



Student co-operation and competition

This chapter examines differences between countries and economies in student co-operation and competition, and how they vary by student and school characteristics. It also looks at how student co-operation and competition are related to student outcomes, and how these relationships vary by students' attitudes towards competition and gender.

8

Student co-operation and competition

The benefits of co-operative behaviours have been broadly documented in various social contexts, including neighbourhoods, hospitals, companies (Coleman, 1988^[1]; Gittell et al., 2000^[2]; Sampson and Groves, 1989^[3]) and in education. When students, teachers, parents and the school principal know and trust each other, work together, and share information, ideas and goals, students – particularly disadvantaged students – benefit (Crosnoe, Johnson and Elder, 2004^[4]; Hughes and Kwok, 2007^[5]; Jennings and Greenberg, 2009^[6]). Several studies indicate that students perform better academically, report more positive relationships with classmates and a stronger attachment to school in co-operative academic settings than in competitive ones (Johnson et al., 1981^[7]; Roseth, Johnson and Johnson, 2008^[8]).

However, co-operation and teamwork come with potential challenges too. Tasks might not be divided fairly and efficiently; team members sometimes work on tasks for which they are unsuited or that they dislike; some group members may freeride on their teammates' efforts; and co-ordinating tasks may be too complex and time-consuming. Researchers have revealed some of the conditions necessary for the success of teamwork and co-operative learning (Gillies, 2016^[9]): making the goals of team members interdependent; helping others achieve their goals; establishing some kind of individual accountability; making decisions collectively; and ensuring that team members acquire co-operative skills, like leadership, communication and respect.

Similarly, competition can improve academic performance and speed in learning (Dennis Madrid, Canas and Ortega-Medina, 2007^[10]; Johnson and Johnson, 1974^[11]). Competition can also be thrilling and enjoyable, provided the goals are clearly specified (Clifford, 1971^[12]; Johnson and Johnson, 1974^[11]). Kistruck et al. (2016^[13]) also suggest that in a resource-scarce environment a competitive goal structure can lead to greater motivation. Some researchers argue that when co-operative and competitive behaviours are brought together, as in inter-team competitions, the performance and enjoyment of participants are even higher than in a purely co-operative or competitive environment (Morschheuser, Hamari and Maedche, 2019^[14]; Tauer and Harackiewicz, 2004^[15]).

What the data tell us

- Co-operation amongst students was more prevalent than competition. On average across OECD countries, 62% of students reported that their schoolmates are co-operating with each other while only 50% of students reported that their peers are competing with each other.
- Student co-operation was most prevalent, relative to competition, in Denmark, Germany, Japan and the Netherlands, whereas student competition was most prevalent, relative to co-operation, in Brazil, Malta, the United Kingdom and the United States.
- On average across OECD countries and in about 78% of education systems, students scored higher in reading when they reported greater peer co-operation.
- Students who see themselves as more competitive scored higher in reading than those who do not, after accounting for socio-economic status.
- Peer competition was more strongly associated with favourable non-academic outcomes amongst boys and students with more favourable attitudes towards competition, than amongst girls and students with less favourable attitudes.

This chapter examines student co-operation and competition. PISA asked students how true (“not at all true”, “slightly true”, “very true”, “extremely true”) the following statements about their school are: “Students seem to value co-operation”; “It seems that students are co-operating with each other”; “Students seem to share the feeling that co-operating with each other is important”; “Students feel that they are encouraged to co-operate with others”. The first three statements were combined to create the index of student co-operation whose average is 0 and standard deviation is 1 across OECD countries. Positive values in this index mean that students perceive that other students at the school co-operate with each other to a greater extent than the average student in OECD countries.

PISA also asked students how true (“not at all true”, “slightly true”, “very true”, “extremely true”) the following statements about their school are: “Students seem to value competition”; “It seems that students are competing with each other”; “Students seem to share the feeling that competing with each other is important”; and “Students feel that they are being compared with others”. The first three statements were combined to create the index of student competition whose average is 0 and standard deviation is 1 across OECD countries. Positive values in this index mean that students perceive that other students at the school compete with each other to a greater extent than the average student in OECD countries.

HOW STUDENT CO-OPERATION AND COMPETITION VARY ACROSS COUNTRIES, SCHOOLS AND STUDENTS

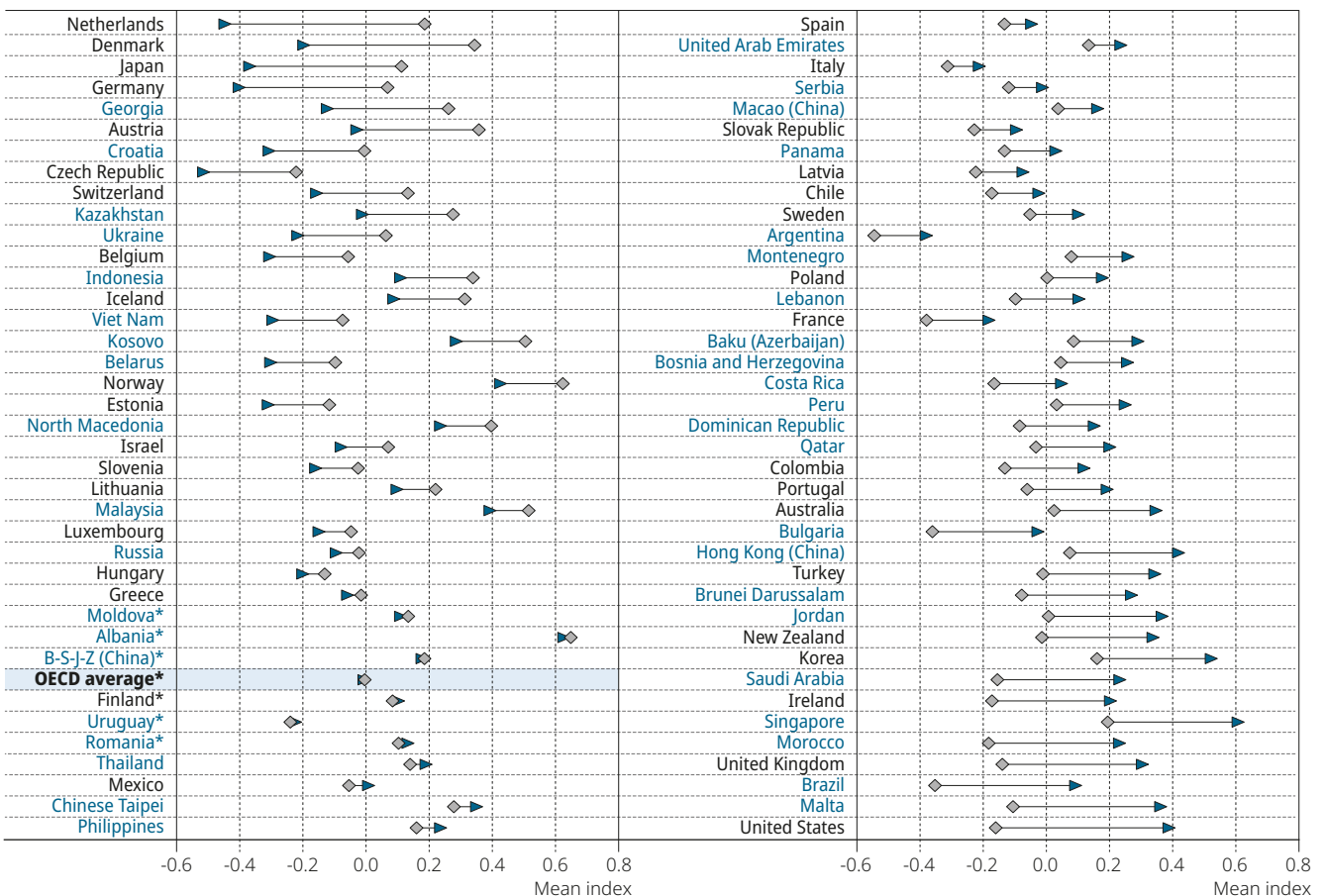
According to 15-year-old students in 2018, co-operation amongst students in school was somewhat more prevalent than student competition (Tables III.B1.8.1 and III.B1.8.2). For instance, on average across OECD countries, some 62% of students reported that it is very or extremely true that their schoolmates co-operate with each other, while about 50% of students reported the same about competing with each other. The largest difference was related to the importance students give to co-operation and competition: about 60% of students reported that students consider co-operation important (i.e. “very true” or “extremely true”), whereas only 44% of students reported that their schoolmates consider competition important. In almost every education system, a majority of students was enrolled in a school where between 25% and 75% of students reported that it is very or extremely true that students co-operate or compete with each other (Tables III.B1.8.4 and III.B1.8.5). However, in nine countries and economies, a majority of students attended a school where at least three out of four students reported that it is very or extremely true that students co-operate with each other, while in only two countries, Albania and Singapore, the same was true for students who reported competition amongst their peers.

There are wide variations across school systems in the indices of student co-operation and competition (Figure III.8.1). In Albania, Austria, Denmark, Iceland, Indonesia, Kosovo, Malaysia, the Republic of North Macedonia (hereafter “North Macedonia”) and Norway, students were most likely to report co-operation amongst their peers, while students in Argentina, Brazil, Bulgaria, the Czech Republic, France, Italy, Latvia, the Slovak Republic and Uruguay were least likely to report co-operation. Moreover, student competition was most prevalent in Albania, Hong Kong (China), Jordan, Korea, Malaysia, Malta, Norway, Singapore, and the United States, and least prevalent in Argentina, the Czech Republic, Estonia, Germany, Japan and the Netherlands, according to students’ reports.

Figure III.8.1 Student co-operation and competition

Based on students’ reports

► Index of student competition ◊ Index of student co-operation



Note: Countries and economies where the difference between the index of student co-operation and the index of student competition is not statistically significant are marked with an asterisk (see Annex A3).

Countries and economies are ranked in descending order of the difference between the indices of student co-operation and student competition.

Source: OECD, PISA 2018 Database, Table III.B1.8.3.

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8

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Perhaps more interesting is identifying the education systems where the differences between the values of the indices of student co-operation and competition were the greatest (Figure III.8.1).¹ According to this analysis, the countries where student co-operation was most prevalent, relative to competition, were Austria, Croatia, Denmark, Georgia, Germany, Japan and the Netherlands, whereas the countries where student competition was most prevalent, relative to co-operation, were Brazil, Brunei Darussalam, Ireland, Jordan, Korea, Malta, Morocco, New Zealand, Saudi Arabia, Singapore, the United Kingdom, and the United States.

Considering differences across schools, about 5% and 3% of the variation in the indices of student co-operation and competition, respectively, lay between schools, on average across OECD countries (Tables III.B1.8.8 and III.B1.8.9). Students in socio-economically advantaged schools were more likely than students in disadvantaged schools to report both co-operation and competition amongst their peers, on average across OECD countries (Figure III.8.2). The socio-economic gap in student co-operation, in favour of advantaged schools, was observed in 58 education systems and was particularly large in Australia, Belgium, the Czech Republic, Germany, Israel, Hungary, Romania and Slovenia. The difference between public and private schools in student co-operation was also comparatively large, while it was negligible in the case of competition. On average across OECD countries and in 27 education systems, students in private schools reported greater co-operation amongst their peers than students in public schools did.

The association between the concentration of immigrant students in school and student co-operation was considerably weaker than that observed when considering schools' socio-economic profile. Still, in 21 school systems, a higher concentration of immigrants was related to less student co-operation; in only 5 countries (Australia, Brunei Darussalam, Latvia, New Zealand and the United Kingdom) was the association positive (Table III.B1.8.8).

On average across OECD countries, socio-economically advantaged students tended to perceive greater competition and co-operation amongst their schoolmates than disadvantaged students did (Tables III.B1.8.6 and III.B1.8.7). Moreover, boys and girls were equally likely to report that their peers co-operate, but boys reported more student competition than girls. In only six countries – Albania, Jordan, Malaysia, Morocco, North Macedonia and Turkey – did girls perceive greater student competition than boys. There are several plausible explanations for this gender gap. For instance, competition amongst students could differ, depending on whether the student body is composed mostly of boys or of girls (22% of students attended a school where more than 60% of students were either boys or girls; see Box III.3.1 in Chapter 3). Moreover, since adolescents are more likely to socialise with peers of their own gender, their reports may largely refer to the attitudes and behaviour of their own gender. It is also possible that boys and girls simply perceive the same phenomena differently.

HOW STUDENT CO-OPERATION AND COMPETITION ARE RELATED TO READING PERFORMANCE

In about 78% of school systems, and on average across OECD countries, students scored higher in reading when they reported greater co-operation amongst their peers, after accounting for the socio-economic profile of students and schools (as measured by the PISA index of economic, social and cultural status) (Table III.B1.8.10). In around 41% of the countries and economies that participated in PISA 2018, students performed better in the reading assessment when they reported a more competitive school environment, after accounting for socio-economic status (Table III.B1.8.11). However, on average across OECD countries, there was no association between student competition and reading performance.

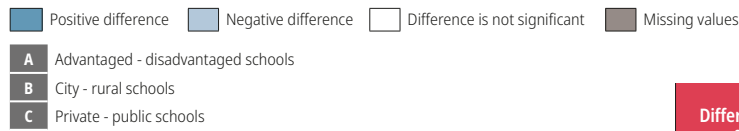
Amongst the four items that make up each of the indices, the strongest positive associations with reading performance were observed when students responded “very” or “extremely” true to the statements: “It seems that students are co-operating with each other” and “Students seem to value co-operation” (Figure III.8.3). In both cases, these students outperformed – by 12 score points – the students who considered these statements to be not at all true or slightly true, after accounting for socio-economic status. In Austria, Iceland, Lebanon, Malaysia, the Republic of Moldova and Norway, students who reported that it is very or extremely true that students co-operate with each other scored at least 25 points higher in reading than students who reported that the statement was not at all true or slightly true (Table III.B1.8.10). A negative association with reading performance was observed only when students reported that it is very or extremely true that “students seem to share the feeling that competing with each other is important” (Table III.B1.8.11).

DO MORE-COMPETITIVE STUDENTS OUTPERFORM LESS-COMPETITIVE STUDENTS?

The previous section has shown that, on average across OECD countries, students scored similarly in reading regardless of how much other students at the school compete with each other (Tables III.B1.8.11 and III.B1.8.13). However, it is one thing to determine how much students perceive their peers to compete with each other at school, and another to measure how competitive students see themselves as being. PISA asked 15-year-old students whether they agree (“strongly disagree”, “disagree”, “agree”, “strongly agree”) with the following statements about themselves: “I enjoy working in situations involving competition with others”; “It is important for me to perform better than other people on a task”; and “I try harder when I’m in competition with other people”. These statements were combined to create the index of attitudes towards competition whose average is 0 and standard deviation is 1 across OECD countries. Positive values in this index mean that students are more competitive than the average student across OECD countries.

Figure III.8.2 Student co-operation and competition, by school characteristics

Based on students' reports

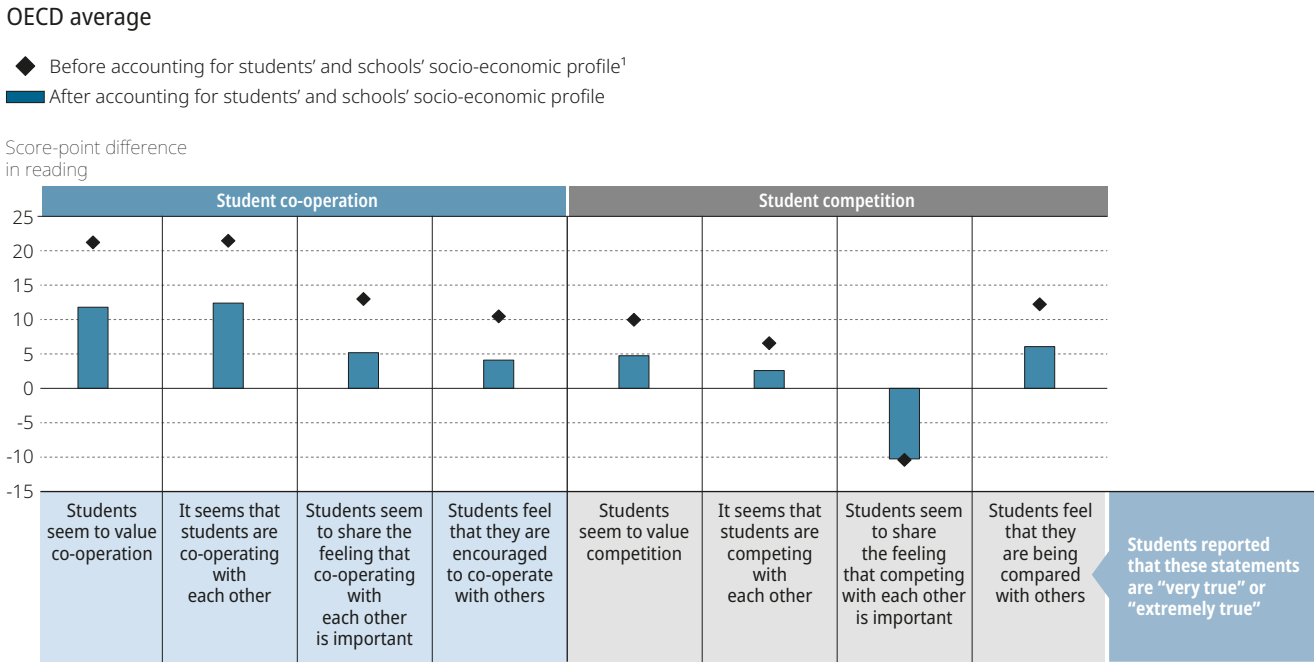


OECD	Difference in the index of co-operation:			Difference in the index of competition:			Partners	Difference in the index of co-operation:			Difference in the index of competition:		
	A	B	C	A	B	C		A	B	C	A	B	C
OECD average													
Australia													
Austria													
Belgium													
Chile													
Colombia													
Czech Republic													
Denmark													
Estonia													
Finland													
France													
Germany													
Greece													
Hungary													
Iceland													
Ireland													
Israel													
Italy													
Japan													
Korea													
Latvia													
Lithuania													
Luxembourg													
Mexico													
Netherlands													
New Zealand													
Norway													
Poland													
Portugal													
Slovak Republic													
Slovenia													
Spain													
Sweden													
Switzerland													
Turkey													
United Kingdom													
United States													
Albania													
Argentina													
Baku (Azerbaijan)													
Belarus													
Bosnia and Herzegovina													
Brazil													
Brunei Darussalam													
B-S-J-Z (China)													
Bulgaria													
Costa Rica													
Croatia													
Dominican Republic													
Georgia													
Hong Kong (China)													
Indonesia													
Jordan													
Kazakhstan													
Kosovo													
Lebanon													
Macao (China)													
Malaysia													
Malta													
Moldova													
Montenegro													
Morocco													
North Macedonia													
Panama													
Peru													
Philippines													
Qatar													
Romania													
Russia													
Saudi Arabia													
Serbia													
Singapore													
Chinese Taipei													
Thailand													
Ukraine													
United Arab Emirates													
Uruguay													
Viet Nam													

A	B	C	A	B	C	
58	8	27	37	10	17	Countries/economies with a positive difference
19	46	32	34	45	41	Countries/economies with no difference
0	7	4	6	6	5	Countries/economies with a negative difference

Source: OECD, PISA 2018 Database, Tables III.B1.8.8 and III.B1.8.9.
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Figure III.8.3 Student co-operation and competition, and reading performance



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

Note: All score-point differences are statistically significant (see Annex A3).

Source: OECD, PISA 2018 Database, Tables III.B1.8.10 and III.B1.8.11.

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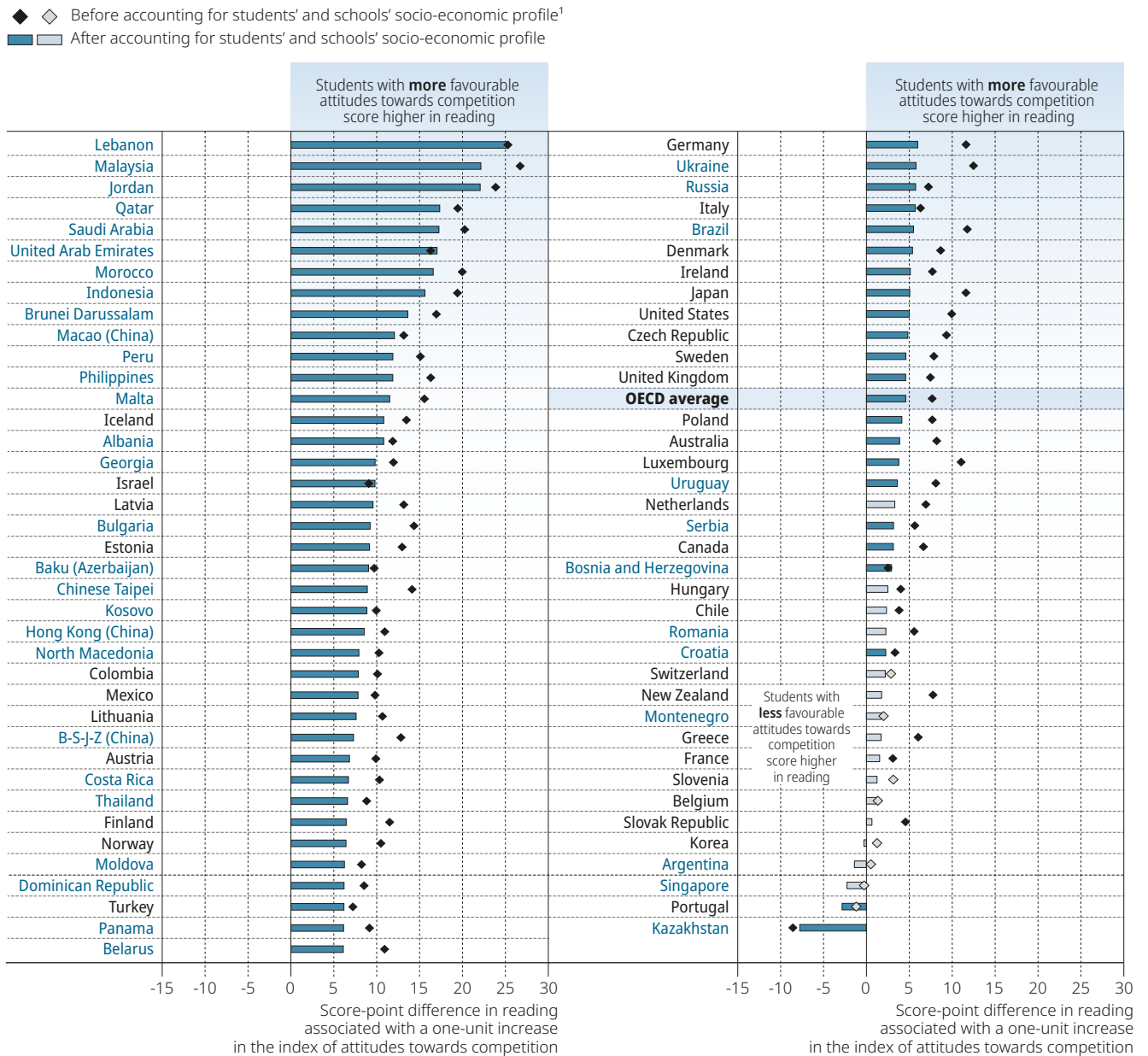
In about 88% of the countries and economies that participated in PISA 2018, students who see themselves as competitive scored higher in reading than students who perceive themselves as less competitive (Figure III.8.4). Even after accounting for the socio-economic profile of students and schools, there was still a positive relationship in about 78% of education systems. For instance, for every one-unit increase in the index of attitudes towards competition, students in Jordan, Lebanon and Malaysia scored at least 22 points higher in reading, after accounting for the socio-economic profile of students and schools. The only countries where less competitive students scored higher in reading were Kazakhstan and Portugal.

Even more interesting were the results for the individual items that make up the index of attitudes towards competition (Table III.B1.8.14). The results clearly show that students who agreed or strongly agreed that they try harder when they are in competition with other people scored considerably higher than students who disagreed with the statement (a difference of about 12 score points, on average across OECD countries, after accounting for the socio-economic profile of students and schools). However, the differences in reading scores were not as large when students were asked whether they enjoy working in situations involving competition with others (a difference of 3 score points) or whether it is important for them to perform better than other people in a task (a difference of 5 score points). While these results should not be interpreted causally, they suggest that competition may produce the greatest benefits when it drives students to invest greater effort.

PEER COMPETITION AND STUDENT OUTCOMES: THE ROLE PLAYED BY STUDENTS' ATTITUDES TOWARDS COMPETITION AND GENDER

Not everyone enjoys competition in the same way. For instance, some research suggests that women tend to avoid competition more often than men do (Datta Gupta, Poulsen and Villeval, 2005_[16]; Lee, Niederle and Kang, 2014_[17]), though these gender differences in competitiveness may reflect social learning rather than an innate trait (Booth and Nolen, 2012_[18]). More important, not everyone responds in the same way in a competitive environment. Niederle and Verstelund (2010_[19]), for instance, show how boys and girls react differently in a competitive test-taking environment. This section examines how the relationships between students' perceptions of student competition in their school and various academic, attitudinal and well-being outcomes vary, depending on how competitive students themselves are, after accounting for the socio-economic profile of students and schools. Since boys and girls usually differ in the degree of their feelings of competitiveness (Figure II.8.3), the section also looks at how these relationships vary by gender. The expectation is that peer competition is more strongly associated with favourable student outcomes amongst boys and students with more favourable attitudes towards competition, than amongst girls and students with less favourable attitudes.

Figure III.8.4 Students' attitudes towards competition and reading performance



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 descending order of the score-point difference associated with the index of attitudes towards competition, after accounting for students' and schools' socio-economic profile.

Source: OECD, PISA 2018 Database, Table III.B1.8.14.

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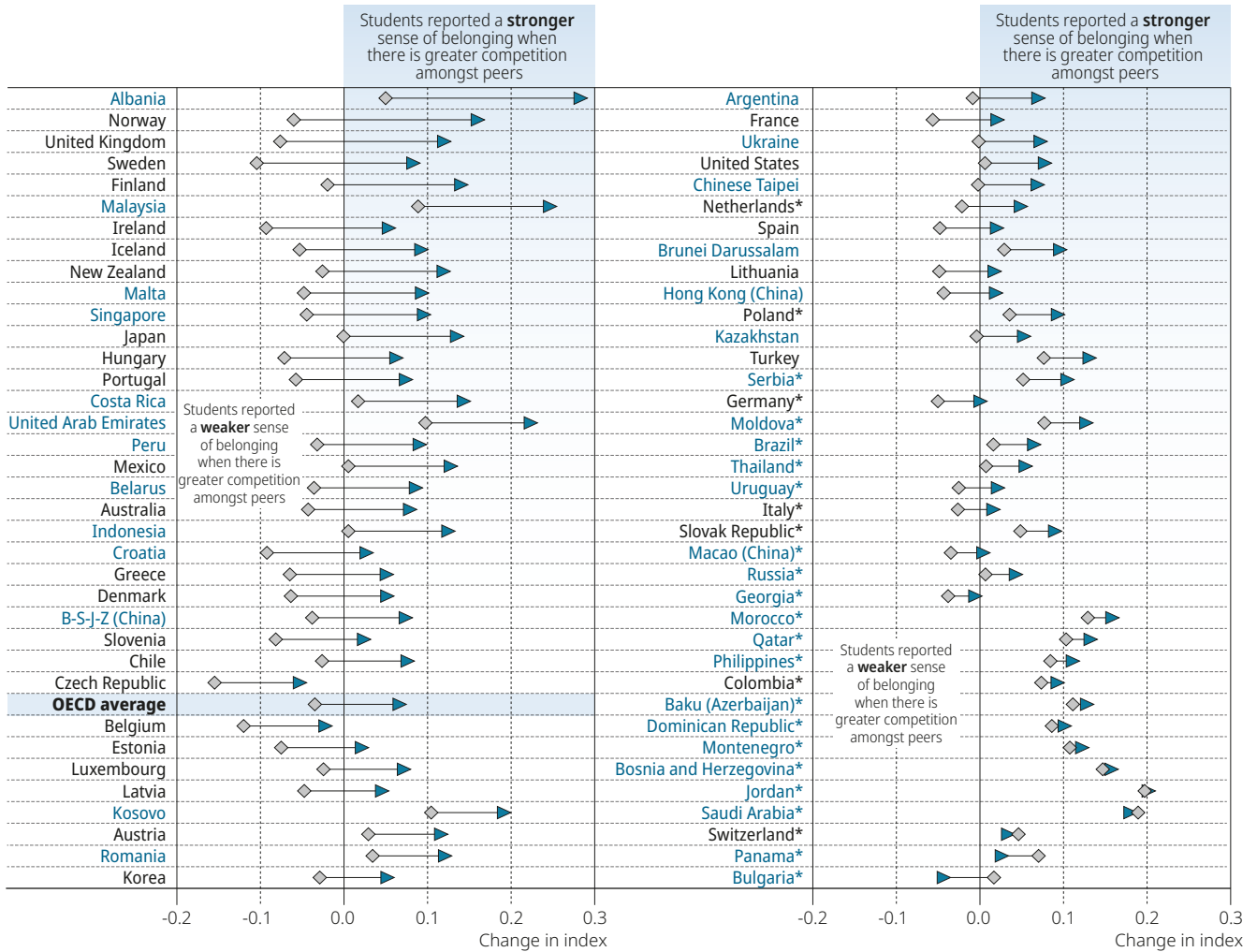
The findings in Table III.B1.8.15 show that, on average across OECD countries, the relationship between student competition and reading performance was slightly more positive amongst students who reported less competitive attitudes (negative values in the index of attitudes towards competition) than amongst students who reported more competitive attitudes (positive values in the index of attitudes towards competition). While this result defies expectations, the findings in the attitudinal and well-being indicators do not. For instance, on average across OECD countries, students were more likely to feel they belong at school when they perceived greater competition amongst their schoolmates, but this was observed only amongst students who saw themselves as competitive (Figure III.8.5). In this regard, in a majority of countries and economies, student competition and sense of belonging at school were more positively associated amongst more competitive than amongst less competitive students.

Figure III.8.5 Student competition and sense of belonging at school, by students' attitudes towards competition

Based on students' reports

Change in the index of sense of belonging associated with a one-unit increase in the index of student competition amongst students whose attitudes towards competition are:

- ▶ More favourable than those of the average OECD student
- ◊ Less favourable than those of the average OECD student



Notes: Countries and economies where the difference in the association between students with more and less favourable attitudes towards competition is not statistically significant are marked with an asterisk (see Annex A3).

Results based on linear regression analysis, after accounting for students' and schools' socio-economic profile. The socio-economic profile is measured by the PISA index of economic, social and cultural status (ESCS).

Countries and economies are ranked in descending order of the difference in the association between students with more and less favourable attitudes towards competition.

Source: OECD, PISA 2018 Database, Table III.B1.8.15.

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Similar results were observed for the indices of fear of failure and positive feelings. On average across OECD countries, students expressed greater fear of failure when they reported greater competition amongst their peers, but this was particularly observed amongst students who reported less favourable attitudes towards competition. Students were more likely to express positive feelings when they perceived greater competition amongst their peers, but competitive students were markedly more likely to express those feelings.

The results in Table III.B1.8.16 show that boys appear to benefit more from a competitive school climate than girls do. For instance, on average across OECD countries, student competition and sense of belonging were positively associated amongst boys, but negatively so amongst girls. More intense student competition was related to greater fear of failure, but especially so amongst girls.

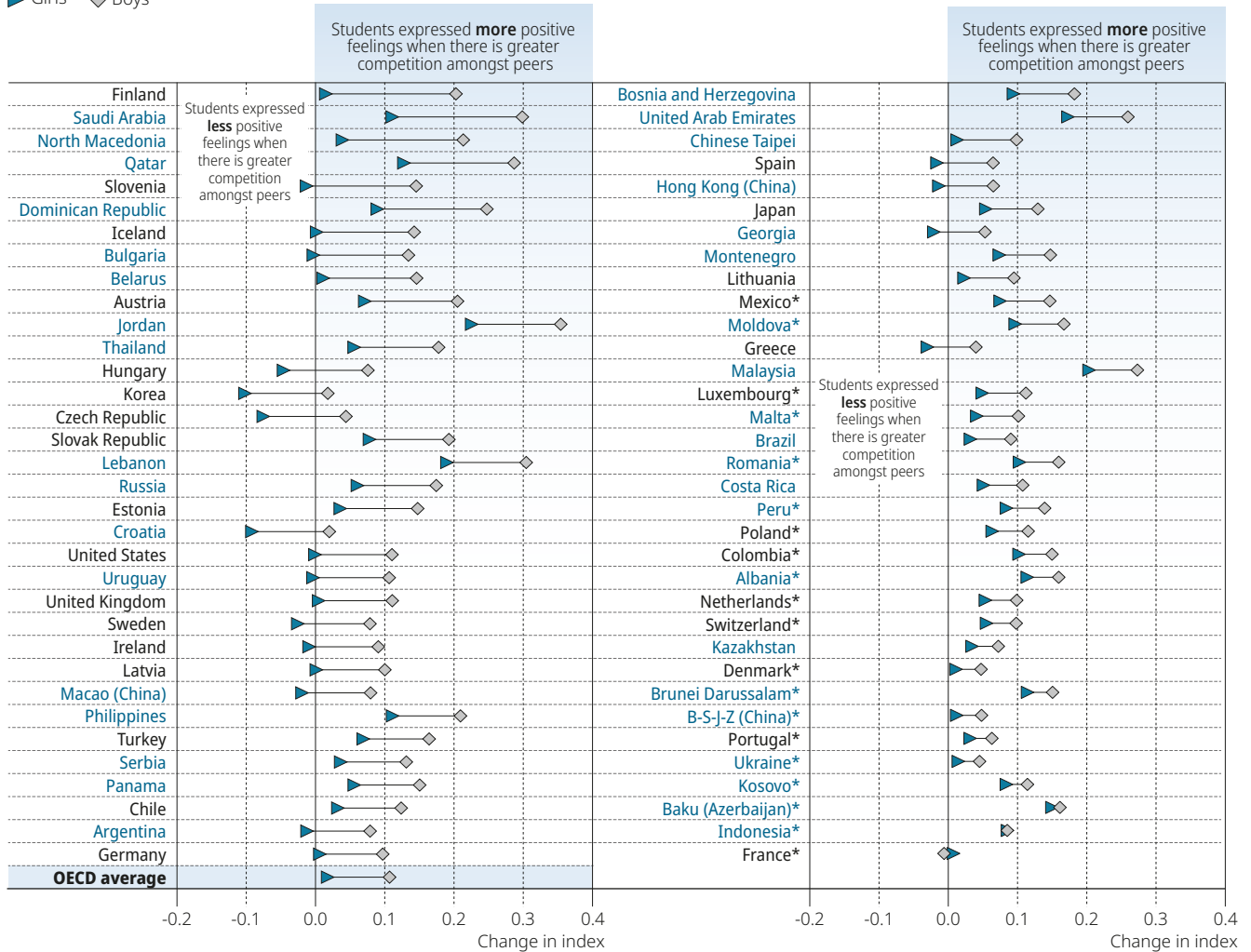
Students expressed more positive feelings when they reported greater competition amongst their schoolmates, but this positive relationship was mostly observed amongst boys (Figure III.8.6). While the indices of student competition and positive feelings were positively associated in 63 countries and economies when considering boys' attitudes, they were positively associated in only 31 countries and economies when considering girls' attitudes.

Figure III.8.6 Student competition and students' positive feelings, by gender

Based on students' reports

Change in the index of positive feelings associated with a one-unit increase in the index of student competition amongst:

▶ Girls ◆ Boys



Notes: Countries and economies where the difference in the association between girls and boys is not statistically significant are marked with an asterisk (see Annex A3).

Results based on linear regression analysis, after accounting for students' and schools' socio-economic profile. The socio-economic profile is measured by the PISA index of economic, social and cultural status (ESCS).

Countries and economies are ranked in descending order of the difference in the association between boys and girls.

Source: OECD, PISA 2018 Database, Table III.B1.8.16.

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Note

1. It bears mentioning that the indices of student co-operation and competition are positively associated, both across students (correlation coefficient of 0.15, on average across OECD countries) and across countries (correlation coefficient of 0.38 across PISA-participating countries and economies).

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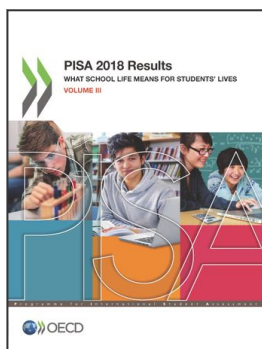
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