figure V.6.6 **Participation in additional language-of-instruction lessons after regular school hours, by schools' socio-economic profile**

Based on students' reports



1.A socio-economically disadvantaged (advantaged) school is a school whose socio-economic profile (i.e. the average socio-economic status of the students in the school) is in the bottom (top) quarter of the PISA index of economic, social and cultural status amongst all schools in the relevant country/economy.

Countries and economies are ranked in ascending order of the percentage of students in schools that provide additional language-of-instruction lessons after regular school hours.

Source: OECD, PISA 2018 Database, Table V.B1.6.17.

StatLink https://doi.org/10.1787/888934131557

SCHOOL-BASED HELP WITH HOMEWORK AND STUDY AFTER REGULAR HOURS

A longstanding and widely used instructional practice (Murillo and Martinez-Garrido, 2014[16]), homework can have a positive influence on student achievement (Cooper, Robinson and Patall, 2006[17]) and also on the development of attitudes towards achievement, such as motivation and self-regulation (Ramdass and Zimmerman, 2011[18]). However, critics argue that too much homework is ineffective, that it takes time from leisure activities, or that it is stressful or harmful to children's development or family life (Baker and Letendre, 2005[19]; Dudley-Marling, 2015[20]).

Previous PISA reports show that homework is widely used across PISA-participating countries and economies. For example, on average across OECD countries in 2015, 15-year-old students reported that they spent 17 hours per week studying after school, including homework, private study and other related activities (OECD, 2016[21]). PISA findings also suggest that homework can help students succeed academically. Students who spend more time doing homework tended to score higher in mathematics, even after accounting for their social and demographic background (OECD, 2014[22]).

A key concern about homework is whether it might have the unintended consequence of widening the performance gap between students from different socio-economic backgrounds. PISA shows that socio-economically advantaged students and students who attend socio-economically advantaged schools tend to spend more time doing homework (OECD, 2014[22]). The lack of a quiet space to study at home, the disparity in home Internet service and computer access, and perhaps less parental support with their studies are amongst the reasons why disadvantaged students spend less time doing homework (Bolkan, 2017[23]).

PISA 2018 did not collect information about how much time students spend doing homework or studying after school. Instead, PISA asked about the kinds of support or help that schools provide to students for completing homework and studying after school. More specifically, PISA asked school principals if their school offers a room where students can do their homework, staff who help students with their homework, or peer-to-peer tutoring. Having a room in the school available for homework hinges on the school's infrastructure. The availability of staff to help students with their homework has to do with the school's human resources and with the financial resources needed to hire teachers or other staff after school hours. Peer-to-peer tutoring does not depend on a school's resources, but rather on its organisational capacity and practices.

Of these three kinds of school support for homework and study after regular school hours, the most frequently observed was having a room where students can do their homework. On average across OECD countries in PISA 2018, three out of four students attended a school that provides a room where students can do their homework. In Canada, France, Japan, Luxembourg, Macao (China), Singapore, Slovenia, Sweden, Chinese Taipei and the United Kingdom, at least 9 out of 10 students had access to a study room after regular hours. By contrast, in Albania, Argentina, Jordan, Kosovo, Lebanon, the United Arab Emirates and Viet Nam, at most 4 out of 10 students attended a school that provides a room in which they can do their homework.

Students in advantaged schools were more likely than students in disadvantaged schools to attend a school that provides a room for homework. On average, the share of students in advantaged schools whose school provides a room for homework was about 7 percentage points larger than the share of students in disadvantaged schools whose school provides such a space. The disparity in favour of students in advantaged schools was found in 24 countries and economies, and in 16 of these countries and economies the size of the disparity was 20 percentage points or larger. Only in six education systems (Brunei Darussalam, Estonia, Latvia, Macao [China], Montenegro and Ukraine) were students in disadvantaged schools more likely than students in advantaged schools to have access to a place at school to do their homework.

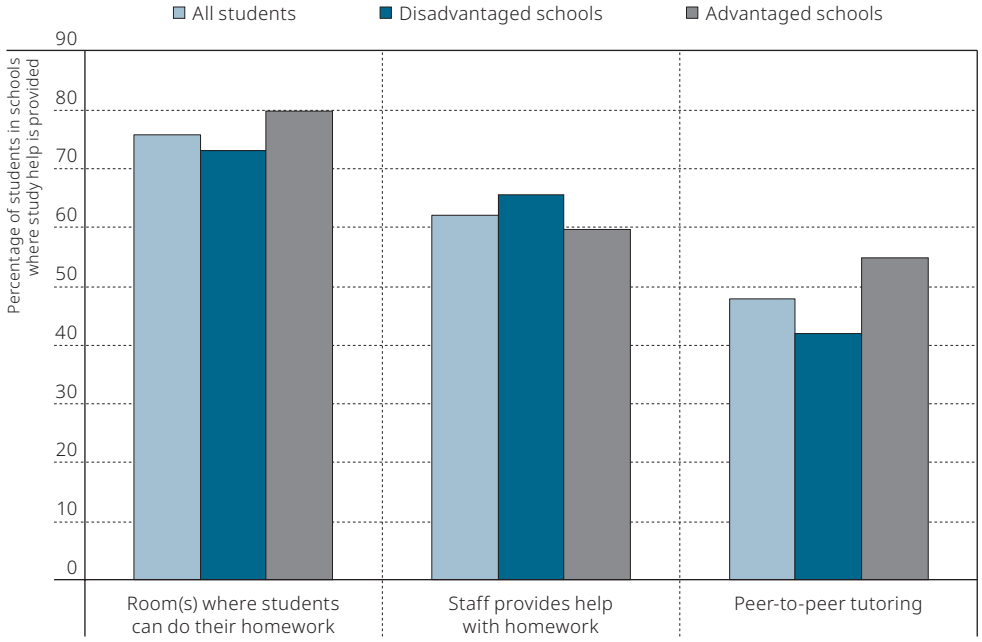
The share of students in schools that provide a room where students can do their homework increased between 2015 and 2018, on average across OECD countries (by 3 percentage points) and in 20 countries and economies. In Finland, Iceland, Mexico, the Republic of Moldova, Norway, Qatar and Turkey, the share increased by more than ten percentage points, but it decreased by more than ten percentage points in Brazil and Denmark.

The incidence of peer-to-peer tutoring was measured for the first time in PISA 2018. On average across OECD countries, almost half of all students attended a school that provides this form of study help. In 24 countries and economies, 75% of students or more were in schools with peer-to-peer tutoring after regular hours, including B-S-J-Z (China), Malaysia, the Philippines, Thailand and Ukraine, where 90% of students or more attended such schools. By contrast, in Finland, Japan, Malta, Sweden and Switzerland, only 25% of students or less attended a school where peer-to-peer tutoring is available (Table V.B1.6.19).

Socio-economic disparities were greater in peer-to-peer tutoring than in the other two forms of study help. On average across OECD countries, the share of students in advantaged schools whose school provides peer-to-peer tutoring was about 13 percentage points larger than the share of students in disadvantaged schools whose school provides this form of study help. In 22 education systems, this disparity in favour of students in advantaged schools was statistically significant, compared to only 7 education systems where the disparity favoured students in disadvantaged schools (Table V.B1.6.19).

Figure V.6.7 **Study help after regular hours, by schools' socio-economic profile**

Based on principals' reports; OECD average



Countries/economies with a positive difference (% of students is higher in advantaged than disadvantaged schools)	23	9	22
Countries/economies with no difference	48	55	49
Countries/economies with a negative difference (% of students is higher in disadvantaged than advantaged schools)	6	13	7

Note: All differences between advantaged and disadvantaged schools are statistically significant, on average across OECD countries (see Annex A3).
Source: OECD, PISA 2018 Database, Table V.B1.6.19.

StatLink https://doi.org/10.1787/888934131576

School-based help with homework and study, and student performance

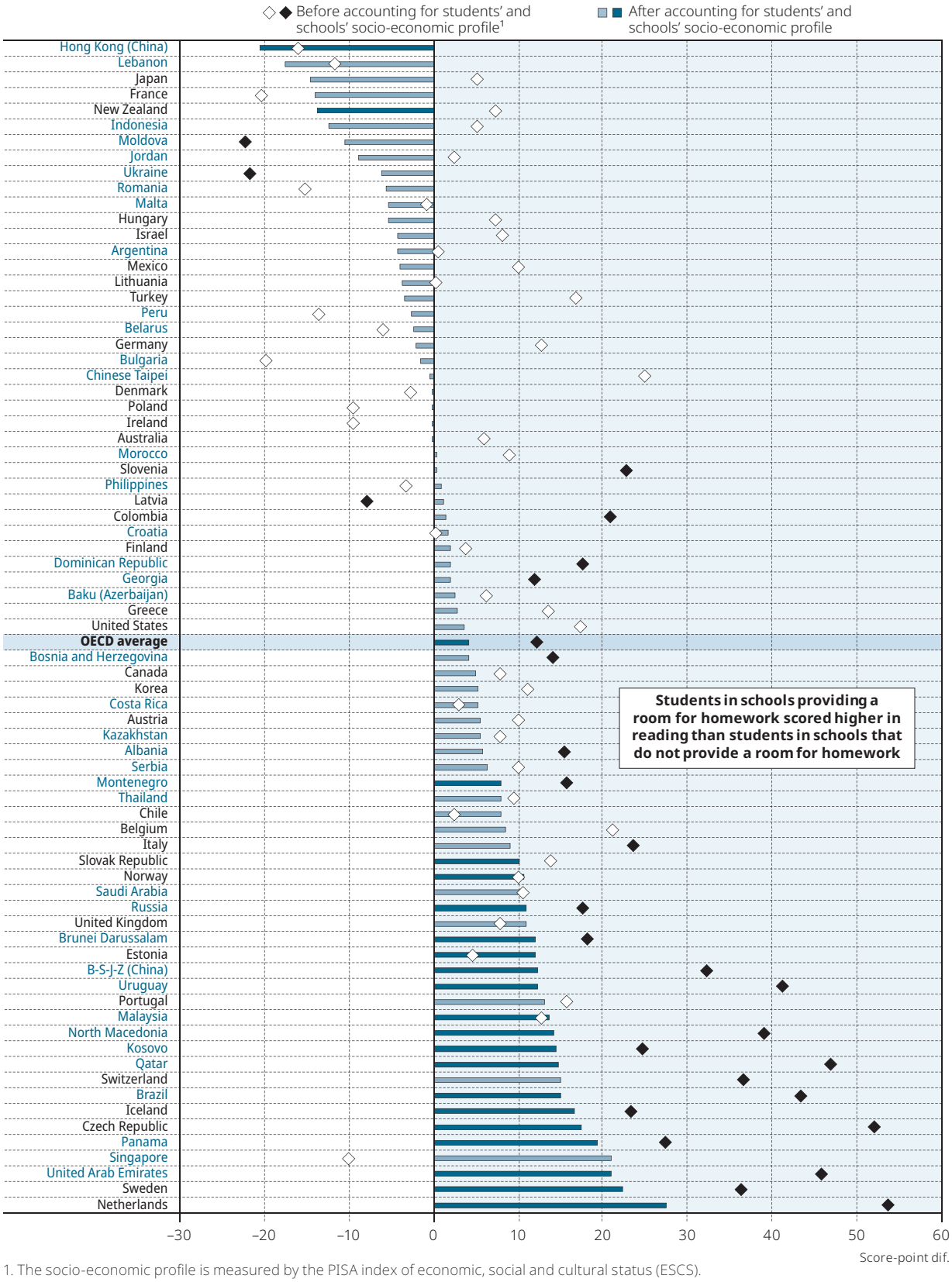
In 20 countries and economies, attending a school that provides space where students can do their homework is associated with higher scores in reading, after accounting for the socio-economic profile of students and schools (Figure V.6.8). On average across OECD countries, students who have access to a room for homework at school scored 12 points higher in reading than students without access to a room for homework, before accounting for other variables, and 4 points higher after accounting for socio-economic variables.

Furthermore, at the system level, those education systems with a higher percentage of students who have access to a room for homework at school tended to show better mean performance in PISA. After accounting for per capita GDP, across all countries and economies, there was a strong correlation between the share of students who have access to a room for homework at school and mean performance in reading (partial r = .54), mathematics (partial r = .51) and science (partial r = .55). Across OECD countries, the correlations were weaker, but also statistically significant, after accounting for per capita GDP, in the three core subjects (partial coefficients between .34 and .47).

Peer-to-peer tutoring was also associated with better performance, although in a smaller number of countries and with narrower score-point differences (Figure V.6.9). On average across OECD countries, students in schools with peer-to-peer tutoring scored 14 points higher in reading than students without access to peer-to-peer tutoring, before accounting for other variables, and 4 points higher after accounting for socio-economic variables. Peer-to-peer tutoring was associated with better reading performance in 15 countries and economies, after accounting for students' and schools' socio-economic profile.

Figure V.6.8 **Availability of a room(s) at school for homework and reading performance**

Score-point difference in reading associated with schools providing a room for homework



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

Note: Statistically significant values are shown in darker tones (see Annex A3).

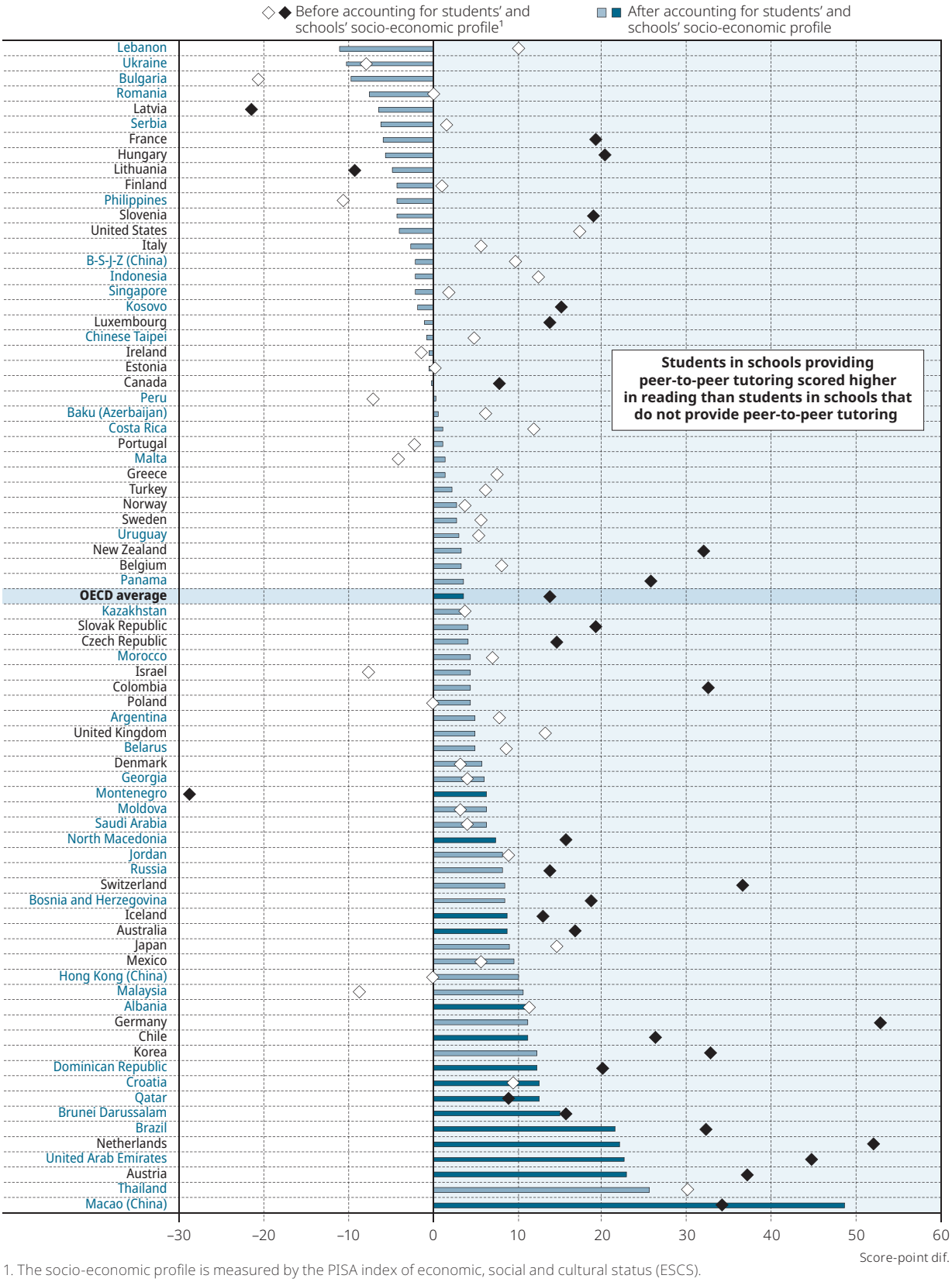
Countries and economies are ranked in ascending order of the score-point difference associated with schools providing a room for homework, after accounting for students' and schools' socio-economic profile.

Source: OECD, PISA 2018 Database, Table V.B1.6.21.

StatLink https://doi.org/10.1787/888934131595

Figure V.6.9 **Peer-to-peer tutoring and reading performance**

Score-point difference in reading associated with schools providing peer-to-peer tutoring



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

Note: Statistically significant values are shown in darker tones (see Annex A3).

Countries and economies are ranked in ascending order of the score-point difference associated with schools providing peer-to-peer tutoring, after accounting for students' and schools' socio-economic profile.

Source: OECD, PISA 2018 Database, Table V.B1.6.21.

StatLink https://doi.org/10.1787/888934131614

EXTRACURRICULAR ACTIVITIES AT SCHOOL

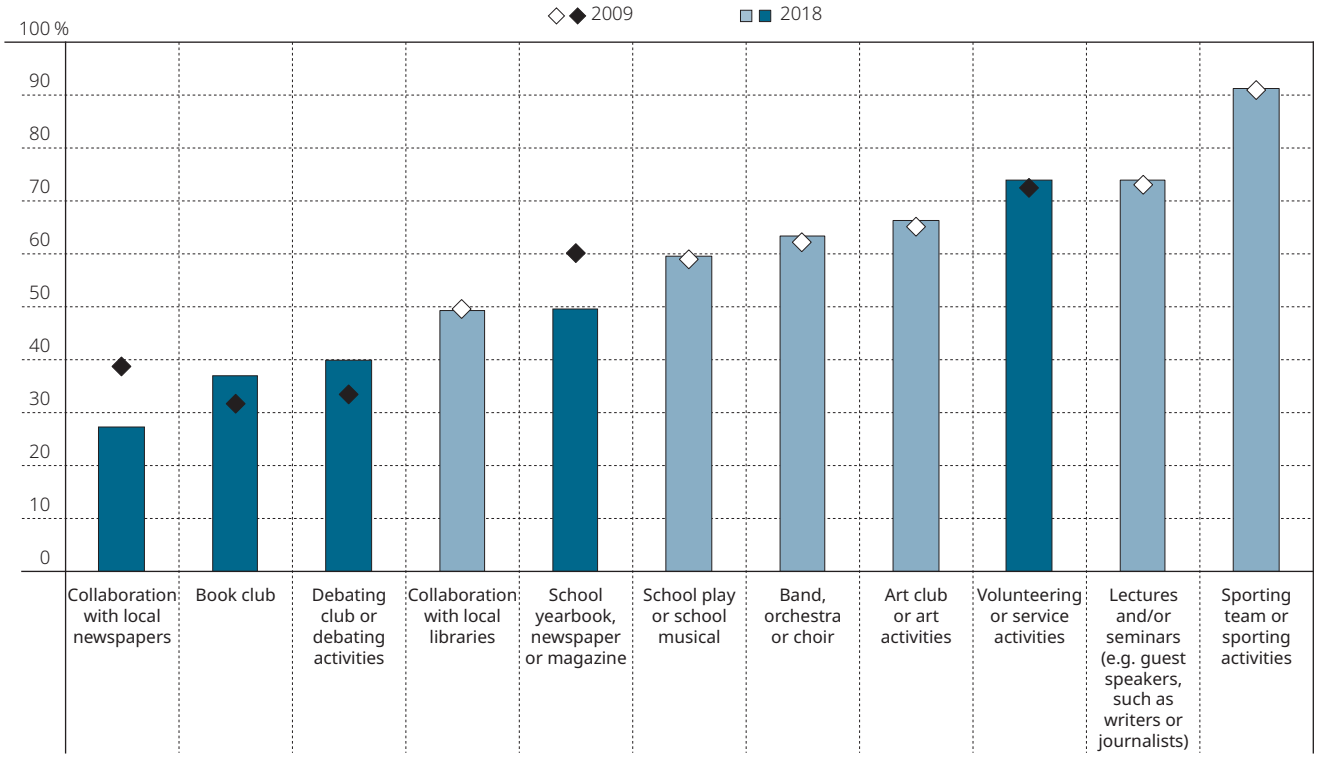
While some of the activities that schools offer after school hours have an explicit academic focus (e.g. offering additional enrichment or remedial lessons), other activities do not. Extracurricular activities at school usually aim to achieve a broader set of goals, such as physical exercise and health, the development of creativity and practice or appreciation of the arts, or volunteering and engagement with the community. Participation in extracurricular activities can also help students develop non-cognitive skills that are helpful for academic success, such as persistence, teamwork or a stronger sense of belonging at school (Farb and Matjasko, 2012[23]; Massoni, 2011[24]). They can also help develop social networks (Stuart et al., 2011[25]). However, research suggests that extracurricular activities might have the unintended effect of enhancing disparities in achievement related to socio-economic status because they tend to be more frequently available in advantaged than in disadvantaged schools (Covay and Carbonaro, 2010[26]; Stearns and Glennie, 2010[27]).

PISA 2018 asked school principals whether their school offers a range of extracurricular activities. These activities are shown in Figure V.6.10. On average across OECD countries, sporting activities were the extracurricular activities most frequently offered to 15-year-old students (90% of students have access to sports activities), followed by lectures or seminars and volunteering or service activities (74% of students). Debating clubs (40% of students), book clubs (37% of students) and collaboration with local newspapers (27%) were the least frequently offered extracurricular activities, on average across OECD countries.

Over the past decade, the largest declines in extracurricular activities were observed amongst those related to newspapers. On average across OECD countries, the share of students in schools whose principal reported that the school offers collaboration with local newspapers decreased by 11 percentage points, and the share of students in schools that support a school yearbook, newspaper or magazine shrank by 10 percentage points. By contrast, the share of students in schools that offer debating clubs increased by 7 percentage points, and the share of students in schools that offer book clubs increased by 5 percentage points.

Figure V.6.10 **Change between 2009 and 2018 in extracurricular activities offered at school**

Percentage of students in schools where extracurricular activities are offered; OECD average



Note: Statistically significant changes between 2009 and 2018 are marked in a darker tone (see Annex A3).
Source: OECD, PISA 2018 Database, Table V.B1.6.22.
StatLink https://doi.org/10.1787/888934131633

The index of creative extracurricular activities at school was computed as the total number of the following music- and art-related activities that are offered at school: band, orchestra or choir; school play or school musical; and art club or art activities. Values in the index range from 0 to 3. On average across OECD countries in 2018, creative extracurricular activities were more frequently offered in advantaged (2.12 in the index) than in disadvantaged (1.65 in the index) schools, in urban (1.94 in the index) than in rural (1.65 in the index) schools, and in private (2.08 in the index) than in public (1.93 in the index) schools.

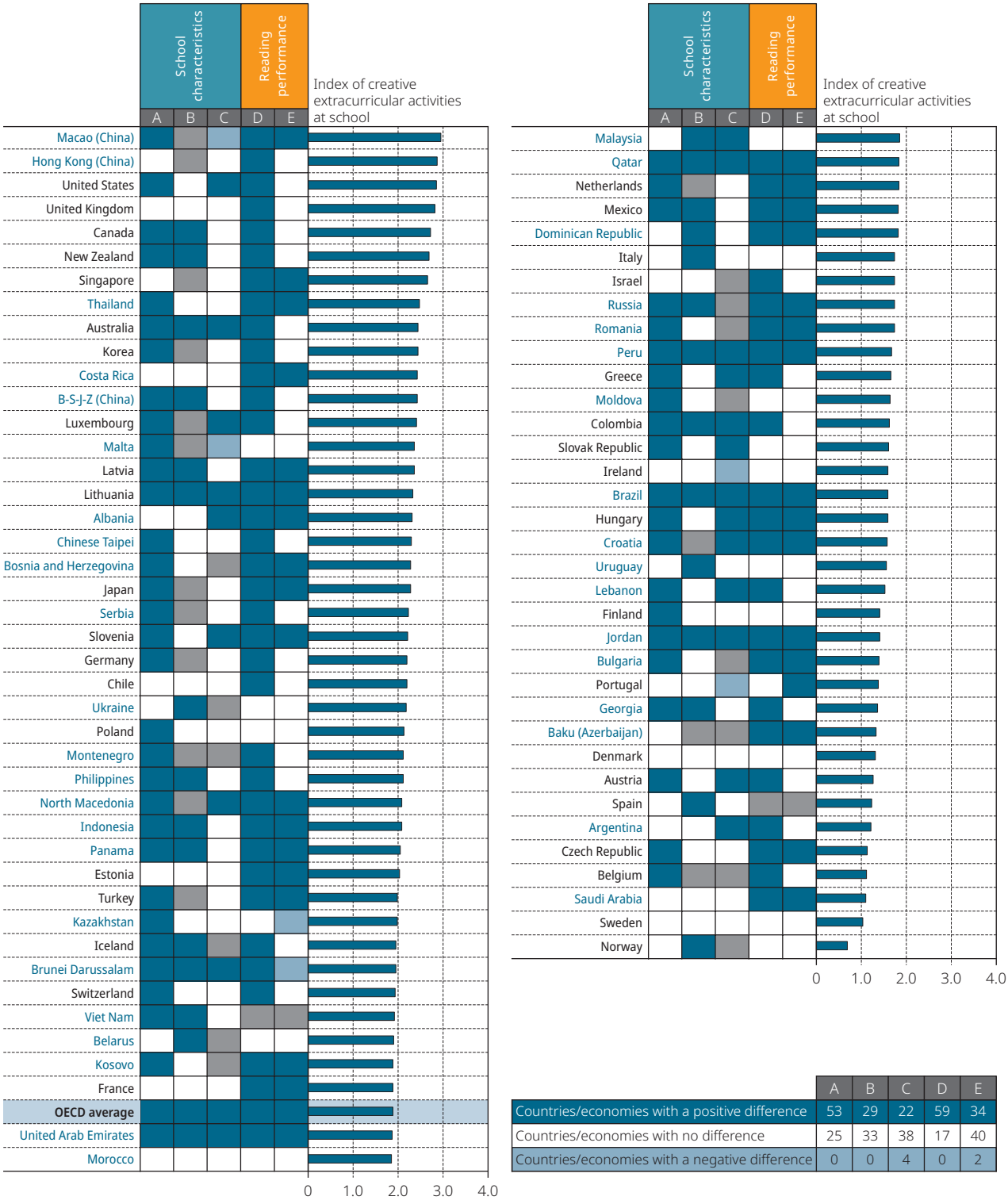
Figure V.6.11 **Creative extracurricular activities offered at school, school characteristics and reading performance**

Based on principals' reports

Positive difference | Negative difference | Difference is not significant | Missing values

A Advantaged - disadvantaged schools | B City - rural schools | C Private - public schools

D Before accounting for students' and schools' socio-economic profile[1] | E After accounting for students' and schools' socio-economic profile[1]



	A	B	C	D	E
Countries/economies with a positive difference	53	29	22	59	34
Countries/economies with no difference	25	33	38	17	40
Countries/economies with a negative difference	0	0	4	0	2

1. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.

Note: Higher values in the index indicate greater number of creative extracurricular activities at school.

Countries and economies are ranked in descending order of the index of creative extracurricular activities at school.

Source: OECD, PISA 2018 Database, Table V.B1.6.23.

StatLink https://doi.org/10.1787/888934131652

After accounting for students' and schools' socio-economic profile, students who were enrolled in schools that offer more creative extracurricular activities performed better in reading, on average across OECD countries (by 4 score points) and in 32 countries and economies.

HOW LEARNING TIME IS RELATED TO DIFFERENCES IN PERFORMANCE AND EQUITY IN EDUCATION ACROSS COUNTRIES/ECONOMIES (SYSTEM-LEVEL ANALYSIS)

This section examines whether learning time is related to education outcomes at the system level. Two education outcomes are considered: mean performance in reading and equity in reading performance. As in previous PISA reports, equity in reading performance is measured by the percentage of variation in reading performance accounted for by the variation in students' socio-economic status: the smaller the variation in performance explained by socio-economic status, the greater the equity in performance (OECD, 2018[18]; OECD, 2019[19]).

Figure V.6.12 shows system-level correlation coefficients between various measures of learning time, on the one hand, and reading performance and equity in reading, on the other. Correlational analyses were conducted separately for OECD countries and for all countries and economies that participated in PISA 2018. In addition, correlations were computed before and after accounting for per capita GDP to account for the level of economic development of a country/economy.

Consistent with the average hump-shaped pattern observed across OECD countries (see Figure V.6.3), system-level analyses show that education systems where more students tended to spend extremely short or long hours in regular lessons tended to score lower in reading. Figure V.6.13 shows that education systems where more students spent 20 hours or less per week in regular school lessons, including language-of-instruction, mathematics, science and foreign-language lessons, tended to show lower average performance in reading. Figure V.6.14 shows that education systems where more students spent 39 hours or more per week in regular lessons in all subjects tended to have lower scores in reading. These relationships were observed both across OECD countries, and across all countries and economies, even after accounting for per capita GDP. Similar patterns were observed when considering mathematics and science performance (Table V.B1.6.24).

Differences in learning time for foreign-language instruction were related to equity in student performance. Figure V.6.15 shows that education systems with a narrower socio-economic gap in regular foreign-language learning time tended to achieve greater equity in reading performance. This relationship was observed both across OECD countries and across all countries and economies, even after accounting for per capita GDP. A similar pattern was also observed for equity in mathematics and science performance (Table V.B1.6.24).

In high-performing education systems, schools tend to provide a room where students can do their homework, and school staff provides help with students' homework. Figure V.6.16 shows that education systems where more students have access to a room for homework at school tended to perform better in reading. Figure V.6.17 shows that education systems where more students attended schools where the staff provides help for their homework tended to perform better in reading. These relationships are observed both across OECD countries, and across all countries and economies, even after accounting for per capita GDP. Similar patterns were also observed for equity in mathematics and science performance (Table V.B1.6.24). Across all countries and economies, there was a weak negative correlation between access to a room for homework at school and equity in performance, after accounting for per capita GDP (partial r = -0.22).

At the system level, countries and economies with more students in schools that offer lectures and/or seminars (e.g. guest speakers, such as writers or journalists) tended to perform better in reading. These countries also tended to show greater equity in performance. These relationships were observed both across OECD countries and across all countries and economies, even after accounting for per capita GDP (Figure V.6.12).

Figure V.6.12 [1/2] **Relationship between measures of student learning time, and student performance and equity**

Correlation coefficients between two relevant measures

		OECD countries			
		Mean reading score		Equity in reading	
		Before accounting for per capita GDP	After accounting for per capita GDP	Before accounting for per capita GDP	After accounting for per capita GDP
Learning time[1]	Regular language-of-instruction learning time (mean)				
	Regular language-of-instruction learning time (difference top-bottom quarters of school socio-economic profile)				
	Regular mathematics learning time (mean)				
	Regular mathematics learning time (difference top-bottom quarters of school socio-economic profile)				
	Regular science learning time (mean)				
	Regular science learning time (difference top-bottom quarters of school socio-economic profile)			-0.40	-0.40
	Regular foreign language learning time (mean)			-0.38	-0.39
	Regular foreign language learning time (difference top-bottom quarters of school socio-economic profile)			-0.55	-0.55
	Total learning time (mean)				
	Total learning time (difference top-bottom quarters of school socio-economic profile)				
	Regular language-of-instruction lessons: 1 hour or less per week (%)				
	Regular language-of-instruction lessons: 2 hours per week (%)				
	Regular language-of-instruction lessons: 3 hours per week (%)				
	Regular language-of-instruction lessons: 4 hours per week (%)				
	Regular language-of-instruction lessons: 5 hours per week (%)				
	Regular language-of-instruction lessons: more than 5 hours per week (%)				
	Total learning time per week: 20 hours or less	-0.70	-0.65		
	Total learning time per week: between 20 hours and less than 24 hours				
	Total learning time per week: between 24 and less than 27 hours				
	Total learning time per week: between 27 and less than 32 hours				
	Total learning time per week: between 32 and less than 39 hours	-0.34	*-0.31*		
	Total learning time per week: 39 hours or more	-0.46	-0.39		
Study help	Additional language-of-instruction lessons offered				
	Enrichment only				
	Remedial only				
	Both enrichment and remedial				
	Without differentiation			*0.32*	*0.32*
	Room where students can do their homework	0.54	0.42		
	Staff provides help	0.53	0.45		
	Peer-to-peer tutoring				
Extracurricular activities	Creative extracurricular activities at school				
	Band	0.33	*0.30*		
	School play				
	School yearbook				
	Volunteering				
	Book club				
	Debating club				
	Art club				
	Sporting team				
	Lectures	0.35	0.38	*0.30*	*0.30*
	Collaboration with libraries		*0.31*		
	Collaboration with newspapers				

1. For each learning time displayed, the time range covered starts where it ends for the previous one; for example, for 2 hours, learning time could be 2 hours or less but more than 1 hour.

Notes: 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 the two measures.

Only statistically significant coefficients are shown. Values that are statistically significant at the 10% level ($p < 0.10$) are in italics. All other values are statistically significant at the 5% level ($p < 0.05$).

Source: OECD, PISA 2018 Database, Table V.B1.6.24.

StatLink https://doi.org/10.1787/888934131671

Figure V.6.12 [2/2] **Relationship between measures of student learning time, and student performance and equity**

Correlation coefficients between two relevant measures

		All countries and economies			
		Mean reading score		Equity in reading	
		Before accounting for per capita GDP	After accounting for per capita GDP	Before accounting for per capita GDP	After accounting for per capita GDP
Learning time[1]	Regular language-of-instruction learning time (mean)				
	Regular language-of-instruction learning time (difference top-bottom quarters of school socio-economic profile)	0.25	0.32		
	Regular mathematics learning time (mean)				
	Regular mathematics learning time (difference top-bottom quarters of school socio-economic profile)		*0.20*		
	Regular science learning time (mean)				
	Regular science learning time (difference top-bottom quarters of school socio-economic profile)				
	Regular foreign language learning time (mean)	0.23			
	Regular foreign language learning time (difference top-bottom quarters of school socio-economic profile)		0.30	-0.30	-0.28
	Total learning time (mean)				
	Total learning time (difference top-bottom quarters of school socio-economic profile)	-0.33	-0.32		
	Regular language-of-instruction lessons: 1 hour or less per week (%)	-0.45	-0.45	*-0.22*	*-0.21*
	Regular language-of-instruction lessons: 2 hours per week (%)	-0.40	-0.27		
	Regular language-of-instruction lessons: 3 hours per week (%)		*0.20*		
	Regular language-of-instruction lessons: 4 hours per week (%)				
	Regular language-of-instruction lessons: 5 hours per week (%)				
	Regular language-of-instruction lessons: more than 5 hours per week (%)				
	Total learning time per week: 20 hours or less	-0.64	-0.58		
	Total learning time per week: between 20 hours and less than 24 hours				
	Total learning time per week: between 24 and less than 27 hours	0.31	0.29		
	Total learning time per week: between 27 and less than 32 hours	0.41	*0.22*		
	Total learning time per week: between 32 and less than 39 hours				
	Total learning time per week: 39 hours or more	-0.48	-0.49		
Study help	Additional language-of-instruction lessons offered				
	Enrichment only				
	Remedial only	0.29		*-0.22*	*-0.28*
	Both enrichment and remedial				
	Without differentiation	*-0.19*			0.25
	Room where students can do their homework	0.62	0.54		*-0.22*
	Staff provides help	0.43	0.30		
	Peer-to-peer tutoring	-0.26	-0.25		
Extracurricular activities	Creative extracurricular activities at school	0.22		0.24	0.26
	Band	0.41	0.34		
	School play			0.30	0.29
	School yearbook			0.26	*0.22*
	Volunteering			*0.19*	
	Book club	-0.24	-0.36		
	Debating club	*-0.21*	-0.34	0.27	0.26
	Art club				
	Sporting team				
	Lectures	0.36	0.25	0.27	0.26
	Collaboration with libraries		0.23		
	Collaboration with newspapers				

1. For each learning time displayed, the time range covered starts where it ends for the previous one; for example, for 2 hours, learning time could be 2 hours or less but more than 1 hour.

Notes: 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 the two measures.

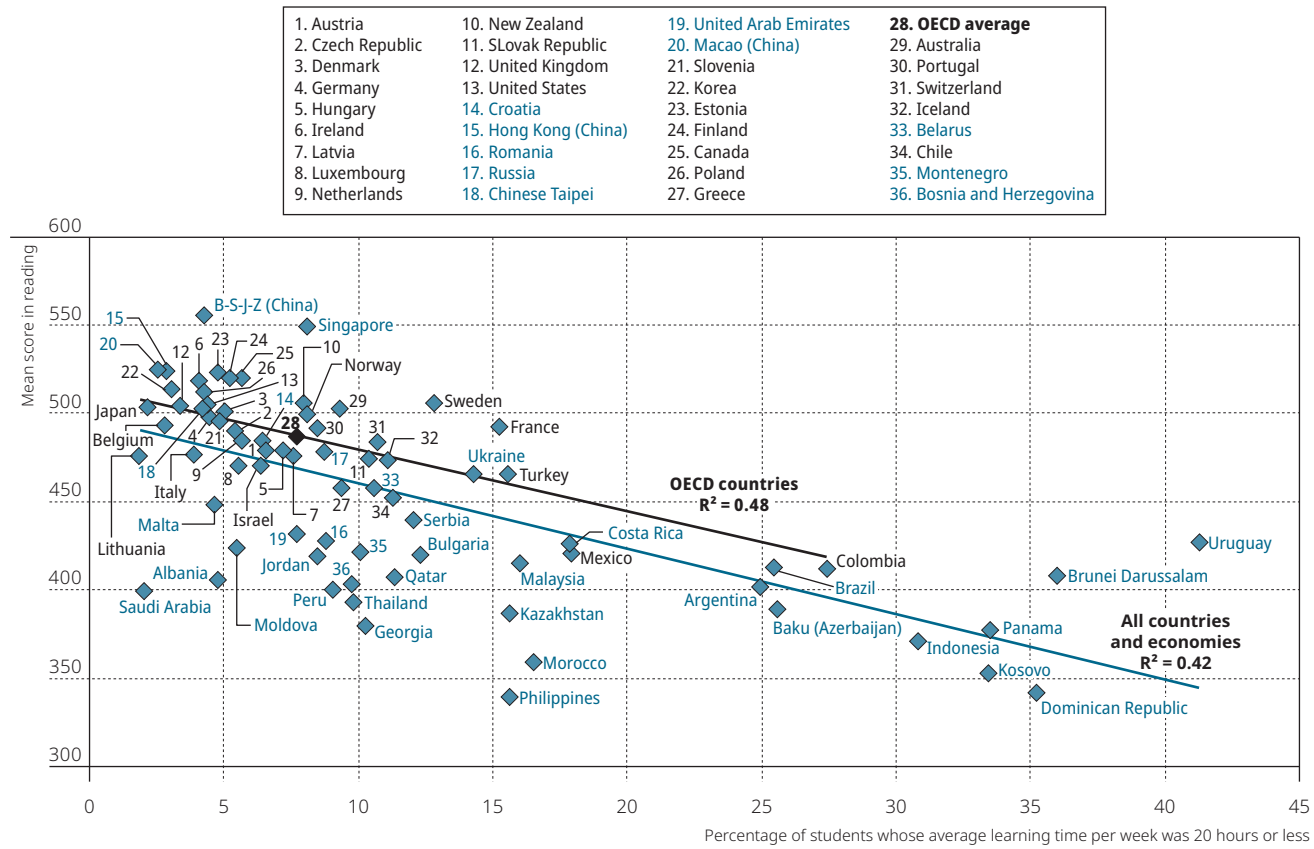
Only statistically significant coefficients are shown. Values that are statistically significant at the 10% level ($p < 0.10$) are in italics. All other values are statistically significant at the 5% level ($p < 0.05$).

Source: OECD, PISA 2018 Database, Table V.B1.6.24.

StatLink https://doi.org/10.1787/888934131671

Figure V.6.13 **Short average learning time in regular lessons and mean reading performance**

Students who spent 20 hour or less per week in all subjects

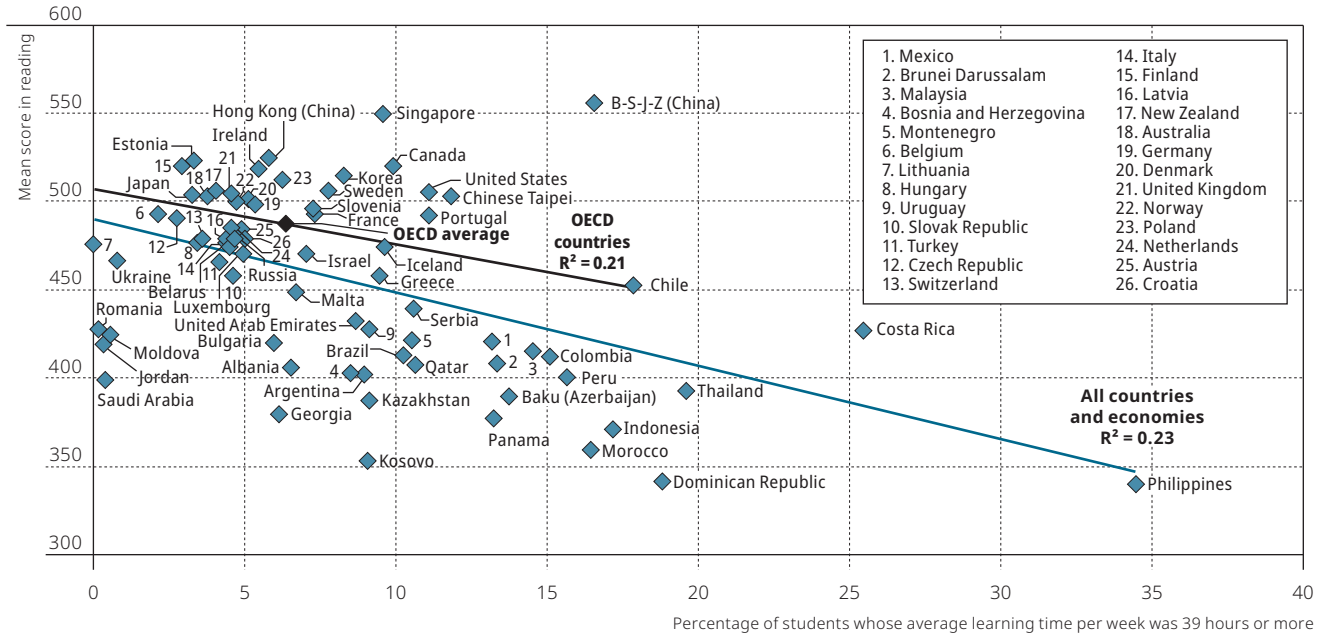


Sources: OECD, PISA 2018 Database, Tables V.B1.6.13 and I.B1.4.

StatLink https://doi.org/10.1787/888934131690

Figure V.6.14 **Long average learning time in regular lessons and mean reading performance**

Students who spent 39 hours or more per week in all subjects

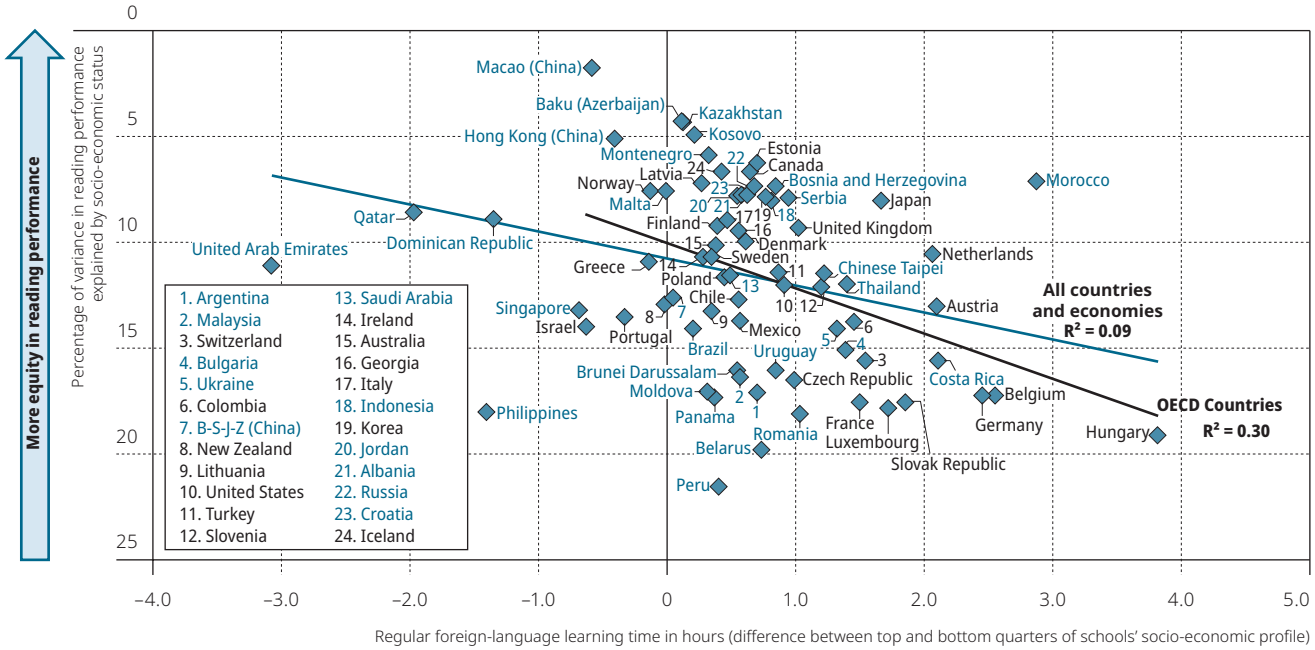


Sources: OECD, PISA 2018 Database, Tables V.B1.6.13 and I.B1.4.

StatLink https://doi.org/10.1787/888934131709

Figure V.6.15 **Disparity in regular foreign-language learning time and equity in reading performance**

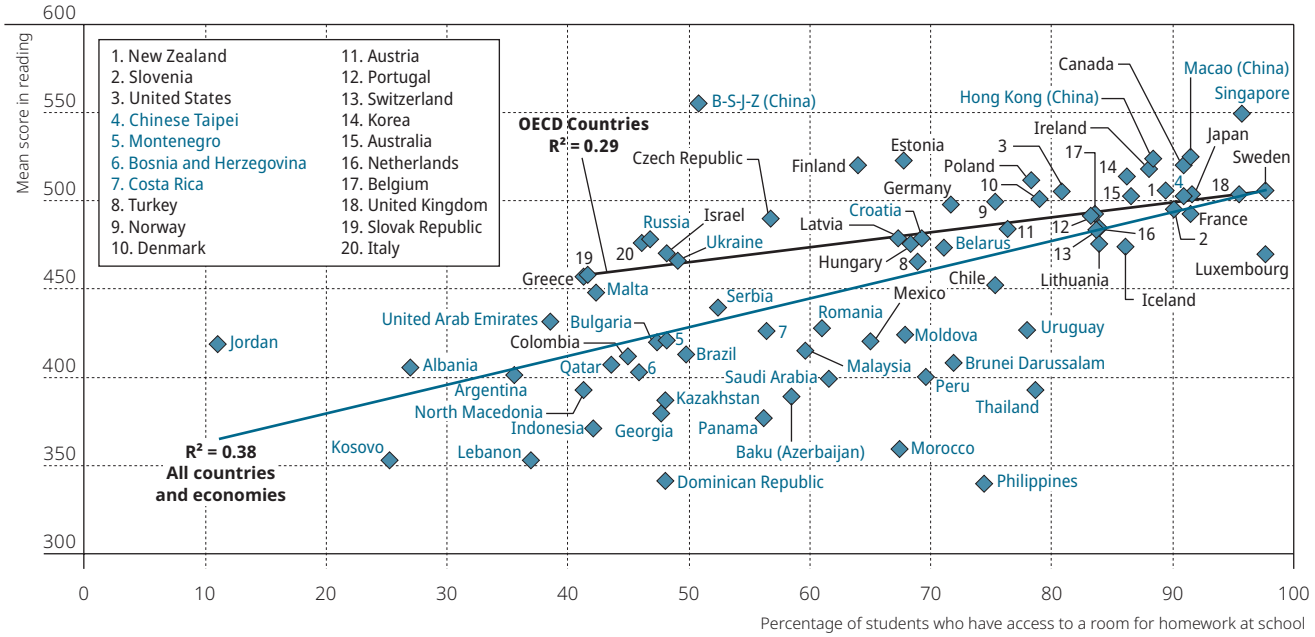
Regular school lessons



Sources: OECD, PISA 2018 Database, Tables V.B1.6.3 and II.B1.2.3.

StatLink https://doi.org/10.1787/888934131728

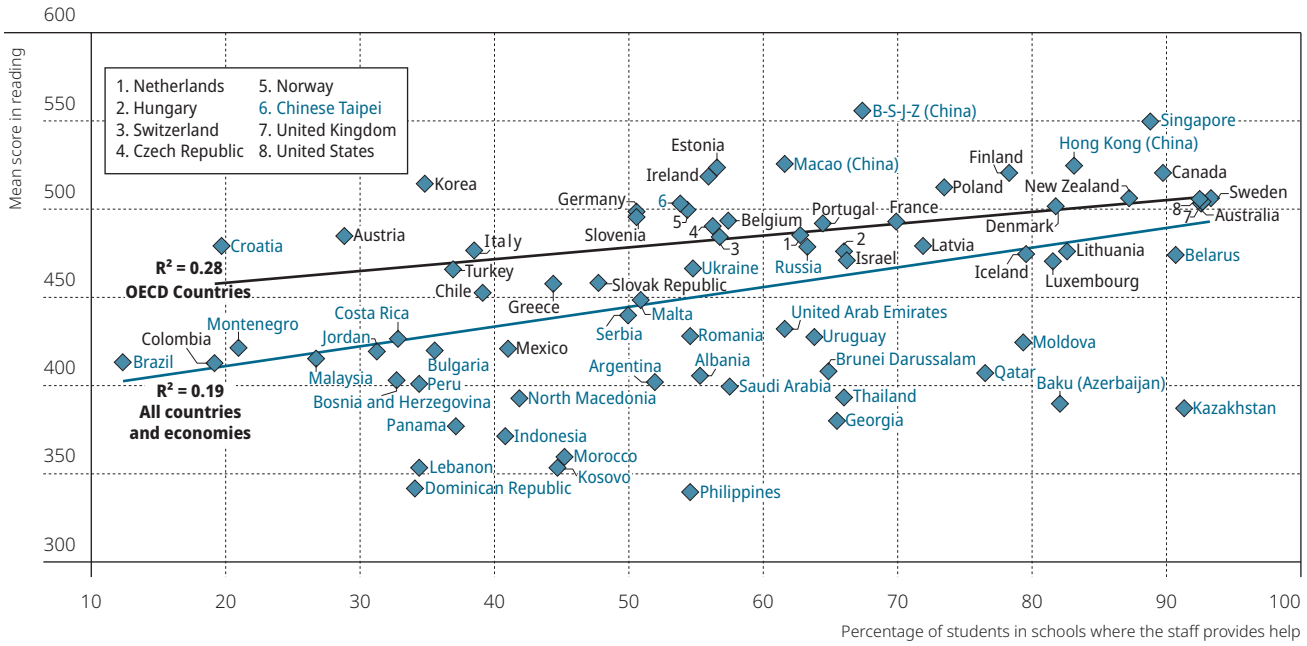
Figure V.6.16 **Students who have access to a room for homework at school and mean reading performance**



Sources: OECD, PISA 2018 Database, Tables V.B1.6.19 and I.B1.4.

StatLink https://doi.org/10.1787/888934131747

Figure V.6.17 **Students in schools where the staff provides help and mean reading performance**



Sources: OECD, PISA 2018 Database, Tables V.B1.6.19 and I.B1.4.

StatLink https://doi.org/10.1787/888934131766

Notes

1. For instance, in the Czech Republic, students were asked about "Czech-language lessons", in Mexico about "Spanish classes" and in Norway about "Norwegian lessons". However, in some countries and economies, the term <test language> was adapted differently, usually to include the term "literature". Some of these exceptions include the following:
   - Bulgaria: Bulgarian language and literature
   - Belarus: Belarusian language and literature
   - Chile: Language and communication
   - Estonia: Estonian language and literature
   - Greece: modern Greek language and literature
   - Hungary: Hungarian language and literature
   - Korea: Korean language arts
   - Peru: Communication
   - Romania: Romanian language and literature
   - The Russian Federation: Russian language and literature
   - The Slovak Republic: Slovak language and literature
   - Ukraine: Ukrainian language and literature, together with foreign literature
   - Uruguay: Spanish language or literature
   - United States: English/Language arts classes
2. Across all countries and economies, the correlation coefficient between learning time in language-of-instruction lessons and learning time in mathematics lessons is 0.82 (partial correlation after accounting for per capita GDP is 0.82). The correlation coefficient between learning time in language-of-instruction lessons and learning time in science lessons is 0.42 (partial correlation after accounting for per capita GDP is 0.43). The correlation coefficient between learning time in language-of-instruction lessons and total learning time (all subjects) is 0.46 (partial correlation after accounting for per capita GDP is 0.42). Across OECD countries, all of the above correlations are as strong or stronger. The correlation coefficient between learning time in language-of-instruction lessons and learning time in foreign-language lessons is not statistically significant across all countries and economies or across OECD countries.
3. Foreign language refers to any language other than the language of instruction. It also includes possible other national languages of a country.
4. In Luxembourg, French and German are official languages and mandatory foreign languages at school.
5. In Belgium, French and Flemish are official languages and mandatory foreign languages at school, depending on the district, and German is an official language and an optional foreign language at school.
6. In Finland, Finnish and Swedish are official languages and mandatory foreign languages at school.
7. In Switzerland, French, German and Italian are official languages and mandatory foreign languages at school.

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