

3. THE ECONOMIC AND SOCIAL BENEFITS OF EDUCATION

How are student performance and equity in education related?

- Boys outperform girls in mathematics in 37 of the 64 countries that participated in PISA 2012, and girls outperform boys in five countries.
- On average, 13% of students in OECD countries are top performers in mathematics and 23% are low performers in mathematics.
- Shanghai-China performs the highest in mathematics of all countries and economies that participated in PISA 2012 with a mean score of 613 points.

Significance

Modern societies reward individuals not for what they know, but for what they can do with what they know. The Programme for International Student Assessment (PISA) 2012 results, which measured 15-year-olds' academic performance in 64 countries and economies around the world, examine not only whether students can reproduce what they have learned, but also how well they can apply their knowledge in unfamiliar settings. PISA results reveal what is possible in education by showing what students in the highest-performing and most rapidly improving education systems can do. An analysis of PISA in the context of various socio-economic factors shows how equitably participating countries are providing education opportunities and realising education outcomes – an indication of the level of equity in the society, as a whole.

Findings

Despite the stereotype that boys are better than girls at mathematics, boys show an advantage in only 37 out of the 64 countries and economies that participated in PISA 2012, and in only six countries is the gender gap – in favour of boys – larger than the equivalent of half a year of school. In contrast, in only five countries – Iceland, Jordan, Malaysia, Qatar and Thailand – do girls outperform boys in mathematics.

Shanghai-China performs the highest in mathematics of all countries and economies that participated in PISA 2012, with a mean score of 613 points – 119 points, or the equivalent of nearly three years of schooling, above the OECD average. The difference between the highest-scoring economy and the lowest-scoring country is 245 points. On average across OECD countries, 13% of students are top performers in mathematics and 23% are low performers.

Among OECD countries, 15% of the difference in performance among students is explained by disparities in students' socio-economic status. Even more telling, some 39 score points – the equivalent of around one year of formal schooling – separate the mathematics performance of those students who are considered socio-economically advantaged and those whose socio-economic status is close to the OECD average.

Trends

Of the 64 countries and economies with trend data between 2003 and 2012, 25 improved in mathematics performance, 25 showed no change, and 14 deteriorated. Among the countries that showed improvement between 2003 and 2012, Italy, Poland and Portugal reduced the proportion of low performers and increased the proportion of high performers.

Of the 39 countries and economies that participated in both PISA 2003 and 2012, Mexico, Turkey and Germany improved both their mathematics performance and their levels of equity in education during the period. Between 2003 and 2012, the degree to which students' socio-economic status predicted performance in mathematics decreased overall from 17% to 15%.

Definitions

Low performers in mathematics are those students who do not reach the baseline Level 2 on the PISA assessment. At Level 2, students can interpret and recognise situations in contexts that require no more than direct inference. Top performers in mathematics score at Level 5 or 6 on the PISA assessment; they are able to draw on and use information from multiple and indirect sources to solve complex problems.

Information on data for Israel:
<http://dx.doi.org/10.1787/888932315602>.

Going further

For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2014* (Indicator A9).

Areas covered include:

- Gender differences in mathematics performance.
- Trends on performance in mathematics.
- Relationship between performance in mathematics and socio-economic status.
- Trends on equity.

Further reading from OECD

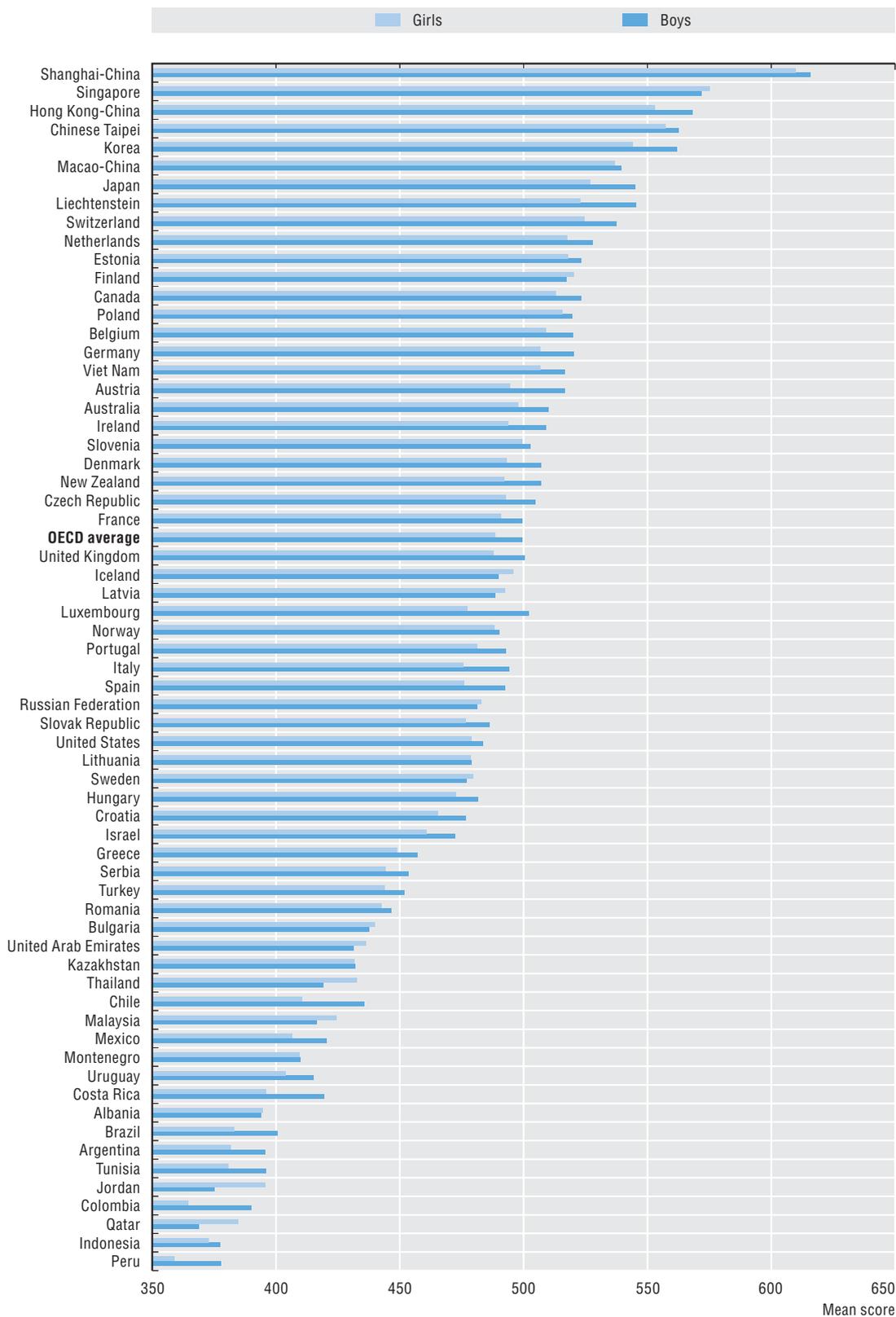
OECD (2014), *PISA 2012 Results: What Students Know and Can Do (Volume I): Student Performance in Mathematics, Reading and Science*, PISA, OECD Publishing, Paris,
<http://dx.doi.org/10.1787/9789264208780-en>.

OECD (2013), *PISA 2012 Results: Excellence through Equity (Volume II): Giving Every Student the Chance to Succeed*, PISA, OECD Publishing, Paris,
<http://dx.doi.org/10.1787/9789264201132-en>.

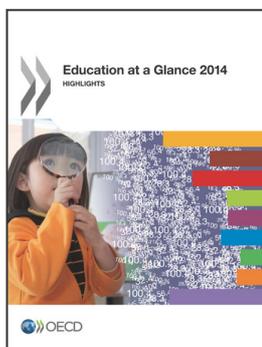
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Figure 3.7. Student performance in mathematics, by gender, PISA 2012



Source: OECD (2014), Education at a Glance 2014, Chart A9.1, available at <http://dx.doi.org/10.1787/888933116813>.



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