Annex A. Description of variables

Students' socio-economic status

OECD Programme for International Student Assessment (PISA)

In PISA, a student's socio-economic status is estimated by the PISA index of economic, social and cultural status (ESCS), a composite score based on three indicators: highest parental occupation, parental education, and home possessions. As no direct income measure has been available from the PISA data, the existence of household items has been used as a proxy for family wealth.

Highest parental occupation: Occupational data for both the student's mother and the student's father were obtained from responses to open-ended questions.

Home possessions: students reported on the availability of 16 household items at their home including three country-specific household items that were seen as local measures of family wealth within the country's context. In addition, students reported the amount of possessions and books at home.

In Türkiye the three country-specific items in PISA 2018 were:

- Air conditioning type heating-cooling system
- TV subscriptions with payment
- A holiday for at least one week in a year

Parental education: based on an internationally standardised transformation of the index of highest educational level of parents into years of education. The values used for each level of education are the median values observed in 2015 across all countries (OECD, 2018[1]).

In PISA the terms "advantaged students" and "disadvantaged students" refer respectively to those students coming from the top and bottom quartile of the ESCS scale.

Trends in International Mathematics and Science Study (TIMMS)

Socio-economic status of students in TIMSS Grade 4 is measured by the Home Resources for Learning scale based on students' and parents' reports. Students were scored according to their own and their parents' reports regarding the availability of five resources on the Home Resources for Learning scale. Cut scores divide the scale into three categories. Students with Many Resources had a score at or above the cut score corresponding to students reporting they had more than 100 books and both home study supports in their home and their parents reporting they had more than 25 children's books in their home, that at least one parent finished university, and that at least one parent had a professional occupation, on average. Students with Few Resources had a score at or below the cut score corresponding to students reporting they had 25 or fewer books and neither of the home study supports in their home and their parents reporting they had ten or fewer children's books in the home, that neither parent had gone beyond upper secondary education, and that neither parent was a small business owner or worked in a clerical or professional occupation, on average. All other students had Some Resources.

Socio-economic status of students in TIMSS Grade 8 is measured by Home Educational Resources scale based on students' reports. Students were scored according to their reports regarding the availability of

three resources on the Home Educational Resources scale. Cut scores divide the scale into three categories. Students with Many Resources had a score at or above the cut score corresponding to reporting they had more than 100 books and both home study supports in their home and that at least one parent finished university, on average. Students with Few Resources had a score at or below the cut score corresponding to reporting they had 25 or fewer books and neither of the home study supports in the home and that neither parent had gone beyond upper secondary education, on average. All other students had Some Resources (IEA, 2020[2]).

In this report, the terms "students with many resources" and "students with few resources" are replaced respectively by advantaged and disadvantaged students for consistency with the terminology used in PISA.

Early childhood education and care (ECEC) participation

PISA

PISA provides the starting age of early childhood education and care and the duration in years (OECD, 2018[1]).

TIMSS

Early childhood education and care attendance in TIMSS is collected only for students in Grade 4 and it is based on the parents' reports. It includes four categories that measure ECEC attendance: Attended 3 Years or More, Attended 2 Years, Attended 1 Year or Less, Did Not Attend (IEA, 2020[2]).

School location

PISA

PISA asks schools principals which definition best describes the community in which their school is located. The options include city, town and rural (OECD, 2018[1]).

TIMSS

TIMSS collects data from principals on a number of school characteristics including school location. The variables includes the following categories: urban area, suburban area, medium sized city, small town and remote area (IEA, 2020[2]).

School socio-economic status

PISA

Advantaged and disadvantaged schools are defined in terms of the socio-economic profile of schools. All schools in each PISA-participating education system are ranked according to their average PISA index of economic, social and cultural status (ESCS) and then divided into four groups with approximately an equal number of students (quarters). Schools in the bottom quarter are referred to as "socio-economically disadvantaged schools"; and schools in the top quarter are referred to as "socio-economically advantaged schools" (OECD, 2019[3]).

TIMSS

TIMSS characterises schools in terms of socio-economic composition based on principals' reports of the percentages of economically-disadvantaged and economically-affluent students in the school. "More affluent" schools were defined as having more than 25 percent of students from economically affluent homes and not more than 25 percent from economically disadvantaged homes, while "more disadvantaged" schools had more than 25 percent of students from disadvantaged homes and not more than 25 percent from affluent homes. All other combinations were considered to be "neither more affluent nor more disadvantaged (IEA, 2020[2]).

In this report, the same terminology of PISA was adopted for TIMSS for consistency, so more affluent and more disadvantaged schools are referred as advantaged and disadvantaged schools.

School resources

PISA

PISA 2018 included a question with eight items about school resources, measuring the school principal's perceptions of potential factors hindering the provision of instruction at school. The four response categories were "Not at all", "Very little", "To some extent", and "A lot". Both the scale on staff shortage and the scale on shortage of educational material were based on four items each (OECD, 2018[1]).

TIMSS

School resources in TIMSS are calculated with the Resource Shortages scale. It is based on principals' reports and it includes two kinds of resource shortages affecting instruction: general school resources and resources specific to mathematics instruction. Students were scored according to their principals' responses regarding thirteen school and classroom resources on the Instruction Affected by Mathematics Resource Shortages scale. Cut scores divide the scale into three categories. Students in schools where instruction was Not Affected by resource shortages had a score at or above the cut score corresponding to their principals reporting that shortages affected instruction "not at all" for seven of the thirteen resources and "a little" for the other six, on average. Students in schools where instruction was Affected A Lot had a score at or below the cut score corresponding to their principals reporting that shortages affected instruction "a lot" for seven of the thirteen resources and "some" for the other six, on average. All other students attended schools where instruction was Somewhat Affected by resource shortages (IEA, 2020[2]).

Language spoken at home

PISA

Students indicated which language they usually speak at home. For students who do not speak the test language at home, they were asked whether the language spoken is: mostly the heritage language, about equally often the heritage language and the test language, or mostly the test language (OECD, 2018[1]).

TIMSS

TIMSS asks students in both Grade 4 and 8 how often they speak the language of the test at home. The variable includes the following categories: "always," "almost always," "sometimes," or "never" speak the language of the TIMSS test at home (IEA, 2020[2]).

Private schools

PISA

Schools are classified as either public or private according to whether a private entity or a public agency has the ultimate power for decision making concerning its affairs. The variable include the following categories: Private independent, Private Government-dependent, Public. This index was calculated in 2018 and in all previous cycles. In PISA 2018, however, a few countries provided this information from administrative record (e.g., Ireland, Singapore) (OECD, 2018[1]).

Isolation index

PISA

Isolation indices provide an indication of whether school systems create "clusters" of students based on their academic performance. Higher values in the indices mean that low achievers are more often isolated in certain schools with students of similar ability; lower values in the indices correspond to a more varied distribution of student abilities within schools. From these indices, one may calculate the opportunities available for a student from one particular group to interact at school with students who do not belong to the same group. For instance, a value of 0.30 in the isolation index of low achievers means that a student who scores in the bottom quarter of the distribution of PISA performance within a country has around one-in-two chance of attending the same school as students who are also low achievers, while this likelihood would have been only one in four if students had been uniformly distributed across schools. Similarly, the isolation index of high achievers measures the concentration in certain schools of those students who score in the top quarter of the distribution of PISA performance in their country, i.e. whether these students are isolated in certain schools with other high-performing students (high values in the index) or are more often "mixed" with students of lower ability (low values in the index) (OECD, 2019[4]).

Student-teacher ratio

PISA

The student-teacher ratio in PISA was obtained by dividing the number of enrolled students by the total number of teachers (OECD, 2018[1]).

Study help

PISA

PISA asks schools principals whether the school provides room(s) where students can do their homework, staff provides help with homework and peer-to-peer tutoring if offered (OECD, 2018[1]).
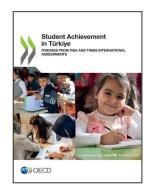
Extra-curricular activities

PISA

School principals were asked to report what extra-curricular activities their schools offered to 15-year-old students. The index of creative extra-curricular activities at school was computed as the total number of the following activities that occurred at school: band, orchestra or choir; school play or school musical; and art club or art activities (OECD, 2018[1]).

References

IEA (2020), *TIMSS 2019 International Results in Mathematics and Science*, https://timss2019.org/reports/home-contexts/# (accessed on 6 December 2021).   [2]

OECD (2019), *PISA Volume II: Where all students can succeed*, https://www.oecd-ilibrary.org/sites/2a009264-en/index.html?itemId=/content/component/2a009264-en (accessed on 6 December 2021).   [4]

OECD (2019), *PISA Volume III: What school life means for students' lives*, https://www.oecd.org/publications/pisa-2018-results-volume-iii-acd78851-en.htm (accessed on 6 December 2021).   [3]

OECD (2018), *PISA 2018 Technical Report*, https://www.oecd.org/pisa/data/pisa2018technicalreport/ (accessed on 6 December 2021).   [1]