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Moderating the Impact of Socio-Economic Background on Educational Outcomes

This chapter focuses on the magnitude of differences in student performance across countries, as well as between and within schools. It also describes the extent to which these differences relate to the socio-economic background of students and schools.



Providing equal educational opportunities is a major goal for policy makers. PISA shows that school systems differ not only in their average performance but also in how equitably they distribute educational opportunities among students, regardless of family and socio-economic background. PISA collected data on a broad set of family background characteristics, including the socio-economic background of the students' parents, home possessions, immigrant status, home language, family structure and school location. While Volume I, *What Students Know and Can Do*, focuses on the performance of students and countries, this volume focuses on equity-related issues and analyses how differences in background characteristics relate to differences in student performance in reading.

The evidence emerging from a growing body of international studies shows that educational equity is not only an issue of fairness but also an economic issue. A recent OECD study of economic growth projections, for example, estimated the current net value of educational reforms that would bring everyone in a country to a baseline level of performance in PISA. The results suggest that bringing the lowest-performing students in the OECD area – many of whom are socio-economically disadvantaged – at least up to 400 score points on the PISA scale, which corresponds roughly to the lower boundary of the PISA baseline Level 2 of proficiency, could imply an aggregate gain of national income in the order of USD 200 trillion over the lifetime of the generation born in 2010. Of course, the estimated benefits vary from one country to the next, and the projections are full of the uncertainties associated with these kinds of exercises. Yet, the estimated benefits of raising quality and equity in educational outcomes are likely large and beyond any conceivable cost of improvement (OECD, 2010a).

This volume explores equity in education from three perspectives:

First, it examines *equality in learning outcomes* by examining the distribution of student performance on the PISA assessment. Are there large performance gaps among groups of students or schools? Where are these differences more marked – at the top or at the bottom end of the performance distribution? What proportion of students is falling behind the PISA baseline Level 2 of proficiency?

Second, it examines *equity in the distribution of learning resources*, namely the extent to which students and schools have access to similar educational resources, both in quantity and quality, regardless of schools' socio-economic background.

Third, and most important, it looks at *equity in the distribution of learning opportunities* by analysing the impact of the family and the socio-economic background of students and schools on learning outcomes (Box II.1.2 provides details on the variables used to measure family and socio-economic background). In an equitable school system, that impact is small; that is, the educational success of students is largely independent of their own family or socio-economic background or the average background of the other students in their schools. In contrast, if that impact is large – that is, if the success of students depends to a great extent on their family background or the socio-economic background of the school in which they are enrolled – then educational opportunities are distributed inequitably.

An analysis of performance gaps and how performance varies across identifiable groups of students, among schools or across school systems, provides valuable policy insights related to the quality and distribution of educational opportunities. In addition, identifying the characteristics of those students, schools and education systems that perform well despite socio-economic disadvantages can help policy makers design effective policies to overcome inequalities in learning (OECD, 2010b).

Volume IV, *What Makes a School Successful?*, furthers the analysis by reviewing how the socio-economic background of students and schools is interrelated with educational resources, policies and practices to influence learning outcomes, and how policies and practices can mediate the impact of socio-economic background on educational success.

Previous analyses have shown that the relationship between the socio-economic background of students and schools and learning outcomes generally does not vary markedly across the subject areas of reading, mathematics and science that are measured by PISA. This volume thus limits the analysis to reading, which was the focus of the PISA 2009 assessment. The analysis builds on work from earlier PISA assessments (OECD, 2001; OECD, 2004; Willms, 2006; OECD, 2007a; Willms, 2010).



INTERPRETING GAPS AND DISPERSION IN STUDENT PERFORMANCE

This volume focuses on differences in student performance. How large are these differences and where do they come from? Much of the variation in students' capacity to understand, use, reflect on and engage with written texts can be traced to differences between within countries and among schools and students within countries. Across the OECD, 11% of all variation in student reading performance can be attributed to differences across countries, while 34% arises from differences among schools and the remaining 55% can be attributed to differences among individual students. Across all countries and economies participating in PISA, which include some countries and economies that are more heterogeneous than OECD member countries, cross-country differences represent 25% of the overall performance variation, school differences account for 30% of the overall variation and student differences account for the remaining 45%.¹ These percentages do not suggest that the performance differences among countries are small, but rather that the performance variation within countries is often very large.

Figure II.1.1 depicts equality in learning outcomes through the performance variation in each country, highlighting student performance at the 10th, 25th, 50th, 75th and 90th percentiles of the performance distribution. These percentiles correspond, respectively, to the score points below which 90%, 75%, 50%, 25% and 10% of students perform. The difference between two adjacent percentiles appears within each section of the bar.

For example, as shown in Volume 1, *What Students Know and Can Do* (and Figure II.1.4 in this chapter), the differences in mean performance between the top performing OECD school systems, Korea and Finland, and the OECD average is 46 and 42 score points on the PISA reading scale, respectively. But in these two countries, as Figure II.1.1 shows, 25% of students score below 490 and 481 score points, respectively, and half of all students score below 545 and 542, respectively. Thus, in Korea there is at least a difference of 54 score points, and in Finland of 62 score points, between those scoring in the bottom quarter and those scoring in the top half of the within-country distribution of student performance. On average across OECD countries, the performance gaps between the median student (the point on the performance distribution where half of all students score above and the other half scores below) and the weakest 10% and 25% of readers are 130 and 67 score points, respectively (Table II.1.1). Box II.1.1 explains how these and other gaps described in this chapter may be interpreted.

Box II.1.1 Interpreting differences in PISA scores: How large a gap?

What is meant by a difference of, say, 46 or 42 points between the scores of two different groups of students?

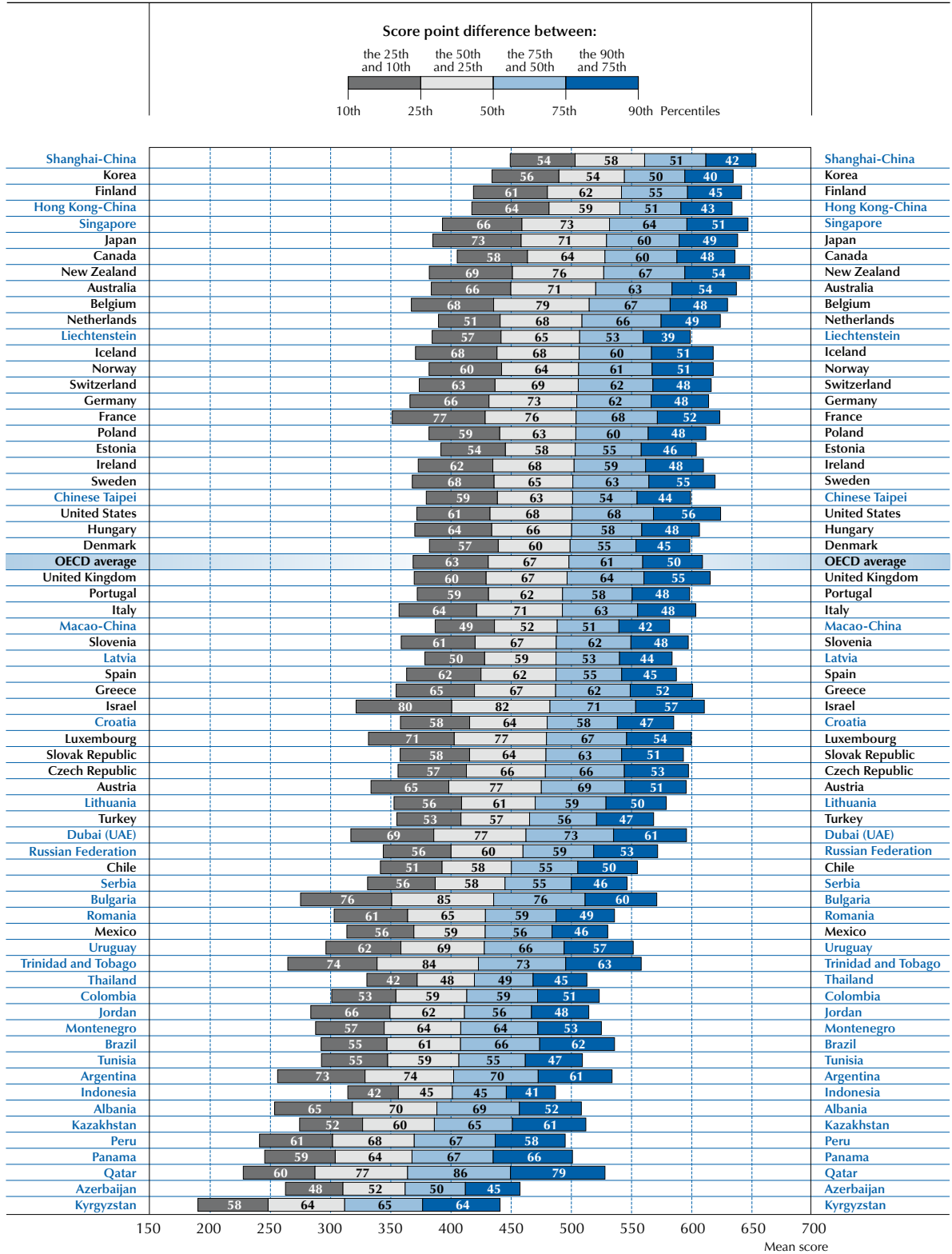
In PISA 2009, as described in Volume 1, *What Students Know and Can Do*, student performance in reading is described through seven levels of proficiency (Levels 1b, 1a, 2, 3, 4, 5 and 6). A difference of about 73 score points represents one proficiency level on the PISA reading scale. This can be considered a comparatively large difference in student performance. For example, as described in the *PISA 2009 Assessment Framework* (OECD, 2009), students proficient at Level 3 on the overall reading literacy scale are capable of completing moderately complex reading tasks, such as locating multiple pieces of information, making links between different parts of a text, and relating the text to familiar knowledge. Meanwhile, students proficient at Level 2 on the reading literacy scale are able to locate information that meets several conditions, to make comparisons or contrasts around a single feature, to work out what a well-defined part of a text means, even when the information is not prominent, and to make connections between the text and personal experience.

For the 32 OECD countries in which a sizeable number of 15-year-olds in the PISA samples were enrolled in at least two different grade levels, the difference between students in the two grades implies that one school year corresponds to an average of 39 score points on the PISA reading scale (see Table A1.2).

The difference in performance on the reading scale between the countries with the highest and lowest mean performance is 242 score points, and the performance gap between the countries with the 5th highest and the 5th lowest mean performance is 154 score points.

In relation to the overall distribution of students in the PISA reading scale, 100 points represent one standard deviation; this means that two-thirds of the OECD student population have scores within 100 points of the OECD mean.

■ Figure II.1.1 ■
Variation of reading performance within countries
Percentiles on the reading scale



Countries are ranked in ascending order of median performance (50th percentile) in reading.

Source: OECD, PISA 2009 Database, Table II.1.1.

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FAMILY AND SOCIO-ECONOMIC BACKGROUND

One of the central themes examined in this volume is the relationship between differences in family and socio-economic background and differences in student performance. National and international evidence has shown that student family background and performance can be closely associated for various reasons (for a pioneering national study, see Coleman *et al.*, 1966 and for international evidence see OECD, 2001; OECD, 2004; and OECD, 2007a). PISA 2009 provides further insights into these relationships.

Box II.1.2 Summarising student and school background characteristics

This volume examines a number of different background characteristics of students and schools:

Background refers to various characteristics of each student's family and community, including: *i*) their socio-economic background (as captured by the *PISA index of social, economic and cultural status*); *ii*) their immigrant status: whether the student or parents were born in another country (captured by the student's immigrant status: first- or second-generation immigrant or native); *iii*) their home language: whether students usually speak the language of assessment at home or not (captured by a variable indicating whether it is the assessment language or another language, which could still be an official language of the country or economy); *iv*) their family structure: whether students usually live with one parent or more (captured by a variable indicating whether the family structure is single-parent or other); and *v*) their school location or home background in its community context (captured by a variable indicating whether the student attends a school located in a village, hamlet or rural area of fewer than 3 000 people, a small town of 3 000 to about 15 000 people, a town of 15 000 to about 100 000 people, a city of 100 000 to about one million people, or a large city with over one million people).

Socio-economic background refers to a combination of characteristics of a student's family that describes its social, economic and cultural status. Socio-economic background is measured by the *PISA index of economic, social and cultural status* (ESCS). This index captures a range of aspects of a student's family and home background that combines information on parents' education and occupations and home possessions. The index was derived from the following variables: the international socio-economic index of occupational status of the father or mother, whichever is higher; the level of education of the father or mother, whichever is higher, converted into years of schooling; and the *index of home possessions*, obtained by asking students whether they had a desk at which they studied at home, a room of their own, a quiet place to study, educational software, a link to the Internet, their own calculator, classic literature, books of poetry, works of art (e.g. paintings), books to help them with their school work, a dictionary, a dishwasher, a DVD player or VCR, three other country-specific items and the number of cellular phones, televisions, computers, cars and books at home. The rationale for choosing these variables is that socio-economic background is usually seen as being determined by occupational status, education and wealth. As no direct measure of parental income or wealth was available from PISA (except for those countries that undertook the PISA Parent Questionnaire), access to relevant household items was used as a proxy.

At the individual level, the analysis in this volume considers the relationship between each student's socio-economic background and his or her individual reading performance as assessed in PISA 2009. At the school level, it considers the relationship between the average socio-economic background of 15-year-old students in the school and the reading scores of 15-year-old students attending that school. At the country level, too, the socio-economic background of students, both overall and in terms of the distribution, can be related to reading performance.

The values of the *PISA index of economic, social and cultural status* have been standardised to a mean of zero for the population of students in OECD countries, with each country given equal weight. A one-point difference on the scale of the index represents a difference of one standard deviation on the distribution of this measure. This means that a score of -1.0 on this scale indicates that a student has a combination of socio-economic attributes that makes the student more advantaged than about one in six students in the average OECD country, and more disadvantaged than five-sixths of students. Having a score above +1.0 means being more advantaged than five-sixths of the students.



Some of the connections between family background and performance are well understood, while there is less of a consensus on others.² In general, more highly educated parents may decide to invest more of their time and energy into educating their children or they may choose to guide their daily interactions with their children in ways that help them succeed at school. Parents with more prestigious occupations may become role models for their children.³ The possibility of ultimately having one of these occupations, which are generally associated with better education, can be an incentive for children to devote more effort to their performance at school. Certain household possessions, such as a quiet place to study or a desk, may also provide an advantage for children. Wealthier families will generally be able either to provide more educational resources at home or to choose schools that will supply them with these resources. Family home background may also be related to student performance through the community context. If a school is located in a city, students may enjoy additional resources nearby, such as public libraries and museums, which support learning and may be less accessible to students attending a rural school. However, not all students enjoy these advantages and many of them have to struggle with individual challenges, such as an immigrant background, speaking a different language at home than the one spoken at school or having only one parent to turn to for support and assistance.

For a school system, a weak relationship between the family and socio-economic background of students and performance is an indication of an equitable distribution of educational opportunities. In such a school system, where the student comes from, his or her family background and the school the student attends are weak predictors of reading performance.

In PISA, family background is measured by a broad set of student characteristics, including the country of birth, the language commonly used at home, family structure and a range of measures that capture the social, economic and cultural status of the student's family. Box II.1.2 briefly describes the indicators used to measure different dimensions of the background characteristics of students and schools.

One of the most commonly analysed family background characteristics is the socio-economic status of the student's family. Socio-economic background is a narrower concept than family background and is summarised in the *PISA index of social, economic and cultural status*. This index is calculated by taking into consideration the parents' education and occupations and an array of household possessions. The index is standardised to have a mean of zero and a standard deviation of one across countries in the OECD area. Throughout the volume, a student's socio-economic background refers to the student's score on this index. A school's socio-economic background refers to the average socio-economic index of the students attending that school. The average socio-economic index of the students in the country is referred to as the socio-economic profile of the education system. A low score on the index relates to a socio-economically disadvantaged background; a high score on the index relates to a socio-economically advantaged background.

SOCIO-ECONOMIC BACKGROUND, UNDERLYING SOCIAL AND ECONOMIC INEQUALITY AND MEAN PERFORMANCE AT THE LEVEL OF THE EDUCATION SYSTEM

Comparing the distribution of educational opportunities across countries is a challenging task. An education system's outcomes depend not only on past and current educational resources, policies and practices, but also on a country's broader economic, social and institutional characteristics. Analysing how learning opportunities are related to certain economic, demographic and social factors can provide a framework for interpreting this volume's results. Given that reading performance varies according to student background, by taking into account the differences in the socio-economic background of students in a country and how students perform as related to their backgrounds, these analyses can shed new light on issues relating to both educational quality and equity.

To what extent, then, are country differences in PISA simply a product of the aggregated differences in young people's backgrounds? The remaining chapters in this volume provide a detailed analysis that tackles this question from different perspectives.

Figure II.1.2 shows the relationship between the average level of students' socio-economic background in each country (on the horizontal axis) and the average reading scores of 15-year-old students in PISA (on the vertical axis). The top-right corner shows those countries that are socio-economically advantaged when compared with a typical OECD country and that perform well relative to the OECD average; the top-left corner shows those that are socio-economically disadvantaged but still perform well; the lower-left corner shows those that are disadvantaged and perform poorly; and the lower-right corner shows those that are advantaged and perform poorly.



■ Figure II.1.2 ■
Reading performance and socio-economic profile

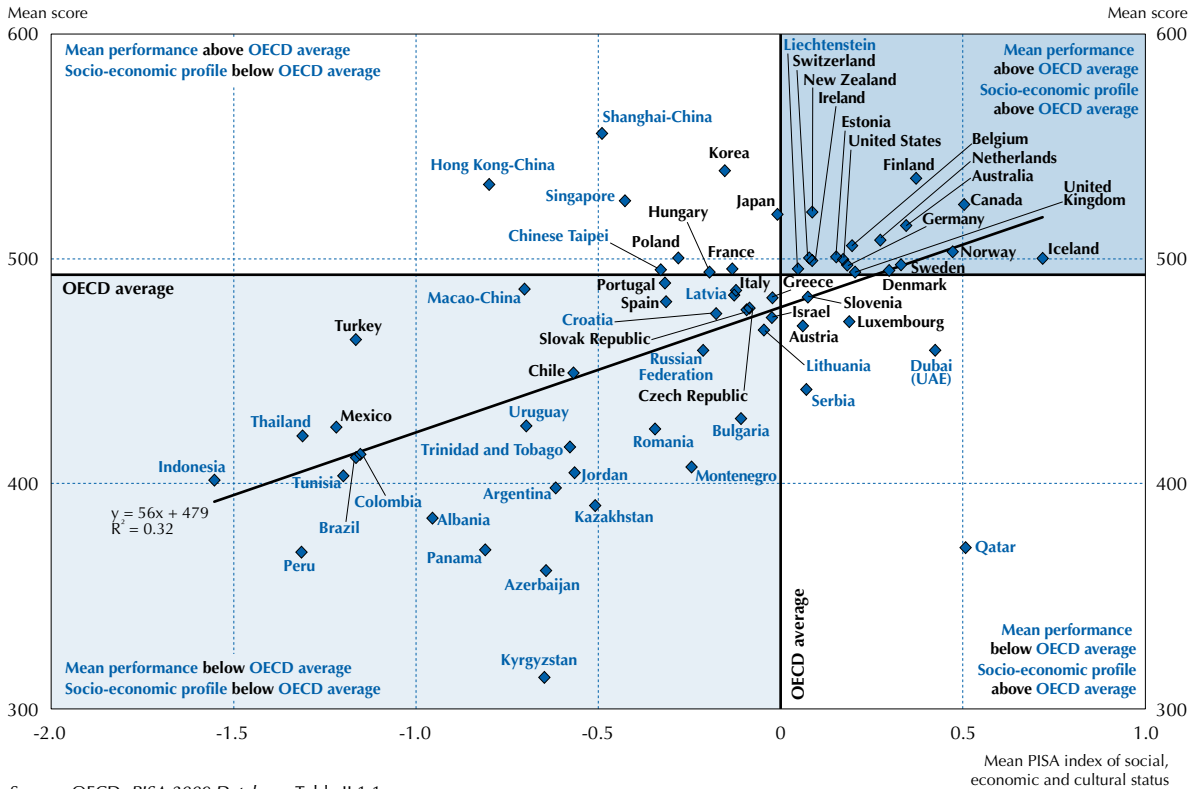


Figure II.1.2 shows that, in general, countries with more socio-economically advantaged students perform better. However, there are many exceptions. Indeed, the mean index of socio-economic background is almost identical for the country with the lowest mean reading performance, Kyrgyzstan, and the economy with the highest mean reading performance, Shanghai-China. The same pattern is apparent among OECD countries. Austria, the Czech Republic, Greece, Ireland, Israel, Japan, New Zealand, the Slovak Republic, Slovenia and Switzerland all share a similar average socio-economic background among their students, with an average close to the OECD average (between -0.09 and +0.09 with the OECD average at 0). The mean performance, however, ranges from 470 to 521 points among this small group of countries with similar socio-economic profiles.

Figure II.1.3 shows the relationship between a common measure of income inequality, the Gini coefficient,⁴ and equity in the distribution of learning opportunities. As described in more detail in subsequent chapters, equity in the distribution of learning opportunities is measured by the percentage of variation in student performance that can be explained by differences in the socio-economic background of students. Each dot places a school system along these two dimensions. The measures have been inverted so that countries with low levels of income inequality and a loose relationship between student performance and socio-economic background are in the top right corner (low Gini coefficient and low explained variance as compared to the OECD average).

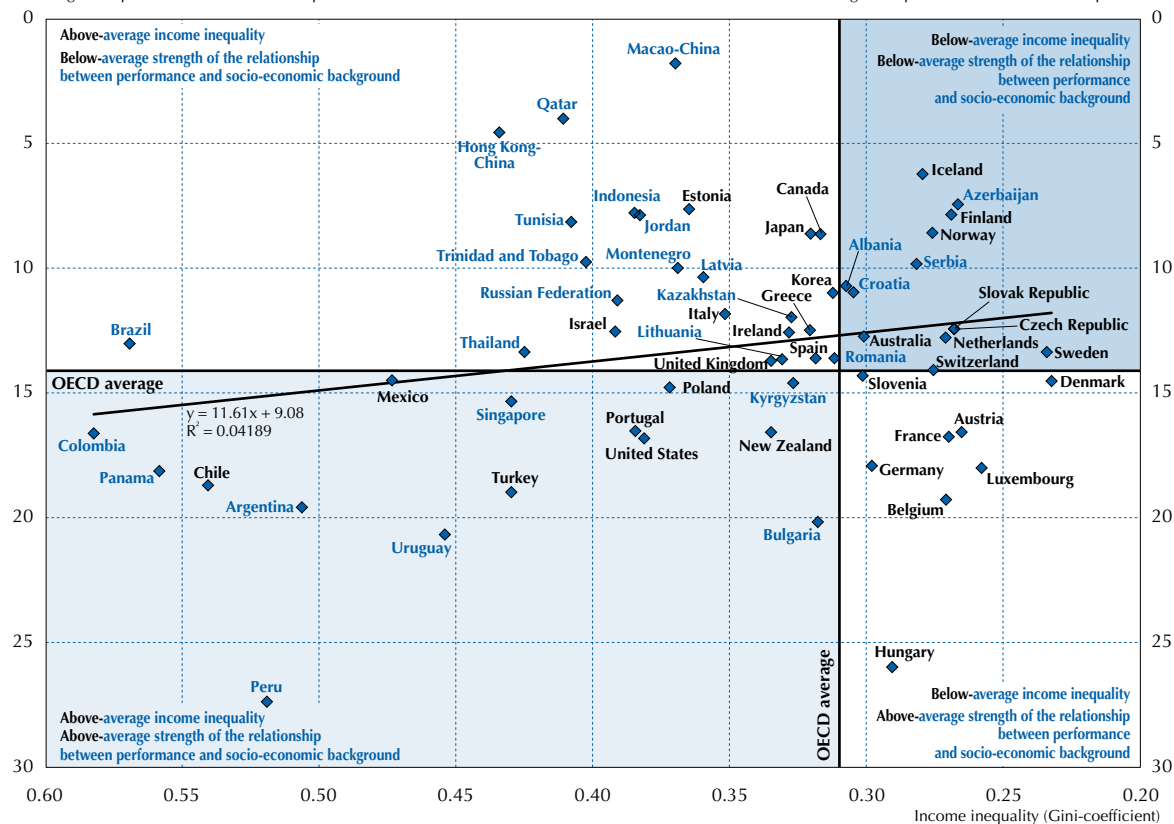
The results in Figure II.1.3 suggest that equity in the distribution of learning opportunities is only weakly associated with a country's underlying income inequality. In fact, the evidence suggests that, in general, cross-national differences in inequalities of performance are associated more closely with the characteristics of the education system than with underlying social inequalities or measures of economic development (Marks, 2005). While many studies show strong evidence that the educational attainment of an individual is closely related to that of his or her parents, some of these studies conclude that income inequality is more closely associated with the policies and institutions that govern the labour markets than the distribution of cognitive skills (Devroye and Freeman, 2001; Blau and Kahn, 2005; Carbonaro, 2006; Hanushek and Woessmann, 2008).

■ Figure II.1.3 ■

Income inequality in the population and strength of the relationship between socio-economic background and performance


Strength of the relationship between performance and the PISA index of economic, social and cultural status (Percentage of explained variance in student performance)

Strength of the relationship between performance and the PISA index of economic, social and cultural status (Percentage of explained variance in student performance)



Note: The Gini coefficient measures the extent to which the distribution of income among individuals or households within an economy deviates from a perfectly equal distribution. The Gini index measures the area between the Lorenz curve and the hypothetical line of absolute equality, expressed as a proportion of the maximum area under the line. A Gini index of zero represents perfect equality and 1, perfect inequality.

Source: OECD, *PISA 2009 Database*, Table II.1.1.

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The weak relationship shown in Figure II.1.3 suggests that countries with similar levels of income inequality distribute learning opportunities very differently. This finding is important as it shows that equity in educational opportunities can be achieved even where income is distributed highly inequitably. For example, in Iceland and Hungary, two OECD countries with a Gini coefficient of around 0.29, close to the OECD average of 0.31, the proportion of the variation in student reading performance explained by the variation in students' socio-economic background is 6% and 26%, respectively. A wide range of countries sits between these two extremes. Finland and Norway appear with Iceland in the top-right corner with below-average impact of socio-economic background on performance and below-average underlying inequality. Austria, Belgium, France, Germany and Luxembourg join Hungary in the bottom-right quadrant with above-average impact of socio-economic background and below-average underlying inequalities. Estonia, Greece, Israel, Italy and Japan appear in the top-left quadrant, with above-average underlying inequalities and a below-average impact of socio-economic background; while Chile, New Zealand, Portugal, the United States and Turkey appear in the bottom-left quadrant, where income inequalities are large and the impact of socio-economic background on learning outcomes is also large. The same pattern is seen among the partner countries and economies, whether at a Gini coefficient above or below the OECD average (Table II.1.2).

That educational equity can be achieved in diverse socio-economic contexts is also apparent when analysing the relationship between how students of varying socio-economic backgrounds are distributed in a society and other measures of the relationship between students' socio-economic background and performance. The inter-percentile



range in socio-economic background is a simple measure of dispersion, indicating the difference in socio-economic background between students at the 95th and 5th percentile of the distribution. Larger inter-percentile ranges indicate a wider distribution of socio-economic background. The average difference in student reading performance associated with a one unit increase in the *PISA index of economic, social and cultural status*, known as the slope of the socio-economic gradient (see Chapter 3 of this volume), is another common measure of the relationship between these two variables and provides another measure of educational equity in PISA.

In general, countries characterised by wide socio-economic disparities are not necessarily those in which the relationship between socio-economic background and performance is more marked. Again, this is an important finding as it suggests that equity in educational opportunities can be achieved even when the socio-economic background of students varies widely. In fact, across OECD countries, the slope of the socio-economic gradient is 30 score points or less in Mexico, Iceland, Estonia, Turkey, Spain and Portugal, but the inter-percentile range in socio-economic background goes from over 4.0 score points in Mexico and Turkey to 2.9 or less in Estonia and Iceland. Among the partner countries and economies, the patterns are similar, with large differences in the slopes despite similar socio-economic disparities. This is observed both among countries with large inter-percentile ranges (e.g. Peru and Colombia, with slopes of 41 and 28, respectively, and an inter-percentile range of around 4.2) and with inter-percentile ranges close to that of the OECD average (e.g. Azerbaijan and Kyrgyzstan, both with slopes of 21 and 40 and an inter-percentile range of around 3.1) (Table II.1.2).

Furthermore, country differences in the level and distribution of students' socio-economic background explain only a small part of the PISA 2009 differences on the quality and equity of school systems. Among OECD countries, Poland, Hungary, Korea and France are characterised by more socio-economically disadvantaged backgrounds than countries at the OECD average, yet mean performance in reading is at or above the OECD average. Among the partner countries and economies, the same is true in Hong Kong-China, Shanghai-China, Singapore and Chinese Taipei (see Figure II.1.2). Chapters 3 and 6 revisit this issue in greater detail.

LOOKING AHEAD

Figure II.1.4 introduces a broad range of indicators on equity that are discussed in this volume. Countries are ranked by their mean performance in reading. For each school system, each cell reports the value of a particular indicator. If the country performs above the OECD average in the respective indicator of equity, the cell is highlighted in light blue. If the opposite is true, then the cell is highlighted in medium blue. If the system performs close to the OECD average, the cell is coloured in dark blue. In the last two columns, it is the direction of the relationship that matters. Those systems in which the relationship is more favourable for socio-economically disadvantaged schools are highlighted in light blue; and, if the relationship is stronger than on average across OECD countries, the value is marked in bold. If the relationship is more favourable for advantaged schools, then the cell is highlighted in medium blue; and, if the relationship is stronger than on average across OECD countries, then it is marked in bold. For example, a positive relationship between a school's socio-economic background and student-teacher ratios suggests that socio-economically advantaged schools have more students per teacher and, conversely, socio-economically disadvantaged schools have more favourable student-teacher ratios. Since that implies that disadvantaged schools have more teacher resources at their disposal, the corresponding cells are marked in light blue.

Figure II.1.4 highlights that equity in education has many facets. The performance of education systems and the share of poorly performing students, marked here as those who do not reach the PISA baseline Level 2 of reading proficiency, are closely related (Chapter 2).

Even in countries with educational opportunities that are distributed highly inequitably, according to the PISA indicators, there are students from disadvantaged backgrounds who show high levels of performance. These students can be considered resilient, and they are more prevalent in those education systems that PISA indicators show to be more equitable (Chapter 3).

The relationship between socio-economic background and performance is a key measure of how equitably a school system distributes educational opportunities. The socio-economic gradient (Chapter 3) captures this relationship. While Chapter 4 is devoted to the analysis of performance differences between students with and without an immigrant background, the between and within school socio-economic gradients are explored in Chapter 5.


■ Figure II.1.4 ■

Summary of PISA measures of educational equity

- Higher quality or equity than OECD average
- At OECD average (no statistically significant difference)
- Lower quality or equity than OECD average

- Disadvantaged schools are more likely to have more or better resources, in **bold** if relationship is statistically different from the OECD average
- Within country correlation is not statistically significant
- Advantaged schools are more likely to have more or better resources, in **bold** if relationship is statistically different from the OECD average

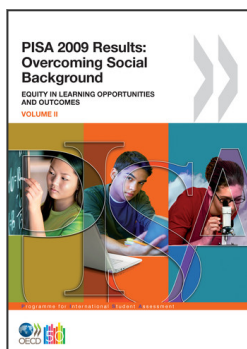
	Mean reading score	Percentage of boys below proficiency Level 2	Percentage of girls below proficiency Level 2	Percentage of resilient students	Percentage of variance in student performance explained by students' socio-economic background	Slope of the socio-economic gradient	Correlation between the socio-economic background of schools and the percentage of teachers with university-level (ISCED 5A) among all full-time teachers	Correlation between socio-economic background of schools and the student/teacher ratio
OECD average	493	25	13	8	14	38	0.15	-0.15
OECD								
Korea	539	9	2	14	11	32	-0.03	0.30
Finland	536	13	3	11	8	31	-0.01	0.08
Canada	524	14	6	10	9	32	0.03	0.09
New Zealand	521	21	8	9	17	52	0.07	0.11
Japan	520	19	8	11	9	40	0.20	0.38
Australia	515	20	9	8	13	46	0.02	-0.07
Netherlands	508	18	11	8	13	37	0.62	0.38
Belgium	506	21	14	8	19	47	0.58	0.66
Norway	503	21	8	6	9	36	0.15	0.19
Estonia	501	19	7	9	8	29	0.00	0.43
Switzerland	501	22	11	8	14	40	0.24	0.06
Poland	500	23	7	9	15	39	-0.05	0.01
Iceland	500	24	10	7	6	27	0.30	0.40
United States	500	21	14	7	17	42	0.10	-0.17
Sweden	497	24	10	6	13	43	-0.04	0.12
Germany	497	24	13	6	18	44	-0.02	0.28
Ireland	496	23	11	7	13	39	-0.08	0.49
France	496	26	14	8	17	51	w	w
Denmark	495	19	11	6	15	36	0.16	0.27
United Kingdom	494	23	14	6	14	44	-0.03	-0.10
Hungary	494	24	11	6	26	48	0.07	0.02
Portugal	489	25	11	10	17	30	0.04	0.39
Italy	486	29	13	8	12	32	0.13	0.50
Slovenia	483	31	11	6	14	39	0.55	-0.25
Greece	483	30	13	7	12	34	0.24	0.25
Spain	481	24	15	9	14	29	m	0.45
Czech Republic	478	31	14	5	12	46	0.37	0.08
Slovak Republic	477	32	13	5	15	41	-0.21	0.00
Israel	474	34	19	6	13	43	0.20	-0.20
Luxembourg	472	33	19	5	18	40	0.39	0.28
Austria	470	35	20	5	17	48	0.64	-0.07
Turkey	464	33	15	10	19	29	0.04	-0.26
Chile	449	36	25	6	19	31	0.25	-0.05
Mexico	425	46	34	7	14	25	-0.04	0.03
Partners								
Shanghai-China	556	7	2	19	12	27	0.32	-0.13
Hong Kong-China	533	11	5	18	5	17	0.12	0.02
Singapore	526	16	9	12	15	47	0.22	-0.14
Liechtenstein	499	21	9	9	8	26	0.57	0.70
Chinese Taipei	495	22	10	10	12	36	0.29	-0.07
Macao-China	487	21	9	13	2	12	-0.18	0.17
Latvia	484	27	9	8	10	29	0.19	0.38
Croatia	476	31	13	7	11	32	0.28	0.32
Lithuania	468	35	13	5	14	33	0.19	0.21
Dubai (UAE)	459	41	21	3	14	51	-0.01	-0.27
Russian Federation	459	36	19	5	11	37	0.31	0.29
Serbia	442	43	23	4	10	27	0.06	0.11
Bulgaria	429	52	29	2	20	51	0.17	0.21
Uruguay	426	51	34	4	21	37	0.08	0.13
Romania	424	51	30	2	14	36	0.11	-0.02
Thailand	421	55	33	7	13	22	0.16	-0.02
Trinidad and Tobago	416	55	34	5	10	38	0.56	0.38
Colombia	413	50	45	6	17	28	-0.08	-0.14
Brazil	412	56	43	6	13	28	0.03	-0.20
Montenegro	408	61	37	2	10	31	0.38	0.33
Jordan	405	62	34	3	8	24	-0.02	0.06
Tunisia	404	58	43	7	8	19	0.20	-0.02
Indonesia	402	65	42	6	8	17	0.16	-0.16
Argentina	398	59	45	3	20	40	0.22	-0.02
Kazakhstan	390	67	50	1	12	38	0.34	0.44
Albania	385	69	44	3	11	31	0.38	0.15
Qatar	372	72	54	1	4	25	-0.07	0.11
Panama	371	72	59	2	18	31	-0.13	0.03
Peru	370	70	60	1	27	41	0.48	-0.02
Azerbaijan	362	78	68	1	7	21	0.44	0.23
Kyrgyzstan	314	88	78	0	15	40	0.35	0.27

Countries are ranked in descending order of the mean score in reading, separately for OECD and partner countries and economies. Source: OECD, PISA 2009 Database, Tables I.2.2., II.1.1., II.2.3., II.3.2 and II.3.3. StatLink  <http://dx.doi.org/10.1787/888932343551>



Notes

1. These results are based on the variance decomposition of a null three-level hierarchical model (student, school, country) on the first plausible value of performance in reading.
2. For a review of this literature see Levin and Belfield (2002).
3. The classic work on this literature is Kohn (1969).
4. The Gini coefficient measures the extent to which the distribution of income among individuals or households within an economy deviates from a perfectly equal distribution. The Gini coefficient measures the area between the Lorenz curve and the hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line. A Gini coefficient of zero represents perfect equality; a Gini coefficient of one represents perfect inequality.



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