Performance in mathematics since 2003

– *Between PISA 2003 and PISA 2009, mathematics performance improved in 8 countries, declined in 9, and was unchanged in 22.*

– *Seven of the eight countries that showed better performance in mathematics were still well below the OECD average in both 2003 and 2009.*

– *All of the declines in mathematics performance occurred in countries that had scored at or above the OECD average in 2003.*

What it means

Even countries that show improvements in mathematics performance can still perform below the OECD average, while those that show a decline in performance can continue to outperform others. While changes in mean mathematics scores describe overall trends, these data can mask changes among the lowest- and the highest-achieving students.

Findings

Mean mathematics performance remained unchanged, on average, across the 28 OECD countries with comparable results in the PISA 2003 and 2009 surveys. However, it improved in six of these countries and in two partner countries. Mexico and Brazil showed the largest improvements over the period: 33 and 30 score points, respectively, or around half a proficiency level. Mathematics performance declined in nine OECD countries over the same period. In the rest of the 39 countries that have comparable results in both assessments, there was no significant change.

Seven countries that showed the greatest improvement in mathematics performance are still below the OECD average. Of these, Italy and Portugal are now only just below average, Greece is half a proficiency level below, and Mexico, Turkey and the partner countries Brazil and Tunisia are between one and two proficiency levels below average.

In some of these countries, the overall improvement was the result of significant improvements among the lowest-performing students. For example, in Mexico, the percentage of students performing below proficiency Level 2 or below fell from 66% to 51%, and in Turkey it dropped from 52% to 42%.

Germany's mean performance in mathematics improved from OECD average levels in 2003 to above-average levels in 2009.

In eight of the nine countries where mathematics performance declined, students had scored above the OECD average in 2003. Despite a drop of 12 score points, the Netherlands remains among the highest-scoring countries in the PISA mathematics survey. In Australia, Belgium, Denmark and Iceland, mean scores also remained above the OECD average in 2009.

However, in the Czech Republic, France and Sweden, mean performance in mathematics declined from above-average levels in 2003 to around the OECD average in 2009. In Ireland, performance declined from around the OECD average to below average.

Definitions

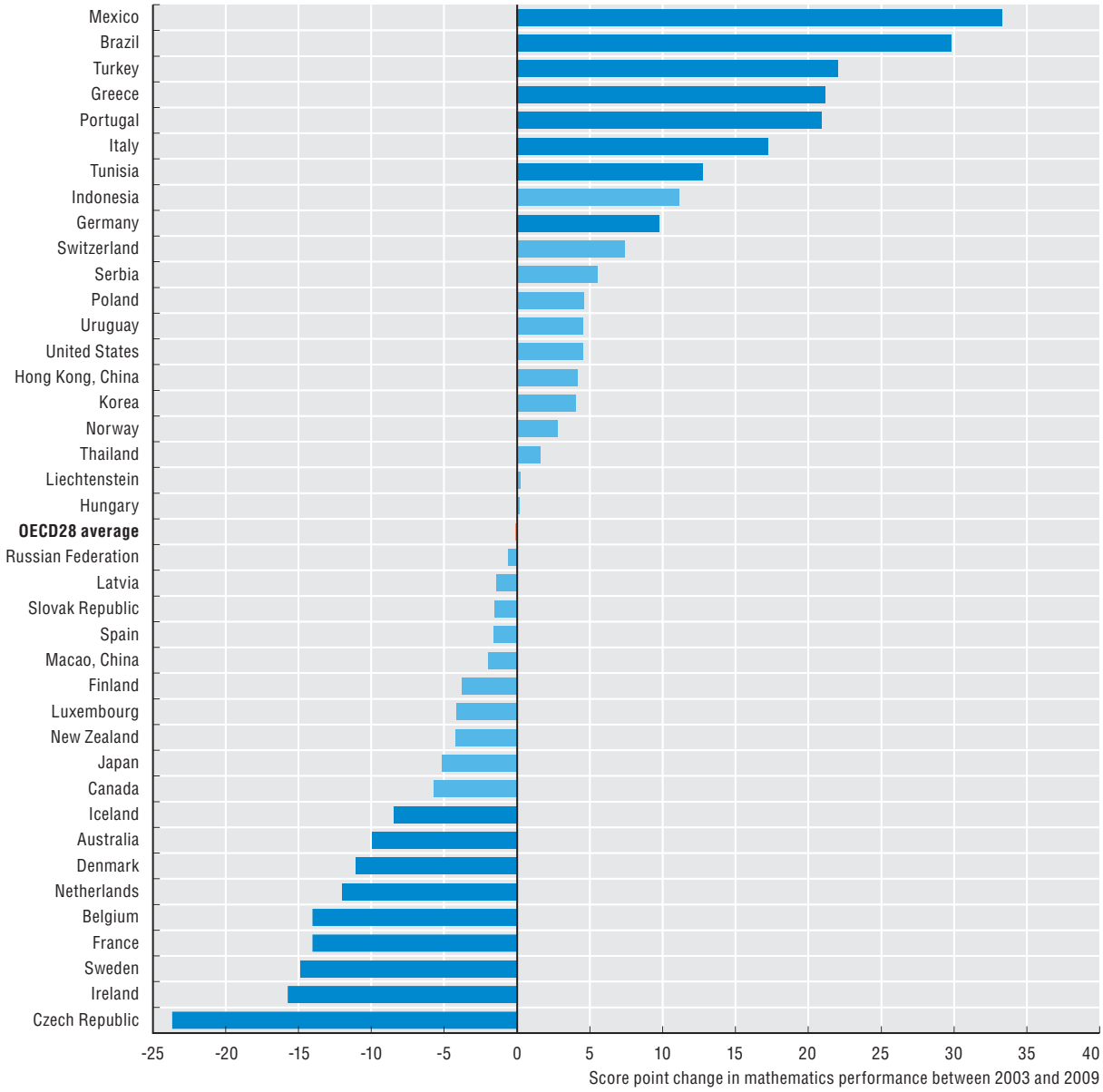
Trends in performance in mathematics are derived by comparing results from PISA 2009 with those from the 2003 and 2006 assessments. Since trends in mathematics start in 2003, as opposed to trends in reading, which start in 2000, performance changes in mathematics since 2003 are expected to be smaller than performance changes in reading since 2000. PISA 2003 provides results in mathematics that were measured with more precision than in PISA 2006 and PISA 2009, since the latter two surveys devoted less testing time to mathematics. Changes in mean PISA mathematics scores are reported here only where they are statistically significant. Not all countries that participated in PISA 2009 had valid results in the PISA 2003 survey too; this section only reports on the 39 countries that did.

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

Going further

Further analysis of changes in mathematics performance between 2000 and 2009 is presented in *PISA 2009 Results Volume V, Learning Trends: Changes in Student Performance Since 2000*. Full data are shown in Tables V.3.1 and V.3.2 at the back of that volume.

Figure 1.16. **Change in mathematics performance between 2003 and 2009**



Note: Statistically significant score point changes are marked in a darker tone. Countries are ranked in descending order of the score point change on the mathematical scale between 2003 and 2009.

Source: OECD (2010), *PISA 2009 Results, Volume V, Learning Trends: Changes in Student Performance Since 2000*, Figure V.3.1, available at *http://dx.doi.org/10.1787/888932359986*.