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# Grade repetition: A comparative study of academic and non-academic consequences

by  
Miyako Ikeda and Emma García\*

*This article explores country-by-country differences in academic performance and attitudes towards school between students who repeated a grade in primary school, in secondary school or never repeated a grade. The analyses use PISA 2009 for 30 countries in which a relatively high proportion of students repeated a grade before the age of 15. The comparisons across countries and the examination of models of both academic and non-academic performance contribute to shed some light on the consequences of repeating a grade for students. The estimated associations suggest that in most countries examined, at the age of 15, students who repeated a grade in secondary school tend to perform better academically than do students who repeated a grade in primary school, but worse than non-repeaters. In terms of the measure of behavioural performance chosen for this analysis, attitudes towards school, in the majority of countries, non-repeaters tend to report more positive attitudes towards schools than primary and secondary-school repeaters, but the comparison between repeaters in primary and secondary schools shows less consistent patterns across countries. These differences are observed after accounting for background characteristics of the students and exploring some differential relationships between grade repetition and education outcomes according to student characteristics. The achievement and behavioural gaps among groups of repeaters may reflect differences in the development of academic and behavioural skills over the school years, as well as differences in the way these groups of students are treated across different educational systems.*

*JEL classification: I21, J13, H52*

*Keywords: Grade repetition, academic performance, attitudes towards school, PISA*

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The empirical literature assessing the consequences of grade repetition provides inconclusive evidence of the academic and socio-emotional effects of retention on students. In fact, the existing empirical literature is divided into two camps (as summarised by Thompson and Cunningham, 2000). The first supports the contention that grade repetition is beneficial for the student. The second suggests that it is detrimental for the students. These mixed findings make the assessment of this educational intervention difficult and its utilisation by education policymakers controversial, even putting aside the recognition that grade repetition is costly for the systems (West, 2012). Despite attempts to explain the differences in findings as the result of the disparity of the contexts analysed – in terms of students’ characteristics, educational system features, country differences, etc. – a great amount of confusion about retention policies still remains. The puzzle calls for further analysis to help disentangle the positive and negative effects of grade retention.

This paper explores whether the two opposite evaluations of grade retention – i.e. whether its effects are positive or negative, on average – can be better understood when analysing the following questions. First, this paper examines how students’ performance in reading at the age of 15 differs according to whether and when they have repeated a grade. Second, the paper focuses on students’ attitudes towards school and analyses the relationships between what 15-year-old students think about their schools and whether and when they have repeated a grade. This paper also examines the role played by students’ individual characteristics in the impact of retention on educational outcomes (i.e. socio-economic background, gender, migrant backgrounds, and age). These characteristics are incorporated to explore how the relationships between grade repetition and students’ performance and attitudes towards school vary according to their background characteristics. The analyses build on the idea that academic and socio-emotional developments of students evolve differently over the school years, and accordingly, retention at different stages of their educational career is likely to have different implications and meaning for students. Also, the relationships between repetition and performance/attitudes towards school may differ across countries, and the comparison of these relationships across countries may uncover relevant information for our understanding of the policy. For these purposes, the analyses of this paper are based on the OECD PISA 2009 dataset.

## 1. Literature review

As mentioned above, previous research on the consequences of retention has noted the dissimilar impacts of the policy and its economic costs for the educational systems. A set of papers that are observational or meta-analysis studies reinforces these findings. For example, Thompson and Cunningham (2000) and West (2012) summarise the results of the assessment of retention policies. On the one hand, the negative consequences of retention arise from the fact that it discourages students with low motivation, confidence and social promotion, and forces retained students to repeat the same curriculum while their advancing peers keep learning more advanced topics. On the other hand, retention signals

to the students no tolerance for weak efforts and low performance, and gives lagging students an opportunity to get serious and get ready for the next grade. Regarding the economic pressure imposed on educational systems, West (2012) estimates that the cost to society of retaining 2.3% of the total student population in the United States is higher than \$12 billion per year (p. 3). Similar evidence for some other countries (OECD, 2011) reinforces the idea that financial resources devoted to repetition are substantial. This cross-country comparison of total annual costs – including direct costs and opportunity costs<sup>1</sup> – suggests that, relative to total expenditure on primary and secondary education, the costs of grade repetition may represent a fraction up to 10 to 12% in Belgium, Spain, the Netherlands and Portugal (and 5 to 10% in Brazil, Germany and Italy).

Rumberger and Lim (2008) review some empirical evidence on the relationship between retention and probability of graduating from high school. The majority of the studies reviewed suggest that retention in elementary and/or middle school was associated with an increase in the odds of dropping out of high school. High school repetition, however, did not seem to have any significant effects on dropout probability. In Colombia, over-age students, who are often grade repeaters, are more likely to drop out of school even at the very early stage of their educational career in primary school (Garcia-Jaramillo et al., 2011).

Xia and Kirby (2009) provide a detailed review of the literature that analyses the impact of retention in various educational outcomes (covering 91 publications). Although the paper notes the existence of mixed results when evaluating the effects of grade retention, the authors conclude that grade retention does not seem “to benefit” academic achievement (p. ix and x). On average, papers identifying positive effects on academic achievement also find that these have dissipated over time. Outcomes negatively associated with retention are the probabilities of graduating and pursuing post-secondary education, and the quality of employment (lower-paid jobs). In terms of non-academic outcomes, the summarised findings are mixed as well. The paper also provides a detailed overview of the characteristics of retained students. In general, retained students tend to have more disadvantaged socio-economic backgrounds, which are measured by proxy variables such as living in poverty, lower parental educational attainment and also lower measures of intelligence.

Allen, Chen, Willson and Hughes (2009) examine the effect of grade retention on academic outcomes. The authors review various studies using quasi-experimental designs published between 1990 and 2007 and conduct a meta-analysis of over 200 effect sizes, using multilevel analysis. The mean Hedges effect size is  $-0.11$  (standard deviation was 0.01). They conclude that there is a negative effect of grade repetition on academic outcomes.

As noted by most of these observational papers, the estimated coefficients reported by some of the existing empirical evidence cannot be interpreted as the statistical impact of retention on achievement and other non-cognitive outcomes. Observational studies are affected by the selection of students in the policy. Consequently, they may represent both the effect of the policy and that of several unobserved variables that would also affect achievement. In the last decades, some papers have utilised quasi-experimental approaches to study the effect of grade repetition on performance, with particular emphasis on regression discontinuities, empirical strategies or instrumental variable estimation. These methods are expected to approximate the ideal conditions of a

randomised experiment, which is the “gold-standard” design for research to make unbiased causal claims (Murnane and Willett, 2011). Most of these strategies find ways to ensure exogenous treatment variability that helps overcome selection on observable and unobservable biases in the causal estimates of the effect of a treatment. For instance, Eide and Showalter (2001) model repetition as an endogenous family decision based on expected costs and benefits. Their paper shows that retention did not exert an independent influence on dropping out or earnings (for white males). They use the variation in age of entry into kindergarten across states as an instrument for grade repetition. The estimated coefficients for white males suggest that retention would lower the probability of dropping out and would increase earnings (for white males, the estimated coefficients associated with the impact of being retained on the log of earnings range from 0.178 to 0.316). The estimated coefficients for black males were statistically indistinguishable from zero.

Manacorda (2012) exploits the discontinuity induced by a regulation in Uruguay, according to which automatic grade failure is established for junior high school students who fail more than three subjects in the same academic year. Adjusting potential correlations between failure and other unobserved variables and reverse causality between failure and school outcomes, the paper shows that grade failure leads to substantial drop-out and lower educational attainment both in the immediate term and also four to five years after grade failure first occurred.

Jacob and Lefgren (2004) evaluate the impact on performance of attending summer school and being retained, as determined by the accountability policy in Chicago Public Schools. This policy was implemented in Chicago in 1996, and entitled students who scored below a certain threshold to summer school participation and potential grade retention. Using a (fuzzy) regression discontinuity design to overcome the effects of selection into the programme, this paper showed that retention increased achievement in mathematics and reading for third grade students, although it did not have any impact on math achievement and had a negative impact on reading achievement for sixth grade students. The estimated effects, reported in logits, suggest that retention in the third grade increased performance in reading by 0.18 and in math by 0.23 logits one year after retention. For students retained in sixth grade, the effect on academic performance one year later is not statistically significantly different from zero, while it is negative in reading performance two years later (estimated coefficient is 0.15 logits).

A more recent paper by Jacob and Lefgren (2009) provides interesting information about the impact of retention in different grade levels, using follow-up information from the previous paper and the same identification strategy. Their estimates suggest that grade retention among students in sixth grade did not affect the probability of completing high school. However, retention of students in eighth grade increased the probability of dropping out of high school, with a coefficient of -9.9 percentage points (the effect was stronger for some minorities, such as African-American girls).

An important paper in terms of its contributions to the hypotheses in our article is Schwerd and West (2012). This paper examines the long-term effects of retention in third grade in Florida. In particular, the study uses a (fuzzy) regression discontinuity to explore the probability of grade repetition that results from Florida’s test-based promotion policy. This policy required that schools would retain students in third grade who failed to demonstrate basic proficiency on the state reading test (some exceptions applied). Using

the vertically scaled test scores in reading and math, the authors compare the achievement of students in the different grades. Thus, the counterfactual for students who were retained is those who had been promoted to the next grade. This between-grade comparison would avoid the traditional same-grade comparison bias, in which the test scores' comparisons cannot disentangle the effect of retention from the effect of being a year older at the time the test was administered.<sup>2</sup> This paper concludes that the effects (for students who comply with the policy, i.e. the local average treatment effect) of retention suggest large short-term gains in achievement, which fade out over the grades, and a statistically significant reduction in the probability of retention in subsequent years. The magnitude of the estimated effects is as follows: after one year, retained students outperformed their non-retained peers by 0.61 standard deviations in reading (0.46 standard deviations in math). The results were 0.42 standard deviations in reading after two years (0.22 standard deviations in math); 0.25 standard deviations in reading after three years (0.20 standard deviations in math); and 0.14 standard deviations in reading after four years (statistically insignificant in math). Regarding the effects of retention on the reduction in the probability of being retained in later grades, the estimated effects are 11% less probability of being retained two years later, 3% less probability of being retained three years later; and 4% less probability of being retained four or five years later. The authors mention that the effects of retention on achievement and educational attainment could vary according to the grade at which the students are retained. They mention that retention in earlier grades could be beneficial to students compared with later retention, although the main argument behind this statement seems to be the fact that earlier retention would reduce the probability of being retained in later years (plus a reference to the papers by Jacob and Lefgren, 2004 and 2009, summarised earlier).<sup>3</sup> Importantly, as acknowledged by the authors, these estimates do not distinguish which part of the effect on performance and later retention is a result of the policy *per se*, and which part is due to some complementary interventions. Florida's test-based promotion policy also provided retained students with other measures such as the opportunity to attend a summer reading programme before the beginning of the next academic year; they were also assigned to a high-performing teacher, and received intensive reading support during the year.<sup>4</sup>

Very few publications have analysed retention policies from a cross-country perspective, from a microeconomic perspective and using quantitative methods.<sup>5</sup> But, there are some exceptions. OECD (2011) provides a comparative international description of retention across countries. This report uses the information from PISA 2009 and identifies some of the associations between retention, student characteristics (socio-economic background) and the educational system (ability of schools to transfer students based on performance, behavioural problems or special learning needs). In terms of the proportion of students who had repeated at least one grade, the report situated the PISA 2009 OECD average at 13%. The between-country variation was high, running from 0% of students retained in Japan, Korea and Norway, to over 25% in countries such as Belgium, France, Luxembourg, the Netherlands, Portugal and Spain (and other partner countries around the world, with Macao-China, Tunisia and Brazil being the countries with the highest retention rates of over 40%, as shown later in Figure 1). This study suggests that in countries with a higher proportion of retained students, overall performance tends to be lower and social background has a stronger impact on learning outcomes than is the case in countries where fewer students are retained – regardless of the country's wealth. This

study also shows that about 15% of the variation in performance across countries was explained by differences in grade repetition rates.

A very recent work by Goos, Schreier, Eduard-Knipprath, De Fraine, Van Damme, and Trautwein (2013) examines the predictive value of different national educational policy characteristics in explaining the probability of students' repeating a grade. This paper, like OECD (2011) and our current research, builds on the PISA 2009 data. The authors specify a three-level model for the likelihood of being retained in primary or secondary school as a function of individual, school and country characteristics for 34 countries (OECD's *Education at a Glance* indicators and Teaching and Learning International Survey [TALIS] indicators are also used). Their findings suggest that a fifth to a quarter of the variation in the likelihood of being retained lay at the country level, and that some specific national educational factors<sup>6</sup> are statistically significant predictors of such a probability (p. 76).

## 2. Data

The analyses in this paper are based on the data of the *OECD Programme for International Student Assessment (PISA)*. PISA has been assessing key competencies of 15-year-old students since 2000. The survey has been conducted every three years to assess students' competencies to apply their knowledge in real life contexts. The PISA 2009 dataset is the latest PISA dataset available to the public at the time of analysis for this paper. The data were collected in 2009 from around 470 000 students in 34 OECD countries and 31 non-OECD countries and economies. Each participating student was given two hours to take a pencil-and-paper cognitive test, and about 30 minutes to complete a questionnaire. Every PISA assessment covers three main subjects – reading, mathematics and science – with emphasis on one of these three subjects. As the main focus of PISA 2009 was reading, the analyses of this paper are based on student performance in reading.

### 2.1. Grade repetition

In the PISA 2009 Student Questionnaire,<sup>7</sup> students were asked whether they have repeated a grade at the primary education level, at the lower secondary education level, or at the upper secondary education level. The response categories were “No, never”, “Yes, once” or “Yes, twice or more” for each of these three education levels.

Table A.1 in Appendix A shows the percentage of students who reported having repeated a grade at each education level. Table A.1 summarises students' responses to the three questions related to grade repetition (i.e. grade repetition at the primary, low-secondary, and upper-secondary levels): students who have never repeated a grade, students who have repeated a grade(s) at the primary education level only, students who have repeated a grade(s) at the secondary education level only, and students who have repeated grades at both the primary and secondary education levels. These are the descriptive statistics of the grade repetition variables that we use for the empirical estimation.

In some countries such as Japan, Korea and Norway, no 15-year-old students have repeated a grade. In about a half of the PISA 2009 participating countries, only one out of ten students or fewer has repeated a grade. Therefore, this paper focuses on the countries and economies where over 10% of 15-year-old students have ever repeated a grade. These include 16 OECD countries (Austria, Belgium, Chile, France, Germany, Hungary, Ireland, Italy, Luxembourg, Mexico, the Netherlands, Portugal, Spain, Switzerland, Turkey and the



United States) and 14 non-OECD countries and economies (Argentina, Brazil, Colombia, Dubai (UAE), Hong Kong-China, Indonesia, Latvia, Macao-China, Panama, Peru, Qatar, Trinidad and Tobago, Tunisia and Uruguay).

## 2.2. Two outcome variables

This article examines the following two outcome variables: student achievement in reading and the index of students' attitudes towards school. These variables are used as prime measures of a variable capturing the cognitive performance and a non-cognitive indicator of the student, linkable to the student's motivation or utility of school in his/her life. Table A.2 shows the descriptive statistics of countries' average performance. The metric for this reading scale is based on a mean for OECD countries set at 500, with a standard deviation of 100, in PISA 2000 when reading was the main focus for the first time.<sup>8</sup> In the PISA 2009 dataset, five plausible values (PVs) are included for reading achievement (the variables are **PV1READ**, **PV2READ**, **PV3READ**, **PV4READ** and **PV5READ**). These five PVs are used for the analyses in this paper. The detailed use of PVs in the analysis is described in the appendix.

Table A.3 shows the descriptive statistics of the index of attitudes toward school (the variable name is **ATSCHL**). This index was derived from students' responses (i.e. strongly agree, agree, disagree, or strongly disagree) to the following four statements: school has done little to prepare me for adult life when I leave school; school has been a waste of time; school has helped give me confidence to make decisions; and school has taught me things which could be useful in a job.

As explained in the PISA 2009 Technical report (OECD, 2012), students' responses to these items were scaled using Item Response Theory. Warm Likelihood Estimates (WLEs) in logits were computed for the latent construct of individual students. Then, WLEs were transformed to a scale with an OECD average of 0 and a standard deviation of 1. The negatively phrased questions were inverted before scaling so that higher values on this index indicate more positive attitudes towards school. For further details, please refer to PISA 2009 Technical Report (OECD, 2012).

## 2.3. Student characteristics

Students' gender, their migration status, their socio-economic backgrounds, and their age are examined in this article.

In the PISA 2009 Student Questionnaire, students were asked whether they are female or male. Based on this question, a dichotomous variable "**MALE**" (1 = boys and 0 = girls) is utilised in this paper. Table A.4 presents the proportion of boys and girls. The percentages of students who are boys range from 46% in Argentina to 53% in Hong Kong-China.

Students were asked the country of birth of themselves and their parents. This information is summarised and the index of immigrant background (**IMMIG**) is included in the *PISA 2009 Database*. This index has three categories: 1) native students (those students born in the country of assessment with at least one parent born in that country; and students who were born abroad with at least one parent born in the country of assessment); 2) second-generation students (those born in the country of assessment but whose parents were born in another country); and 3) first-generation students (those born outside the country of assessment and whose parents were also born in another country). Students were also asked to indicate the language they usually speak at home. Based on

this question, a variable of language at home (ST19Q01) is developed and included in the PISA 2009 database: 1) language at home is the same as the language of assessment; and 2) language at home is different language than the language of assessment. Based on these two variables in the PISA 2009 database, a dichotomous variable “**MIGLAN**” is developed for the analyses in this paper. MIGLAN is 1 when either IMMIG is 2 or 3, or ST19Q01 is 2; and MIGLAN is 0 for all other cases. In other words, MIGLAN is 1 when a student has a migrant background (either first- or second-generation) or speaks a language at home that is different from the language of assessment (either as a result of being an immigrant to the country or as a consequence of the coexistence of various languages in a given country). The percentages of students with migrant backgrounds or with a language at home that is different from the language of assessment range from 0.4% in Tunisia to 94% in Luxembourg.

Students’ socio-economic backgrounds are measured with the index of economic, social and cultural status (**ESCS**) included in the PISA 2009 database. This index was derived from students’ responses to questions about parents’ occupational status, parents’ education level, and home possessions.<sup>9</sup> The values on this index have an OECD mean of 0 and a standard deviation of 1. As seen in Table A.4, the country averages of the index of economic, social and cultural status vary from -1.6 in Indonesia to 0.5 in Qatar. The standard deviation of ESCS varies from 0.80 in Dubai (UAE) to 1.33 in Panama.

Finally, students provided their birthdays. The variable **AGE** included in the PISA 2009 dataset was calculated as the difference between the middle month and the year in which students were assessed and their month and year of birth, expressed in years and months. This variable varies from 15.25 to 16.33 at the student level (or 15 years and 3 months and 16 years and 4 months, respectively). For the analysis in this paper, the variable of student age (**AGE**) is recoded into a dichotomous variable to facilitate the interpretation of the results. The dichotomous variable **rAGE** is zero when a student is at or above the country average age and 1 when a student is below the country average age. Table A.4 presents the average age of students by country. As expected, about half of the students are at or above the country average age and the other half are below the country average age.

### 3. Method

This section introduces important statistical components linked to the design of PISA (sampling weights, replication weights, and plausible values) and the regression equations that are estimated in this study.

#### 3.1. Sampling weights

The PISA target population is “15-year-old students attending educational institutions in grades 7 and higher” (OECD, 2012). PISA applies two-stage sampling. Schools are first selected with probabilities proportional to their size (PPS). Then, in general, 35 students are randomly sampled from each of the participating schools. In a two-stage sample design with a PPS sample of schools, all students should have the same probability of selection and consequently they should have the same weights. However, in PISA, student final weights (**W\_FSTUWT**) vary because they are adjusted for non-responses of students or schools; the size measure for schools on the school sampling frame prepared at the early stage of the project is adjusted or updated after collecting data, and over-sampling or under-sampling of some strata of population is adjusted for. Thus, it is important to apply the student final weights when conducting analyses.

### 3.2. Replicate weights

As PISA applies two-stage sampling but not simple random sampling, it is recommended to compute standard errors based on the Balanced Repeated Replication (BRR) method (OECD, 2009). The PISA 2009 Database contains 80 replicate weights (**W\_FSTR0** to **W\_FSTR80**). The statistics of interest are computed with the student final weights as well as with 80 replicate weights (i.e. repeat the same computation 81 times). Then, the sampling variance is derived by aggregating the differences between each of the estimates with 80 replicate weights and the estimate computed with the student final weights. As PISA uses the Fay method with a factor of 0.5, the following formula is used to compute sampling variance:

$$\sigma_{(\hat{\theta})}^2 = \frac{1}{80(1-0.5)^2} \sum_{i=1}^{80} (\hat{\theta}_{(i)} - \hat{\theta})^2$$

### 3.3. Plausible Values (PVs)

Students' responses to the cognitive items are scaled, based on classical Item Response Theory (IRT). As student proficiencies, which cannot be directly observed, have to be inferred based on the observed students' responses to cognitive items (reading, for the purposes of our analyses, but also for the other two areas of assessment, mathematics and science), PISA applies one of the inference approaches known as Plausible Values (PVs). See Appendix B for a detailed description of PVs.

### 3.4. Regressions

The results in Tables A.6, A.7, A.8 and A.9 in Appendix A are based on Ordinary Least Squares (OLS) regression models.

For grade repetition, three dummy variables are derived for the regression models:

- **DREPN**: A dummy variable indicating that a student has never repeated a grade.
- **DREP1**: A dummy variable indicating that a student has repeated a grade(s) at the primary education level only.
- **DREP12**: A dummy variable indicating that a student has repeated grades both at the primary and secondary education levels.

These three grade repetition dummy variables are included in the regression models. The reference group is students who have repeated a grade(s) at the secondary education level only.

In the regression models, the index of economic, social and cultural status (**ESCS**) is standardised to have the OECD mean of zero and a standard deviation of one across OECD countries.

Other students' characteristics variables – **MALE**, **MIGLAN** and **rAGE** – are all dichotomous variables (1 and 0) and defined in detail in the previous section.

- **MALE**: 1 = Boys and 0 = girls.
- **MIGLAN**: 1 = Students with migrant backgrounds or for whom the language spoken at home is different from the language of assessment; and 0 = others.
- **rAGE**: 1 = Students below the country average age; and 0 = students at or above the country average age.

Table A.6 presents the results of the following three models. Model 1 examines the relationship between student performance in reading and grade repetition before accounting for any of the students' characteristics. The intercept  $\beta_0$  can be interpreted as the average score for the reference group, which is students who have repeated a grade(s) at the secondary education level only. The regression coefficient  $\beta_1$  indicates the performance difference between students who have never repeated a grade and students who have repeated a grade(s) at the secondary education level only. The regression coefficient  $\beta_2$  indicates the performance difference between students who have repeated a grade(s) at the primary education level only and students who have repeated a grade(s) at the secondary education level only. The regression coefficient  $\beta_3$  indicates the performance difference between students who have repeated grades both at the primary and secondary education levels and students who have repeated a grade(s) at the secondary education level only.

Model 2 examines the relationship between student performance in reading and grade repetition after accounting for student socio-economic background. Model 3 examines this relationship after accounting for student socio-economic background, gender, migrant background and age.

*Model 1 (Equation 1):*

$$\text{Read} = \beta_0 + \beta_1 \text{DREPN} + \beta_2 \text{DREP1} + \beta_3 \text{DREP12}$$

*Model 2 (Equation 2):*

$$\text{Read} = \beta_0 + \beta_1 \text{DREPN} + \beta_2 \text{DREP1} + \beta_3 \text{DREP12} + \beta_4 \text{ESCS}$$

*Model 3 (Equation 3):*

$$\text{Read} = \beta_0 + \beta_1 \text{DREPN} + \beta_2 \text{DREP1} + \beta_3 \text{DREP12} + \beta_4 \text{ESCS} + \beta_5 \text{MALE} \\ + \beta_6 \text{MIGLAN} + \beta_7 \text{rAGE}$$

Four models in Table A.7 are built on Model 3 in Table A.6. In each of these four models, the interactions between grade repetition dummies and each of the student characteristics are included. The main focus is the performance difference between students who have never repeated a grade and students who have repeated a grade(s) at the secondary education level only; and the performance difference between students who have repeated a grade(s) at the primary education level only and students who have repeated a grade(s) at the secondary education level only. Thus, only two of the three grade repetition dummy variables are interacted with each of the students' characteristics in order to analyse how these performance differences by grade repetition vary depending on students' characteristics.

*Model 4 (Equation 4):*

$$\text{Read} = \beta_0 + \beta_1 \text{DREPN} + \beta_2 \text{DREP1} + \beta_3 \text{DREP12} + \beta_4 \text{ESCS} + \beta_5 \text{MALE} \\ + \beta_6 \text{MIGLAN} + \beta_7 \text{rAGE} + \beta_8 \text{DREPN*ESCS} + \beta_9 \text{DREP1*ESCS}$$

*Model 5 (Equation 5):*

$$\text{Read} = \beta_0 + \beta_1 \text{DREPN} + \beta_2 \text{DREP1} + \beta_3 \text{DREP12} + \beta_4 \text{ESCS} + \beta_5 \text{MALE} \\ + \beta_6 \text{MIGLAN} + \beta_7 \text{rAGE} + \beta_8 \text{DREPN*MALE} + \beta_9 \text{DREP1*MALE}$$

*Model 6 (Equation 6):*

$$\text{Read} = \beta_0 + \beta_1 \text{DREPN} + \beta_2 \text{DREP1} + \beta_3 \text{DREP12} + \beta_4 \text{ESCS} + \beta_5 \text{MALE} + \beta_6 \text{MIGLAN} \\ + \beta_7 \text{rAGE} + \beta_8 \text{DREPN*MIGLAN} + \beta_9 \text{DREP1*MIGLAN}$$

*Model 7 (Equation 7):*

$$\text{Read} = \beta_0 + \beta_1 \text{DREPN} + \beta_2 \text{DREP1} + \beta_3 \text{DREP12} + \beta_4 \text{ESCS} + \beta_5 \text{MALE} + \beta_6 \text{MIGLAN} \\ + \beta_7 \text{rAGE} + \beta_8 \text{DREPN*rAGE} + \beta_9 \text{DREP1*rAGE}$$

For all models in Tables A.6 and A.7, five Plausible Values, the student final weights and 80 replicate weights are used.

Similarly, three models (see Table A.8) and four models with interactions (see Table A.9) are developed with the index of student attitudes towards school (**ATSCHL**) as an outcome variable. All of these models in Tables A.8 and A.9 are based on the cases without any missing values in the index of student attitudes towards school, grade repetition, student socio-economic background, gender, migrant background and age. For all models in Tables A.8 and A.9, the student final weights and 80 replicate weights are used.

Table A.8 presents the results of Models 8 to 10.

*Model 8 (Equation 8):*

$$\text{ATSCHL} = \beta_0 + \beta_1 \text{DREPN} + \beta_2 \text{DREP1} + \beta_3 \text{DREP12}$$

*Model 9 (Equation 9):*

$$\text{ATSCHL} = \beta_0 + \beta_1 \text{DREPN} + \beta_2 \text{DREP1} + \beta_3 \text{DREP12} + \beta_4 \text{ESCS}$$

*Model 10 (Equation 10):*

$$\text{ATSCHL} = \beta_0 + \beta_1 \text{DREPN} + \beta_2 \text{DREP1} + \beta_3 \text{DREP12} + \beta_4 \text{ESCS} + \beta_5 \text{MALE} \\ + \beta_6 \text{MIGLAN} + \beta_7 \text{rAGE}$$

Table A.9 presents the results of Models 11 to 14.

*Model 11 (Equation 11):*

$$\text{ATSCHL} = \beta_0 + \beta_1 \text{DREPN} + \beta_2 \text{DREP1} + \beta_3 \text{DREP12} + \beta_4 \text{ESCS} + \beta_5 \text{MALE} \\ + \beta_6 \text{MIGLAN} + \beta_7 \text{rAGE} + \beta_8 \text{DREPN*ESCS} + \beta_9 \text{DREP1*ESCS}$$

*Model 12 (Equation 12):*

$$\text{ATSCHL} = \beta_0 + \beta_1 \text{DREPN} + \beta_2 \text{DREP1} + \beta_3 \text{DREP12} + \beta_4 \text{ESCS} + \beta_5 \text{MALE} \\ + \beta_6 \text{MIGLAN} + \beta_7 \text{rAGE} + \beta_8 \text{DREPN*MALE} + \beta_9 \text{DREP1*MALE}$$

*Model 13 (Equation 13):*

$$\text{ATSCHL} = \beta_0 + \beta_1 \text{DREPN} + \beta_2 \text{DREP1} + \beta_3 \text{DREP12} + \beta_4 \text{ESCS} + \beta_5 \text{MALE} + \beta_6 \text{MIGLAN} \\ + \beta_7 \text{rAGE} + \beta_8 \text{DREPN*MIGLAN} + \beta_9 \text{DREP1*MIGLAN}$$

*Model 14 (Equation 14):*

$$\text{ATSCHL} = \beta_0 + \beta_1 \text{DREPN} + \beta_2 \text{DREP1} + \beta_3 \text{DREP12} + \beta_4 \text{ESCS} + \beta_5 \text{MALE} + \beta_6 \text{MIGLAN} \\ + \beta_7 \text{rAGE} + \beta_8 \text{DREPN*rAGE} + \beta_9 \text{DREP1*rAGE}$$

### 3.5. Counterfactual for retained students and causality

Two final considerations about our empirical strategy are discussed to conclude this section. Some of the papers estimating the effects of retention face an important limitation when constructing the counterfactual for the performance of a retained student. A proper counterfactual is not possible in the absence of vertically scaled test scores that make it possible to compare the achievement of students tested in different grades (Schwerd and West, 2012): “same grade comparisons conflate any effect of retention on achievement with the effect of being a year older when you take the test.” As in their paper, PISA provides us with the right performance counterfactual due to the fact that PISA’s goal is to test the ability to apply the “contents” of education to real life, and not the ability to “master” the contents. As described in Section 2, the student population in PISA is composed of 15-year-olds, who, as a result of retention or other factors, may not be attending the grade level that is appropriate for their age (the modal grade). Thus, as in the paper by Schwerd and West, our counterfactual condition for retained students is to have been immediately promoted to the next grade, and we compare the ability to apply educational contents to real life of retained versus non-retained students. Regarding

another educational outcome variable used in this paper (i.e. the index of attitudes towards school), a single index was developed in a way that students' attitudes towards school can be directly compared among students sampled in the PISA 2009 regardless of their grade levels.

On causality, the characteristics of the data source do not allow us to utilise a quasi-experimental method that would be more appropriate to address the causal impact of retention on the students' achievement and socio-emotional behaviour. To overcome the selection into the retention treatment this paper sets out an observational study with observable individual level controls. Since some of these controls are measured after the treatment, and although it is unlikely that the controls, as measured by PISA, are affected by the students' outcomes, the results should be interpreted cautiously acknowledging the limitations. The concerns with unobservable characteristics, including whether they are affected by the students' outcomes that are norm in this type of identification, also apply to the analysis in this paper.

## 4. Empirical results

### 4.1. Grade repetition

Figure 1 shows 16 OECD countries and 14 non-OECD countries and economies where over 10% of 15-year-old students reported that they had repeated a grade at least once. In the Netherlands, Mexico, Ireland, the United States, Switzerland, Trinidad and Tobago, Indonesia, Peru and Hong Kong-China, students are more likely to repeat a grade at the level of primary education compared with secondary education. On the other hand, in Spain, Italy, Turkey, Chile, France, Germany, Belgium, Austria, Tunisia, Argentina, Macao-China, Brazil, Panama and Uruguay, students are more likely to repeat a grade at the level of secondary education compared with primary education. In Hungary, Portugal, Luxembourg, Qatar, Latvia, Dubai (UAE) and Colombia, there is not much difference in the percentage of students who repeated a grade in primary versus secondary education. In all of these 30 countries and economies except Spain, Brazil, Uruguay, Macao-China and Tunisia, 5% or less of students repeated grades both at the primary and secondary education levels (Table A.1).

### 4.2. Grade repetition and student performance in reading

Figure 2 shows that, when the bivariate relationship between grade repetition and performance is examined, with almost no exception, performance of students who never repeated a grade, compared with students who were retained in secondary school, is higher (Model 1 in Table A.6). The achievement gaps between these groups range from 35 score points (in Austria and Colombia) to close to 80-100 score points in a wide set of countries (France, Argentina, Spain, Hungary, Ireland, Italy, Portugal, Dubai, Qatar, Uruguay and the United States) and 152 score points in Trinidad and Tobago. The difference is not statistically significant in the Netherlands (where the proportion of retained students was one of the smallest in the sample).

Another important finding is that students who repeated a grade at the secondary education level only tend to perform better than students who repeated a grade at the primary education level only in 23 out of 30 countries and economies that were examined (Model 1 in Table A.6). The score-point differences range from 12 points in Macao-China to around 74 points in Austria and Luxembourg. The only two exceptions are Qatar and

Figure 1. Grade repetition

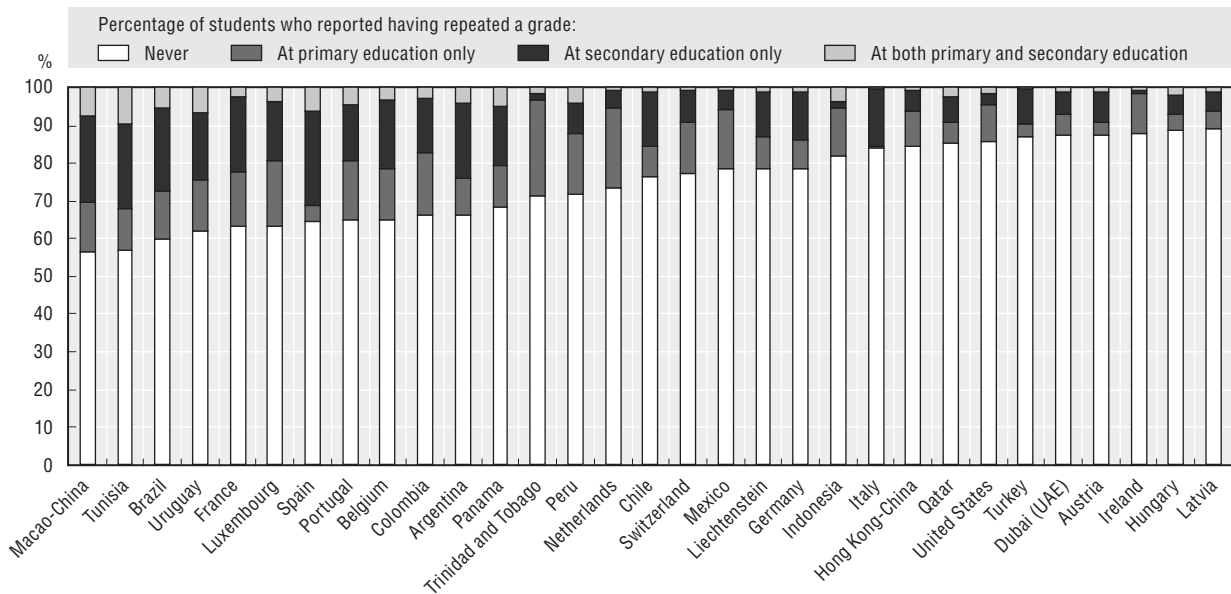
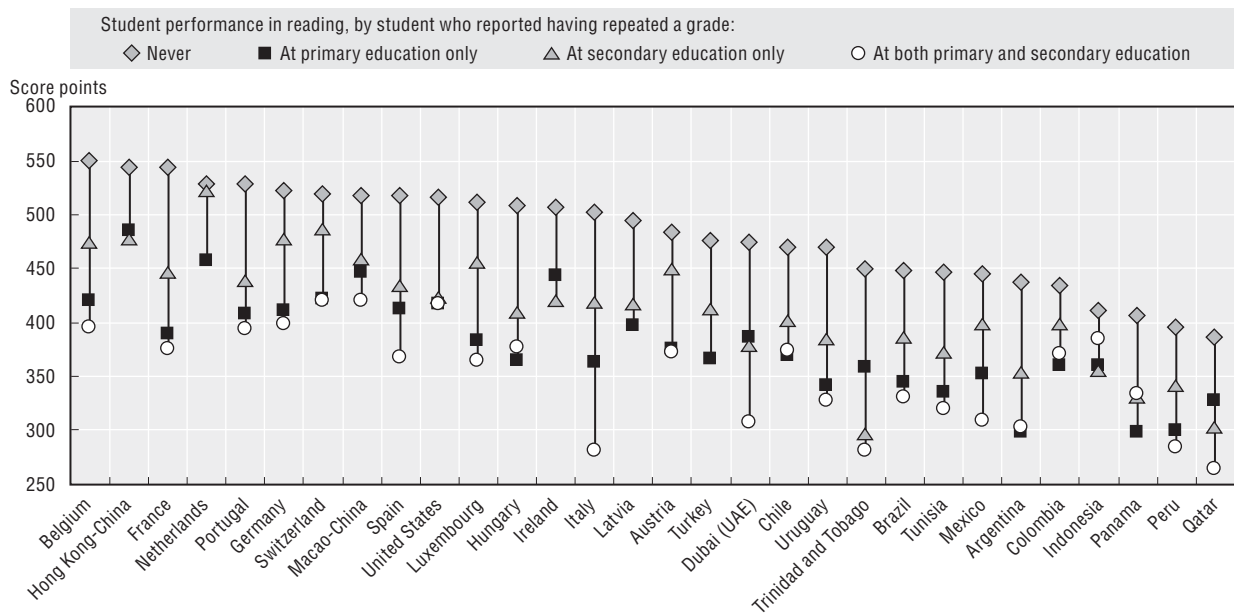


Figure 2. Reading performance by grade repetition



Trinidad and Tobago, where the gap is favourable to students who were retained in primary school, compared with students retained in secondary school. In Hong Kong-China, Indonesia, Ireland, Dubai (UAE) and the United States, the difference in performance between these groups is not statistically significant. In these five countries and economies, there is no difference in reading performance between these two groups of students and a small percentage of students repeats a grade at the secondary education level (1.0% in Ireland, 3.2% in the United States, 5.3% in Hong Kong-China, 5.8% in Dubai (UAE) and 1.7% in Indonesia).

### **4.3. Relationship between performance and grade repetition after accounting for student background**

Model 2 in Table A.6 examines the achievement gaps among students who repeated a grade after accounting for student socio-economic background. The results suggest that the achievement gaps between students who never repeated a grade and students who were retained in secondary school decrease after accounting for student socio-economic background, while the statistical significance of the coefficient remains unchanged. The largest drops in performance difference among these students are found in Hungary (32 point change), the United States (24 point change) and Dubai (16 point change). The gap between non-repeaters and students who repeated a grade in secondary school only increases in Mexico and Indonesia (very modestly, by 2 score points). Similarly, the gap between students who repeated in primary school and students who repeated in secondary school is also reduced after accounting for the students' socio-economic background, by a considerable number of score points. The largest reduction in the achievement gap between students who repeated a grade in primary school and in secondary school is observed in Luxembourg, Peru, Mexico, Austria, Germany, Italy and Turkey (between 15 and 20 score-point change). The difference among students who repeated in primary school and students who repeated in secondary school is not statistically significant after accounting for student socio-economic background in Latvia and Panama. Regarding the association between performance and student socio-economic background, the results in all countries and economies that are examined in this paper show a strong positive association (statistically significant).

After accounting for other individual characteristics in Model 3, the performance gaps shrink slightly, compared with the results of Model 2 where the relationship is examined only after accounting for student socio-economic background. The gap between students who never repeated a grade and students who repeated a grade in secondary school is reduced by 3 to 6 score points in most of the countries, and by 11 to 15 score points in Dubai (UAE), Qatar, Trinidad and Tobago and Latvia. Regarding the gap between students who were retained in primary and secondary school, the achievement gap stays the same or increases by around 2 score points in more than half of the countries. This gap decreases in Austria, France, Hungary, Italy, Luxembourg, Mexico, Portugal, Switzerland, Argentina, Brazil, Qatar, Dubai and Peru, and increases in Indonesia and Trinidad and Tobago. The association between reading performance and student socio-economic background is still positive, strong and statistically significant across all the countries. In contrast, the performance gap between boys and girls, identified by the coefficients associated with the male dummy, suggests that boys underscore girls in all the countries in the sample. The gender gaps vary between 10 score points in Colombia and 51 score points (which is equivalent to half of a standard deviation) in Trinidad and Tobago. Among native and immigrant students, immigrant students significantly outperform native students in only three countries (22 point difference in Luxembourg, 52 point difference in Qatar and 72 point difference in Dubai), while in most countries native students score higher in the reading test than do students with an immigrant background (40 point difference and more in Colombia, Brazil, Mexico, Peru, Chile and Panama). Finally, the association between reading achievement and the age of the students is examined. Overall, the estimated coefficients suggest that students who are below the average age of the country underperform the elder students. On average, the estimated coefficients vary between 4 and 20 fewer score points in Spain and Luxembourg, respectively.



Overall, even after accounting for students' background characteristics, similar relationships to the bivariate relationships found in Model 1 and Table A.6 can still be observed. In some countries, the performance differences between grade repetition and performance are reduced after accounting for these characteristics, which suggests that the student background characteristics are related to both grade repetition and performance. But, in general, even after accounting for students' background characteristics, non-repeaters perform better than repeaters; and secondary-education repeaters perform better than primary-education repeaters. This finding leads to the question of whether these relationships are common across different sub-groups of students. The following sections examine how the relationship between grade repetition and performance varies according to student background characteristics.

#### **4.4. How the relationships between performance and grade repetition vary according to student background characteristics**

In this section, the interaction between grade repetition and student characteristics is examined. In particular, the analyses focus on how the relationship between repetition and performance is different across some characteristics of the students such as student socio-economic background, gender, migrant/language background and age. The results are shown in Table A.7.

##### **4.4.1. Heterogeneous relationships across student socio-economic background**

Table 1 (i.e. Model 4 in Table A.7) examines the interaction of grade repetition and student socio-economic background in relation to performance. For students whose socio-economic backgrounds are around or at the level of the country-average, a student who never repeated a grade tends to perform better than a student who repeated during secondary school, in all countries and economies examined except the Netherlands (see the coefficients of  $drepN$ ). Similar to the results of Model 3 in Table A.6, the difference ranges from 24 score points in Austria to 146 in Trinidad and Tobago. In 18 countries, this gap is even wider for students with more advantaged socio-economic backgrounds (see the coefficients of  $drepN*ESCS$ ). In the Netherlands, the interaction is statistically significant, despite the fact that the difference between non-repeaters and secondary school repeaters was not significant for students whose socio-economic backgrounds are at the OECD average level.

Figure 3 presents the performance differences between non-repeaters and repeaters in secondary school for students with a disadvantaged socio-economic background (i.e. one standard deviation lower than the OECD average), and those for students with more advantaged socio-economic backgrounds (i.e. one standard deviation higher than the OECD average) for these 17 countries and economies with significant results. The former is shown with black bars and the latter with grey bars. The biggest differences between the black and grey bars are found in Trinidad and Tobago, where the difference is over 40 score points. This difference is over 30 score points in Peru, Turkey, Uruguay and Luxembourg.

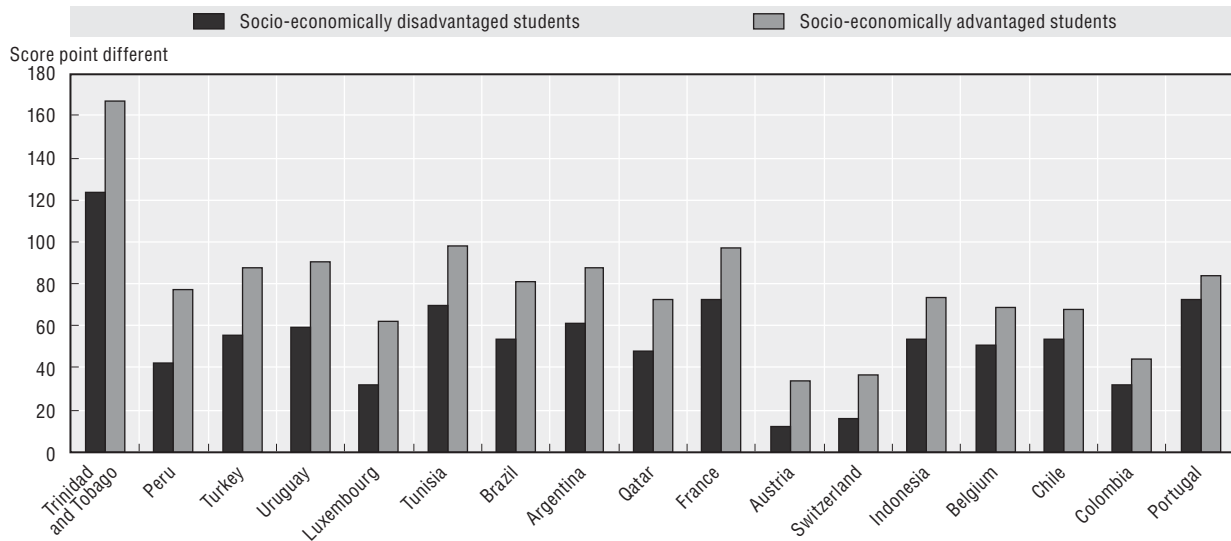
Model 4 in Table A.7 also examines the performance advantage of students who repeated a grade during secondary school relative to students who repeated a grade during primary school, and how this performance advantage differs between students with country-average levels of socio-economic background and students with more advantaged socio-economic backgrounds (see the coefficients of  $drep1*ESCS$ ). Only in Mexico, Argentina, Brazil and Panama does this performance advantage for secondary-school

Table 1. Grade repetition, reading performance and student socio-economic background

|                     |            | Model 4   |            |            |            |            |            |            |           |            |            |            |            |            |            |            |           |            |            |            |      |                |
|---------------------|------------|-----------|------------|------------|------------|------------|------------|------------|-----------|------------|------------|------------|------------|------------|------------|------------|-----------|------------|------------|------------|------|----------------|
|                     |            | Intercept |            | drepN      |            | drep1      |            | drep12     |           | ESCS       |            | MALE       |            | MIGLAN     |            | rAGE       |           | drepN*ESCS |            | drep1*ESCS |      | R <sup>2</sup> |
|                     |            | Intercept | S.E.       | Reg. coef. | S.E.       | Reg. coef. | S.E.       | Reg. coef. | S.E.      | Reg. coef. | S.E.       | Reg. coef. | S.E.       | Reg. coef. | S.E.       | Reg. coef. | S.E.      | Reg. coef. | S.E.       | Reg. coef. | S.E. |                |
| <b>OECD</b>         |            |           |            |            |            |            |            |            |           |            |            |            |            |            |            |            |           |            |            |            |      |                |
| Austria             | <b>487</b> | (6.0)     | <b>24</b>  | (5.5)      | <b>-68</b> | (8.4)      | <b>-64</b> | (13.3)     | <b>31</b> | (4.7)      | <b>-40</b> | (4.5)      | <b>-28</b> | (5.5)      | <b>-20</b> | (3.0)      | <b>11</b> | (5.0)      | -15        | (9.3)      |      | 0.25           |
| Belgium             | <b>488</b> | (3.9)     | <b>61</b>  | (3.4)      | <b>-47</b> | (4.3)      | <b>-69</b> | (6.7)      | <b>23</b> | (3.1)      | <b>-20</b> | (2.7)      | <b>-18</b> | (3.6)      | 3          | (2.2)      | <b>9</b>  | (3.4)      | -2         | (4.2)      |      | 0.39           |
| Chile               | <b>433</b> | (3.9)     | <b>61</b>  | (3.7)      | <b>-28</b> | (6.6)      | -27        | (13.9)     | <b>21</b> | (2.8)      | <b>-16</b> | (3.1)      | <b>-55</b> | (12.1)     | <b>-7</b>  | (2.0)      | <b>7</b>  | (2.9)      | -1         | (4.7)      |      | 0.33           |
| France              | <b>473</b> | (7.8)     | <b>85</b>  | (8.1)      | <b>-50</b> | (8.5)      | <b>-62</b> | (14.5)     | <b>21</b> | (5.7)      | <b>-31</b> | (3.3)      | <b>-27</b> | (5.7)      | 1          | (2.7)      | <b>12</b> | (6.3)      | -2         | (7.4)      |      | 0.45           |
| Germany             | <b>506</b> | (4.2)     | <b>33</b>  | (4.2)      | <b>-57</b> | (5.5)      | <b>-59</b> | (12.0)     | <b>28</b> | (4.0)      | <b>-36</b> | (3.3)      | <b>-25</b> | (3.8)      | <b>-15</b> | (2.8)      | 7         | (4.6)      | -7         | (6.9)      |      | 0.31           |
| Hungary             | <b>475</b> | (7.6)     | <b>62</b>  | (7.0)      | <b>-52</b> | (16.2)     | <b>-34</b> | (10.8)     | <b>40</b> | (5.6)      | <b>-38</b> | (3.0)      | -2         | (9.8)      | <b>-11</b> | (2.4)      | 1         | (5.7)      | -12        | (10.2)     |      | 0.39           |
| Ireland             | <b>463</b> | (14.7)    | <b>69</b>  | (14.8)     | 11         | (15.8)     | c          | c          | <b>31</b> | (10.8)     | <b>-40</b> | (3.7)      | <b>-18</b> | (6.6)      | <b>-13</b> | (2.7)      | 7         | (11.1)     | 3          | (11.7)     |      | 0.23           |
| Italy               | <b>460</b> | (2.7)     | <b>69</b>  | (2.6)      | <b>-45</b> | (14.0)     | <b>-99</b> | (19.5)     | <b>22</b> | (3.1)      | <b>-39</b> | (2.3)      | <b>-27</b> | (2.5)      | <b>-7</b>  | (1.5)      | 5         | (3.2)      | -10        | (12.5)     |      | 0.26           |
| Luxembourg          | <b>457</b> | (6.2)     | <b>47</b>  | (3.5)      | <b>-57</b> | (5.5)      | <b>-76</b> | (8.6)      | <b>19</b> | (2.5)      | <b>-35</b> | (2.2)      | <b>21</b>  | (5.6)      | <b>-20</b> | (2.7)      | <b>15</b> | (2.9)      | 4          | (4.4)      |      | 0.40           |
| Mexico              | <b>436</b> | (6.7)     | <b>48</b>  | (6.3)      | <b>-46</b> | (7.4)      | <b>-72</b> | (10.7)     | <b>16</b> | (2.7)      | <b>-20</b> | (1.3)      | <b>-61</b> | (5.5)      | <b>-10</b> | (1.5)      | 4         | (2.9)      | <b>-8</b>  | (3.6)      |      | 0.31           |
| Netherlands         | <b>531</b> | (9.0)     | 0          | (8.2)      | <b>-60</b> | (8.3)      | c          | c          | <b>17</b> | (6.5)      | <b>-22</b> | (2.6)      | -12        | (7.8)      | -3         | (3.0)      | <b>16</b> | (6.6)      | 9          | (7.4)      |      | 0.22           |
| Portugal            | <b>465</b> | (3.6)     | <b>79</b>  | (4.0)      | <b>-25</b> | (4.3)      | <b>-39</b> | (5.2)      | <b>14</b> | (2.5)      | <b>-28</b> | (2.0)      | <b>-16</b> | (3.9)      | -3         | (1.9)      | <b>6</b>  | (2.8)      | 2          | (3.7)      |      | 0.46           |
| Spain               | <b>462</b> | (2.7)     | <b>71</b>  | (2.1)      | <b>-23</b> | (5.4)      | <b>-61</b> | (4.8)      | <b>14</b> | (2.0)      | <b>-21</b> | (1.6)      | <b>-14</b> | (2.9)      | <b>-4</b>  | (1.7)      | 3         | (1.8)      | -3         | (4.2)      |      | 0.38           |
| Switzerland         | <b>517</b> | (3.9)     | <b>27</b>  | (4.2)      | <b>-54</b> | (4.7)      | <b>-55</b> | (12.6)     | <b>23</b> | (3.4)      | <b>-37</b> | (2.2)      | <b>-22</b> | (2.5)      | <b>-13</b> | (2.4)      | <b>10</b> | (4.1)      | 3          | (4.7)      |      | 0.29           |
| Turkey              | <b>451</b> | (8.7)     | <b>72</b>  | (8.3)      | <b>-52</b> | (24.3)     | c          | c          | <b>12</b> | (3.9)      | <b>-32</b> | (3.1)      | -14        | (8.6)      | -3         | (2.3)      | <b>16</b> | (3.9)      | -8         | (11.1)     |      | 0.31           |
| United States       | <b>454</b> | (8.8)     | <b>65</b>  | (8.6)      | -17        | (10.7)     | -15        | (14.7)     | <b>40</b> | (6.6)      | <b>-22</b> | (2.7)      | 6          | (3.5)      | <b>-7</b>  | (2.5)      | -2        | (7.1)      | -9         | (12.3)     |      | 0.26           |
| <b>Partners</b>     |            |           |            |            |            |            |            |            |           |            |            |            |            |            |            |            |           |            |            |            |      |                |
| Argentina           | <b>391</b> | (6.2)     | <b>75</b>  | (6.4)      | <b>-60</b> | (11.3)     | <b>-43</b> | (9.0)      | <b>24</b> | (3.1)      | <b>-29</b> | (3.1)      | -18        | (9.8)      | -4         | (2.9)      | <b>13</b> | (4.0)      | <b>-12</b> | (6.1)      |      | 0.38           |
| Brazil              | <b>422</b> | (3.0)     | <b>68</b>  | (3.8)      | <b>-48</b> | (5.3)      | <b>-49</b> | (4.5)      | <b>15</b> | (1.8)      | <b>-25</b> | (1.8)      | <b>-64</b> | (9.2)      | <b>-9</b>  | (2.1)      | <b>14</b> | (2.5)      | <b>-8</b>  | (2.8)      |      | 0.32           |
| Colombia            | <b>431</b> | (5.7)     | <b>39</b>  | (5.7)      | <b>-31</b> | (7.5)      | <b>-22</b> | (8.2)      | <b>21</b> | (2.8)      | <b>-10</b> | (3.0)      | <b>-68</b> | (14.2)     | <b>-6</b>  | (2.9)      | <b>6</b>  | (3.2)      | -1         | (3.9)      |      | 0.25           |
| Dubai (UAE)         | <b>363</b> | (5.5)     | <b>63</b>  | (5.1)      | 13         | (6.8)      | <b>-44</b> | (11.5)     | <b>37</b> | (4.7)      | <b>-48</b> | (2.5)      | <b>72</b>  | (2.9)      | <b>-11</b> | (2.6)      | 0         | (5.1)      | 0          | (7.4)      |      | 0.32           |
| Hong Kong-China     | <b>512</b> | (8.4)     | <b>60</b>  | (8.3)      | 7          | (10.4)     | c          | c          | <b>16</b> | (5.8)      | <b>-30</b> | (3.6)      | 3          | (4.3)      | <b>-6</b>  | (2.4)      | -1        | (5.9)      | -3         | (6.0)      |      | 0.15           |
| Indonesia           | <b>387</b> | (13.4)    | <b>64</b>  | (12.1)     | 7          | (14.0)     | <b>28</b>  | (8.7)      | 8         | (5.3)      | <b>-34</b> | (3.0)      | 7          | (4.0)      | -3         | (2.4)      | <b>10</b> | (4.9)      | 0          | (5.8)      |      | 0.21           |
| Latvia              | <b>458</b> | (7.0)     | <b>60</b>  | (6.7)      | -21        | (12.4)     | c          | c          | <b>17</b> | (7.1)      | <b>-43</b> | (2.6)      | -7         | (5.5)      | -3         | (2.7)      | 10        | (6.8)      | -2         | (12.2)     |      | 0.26           |
| Macao-China         | <b>483</b> | (3.4)     | <b>57</b>  | (2.9)      | -7         | (5.2)      | <b>-38</b> | (3.8)      | 4         | (2.1)      | <b>-25</b> | (1.7)      | <b>-5</b>  | (2.0)      | <b>-6</b>  | (2.2)      | 3         | (2.3)      | 4          | (4.4)      |      | 0.25           |
| Panama              | <b>371</b> | (8.9)     | <b>70</b>  | (7.5)      | <b>-52</b> | (12.2)     | -1         | (9.7)      | <b>23</b> | (4.4)      | <b>-19</b> | (6.6)      | <b>-37</b> | (14.1)     | -6         | (5.1)      | 8         | (4.5)      | <b>-21</b> | (5.3)      |      | 0.35           |
| Peru                | <b>387</b> | (7.0)     | <b>60</b>  | (7.3)      | <b>-23</b> | (8.4)      | <b>-50</b> | (7.6)      | <b>19</b> | (3.4)      | <b>-16</b> | (2.9)      | <b>-60</b> | (7.3)      | -4         | (2.6)      | <b>17</b> | (4.0)      | 3          | (4.3)      |      | 0.38           |
| Qatar               | <b>301</b> | (4.1)     | <b>61</b>  | (3.8)      | <b>19</b>  | (5.8)      | <b>-32</b> | (6.8)      | <b>8</b>  | (3.7)      | <b>-39</b> | (1.7)      | <b>52</b>  | (2.0)      | <b>-6</b>  | (1.7)      | <b>13</b> | (3.7)      | <b>11</b>  | (5.2)      |      | 0.18           |
| Trinidad and Tobago | <b>345</b> | (17.9)    | <b>146</b> | (17.4)     | <b>62</b>  | (18.3)     | -24        | (17.5)     | 15        | (9.8)      | <b>-50</b> | (2.9)      | <b>-25</b> | (9.5)      | -2         | (2.9)      | <b>21</b> | (10.0)     | 11         | (10.4)     |      | 0.29           |
| Tunisia             | <b>386</b> | (5.3)     | <b>84</b>  | (6.0)      | <b>-29</b> | (7.6)      | <b>-52</b> | (4.5)      | 0         | (2.1)      | <b>-20</b> | (2.1)      | c          | c          | <b>-6</b>  | (2.2)      | <b>14</b> | (2.7)      | 5          | (3.6)      |      | 0.39           |
| Uruguay             | <b>418</b> | (5.2)     | <b>76</b>  | (5.1)      | <b>-32</b> | (6.1)      | <b>-52</b> | (5.2)      | <b>12</b> | (2.4)      | <b>-33</b> | (2.7)      | <b>-22</b> | (8.7)      | -3         | (2.2)      | <b>15</b> | (2.6)      | 5          | (3.2)      |      | 0.41           |

Note: The outcome variable is student performance in reading (PV1READ to PV5READ). Values that are statistically significant are indicated in bold. When there are too few observations (fewer than 30 students or less than five schools with valid data) it is indicated as "c".

Figure 3. **Grade repetition and reading performance, by student socio-economic background**  
Difference in reading performance between non-repeaters and repeaters in secondary education



repeaters significantly increase for socio-economically advantaged students compared with students with average socio-economic backgrounds. In Qatar, the opposite relationship is observed: primary-school repeaters tend to perform at higher scores than secondary-school repeaters for students with average socio-economic background; and this difference increases for students with more advantaged backgrounds. The interaction is not statistically significant in the rest of the countries.

#### 4.4.2. Heterogeneous relationships across gender

In Model 5 in Table A.7, the relationship between grade repetition and reading performance is examined according to student gender. In most countries and economies examined, the relationships between grade repetition and performance seem to be similar for boys and for girls (see the coefficients of  $drepN*MALE$  and  $drep1*MALE$ ). Only in a few countries do the relationships differ between boys and girls. In Mexico, girls who have never repeated a grade outperform girls who repeated in secondary school by 55 score points and girls who repeated in secondary school outperform girls who repeated in primary school by 13 score points, while boys who have never repeated a grade outperform boys who repeated in secondary school by 38 score points and boys who repeated in secondary school outperform boys who repeated in primary school by 37 score points. In Latvia, Qatar, and Tunisia, girls who never repeated outperform girls who repeated in secondary school, and this performance gap is wider for boys than girls. The performance gap between secondary-school repeaters and primary-school repeaters (i.e. the secondary-school repeaters outperform the primary-school repeaters) is wider for boys than girls in Luxembourg (40 points difference for girls and 62 points difference for boys), but this gap is narrower for boys than girls in Spain (32 points difference for girls and 12 points difference for boys). In the rest of the countries, the difference in performance between repeaters and non-repeaters is not statistically significantly different across boys and girls.

#### **4.4.3. Heterogeneous relationships across migrant/language background**

According to Model 6 in Table A.7, the differences in performance between non-repeaters and secondary-school repeaters vary depending on immigrant/language backgrounds of students in eight countries and economies. For native students, the difference is in favour of students who have never repeated a grade in all countries examined except the Netherlands. Similarly, among immigrant students, the performance difference between non-repeaters and secondary-school repeaters stays the same, except for the following six countries and economies: in Germany, Luxembourg, Portugal, Colombia and Macao-China, the performance advantage of non-repeaters is smaller for students with migrant backgrounds than native students. In Colombia, for native students, non-repeaters outperform secondary-school repeaters, while for students with migrant backgrounds, secondary-school repeaters outperform non-repeaters. Only in Qatar is the performance advantage for non-repeaters even greater for students with migrant backgrounds than native students.

In the majority of countries, the achievement gap between students who repeated in secondary school and students who repeated in primary school for native students is in favour of the former group. On average, in OECD countries, this difference is between 21 and 68 score points. A similar relationship is observed in non-OECD countries, although the gaps are smaller (16 to 38 score points). The gap in Qatar and Trinidad and Tobago is positive, which suggests that primary school-native repeaters outperform (18 and 47 score points) secondary school-native repeaters. The gaps are very similar for students with immigrant backgrounds. Only in Belgium and Mexico is this performance gap between secondary-school repeaters and primary-school repeaters smaller for students with migrant backgrounds. In Mexico, for students with migrant backgrounds, on average, primary-school repeaters outperform secondary-school repeaters.

#### **4.4.4. Heterogeneous relationships across age**

Finally, Model 7 tests if the association between performance and repetition would be different for younger students or for older students. In general, the coefficients estimated for the different countries suggest that the achievement gaps between non-repeaters and students who repeated in secondary school are not different for students who are younger or older than students at the country-average age. Only in Brazil is the performance advantage of non-repeaters relative to secondary-school repeaters smaller for younger students than older students. In Austria, among students whose ages are at or above the country average, secondary-school repeaters outperform primary-school repeaters, and this difference is smaller among younger students. In Ireland, among students whose ages are at or above the country average, there is no performance difference between primary- and secondary-school repeaters, while primary-school repeaters outperform secondary-school repeaters among younger students.

#### **4.5. Grade repetition and student attitude towards school**

As anticipated earlier, this research examines the associations of grade repetition with an indicator of the socio-emotional or non-cognitive outcomes of the student, represented in this case by the index of student attitude towards school. When the bivariate relationship between the index of student attitude towards school and grade repetition is examined, the results show that, in general, in many countries secondary-school repeaters tend to have lower values of the index (i.e. more negative attitudes towards school) than

non-repeaters. But, across countries, the results are less consistent in terms of the difference in student attitude between primary-school repeaters and non-repeaters as well the difference between primary- and secondary-school repeaters.

Table 2 shows that non-repeaters tend to have higher values on the index of student attitudes towards school than do those who repeated a grade in secondary education in 11 OECD countries and 10 non-OECD countries and economies. Primary-school repeaters tend to report more positive attitudes towards school than do secondary-school repeaters in 11 countries and economies, while the opposite is observed in two countries.

Table 2. **Students' attitudes towards school and grade repetition**

|                     | Model 8      |        |             |        |              |        |              |        | R <sup>2</sup> |
|---------------------|--------------|--------|-------------|--------|--------------|--------|--------------|--------|----------------|
|                     | Intercept    |        | drepN       |        | drep1        |        | drep12       |        |                |
|                     | Intercept    | S.E.   | Reg. coef.  | S.E.   | Reg. coef.   | S.E.   | Reg. coef.   | S.E.   |                |
| <b>OECD</b>         |              |        |             |        |              |        |              |        |                |
| Austria             | <b>-0.17</b> | (0.07) | <b>0.26</b> | (0.06) | <b>0.32</b>  | (0.10) | 0.01         | (0.26) | 0.01           |
| Belgium             | <b>-0.14</b> | (0.03) | 0.02        | (0.03) | <b>0.15</b>  | (0.04) | -0.05        | (0.08) | 0.00           |
| Chile               | <b>0.15</b>  | (0.04) | <b>0.19</b> | (0.05) | -0.07        | (0.07) | -0.06        | (0.18) | 0.01           |
| France              | <b>-0.13</b> | (0.04) | <b>0.27</b> | (0.05) | <b>0.23</b>  | (0.07) | 0.13         | (0.16) | 0.01           |
| Germany             | <b>-0.25</b> | (0.05) | <b>0.16</b> | (0.05) | <b>0.21</b>  | (0.07) | -0.22        | (0.20) | 0.00           |
| Hungary             | <b>-0.19</b> | (0.09) | 0.16        | (0.10) | 0.05         | (0.10) | 0.08         | (0.16) | 0.00           |
| Ireland             | 0.23         | (0.17) | -0.08       | (0.17) | -0.17        | (0.18) | c            | c      | 0.00           |
| Italy               | <b>-0.12</b> | (0.02) | <b>0.17</b> | (0.03) | 0.20         | (0.16) | -0.33        | (0.26) | 0.00           |
| Luxembourg          | <b>-0.28</b> | (0.04) | <b>0.16</b> | (0.05) | <b>0.25</b>  | (0.06) | 0.16         | (0.13) | 0.00           |
| Mexico              | <b>0.25</b>  | (0.05) | <b>0.28</b> | (0.05) | <b>-0.19</b> | (0.05) | <b>-0.50</b> | (0.10) | 0.04           |
| Netherlands         | <b>-0.29</b> | (0.06) | 0.06        | (0.06) | 0.10         | (0.07) | c            | c      | 0.00           |
| Portugal            | <b>0.12</b>  | (0.05) | <b>0.32</b> | (0.05) | <b>0.15</b>  | (0.06) | 0.08         | (0.08) | 0.02           |
| Spain               | -0.01        | (0.03) | <b>0.25</b> | (0.03) | <b>0.19</b>  | (0.05) | 0.02         | (0.05) | 0.01           |
| Switzerland         | <b>-0.11</b> | (0.05) | <b>0.11</b> | (0.04) | <b>0.27</b>  | (0.05) | 0.13         | (0.18) | 0.00           |
| Turkey              | 0.08         | (0.05) | <b>0.13</b> | (0.05) | 0.21         | (0.19) | c            | c      | 0.00           |
| United States       | 0.08         | (0.08) | 0.15        | (0.09) | 0.13         | (0.11) | -0.15        | (0.18) | 0.00           |
| <b>Partners</b>     |              |        |             |        |              |        |              |        |                |
| Argentina           | <b>0.08</b>  | (0.03) | 0.05        | (0.05) | 0.10         | (0.07) | -0.14        | (0.11) | 0.00           |
| Brazil              | <b>0.37</b>  | (0.03) | <b>0.12</b> | (0.03) | -0.02        | (0.04) | <b>-0.16</b> | (0.05) | 0.01           |
| Colombia            | <b>0.38</b>  | (0.05) | <b>0.15</b> | (0.05) | -0.11        | (0.06) | 0.02         | (0.10) | 0.01           |
| Dubai (UAE)         | <b>-0.12</b> | (0.05) | <b>0.21</b> | (0.05) | 0.02         | (0.07) | -0.14        | (0.14) | 0.01           |
| Hong Kong-China     | <b>-0.59</b> | (0.05) | <b>0.11</b> | (0.05) | <b>0.13</b>  | (0.05) | c            | c      | 0.00           |
| Indonesia           | 0.05         | (0.09) | <b>0.48</b> | (0.09) | <b>0.27</b>  | (0.11) | <b>0.42</b>  | (0.12) | 0.01           |
| Latvia              | 0.10         | (0.08) | 0.11        | (0.08) | -0.19        | (0.12) | c            | c      | 0.01           |
| Macao-China         | <b>-0.49</b> | (0.02) | <b>0.06</b> | (0.03) | 0.05         | (0.03) | -0.01        | (0.04) | 0.00           |
| Panama              | <b>0.23</b>  | (0.08) | <b>0.26</b> | (0.08) | -0.05        | (0.11) | -0.02        | (0.12) | 0.02           |
| Peru                | <b>0.16</b>  | (0.05) | 0.08        | (0.06) | <b>-0.17</b> | (0.06) | <b>-0.33</b> | (0.10) | 0.01           |
| Qatar               | <b>-0.24</b> | (0.04) | <b>0.13</b> | (0.04) | 0.01         | (0.06) | -0.14        | (0.08) | 0.00           |
| Trinidad and Tobago | -0.17        | (0.13) | <b>0.71</b> | (0.13) | <b>0.55</b>  | (0.14) | -0.33        | (0.18) | 0.02           |
| Tunisia             | <b>0.43</b>  | (0.04) | <b>0.18</b> | (0.05) | 0.06         | (0.05) | <b>-0.20</b> | (0.07) | 0.01           |
| Uruguay             | <b>0.11</b>  | (0.03) | 0.08        | (0.04) | 0.09         | (0.05) | -0.11        | (0.06) | 0.00           |

Note: The outcome variable is the index of student attitude towards school (ATSCHL). Values that are statistically significant are indicated in bold. When there are too few observations (fewer than 30 students or less than five schools with valid data) it is indicated as "c".

#### **4.6. Relationship between attitudes towards school and grade repetition after accounting for student background**

The results of Model 9 and Model 10 in Table A.8 indicate that, even after accounting for student socio-economic background and other student background characteristics, the patterns found with Model 8 mainly remain unchanged. The only differences in the coefficient for grade repetition dummies between Model 8 and Models 9 and 10 are found in Macao-China and Qatar, where there is no difference in students' attitudes towards school between non-repeaters and secondary-school repeaters in Models 9 and/or 10, and in Uruguay, where non-repeaters tend to report more positive attitudes than secondary-school repeaters in Models 9 and 10.

Although the coefficients associated with the repetition variables remain stable after the inclusion of the covariates of student background characteristics, it is important to note some statistically significant associations between the index of attitudes towards school and some of the background characteristics. For instance, boys tend to report more negative attitudes towards schools than girls, on average. The gaps between boys and girls vary, on average, between -0.05 index points in Belgium and -0.20 index points in Portugal. The only country in which boys report more positive attitudes towards school than girls is Chile (0.08 index point difference). The difference in the index between boys and girls is not statistically significant in Austria, Ireland, the Netherlands, the United States, Argentina, Colombia, Hong Kong-China, Macao-China, Panama, Qatar and Uruguay. Regarding the differences between native students and students with migrant backgrounds, the direction and the size of difference vary across countries. Native students tend to report more negative attitudes toward school than do students with migrant backgrounds in Austria, Belgium, Switzerland, Germany, France, the Netherlands, the United States, Indonesia and Qatar. In contrast, native students tend to report more positive attitudes towards school than do students with migrant backgrounds in Chile, Spain, Mexico, Brazil, Panama and Peru. In the rest of the countries, the differences are not statistically significant. Regarding student age, no significant relationship between age of the students and their attitudes towards school is found in most countries. The exceptions are the Netherlands and Switzerland, where younger students tend to report more positive attitudes towards school than do older students and Mexico, where older students tend to report, on average, more positive attitudes than do younger students. Finally, the relationship between socio-economic status and the index of attitudes towards school remains similar between Models 9 and 10. In half of the countries (according to Model 10 in Table A.8), the association between attitudes towards school and socio-economic status is positive, including Belgium, France, Ireland, Mexico, the Netherlands, the United States, Hong Kong-China, Indonesia, Macao-China, Panama, Peru and Qatar. In contrast, the relationship is negative in Germany, Luxembourg and Turkey. The relationship is not statistically significant in the remaining countries in the sample.

#### **4.7. How the relationship between attitudes towards school and grade repetition vary according to student background characteristics**

##### **4.7.1. Heterogeneous relationships across student socio-economic background**

Table A.9 presents the results of Models 11 to 14. Model 11 adds an interaction between grade repetition and socio-economic background to Model 10. This model examines how the relationship between grade repetition and students' attitudes toward school varies according to student socio-economic background. The interaction terms (see

the columns of  $\text{drepN}^*\text{ESCS}$  and  $\text{drep1}^*\text{ESCS}$ ) suggest that the relationship between grade repetition and student attitudes towards school are similar across different levels of student socio-economic background in most countries and economies examined.

The only exceptions are in Italy, Mexico, Turkey, Brazil, Macao-China, Panama and Peru. In Italy and Brazil, for students with the OECD average level of socio-economic background, there is no difference in attitudes towards school between primary- and secondary-school repeaters, while for students with more advantaged socio-economic backgrounds (i.e. one standard deviation higher on the ESCS index) primary-school repeaters tend to report more negative attitudes than do secondary-school repeaters by 0.34 index points and 0.06 index points respectively. In Mexico, for students with the OECD average level of socio-economic background, non-repeaters tend to report more positive attitudes than do secondary-school repeaters by 0.18 points and secondary-school repeaters tend to report more positive attitudes than do primary-school repeaters by 0.32 points, while for students with more advantaged socio-economic backgrounds the difference in attitudes between non-repeaters and secondary-school repeaters decreases, and secondary-school repeaters tend to report more positive attitudes than do primary-school repeaters by 0.44 points. In Turkey, for students with the average level of socio-economic background for the OECD countries, there is no difference in attitude between non-repeaters and secondary-school repeaters, while for students with more advantaged socio-economic backgrounds, secondary-school repeaters tend to report more positive attitudes than do non-repeaters by 0.20 index points. In Macao-China, for students with the OECD average level of socio-economic background non-repeaters report more positive attitudes than secondary-school repeaters by 0.09 index points, and for students with more advantaged backgrounds non-repeaters tend to report even more positive attitudes than do secondary-school repeaters by 0.16 index points. In Panama, for students with the average level of socio-economic background for the OECD countries there is no difference in attitude between primary- and secondary-school repeaters, while for students with more advantaged backgrounds, primary-school repeaters tend to report more positive attitudes than do secondary-school repeaters by 0.45 index points. In Peru, for students with the OECD average level of socio-economic background, there is no difference in attitudes between non-repeaters and secondary-school repeaters as well as between primary- and secondary-school repeaters, while for students with more advantaged backgrounds secondary-school repeaters tend to report more negative attitudes than do non-repeaters by 0.26 index points and secondary-school repeaters tend to report more negative attitudes than do primary-school repeaters by 0.13 index points.

#### **4.7.2. Heterogeneous relationships across gender**

The results of Model 12 show that the relationships between students' attitudes towards school and grade repetition do not differ between boys and girls in almost all countries. The gender difference is observed only in the comparison between students who repeated in primary school and those who repeated in secondary school in Luxembourg, Tunisia and Trinidad and Tobago. In these countries, girls who repeated in primary school tend to report more positive attitudes than do girls who repeated in secondary school. In Luxembourg, for boys there is almost no difference between primary- and secondary-school repeaters (0.10 index point difference). In Trinidad and Tobago, the difference in attitudes between primary- and secondary-school repeaters is smaller for

boys than for girls. In Tunisia, for boys, secondary-school repeaters have more positive attitudes towards schools than primary-school repeaters.

#### 4.7.3. *Heterogeneous relationships across immigrant status*

Model 13 in Table A.9 examines the relationships between grade repetition and students' attitudes towards school and how these relationships vary between native students and students with migrant backgrounds. The results show that the relationships are similar between native students and students with migrant backgrounds in most countries. There are four exceptions. In Austria, for native students, non-repeaters tend to report more positive attitudes than do secondary-school repeaters by 0.35 index points, while for students with migrant backgrounds there is almost no difference in attitudes (0.06 index points) between those two groups of students. In Indonesia, for native students, non-repeaters tend to report more positive attitudes than secondary-school repeaters by 0.59 index points and primary-school repeaters tend to report more positive attitudes than do secondary-school repeaters by 0.41 index points, while for students with migrant backgrounds both of these differences are smaller (0.32 index points and 0.13 index points, respectively). In Panama, for native students, non-repeaters tend to have more positive attitudes than do secondary-school repeaters with a difference of 0.21 index points and there is no difference in attitudes between primary- and secondary-school repeaters, while for students with migrant backgrounds non-repeaters tend to have better attitudes towards school than do secondary-school repeaters with a difference of 0.61 index points, and secondary-school repeaters tend to have better attitudes than do primary-school repeaters with a difference of 0.85 index points. In Qatar, for native students there is no difference in attitudes between non-repeaters and secondary-school repeaters, while for students with migrant backgrounds secondary-school repeaters tend to report more positive attitudes than do non-repeaters with a difference of 0.14 index points.

#### 4.7.4. *Heterogeneous relationships across age*

Model 14 examines the relationships between attitudes towards school and repetition and how these relationships differ depending on the student's age. In general, the coefficients estimated for the different countries suggest that these relationships are similar between students who are at or above the country-average age and students who are below the country-average age. The exceptions are observed in six countries and economies. In Ireland, for older students secondary-repeaters tend to report more positive attitudes than do non-repeaters and primary-school repeaters (by 0.57 and 0.61 index points, respectively), while for younger students these differences are smaller (by 0.17 and 0.07 score points, respectively). In Argentina, for younger students there is no difference in attitudes between non-repeaters and secondary-school repeaters and between primary- and secondary-school repeaters, while for older students non-repeaters and primary-school repeaters tend to report more positive attitudes than do secondary-school repeaters by 0.15 and 0.26 index points, respectively. In Dubai (UAE), for younger students, there is no significant relationship between grade repetition and students' attitudes towards school, while for older students, non-repeaters tend to report more positive attitudes than do secondary-school repeaters by 0.32 index points. In Indonesia, for younger students primary-school repeaters tend to have more positive attitudes than do secondary-school repeaters with the difference of 0.39 index points, while for older students this difference is smaller (with the difference of 0.15 index points). In Macao-China, for younger students



there is no difference in attitudes between non-repeaters and secondary-school repeaters, while for older students non-repeaters tend to report more positive attitudes than do secondary-school repeaters by 0.11 index points. Finally, in Qatar, for younger students there is no difference in attitudes between primary-school repeaters and secondary-school repeaters, while for older students secondary-school repeaters tend to report more positive attitudes than do primary-school repeaters by 0.14 index points.

## 5. Conclusions

Using the OECD PISA 2009 dataset and a sample of 30 countries and economies with over 10% of 15-year-old students having repeated a grade at least once, this article analyses the relationships between grade retention and educational outcomes – performance and students' attitudes towards school. In this article, students are grouped according to the educational levels (primary or secondary school) at which they have repeated a grade. The results show that this distinction between grade repetitions at primary and at secondary education levels is important, because the extent of the relationship between grade repetition and educational outcomes differs according to whether students have repeated a grade in primary or secondary school. In most countries examined, students who repeated a grade in secondary school tend to perform better than do students who repeated a grade in primary school, and non-repeaters tend to perform even better than secondary-school repeaters. These findings remain unchanged, in general, even after controlling for student socio-economic background and a set of individual characteristics.

The results of this article contribute to shedding some light on the literature that has emerged with the availability of better (longitudinal) databases and some more appropriate quasi-experimental methods that allow for identifying the causal effect of retention. Our results are difficult to compare with other empirical findings because of existing differences in the statistical information available to all these analyses. For instance, Schwerdt and West (2012) conclude that there are some large short-term gains in achievement, which fade out over the grades, for students retained in third grade. While the timing (and the context and identification strategy) of their paper is very different from ours, our speculation is that, if measured in later grades, the faded-out initial positive effects could follow the negative trend and become negative. In addition to this, the somewhat narrower performance gaps that exist between secondary-school repeaters and non-repeaters in comparison to those between primary-school repeaters and non-repeaters found in this paper may indicate that either the profile of the repeaters is different between primary- and secondary-school repeaters or that repeaters at the later stage of their education career are still experiencing the “immediate” gains (or smaller losses) in achievement as identified by Schwerdt and West (2012), which may or may not fade out in later years.

In terms of the association between grade repetition and a measure of non-cognitive skills provided by PISA (the attitudes towards school index), the results show a more complex picture and the relationships vary across countries. In about one-third of countries and economies, primary-school repeaters tend to report more positive attitudes towards schools than do secondary-school repeaters. In 13 countries and economies, non-repeaters tend to report more positive attitudes than do primary-school repeaters. In about two-thirds of countries and economies examined, non-repeaters report more positive attitudes towards school than do secondary-school repeaters. These inconsistent patterns across countries might be related to the differences in how repeaters are treated across

different educational systems. Only in Belgium and Switzerland do primary-school repeaters tend to report more positive attitudes towards school than non-repeaters. Both these countries have highly selective education systems, where students are selected and sorted into different programmes at the age of 12, and four distinct educational programmes are available to 15-year-old students, while the OECD average is 14 years old for the first selection with 2.5 programmes available for 15-year-old students on average (OECD, 2010). Further examination is required to disentangle how the system-level characteristics affect the relationships between grade repetitions and students' attitudes towards school.

The analyses in this article incorporate some interaction terms of the grade repetition dummies and the students' characteristics. In the models with reading performance as an outcome, the interaction between grade repetition and student socio-economic background suggests differences in the relationships between repeaters and non-repeaters depending on their socio-economic background. In 18 countries and economies, the performance difference between non-repeaters and secondary-school repeaters is greater for socio-economically advantaged students than for socio-economically disadvantaged students. This may imply that for socio-economically advantaged students, whether a student repeated a grade in secondary school or not is mainly determined by their academic ability, while for socio-economically disadvantaged students, it is determined by other factors in addition to their academic ability. Some of these findings associated with these interactions can be considered good reasons to further investigate the consequences of grade retention within and across countries.

Analyses in this article are built on the hypothesis that academic and socio-emotional developments of students evolve differently over the school years, and accordingly, students' retention is likely to have different implications and meanings at different ages. The article also shows how these relationships differ across countries. In the future, the analyses in this paper can be extended to include some country-level variables in order to explain the variation of these relationships with country-level characteristics (similar to the framework used by Goos, Schreier, Eduard-Knipprath, De Fraine, Van Damme, & Trautwein, 2013). Instead of drawing on country-by-country regressions as done in this article, a (hierarchical) model that incorporates some variables describing the countries' repetition policies or their educational systems can be developed to examine the between-countries variation and to better assess when and for whom grade repetition is beneficial. Simultaneously, it will be important to keep trying to disentangle the positive and negative effects of grade repetition, in order to identify what type of supplementary services should be provided to retained students to sustain their performance in school and improve their educational outcomes, a puzzle which also has repercussions for the distribution of economic resources available for education.

## Notes

1. These include the cost of providing an additional year of schooling to students who repeated a grade and the opportunity cost in delaying their entrance into the labour market by one year (see OECD, 2011, point 2).
2. See below for a discussion of the suitability of PISA to overcome this problem, i.e. on how to use valid between-grade comparison to assess the impact of retention.
3. Indeed, the real reasons why this would be happening, other than reducing the probability of being retained later, are not discussed.

4. The authors conclude that they do not provide definitive evidence that early grade retention is beneficial for students in the long run.
5. Lee and Barro (2001) study the importance of family background and school qualities in grade repetition rates at the country level.
6. Among the available country-level variables, only a few of them are statistically-significant predictors of the probability of grade repetition. Because of this, the authors note that retention practices are “only slightly affected by any national educational policy” (p. 77).
7. Questionnaires are available at [www.pisa.oecd.org](http://www.pisa.oecd.org).
8. For the purposes of measuring trends, PISA 2009 reading was linked to the PISA 2000 reading scale using a six-step equating approach. The detail of this equating approach is described in *PISA 2009 Technical Report* (OECD, 2012). In PISA 2009, the OECD mean is 493, with a standard deviation of 93.
9. *PISA 2009 Technical Report* (OECD, 2012).

## APPENDIX A

## Tables

Table A.1. Grade repetition

|                 | Repeated a grade |       |                           |       |                             |       |   |       |
|-----------------|------------------|-------|---------------------------|-------|-----------------------------|-------|---|-------|
|                 | Never            |       | At primary education only |       | At secondary education only |       | At both primary and secondary education |       |
|                 | %                | S.E.  | %                         | S.E.  | %                           | S.E.  | %                                       | S.E.  |
| <b>OECD</b>     |                  |       |                           |       |                             |       |   |       |
| Australia       | 91.6             | (0.4) | 7.0                       | (0.3) | 1.1                         | (0.1) | 0.3                                     | (0.1) |
| Austria         | 87.4             | (0.9) | 3.5                       | (0.4) | 7.9                         | (0.6) | 1.2                                     | (0.2) |
| Belgium         | 65.1             | (0.7) | 13.4                      | (0.5) | 18.2                        | (0.6) | 3.4                                     | (0.3) |
| Canada          | 91.6             | (0.3) | 3.8                       | (0.2) | 4.0                         | (0.2) | 0.5                                     | (0.1) |
| Chile           | 76.6             | (0.9) | 8.1                       | (0.5) | 14.2                        | (0.7) | 1.2                                     | (0.2) |
| Czech Republic  | 96.0             | (0.3) | 1.7                       | (0.2) | 1.9                         | (0.3) | 0.4                                     | (0.1) |
| Denmark         | 95.6             | (0.3) | 3.4                       | (0.3) | 0.8                         | (0.2) | 0.2                                     | (0.1) |
| Estonia         | 94.4             | (0.6) | 3.2                       | (0.3) | 1.8                         | (0.3) | 0.6                                     | (0.2) |
| Finland         | 97.2             | (0.3) | 2.4                       | (0.2) | 0.4                         | (0.1) | 0.0                                     | (0.0) |
| France          | 63.1             | (1.0) | 14.5                      | (0.9) | 20.2                        | (1.0) | 2.2                                     | (0.3) |
| Germany         | 78.6             | (0.7) | 7.7                       | (0.5) | 12.6                        | (0.6) | 1.2                                     | (0.2) |
| Greece          | 94.3             | (0.8) | 1.5                       | (0.4) | 3.7                         | (0.7) | 0.4                                     | (0.1) |
| Hungary         | 88.9             | (1.2) | 4.0                       | (0.6) | 5.0                         | (0.7) | 2.0                                     | (0.4) |
| Iceland         | 99.1             | (0.2) | 0.5                       | (0.1) | 0.2                         | (0.1) | 0.2                                     | (0.1) |
| Ireland         | 88.0             | (0.6) | 10.3                      | (0.5) | 1.0                         | (0.2) | 0.6                                     | (0.1) |
| Israel          | 92.5             | (0.5) | 1.9                       | (0.3) | 3.2                         | (0.4) | 2.4                                     | (0.3) |
| Italy           | 84.0             | (0.4) | 0.6                       | (0.1) | 15.0                        | (0.4) | 0.3                                     | (0.1) |
| Luxembourg      | 63.5             | (0.5) | 17.4                      | (0.5) | 15.7                        | (0.5) | 3.4                                     | (0.2) |
| Mexico          | 78.5             | (0.7) | 15.8                      | (0.7) | 5.0                         | (0.2) | 0.8                                     | (0.1) |
| Netherlands     | 73.3             | (1.1) | 21.3                      | (1.2) | 4.7                         | (0.4) | 0.6                                     | (0.2) |
| New Zealand     | 94.9             | (0.3) | 3.1                       | (0.2) | 1.2                         | (0.2) | 0.7                                     | (0.1) |
| Poland          | 94.7             | (0.4) | 1.4                       | (0.2) | 3.4                         | (0.3) | 0.4                                     | (0.1) |
| Portugal        | 65.0             | (1.9) | 15.7                      | (1.0) | 15.0                        | (0.9) | 4.4                                     | (0.5) |
| Slovak Republic | 96.2             | (0.5) | 1.7                       | (0.3) | 1.9                         | (0.3) | 0.2                                     | (0.1) |
| Slovenia        | 98.5             | (0.4) | 0.0                       | c     | 1.5                         | (0.4) | 0.0                                     | c     |
| Spain           | 64.7             | (0.7) | 4.2                       | (0.2) | 24.9                        | (0.6) | 6.3                                     | (0.3) |
| Sweden          | 95.4             | (0.4) | 3.1                       | (0.3) | 0.8                         | (0.1) | 0.7                                     | (0.1) |
| Switzerland     | 77.2             | (0.9) | 13.5                      | (0.7) | 8.5                         | (0.5) | 0.8                                     | (0.1) |
| Turkey          | 87.0             | (0.8) | 3.4                       | (0.5) | 9.6                         | (0.7) | 0.1                                     | (0.0) |
| United Kingdom  | 97.8             | (0.2) | 1.2                       | (0.1) | 0.6                         | (0.1) | 0.4                                     | (0.1) |
| United States   | 85.8             | (0.9) | 9.6                       | (0.7) | 3.2                         | (0.4) | 1.3                                     | (0.2) |

Table A.1. **Grade repetition (cont.)**

|                     | Repeated a grade |       |                           |       |                             |       |   |       |
|---------------------|------------------|-------|---------------------------|-------|-----------------------------|-------|---|-------|
|                     | Never            |       | At primary education only |       | At secondary education only |       | At both primary and secondary education |       |
|                     | %                | S.E.  | %                         | S.E.  | %                           | S.E.  | %                                       | S.E.  |
| <b>Partners</b>     |                  |       |                           |       |                             |       |   |       |
| Albania             | 95.3             | (0.5) | 1.7                       | (0.3) | 1.8                         | (0.3) | 1.2                                     | (0.2) |
| Argentina           | 66.2             | (1.6) | 9.7                       | (0.6) | 20.0                        | (1.3) | 4.0                                     | (0.4) |
| Azerbaijan          | 98.3             | (0.3) | 0.6                       | (0.2) | 0.9                         | (0.2) | 0.2                                     | (0.1) |
| Brazil              | 59.9             | (0.9) | 12.6                      | (0.5) | 22.1                        | (0.6) | 5.5                                     | (0.3) |
| Bulgaria            | 94.4             | (0.5) | 1.2                       | (0.2) | 2.9                         | (0.4) | 1.5                                     | (0.2) |
| Colombia            | 66.1             | (1.1) | 16.9                      | (1.0) | 14.2                        | (0.7) | 2.9                                     | (0.3) |
| Croatia             | 97.2             | (0.2) | 0.1                       | (0.1) | 1.6                         | (0.2) | 1.1                                     | (0.2) |
| Dubai (UAE)         | 87.4             | (0.3) | 5.8                       | (0.3) | 5.8                         | (0.3) | 1.1                                     | (0.1) |
| Hong Kong-China     | 84.4             | (0.7) | 9.5                       | (0.5) | 5.3                         | (0.5) | 0.8                                     | (0.1) |
| Indonesia           | 82.0             | (1.2) | 12.4                      | (1.1) | 1.7                         | (0.2) | 3.8                                     | (0.4) |
| Jordan              | 93.4             | (0.5) | 1.7                       | (0.2) | 2.7                         | (0.3) | 2.1                                     | (0.2) |
| Kazakhstan          | 98.3             | (0.2) | 1.0                       | (0.2) | 0.3                         | (0.1) | 0.4                                     | (0.1) |
| Kyrgyzstan          | 95.7             | (0.4) | 1.7                       | (0.2) | 1.4                         | (0.2) | 1.2                                     | (0.2) |
| Latvia              | 88.9             | (1.0) | 4.9                       | (0.5) | 5.3                         | (0.8) | 0.9                                     | (0.2) |
| Liechtenstein       | 78.5             | (2.0) | 8.4                       | (1.5) | 11.9                        | (1.7) | 1.1                                     | (0.6) |
| Lithuania           | 96.1             | (0.4) | 1.7                       | (0.2) | 1.8                         | (0.2) | 0.3                                     | (0.1) |
| Macao-China         | 56.3             | (0.5) | 13.3                      | (0.4) | 23.0                        | (0.5) | 7.4                                     | (0.3) |
| Montenegro          | 98.2             | (0.5) | 0.4                       | (0.2) | 1.2                         | (0.4) | 0.2                                     | (0.0) |
| Panama              | 68.2             | (2.7) | 11.0                      | (1.3) | 16.0                        | (1.5) | 4.8                                     | (0.7) |
| Peru                | 71.9             | (1.2) | 16.0                      | (0.8) | 8.0                         | (0.6) | 4.1                                     | (0.3) |
| Qatar               | 85.2             | (0.3) | 5.8                       | (0.2) | 6.6                         | (0.2) | 2.5                                     | (0.2) |
| Roumania            | 95.8             | (0.7) | 1.5                       | (0.4) | 1.8                         | (0.4) | 0.8                                     | (0.2) |
| Russian Federation  | 96.8             | (0.5) | 2.0                       | (0.3) | 1.0                         | (0.2) | 0.3                                     | (0.1) |
| Serbia              | 98.0             | (0.5) | 0.3                       | (0.1) | 1.6                         | (0.4) | 0.1                                     | (0.0) |
| Shanghai-China      | 92.5             | (0.7) | 4.0                       | (0.5) | 3.1                         | (0.5) | 0.3                                     | (0.1) |
| Singapore           | 94.6             | (0.3) | 1.9                       | (0.2) | 3.1                         | (0.2) | 0.4                                     | (0.1) |
| Chinese Taipei      | 98.4             | (0.2) | 0.5                       | (0.1) | 0.7                         | (0.1) | 0.4                                     | (0.1) |
| Thailand            | 96.5             | (0.3) | 2.1                       | (0.2) | 1.2                         | (0.2) | 0.2                                     | (0.1) |
| Trinidad and Tobago | 71.2             | (0.6) | 25.7                      | (0.6) | 1.8                         | (0.2) | 1.4                                     | (0.2) |
| Tunisia             | 56.8             | (1.2) | 11.2                      | (0.8) | 22.4                        | (0.9) | 9.6                                     | (0.5) |
| Uruguay             | 62.0             | (1.1) | 13.4                      | (0.6) | 17.8                        | (0.7) | 6.8                                     | (0.4) |

Table A.2. Student performance in reading

|                     | All students |       |                    |       | Gender differences |       |            |       |                    | Percentiles |       |        |       |        |       |       |       |       |       |       |       |        |
|---------------------|--------------|-------|--------------------|-------|--------------------|-------|------------|-------|--------------------|-------------|-------|--------|-------|--------|-------|-------|-------|-------|-------|-------|-------|--------|
|                     | Mean score   |       | Standard deviation |       | Boys               |       | Girls      |       | Difference (B – G) |             | 5th   |        | 10th  |        | 25th  |       | 75th  |       | 90th  |       | 95th  |        |
|                     | Mean         | S.E.  | S.D.               | S.E.  | Mean score         | S.E.  | Mean score | S.E.  | Score dif.         | S.E.        | Score | S.E.   | Score | S.E.   | Score | S.E.  | Score | S.E.  | Score | S.E.  | Score | S.E.   |
| <b>OECD</b>         |              |       |                    |       |                    |       |            |       |                    |             |       |        |       |        |       |       |       |       |       |       |       |        |
| Austria             | 470          | (2.9) | 100                | (2.0) | 449                | (3.8) | 490        | (4.0) | <b>-41</b>         | (5.5)       | 299   | (5.2)  | 334   | (6.1)  | 399   | (4.3) | 545   | (3.3) | 596   | (3.4) | 625   | (4.3)  |
| Belgium             | 506          | (2.3) | 102                | (1.7) | 493                | (3.4) | 520        | (2.9) | <b>-27</b>         | (4.4)       | 326   | (6.1)  | 368   | (4.3)  | 436   | (3.8) | 583   | (2.2) | 631   | (2.7) | 657   | (2.9)  |
| Chile               | 449          | (3.1) | 83                 | (1.7) | 439                | (3.9) | 461        | (3.6) | <b>-22</b>         | (4.1)       | 310   | (5.1)  | 342   | (5.0)  | 393   | (4.1) | 506   | (3.3) | 556   | (3.6) | 584   | (5.1)  |
| France              | 496          | (3.4) | 106                | (2.8) | 475                | (4.3) | 515        | (3.4) | <b>-40</b>         | (3.7)       | 305   | (8.2)  | 352   | (7.0)  | 429   | (4.7) | 572   | (4.0) | 624   | (3.9) | 651   | (4.6)  |
| Germany             | 497          | (2.7) | 95                 | (1.8) | 478                | (3.6) | 518        | (2.9) | <b>-40</b>         | (3.9)       | 333   | (4.8)  | 367   | (5.1)  | 432   | (4.5) | 567   | (2.8) | 615   | (3.2) | 640   | (3.1)  |
| Hungary             | 494          | (3.2) | 90                 | (2.4) | 475                | (3.9) | 513        | (3.6) | <b>-38</b>         | (4.0)       | 332   | (7.4)  | 371   | (6.9)  | 435   | (4.3) | 559   | (3.6) | 607   | (3.5) | 632   | (4.0)  |
| Ireland             | 496          | (3.0) | 95                 | (2.2) | 476                | (4.2) | 515        | (3.1) | <b>-39</b>         | (4.7)       | 330   | (7.8)  | 373   | (4.7)  | 435   | (3.9) | 562   | (2.8) | 611   | (2.8) | 638   | (3.2)  |
| Italy               | 486          | (1.6) | 96                 | (1.4) | 464                | (2.3) | 510        | (1.9) | <b>-46</b>         | (2.8)       | 320   | (3.7)  | 358   | (2.6)  | 422   | (2.3) | 556   | (1.7) | 604   | (1.7) | 631   | (2.1)  |
| Luxembourg          | 472          | (1.3) | 104                | (0.9) | 453                | (1.9) | 492        | (1.5) | <b>-39</b>         | (2.3)       | 288   | (3.6)  | 332   | (3.5)  | 403   | (2.4) | 547   | (1.7) | 600   | (2.0) | 630   | (3.7)  |
| Mexico              | 425          | (2.0) | 85                 | (1.2) | 413                | (2.1) | 438        | (2.1) | <b>-25</b>         | (1.6)       | 281   | (3.9)  | 314   | (2.9)  | 370   | (2.4) | 485   | (1.9) | 531   | (2.2) | 557   | (2.4)  |
| Netherlands         | 508          | (5.1) | 89                 | (1.6) | 496                | (5.1) | 521        | (5.3) | <b>-24</b>         | (2.4)       | 365   | (4.7)  | 390   | (5.0)  | 442   | (6.1) | 575   | (5.4) | 625   | (4.6) | 650   | (4.0)  |
| Portugal            | 489          | (3.1) | 87                 | (1.6) | 470                | (3.5) | 508        | (2.9) | <b>-38</b>         | (2.4)       | 338   | (4.8)  | 373   | (4.9)  | 432   | (4.4) | 551   | (3.4) | 599   | (3.5) | 624   | (3.6)  |
| Spain               | 481          | (2.0) | 88                 | (1.1) | 467                | (2.2) | 496        | (2.2) | <b>-29</b>         | (2.0)       | 326   | (4.2)  | 364   | (3.5)  | 426   | (3.3) | 543   | (3.0) | 588   | (2.0) | 613   | (2.4)  |
| Switzerland         | 501          | (2.4) | 93                 | (1.4) | 481                | (2.9) | 520        | (2.7) | <b>-39</b>         | (2.5)       | 337   | (4.1)  | 374   | (4.0)  | 437   | (3.6) | 569   | (3.0) | 617   | (3.3) | 645   | (4.4)  |
| Turkey              | 464          | (3.5) | 82                 | (1.7) | 443                | (3.7) | 486        | (4.1) | <b>-43</b>         | (3.7)       | 325   | (5.1)  | 356   | (4.3)  | 409   | (3.8) | 522   | (4.5) | 569   | (5.2) | 596   | (5.4)  |
| United States       | 500          | (3.7) | 97                 | (1.6) | 488                | (4.2) | 513        | (3.8) | <b>-25</b>         | (3.4)       | 339   | (4.2)  | 372   | (3.9)  | 433   | (4.0) | 569   | (4.6) | 625   | (5.0) | 656   | (5.8)  |
| <b>Partners</b>     |              |       |                    |       |                    |       |            |       |                    |             |       |        |       |        |       |       |       |       |       |       |       |        |
| Argentina           | 398          | (4.6) | 108                | (3.4) | 379                | (5.1) | 415        | (4.9) | <b>-37</b>         | (3.8)       | 209   | (11.3) | 257   | (8.3)  | 329   | (5.8) | 473   | (6.3) | 535   | (7.1) | 568   | (6.7)  |
| Brazil              | 412          | (2.7) | 94                 | (1.5) | 397                | (2.9) | 425        | (2.8) | <b>-29</b>         | (1.7)       | 262   | (3.0)  | 293   | (3.2)  | 348   | (2.7) | 474   | (3.9) | 537   | (4.2) | 572   | (4.6)  |
| Colombia            | 413          | (3.7) | 87                 | (1.9) | 408                | (4.5) | 418        | (4.0) | <b>-9</b>          | (3.8)       | 269   | (6.4)  | 302   | (5.2)  | 355   | (4.4) | 473   | (3.9) | 524   | (4.1) | 554   | (4.0)  |
| Dubai (UAE)         | 459          | (1.1) | 107                | (0.9) | 435                | (1.7) | 485        | (1.5) | <b>-51</b>         | (2.3)       | 277   | (3.4)  | 317   | (2.8)  | 386   | (2.4) | 536   | (2.4) | 596   | (2.7) | 628   | (3.1)  |
| Hong Kong-China     | 533          | (2.1) | 84                 | (1.7) | 518                | (3.3) | 550        | (2.8) | <b>-33</b>         | (4.4)       | 380   | (5.5)  | 418   | (4.5)  | 482   | (3.0) | 592   | (2.5) | 634   | (2.9) | 659   | (3.1)  |
| Indonesia           | 402          | (3.7) | 66                 | (2.0) | 383                | (3.8) | 420        | (3.9) | <b>-37</b>         | (3.3)       | 291   | (5.8)  | 315   | (5.0)  | 357   | (4.1) | 447   | (4.6) | 487   | (5.0) | 510   | (5.8)  |
| Latvia              | 484          | (3.0) | 80                 | (1.5) | 460                | (3.4) | 507        | (3.1) | <b>-47</b>         | (3.2)       | 348   | (6.3)  | 379   | (4.2)  | 429   | (3.8) | 541   | (3.3) | 584   | (3.2) | 610   | (4.3)  |
| Macao-China         | 487          | (0.9) | 76                 | (0.8) | 470                | (1.3) | 504        | (1.2) | <b>-34</b>         | (1.7)       | 357   | (2.7)  | 388   | (1.8)  | 437   | (1.4) | 540   | (1.4) | 582   | (1.8) | 608   | (1.8)  |
| Panama              | 371          | (6.5) | 99                 | (3.5) | 354                | (7.0) | 387        | (7.3) | <b>-33</b>         | (6.7)       | 209   | (12.0) | 246   | (10.0) | 304   | (7.4) | 436   | (7.7) | 502   | (9.3) | 540   | (10.0) |
| Peru                | 370          | (4.0) | 98                 | (2.4) | 359                | (4.2) | 381        | (4.9) | <b>-22</b>         | (4.7)       | 209   | (5.0)  | 241   | (3.9)  | 302   | (4.3) | 437   | (5.2) | 496   | (6.4) | 530   | (7.0)  |
| Qatar               | 372          | (0.8) | 115                | (0.8) | 347                | (1.3) | 397        | (1.0) | <b>-50</b>         | (1.8)       | 196   | (2.4)  | 228   | (2.2)  | 288   | (1.4) | 450   | (1.4) | 529   | (2.1) | 573   | (2.8)  |
| Trinidad and Tobago | 416          | (1.2) | 113                | (1.3) | 387                | (1.9) | 445        | (1.6) | <b>-58</b>         | (2.5)       | 220   | (5.8)  | 265   | (3.9)  | 339   | (2.5) | 496   | (2.3) | 559   | (2.5) | 594   | (3.0)  |
| Tunisia             | 404          | (2.9) | 85                 | (1.8) | 387                | (3.2) | 418        | (3.0) | <b>-31</b>         | (2.2)       | 258   | (4.4)  | 293   | (3.8)  | 348   | (3.4) | 462   | (3.4) | 510   | (4.8) | 538   | (5.2)  |
| Uruguay             | 426          | (2.6) | 99                 | (1.9) | 404                | (3.2) | 445        | (2.8) | <b>-42</b>         | (3.1)       | 257   | (5.2)  | 297   | (4.2)  | 359   | (3.4) | 495   | (3.1) | 552   | (3.3) | 584   | (4.5)  |

Note: Values that are statistically significant are indicated in bold.

Source: PISA 2009 Results, Vol. 1 (OECD, 2010).

Table A.3. **Students' attitudes towards school**

| Index of attitude towards school |              | School has done little to prepare me for adult life when I leave school |       |          |       |       |       |                |       | School has been a waste of time |       |          |       |       |       |                |       |
|----------------------------------|--------------|---|-------|----------|-------|-------|-------|----------------|-------|---------------------------------|-------|----------|-------|-------|-------|----------------|-------|
|                                  |              | Strongly disagree   |       | Disagree |       | Agree |       | Strongly agree |       | Strongly disagree               |       | Disagree |       | Agree |       | Strongly agree |       |
| Index points                     | S.E.         | %   | S.E.  | %        | S.E.  | %     | S.E.  | %              | S.E.  | %                               | S.E.  | %        | S.E.  | %     | S.E.  | %              | S.E.  |
| <b>OECD</b>                      |              |   |       |          |       |       |       |                |       |                                 |       |          |       |       |       |                |       |
| Austria                          | 0.06 (0.02)  | 34.9  | (0.9) | 39.1     | (1.0) | 20.7  | (0.7) | 5.3            | (0.4) | 60.4                            | (1.0) | 29.9     | (0.9) | 5.8   | (0.4) | 3.9            | (0.3) |
| Belgium                          | -0.11 (0.01) | 28.8  | (0.6) | 52.6     | (0.6) | 15.0  | (0.5) | 3.7            | (0.2) | 39.3                            | (0.7) | 52.1     | (0.7) | 6.1   | (0.3) | 2.5            | (0.2) |
| Chile                            | 0.29 (0.02)  | 36.2  | (1.1) | 39.9     | (0.8) | 17.7  | (0.7) | 6.2            | (0.3) | 64.8                            | (0.8) | 30.7     | (0.8) | 2.5   | (0.2) | 1.9            | (0.2) |
| France                           | 0.07 (0.02)  | 36.5  | (0.8) | 44.1     | (0.8) | 15.4  | (0.7) | 4.0            | (0.3) | 47.2                            | (1.0) | 44.3     | (0.9) | 5.9   | (0.4) | 2.5            | (0.3) |
| Germany                          | -0.11 (0.02) | 25.7  | (0.8) | 38.9     | (0.8) | 27.1  | (0.7) | 8.4            | (0.5) | 58.7                            | (0.8) | 32.9     | (0.7) | 5.5   | (0.3) | 2.9            | (0.2) |
| Hungary                          | -0.04 (0.02) | 35.5  | (1.1) | 48.9     | (1.1) | 12.7  | (0.6) | 2.9            | (0.3) | 43.8                            | (0.9) | 48.1     | (0.9) | 5.5   | (0.4) | 2.7            | (0.3) |
| Ireland                          | 0.14 (0.02)  | 35.4  | (0.8) | 45.3     | (0.8) | 14.1  | (0.6) | 5.1            | (0.4) | 47.2                            | (0.9) | 45.5     | (0.9) | 5.4   | (0.4) | 2.0            | (0.3) |
| Italy                            | 0.03 (0.01)  | 27.3  | (0.4) | 52.2     | (0.4) | 16.1  | (0.3) | 4.3            | (0.2) | 47.5                            | (0.5) | 45.1     | (0.4) | 4.9   | (0.2) | 2.5            | (0.1) |
| Luxembourg                       | -0.13 (0.01) | 31.4  | (0.7) | 36.4     | (0.7) | 23.8  | (0.7) | 8.4            | (0.4) | 54.2                            | (0.7) | 36.4     | (0.6) | 5.8   | (0.4) | 3.6            | (0.3) |
| Mexico                           | 0.43 (0.01)  | 35.8  | (0.4) | 30.5     | (0.4) | 23.0  | (0.5) | 10.6           | (0.3) | 71.7                            | (0.5) | 23.7     | (0.4) | 2.5   | (0.2) | 2.1            | (0.1) |
| Netherlands                      | -0.22 (0.02) | 17.1  | (0.7) | 61.5     | (0.8) | 18.1  | (0.7) | 3.3            | (0.3) | 29.1                            | (0.9) | 57.4     | (1.0) | 9.1   | (0.5) | 4.4            | (0.5) |
| Portugal                         | 0.36 (0.02)  | 47.6  | (1.1) | 39.1     | (0.8) | 9.9   | (0.5) | 3.5            | (0.3) | 57.2                            | (0.9) | 38.6     | (0.8) | 3.4   | (0.3) | 0.9            | (0.1) |
| Spain                            | 0.17 (0.02)  | 37.0  | (0.9) | 42.2     | (0.7) | 15.5  | (0.4) | 5.3            | (0.3) | 55.9                            | (0.8) | 37.1     | (0.8) | 4.7   | (0.2) | 2.3            | (0.2) |
| Switzerland                      | 0.01 (0.02)  | 33.1  | (0.7) | 42.9     | (0.5) | 19.0  | (0.6) | 5.0            | (0.4) | 52.6                            | (0.9) | 38.2     | (0.8) | 5.9   | (0.3) | 3.3            | (0.3) |
| Turkey                           | 0.20 (0.02)  | 33.1  | (0.8) | 35.2     | (0.7) | 21.2  | (0.8) | 10.5           | (0.5) | 60.6                            | (0.9) | 32.8     | (0.8) | 4.5   | (0.3) | 2.0            | (0.3) |
| United States                    | 0.22 (0.02)  | 40.1  | (0.9) | 37.6     | (0.8) | 16.6  | (0.7) | 5.7            | (0.3) | 52.2                            | (1.0) | 39.6     | (0.9) | 5.9   | (0.4) | 2.3            | (0.2) |
| <b>Partners</b>                  |              |   |       |          |       |       |       |                |       |                                 |       |          |       |       |       |                |       |
| Argentina                        | 0.11 (0.02)  | 27.6  | (0.8) | 37.2     | (0.8) | 25.5  | (0.8) | 9.6            | (0.6) | 54.5                            | (1.0) | 38.2     | (0.8) | 4.2   | (0.3) | 3.1            | (0.3) |
| Brazil                           | 0.43 (0.02)  | 44.2  | (0.8) | 40.7     | (0.6) | 11.0  | (0.4) | 4.1            | (0.3) | 64.2                            | (0.8) | 32.6     | (0.7) | 1.9   | (0.1) | 1.3            | (0.2) |
| Colombia                         | 0.46 (0.02)  | 47.2  | (1.0) | 31.6     | (0.8) | 13.1  | (0.6) | 8.1            | (0.6) | 68.9                            | (1.1) | 27.0     | (0.9) | 2.2   | (0.3) | 1.9            | (0.2) |
| Dubai (UAE)                      | 0.07 (0.01)  | 26.0  | (0.6) | 34.3     | (0.7) | 28.3  | (0.7) | 11.4           | (0.4) | 56.9                            | (0.7) | 34.7     | (0.7) | 5.5   | (0.3) | 2.8            | (0.2) |
| Hong Kong-China                  | -0.49 (0.01) | 6.6   | (0.4) | 52.3     | (0.7) | 35.2  | (0.6) | 5.8            | (0.4) | 34.5                            | (0.8) | 55.9     | (0.8) | 7.2   | (0.4) | 2.4            | (0.2) |
| Indonesia                        | 0.50 (0.02)  | 32.6  | (1.0) | 45.3     | (1.0) | 18.0  | (0.6) | 4.1            | (0.4) | 69.0                            | (0.9) | 28.5     | (0.9) | 1.7   | (0.2) | 0.8            | (0.2) |
| Latvia                           | 0.19 (0.02)  | 37.4  | (1.1) | 49.4     | (1.0) | 10.4  | (0.6) | 2.8            | (0.3) | 49.5                            | (1.1) | 45.5     | (1.0) | 3.3   | (0.3) | 1.6            | (0.2) |
| Macao-China                      | -0.45 (0.01) | 9.5   | (0.4) | 41.3     | (0.8) | 39.0  | (0.6) | 10.3           | (0.4) | 34.7                            | (0.6) | 56.6     | (0.7) | 6.5   | (0.3) | 2.2            | (0.2) |
| Panama                           | 0.38 (0.03)  | 38.7  | (1.2) | 30.6     | (1.6) | 19.0  | (1.0) | 11.8           | (0.9) | 67.1                            | (1.4) | 23.8     | (0.9) | 5.6   | (0.9) | 3.6            | (0.5) |
| Peru                             | 0.18 (0.02)  | 25.3  | (1.0) | 41.7     | (0.9) | 26.3  | (0.9) | 6.7            | (0.4) | 56.8                            | (1.0) | 33.9     | (0.8) | 5.8   | (0.5) | 3.6            | (0.3) |
| Qatar                            | -0.13 (0.01) | 26.2  | (0.5) | 28.5     | (0.4) | 33.6  | (0.5) | 11.7           | (0.4) | 45.9                            | (0.6) | 37.5     | (0.5) | 11.5  | (0.3) | 5.2            | (0.2) |
| Trinidad and Tobago              | 0.47 (0.01)  | 41.8  | (0.7) | 29.4     | (0.8) | 17.3  | (0.6) | 11.5           | (0.5) | 64.9                            | (0.7) | 30.9     | (0.6) | 2.8   | (0.3) | 1.4            | (0.2) |
| Tunisia                          | 0.51 (0.02)  | 38.1  | (1.0) | 36.3     | (0.8) | 19.7  | (0.9) | 5.9            | (0.5) | 70.2                            | (0.8) | 24.8     | (0.8) | 3.3   | (0.3) | 1.7            | (0.2) |
| Uruguay                          | 0.16 (0.02)  | 36.4  | (0.8) | 40.8     | (0.8) | 16.5  | (0.6) | 6.4            | (0.4) | 60.5                            | (0.8) | 33.2     | (0.7) | 4.0   | (0.3) | 2.3            | (0.2) |

Table A.3. **Students' attitudes towards school (cont.)**

|                     | School has helped give me confidence to make decisions |       |          |       |       |       |                |       | School has taught me things which could be useful in a job |       |          |       |       |       |                |       |
|---------------------|--|-------|----------|-------|-------|-------|----------------|-------|--|-------|----------|-------|-------|-------|----------------|-------|
|                     | Strongly disagree                                      |       | Disagree |       | Agree |       | Strongly agree |       | Strongly disagree  |       | Disagree |       | Agree |       | Strongly agree |       |
|                     | %  | S.E.  | %        | S.E.  | %     | S.E.  | %              | S.E.  | %  | S.E.  | %        | S.E.  | %     | S.E.  | %              | S.E.  |
| <b>OECD</b>         |  |       |          |       |       |       |                |       |  |       |          |       |       |       |                |       |
| Austria             | 10.6   | (0.5) | 24.2     | (0.6) | 49.3  | (0.9) | 15.9           | (0.8) | 5.3  | (0.4) | 7.3      | (0.5) | 32.8  | (0.9) | 54.6           | (1.1) |
| Belgium             | 7.0  | (0.3) | 23.8     | (0.5) | 57.9  | (0.6) | 11.4           | (0.4) | 2.6  | (0.2) | 7.0      | (0.3) | 51.4  | (0.7) | 39.0           | (0.7) |
| Chile               | 5.6  | (0.4) | 13.1     | (0.6) | 53.3  | (0.8) | 28.1           | (0.8) | 3.9  | (0.3) | 5.2      | (0.3) | 36.4  | (0.8) | 54.4           | (0.8) |
| France              | 8.5  | (0.4) | 20.1     | (0.7) | 55.0  | (0.9) | 16.4           | (0.6) | 2.4  | (0.2) | 4.5      | (0.4) | 42.9  | (0.9) | 50.1           | (0.9) |
| Germany             | 12.1   | (0.5) | 28.3     | (0.6) | 45.5  | (0.9) | 14.0           | (0.6) | 3.2  | (0.2) | 7.5      | (0.4) | 40.1  | (0.8) | 49.2           | (0.8) |
| Hungary             | 6.3  | (0.5) | 22.5     | (0.9) | 59.9  | (0.9) | 11.3           | (0.6) | 2.9  | (0.3) | 7.6      | (0.5) | 53.6  | (0.9) | 35.8           | (1.0) |
| Ireland             | 4.6  | (0.4) | 14.3     | (0.6) | 59.7  | (0.8) | 21.5           | (0.7) | 3.1  | (0.3) | 6.5      | (0.4) | 44.8  | (1.0) | 45.6           | (0.9) |
| Italy               | 5.5  | (0.2) | 16.4     | (0.3) | 61.3  | (0.3) | 16.8           | (0.3) | 3.3  | (0.1) | 6.5      | (0.2) | 43.6  | (0.4) | 46.7           | (0.5) |
| Luxembourg          | 13.9   | (0.6) | 27.8     | (0.8) | 44.5  | (0.7) | 13.8           | (0.5) | 4.2  | (0.3) | 8.8      | (0.4) | 42.4  | (0.7) | 44.6           | (0.7) |
| Mexico              | 3.1  | (0.2) | 4.8      | (0.2) | 51.9  | (0.4) | 40.2           | (0.5) | 2.8  | (0.1) | 2.6      | (0.2) | 31.5  | (0.4) | 63.1           | (0.4) |
| Netherlands         | 2.9  | (0.3) | 14.9     | (0.7) | 63.8  | (0.9) | 18.4           | (0.7) | 1.9  | (0.3) | 10.3     | (0.6) | 58.6  | (0.9) | 29.1           | (1.0) |
| Portugal            | 2.3  | (0.2) | 9.1      | (0.4) | 66.2  | (0.8) | 22.3           | (0.8) | 1.3  | (0.2) | 5.4      | (0.3) | 47.1  | (0.8) | 46.3           | (0.9) |
| Spain               | 5.3  | (0.3) | 14.3     | (0.5) | 60.6  | (0.6) | 19.8           | (0.6) | 3.3  | (0.2) | 6.3      | (0.3) | 43.7  | (0.6) | 46.6           | (0.7) |
| Switzerland         | 10.6   | (0.5) | 24.9     | (0.7) | 47.5  | (0.8) | 17.0           | (0.5) | 4.7  | (0.3) | 8.1      | (0.4) | 40.5  | (0.7) | 46.8           | (0.9) |
| Turkey              | 4.3  | (0.3) | 10.2     | (0.5) | 51.9  | (0.7) | 33.6           | (0.9) | 3.8  | (0.3) | 9.2      | (0.5) | 40.3  | (0.8) | 46.7           | (1.1) |
| United States       | 4.3  | (0.3) | 12.9     | (0.6) | 56.0  | (0.9) | 26.7           | (0.9) | 3.0  | (0.3) | 5.8      | (0.4) | 45.1  | (1.0) | 46.1           | (1.0) |
| <b>Partners</b>     |  |       |          |       |       |       |                |       |  |       |          |       |       |       |                |       |
| Argentina           | 4.4  | (0.3) | 12.2     | (0.7) | 59.1  | (0.9) | 24.4           | (0.8) | 4.2  | (0.3) | 3.4      | (0.3) | 36.7  | (0.9) | 55.7           | (1.1) |
| Brazil              | 3.5  | (0.3) | 10.0     | (0.4) | 57.2  | (0.6) | 29.2           | (0.6) | 2.7  | (0.3) | 3.6      | (0.2) | 39.2  | (0.6) | 54.6           | (0.7) |
| Colombia            | 5.7  | (0.4) | 8.7      | (0.5) | 54.0  | (0.8) | 31.6           | (1.0) | 3.4  | (0.3) | 3.9      | (0.3) | 32.8  | (0.9) | 59.9           | (1.1) |
| Dubai (UAE)         | 4.7  | (0.3) | 11.0     | (0.4) | 53.0  | (0.7) | 31.3           | (0.6) | 4.5  | (0.3) | 7.3      | (0.4) | 42.4  | (0.7) | 45.9           | (0.7) |
| Hong Kong-China     | 4.2  | (0.3) | 25.8     | (0.6) | 62.7  | (0.7) | 7.3            | (0.5) | 3.2  | (0.3) | 12.0     | (0.5) | 69.4  | (0.8) | 15.5           | (0.7) |
| Indonesia           | 2.8  | (0.3) | 3.0      | (0.3) | 50.0  | (1.1) | 44.2           | (1.1) | 1.7  | (0.2) | 1.8      | (0.2) | 35.2  | (0.9) | 61.3           | (0.9) |
| Latvia              | 4.0  | (0.4) | 15.1     | (0.6) | 66.3  | (1.0) | 14.6           | (0.6) | 3.0  | (0.3) | 4.4      | (0.4) | 39.7  | (0.9) | 52.9           | (1.0) |
| Macao-China         | 4.4  | (0.3) | 22.4     | (0.5) | 61.9  | (0.6) | 11.3           | (0.4) | 3.2  | (0.2) | 9.8      | (0.4) | 63.8  | (0.5) | 23.2           | (0.5) |
| Panama              | 5.7  | (0.7) | 8.1      | (0.8) | 49.7  | (1.6) | 36.4           | (1.4) | 3.9  | (0.6) | 3.8      | (0.5) | 29.3  | (1.4) | 63.1           | (1.6) |
| Peru                | 3.2  | (0.3) | 7.2      | (0.4) | 57.0  | (0.7) | 32.7           | (0.8) | 3.4  | (0.3) | 4.4      | (0.3) | 42.8  | (0.8) | 49.4           | (1.0) |
| Qatar               | 9.2  | (0.3) | 16.0     | (0.4) | 47.7  | (0.5) | 27.1           | (0.5) | 7.3  | (0.3) | 9.5      | (0.3) | 39.4  | (0.5) | 43.8           | (0.5) |
| Trinidad and Tobago | 3.0  | (0.3) | 6.2      | (0.4) | 48.4  | (0.8) | 42.5           | (0.8) | 2.6  | (0.2) | 3.0      | (0.3) | 32.4  | (0.6) | 62.0           | (0.6) |
| Tunisia             | 3.6  | (0.4) | 5.5      | (0.4) | 41.1  | (0.8) | 49.8           | (1.0) | 3.0  | (0.3) | 4.0      | (0.3) | 31.0  | (0.8) | 62.0           | (0.9) |
| Uruguay             | 4.9  | (0.3) | 13.6     | (0.5) | 61.2  | (0.6) | 20.4           | (0.6) | 3.2  | (0.3) | 4.7      | (0.3) | 48.8  | (0.8) | 43.3           | (0.8) |



Table A.4. Descriptive statistics of students' background characteristics

| PISA index of economic, social and cultural status (ESCS) |              | Gender (MALE)      |      |                 |      | Migrant background (MIGLAN) |      |  |      | Student age (rAGE)  |      |                   |      |                                     |      |                               |      |
|---|--------------|--------------------|------|-----------------|------|-----------------------------|------|--|------|---------------------|------|-------------------|------|-------------------------------------|------|-------------------------------|------|
| Average ESCS  |              | Standard Deviation |      | Boys (MALE = 1) |      | Girls (MALE = 0)            |      | Students with migrant background or students who speak language at home different from the language of assessment (MIGLAN=1) |      | Others (MIGLAN = 0) |      | Student age (AGE) |      | At or above the country average age |      | Below the country average age |      |
| Mean index  | S.E.         | Std. Dev.          | S.E. | %               | S.E. | %                           | S.E. | %  | S.E. | %                   | S.E. | Mean age          | S.E. | %                                   | S.E. | %                             | S.E. |
| <b>OECD</b>   |              |                    |      |                 |      |                             |      |  |      |                     |      |                   |      |                                     |      |                               |      |
| Austria   | 0.06 (0.02)  | 0.84 (0.01)        |      | 49.0 (1.83)     |      | 51.0 (1.83)                 |      | 16.5 (1.24)  |      | 83.5 (1.24)         |      | 15.81 (0.01)      |      | 49.2 (0.82)                         |      | 50.8 (0.82)                   |      |
| Belgium   | 0.20 (0.02)  | 0.93 (0.01)        |      | 51.1 (1.22)     |      | 48.9 (1.22)                 |      | 28.4 (1.35)  |      | 71.6 (1.35)         |      | 15.85 (0.00)      |      | 53.0 (0.68)                         |      | 47.0 (0.68)                   |      |
| Chile   | -0.57 (0.04) | 1.14 (0.02)        |      | 51.0 (1.12)     |      | 49.0 (1.12)                 |      | 0.9 (0.14)   |      | 99.1 (0.14)         |      | 15.79 (0.00)      |      | 50.3 (0.62)                         |      | 49.7 (0.62)                   |      |
| France  | -0.13 (0.03) | 0.84 (0.02)        |      | 48.7 (1.19)     |      | 51.3 (1.19)                 |      | 15.3 (1.37)  |      | 84.7 (1.37)         |      | 15.86 (0.00)      |      | 51.9 (0.87)                         |      | 48.1 (0.87)                   |      |
| Germany   | 0.18 (0.02)  | 0.90 (0.01)        |      | 51.1 (0.97)     |      | 48.9 (0.97)                 |      | 19.0 (1.03)  |      | 81.0 (1.03)         |      | 15.83 (0.01)      |      | 47.0 (0.79)                         |      | 53.0 (0.79)                   |      |
| Hungary   | -0.20 (0.03) | 0.97 (0.02)        |      | 50.4 (1.51)     |      | 49.6 (1.51)                 |      | 2.9 (0.40)   |      | 97.1 (0.40)         |      | 15.72 (0.00)      |      | 50.4 (0.90)                         |      | 49.6 (0.90)                   |      |
| Ireland   | 0.05 (0.03)  | 0.85 (0.01)        |      | 50.6 (1.08)     |      | 49.4 (1.08)                 |      | 10.3 (0.97)  |      | 89.7 (0.97)         |      | 15.71 (0.00)      |      | 50.8 (0.83)                         |      | 49.2 (0.83)                   |      |
| Italy   | -0.12 (0.01) | 1.02 (0.01)        |      | 51.4 (0.93)     |      | 48.6 (0.93)                 |      | 15.1 (0.39)  |      | 84.9 (0.39)         |      | 15.73 (0.00)      |      | 48.5 (0.45)                         |      | 51.5 (0.45)                   |      |
| Luxembourg  | 0.19 (0.01)  | 1.10 (0.01)        |      | 50.7 (0.16)     |      | 49.3 (0.16)                 |      | 93.6 (0.47)  |      | 6.4 (0.47)          |      | 15.83 (0.00)      |      | 46.6 (0.58)                         |      | 53.4 (0.58)                   |      |
| Mexico  | -1.22 (0.03) | 1.30 (0.01)        |      | 49.4 (0.44)     |      | 50.6 (0.44)                 |      | 4.2 (0.32)   |      | 95.8 (0.32)         |      | 15.68 (0.00)      |      | 54.2 (0.44)                         |      | 45.8 (0.44)                   |      |
| Netherlands   | 0.27 (0.03)  | 0.86 (0.02)        |      | 49.7 (0.70)     |      | 50.3 (0.70)                 |      | 13.8 (1.53)  |      | 86.2 (1.53)         |      | 15.72 (0.00)      |      | 48.6 (0.67)                         |      | 51.4 (0.67)                   |      |
| Portugal  | -0.32 (0.04) | 1.18 (0.02)        |      | 48.9 (0.62)     |      | 51.1 (0.62)                 |      | 6.0 (0.46)   |      | 94.0 (0.46)         |      | 15.75 (0.01)      |      | 46.0 (0.82)                         |      | 54.0 (0.82)                   |      |
| Spain   | -0.31 (0.03) | 1.09 (0.01)        |      | 50.8 (0.57)     |      | 49.2 (0.57)                 |      | 23.3 (1.04)  |      | 76.7 (1.04)         |      | 15.85 (0.00)      |      | 52.8 (0.50)                         |      | 47.2 (0.50)                   |      |
| Switzerland   | 0.08 (0.02)  | 0.88 (0.01)        |      | 50.8 (1.14)     |      | 49.2 (1.14)                 |      | 26.5 (0.97)  |      | 73.5 (0.97)         |      | 15.85 (0.01)      |      | 53.6 (0.90)                         |      | 46.4 (0.90)                   |      |
| Turkey  | -1.16 (0.05) | 1.22 (0.02)        |      | 51.6 (1.71)     |      | 48.4 (1.71)                 |      | 4.4 (0.58)   |      | 95.6 (0.58)         |      | 15.82 (0.00)      |      | 47.4 (0.74)                         |      | 52.6 (0.74)                   |      |
| United States   | 0.17 (0.04)  | 0.93 (0.02)        |      | 51.3 (0.75)     |      | 48.7 (0.75)                 |      | 20.9 (1.40)  |      | 79.1 (1.40)         |      | 15.79 (0.01)      |      | 49.6 (1.05)                         |      | 50.4 (1.05)                   |      |
| <b>Partners</b>   |              |                    |      |                 |      |                             |      |  |      |                     |      |                   |      |                                     |      |                               |      |
| Argentina   | -0.62 (0.05) | 1.19 (0.03)        |      | 46.3 (1.06)     |      | 53.7 (1.06)                 |      | 4.4 (0.50)   |      | 95.6 (0.50)         |      | 15.70 (0.01)      |      | 51.4 (0.94)                         |      | 48.6 (0.94)                   |      |
| Brazil  | -1.16 (0.03) | 1.21 (0.01)        |      | 46.9 (0.38)     |      | 53.1 (0.38)                 |      | 1.4 (0.16)   |      | 98.6 (0.16)         |      | 15.86 (0.00)      |      | 51.1 (0.61)                         |      | 48.9 (0.61)                   |      |
| Colombia  | -1.15 (0.05) | 1.27 (0.02)        |      | 47.6 (1.20)     |      | 52.4 (1.20)                 |      | 0.7 (0.10)   |      | 99.3 (0.10)         |      | 15.85 (0.01)      |      | 53.7 (1.10)                         |      | 46.3 (1.10)                   |      |
| Dubai (UAE)   | 0.42 (0.01)  | 0.79 (0.01)        |      | 51.1 (0.14)     |      | 48.9 (0.14)                 |      | 78.5 (0.40)  |      | 21.5 (0.40)         |      | 15.82 (0.00)      |      | 49.0 (0.58)                         |      | 51.0 (0.58)                   |      |
| Hong Kong-China   | -0.80 (0.04) | 1.02 (0.02)        |      | 52.9 (1.76)     |      | 47.1 (1.76)                 |      | 41.9 (1.53)  |      | 58.1 (1.53)         |      | 15.75 (0.00)      |      | 47.4 (0.66)                         |      | 52.6 (0.66)                   |      |
| Indonesia   | -1.55 (0.06) | 1.10 (0.02)        |      | 49.5 (1.95)     |      | 50.5 (1.95)                 |      | 64.0 (2.08)  |      | 36.0 (2.08)         |      | 15.76 (0.01)      |      | 54.0 (1.13)                         |      | 46.0 (1.13)                   |      |
| Latvia  | -0.13 (0.03) | 0.88 (0.01)        |      | 49.3 (0.87)     |      | 50.7 (0.87)                 |      | 12.7 (1.30)  |      | 87.3 (1.30)         |      | 15.77 (0.01)      |      | 51.0 (0.83)                         |      | 49.0 (0.83)                   |      |
| Macao-China   | -0.70 (0.01) | 0.87 (0.01)        |      | 50.6 (0.09)     |      | 49.4 (0.09)                 |      | 74.9 (0.62)  |      | 25.1 (0.62)         |      | 15.78 (0.00)      |      | 53.4 (0.60)                         |      | 46.6 (0.60)                   |      |
| Panama  | -0.81 (0.08) | 1.33 (0.04)        |      | 49.6 (1.43)     |      | 50.4 (1.43)                 |      | 7.8 (1.58)   |      | 92.2 (1.58)         |      | 15.84 (0.01)      |      | 56.0 (1.63)                         |      | 44.0 (1.63)                   |      |
| Peru  | -1.31 (0.05) | 1.25 (0.03)        |      | 50.5 (1.21)     |      | 49.5 (1.21)                 |      | 5.5 (0.83)   |      | 94.5 (0.83)         |      | 15.79 (0.00)      |      | 50.8 (0.71)                         |      | 49.2 (0.71)                   |      |
| Qatar   | 0.51 (0.01)  | 0.91 (0.01)        |      | 50.9 (0.11)     |      | 49.1 (0.11)                 |      | 63.8 (0.39)  |      | 36.2 (0.39)         |      | 15.74 (0.00)      |      | 47.2 (0.24)                         |      | 52.8 (0.24)                   |      |
| Trinidad and Tobago                                       | -0.58 (0.02) | 0.93 (0.01)        |      | 49.5 (0.22)     |      | 50.5 (0.22)                 |      | 4.6 (0.29)   |      | 95.4 (0.29)         |      | 15.68 (0.01)      |      | 54.3 (0.89)                         |      | 45.7 (0.89)                   |      |
| Tunisia   | -1.20 (0.05) | 1.31 (0.02)        |      | 47.6 (0.48)     |      | 52.4 (0.48)                 |      | 0.4 (0.11)   |      | 99.6 (0.11)         |      | 15.88 (0.00)      |      | 49.3 (0.83)                         |      | 50.7 (0.83)                   |      |
| Uruguay   | -0.70 (0.03) | 1.22 (0.02)        |      | 47.0 (0.69)     |      | 53.0 (0.69)                 |      | 2.7 (0.24)   |      | 97.3 (0.24)         |      | 15.86 (0.00)      |      | 51.0 (0.81)                         |      | 49.0 (0.81)                   |      |

Table A.5. Student socio-economic background by grade repetition

| Student socio-economic background, by repeated grade |              |                           |              |                             |                     |   |                     | Difference in student socio-economic background between students who have repeated a grade at: |      |   |      |   |      |   |      |
|--|--------------|---------------------------|--------------|-----------------------------|---------------------|---|---------------------|--|------|---|------|---|------|---|------|
| Never  |              | At primary education only |              | At secondary education only |                     | At both primary and secondary education |                     | Primary education only and Never (Primary education only – Never)                              |      | Secondary education only and Never (Secondary education only – Never) |      | Both primary and secondary education and Never (Both primary and secondary education – Never) |      | Primary education only and Secondary education only (Secondary education only – Primary education only) |      |
| Index points   | S.E.         | Index points              | S.E.         | Index points                | S.E.                | Index points                            | S.E.                | Index dif.   | S.E. | Index dif.  | S.E. | Index dif.  | S.E. | Index dif.  | S.E. |
| <b>OECD</b>  |              |                           |              |                             |                     |   |                     |  |      |   |      |   |      |   |      |
| Austria  | 0.13 (0.02)  | -0.38 (0.07)              | 0.01 (0.04)  | -0.26 (0.12)                | <b>-0.51</b> (0.07) | <b>-0.12</b> (0.05)                     | <b>-0.39</b> (0.12) | <b>0.39</b> (0.07)   |      |   |      |   |      |   |      |
| Belgium  | 0.40 (0.02)  | -0.31 (0.04)              | 0.08 (0.03)  | -0.34 (0.06)                | <b>-0.71</b> (0.04) | <b>-0.31</b> (0.03)                     | <b>-0.74</b> (0.06) | <b>0.39</b> (0.05)   |      |   |      |   |      |   |      |
| Chile  | -0.46 (0.03) | -1.11 (0.08)              | -0.81 (0.06) | -0.98 (0.13)                | <b>-0.65</b> (0.07) | <b>-0.36</b> (0.05)                     | <b>-0.52</b> (0.14) | <b>0.29</b> (0.08)   |      |   |      |   |      |   |      |
| France   | 0.05 (0.04)  | -0.66 (0.04)              | -0.28 (0.05) | -0.57 (0.10)                | <b>-0.71</b> (0.05) | <b>-0.33</b> (0.06)                     | <b>-0.62</b> (0.10) | <b>0.38</b> (0.06)   |      |   |      |   |      |   |      |
| Germany  | 0.28 (0.02)  | -0.32 (0.06)              | 0.12 (0.04)  | -0.44 (0.17)                | <b>-0.60</b> (0.06) | <b>-0.16</b> (0.05)                     | <b>-0.72</b> (0.17) | <b>0.44</b> (0.07)   |      |   |      |   |      |   |      |
| Hungary  | -0.09 (0.03) | -1.16 (0.12)              | -0.92 (0.12) | -0.82 (0.16)                | <b>-1.06</b> (0.12) | <b>-0.82</b> (0.12)                     | <b>-0.73</b> (0.16) | 0.24 (0.15)  |      |   |      |   |      |   |      |
| Ireland  | 0.07 (0.03)  | -0.09 (0.05)              | -0.31 (0.12) | c c                         | <b>-0.16</b> (0.05) | <b>-0.38</b> (0.12)                     | c c                 | -0.22 (0.13)   |      |   |      |   |      |   |      |
| Italy  | -0.06 (0.01) | -0.97 (0.12)              | -0.40 (0.03) | -1.27 (0.18)                | <b>-0.91</b> (0.11) | <b>-0.34</b> (0.03)                     | <b>-1.21</b> (0.18) | <b>0.57</b> (0.12)   |      |   |      |   |      |   |      |
| Luxembourg   | 0.38 (0.02)  | -0.44 (0.04)              | 0.21 (0.04)  | -0.25 (0.09)                | <b>-0.83</b> (0.04) | <b>-0.17</b> (0.05)                     | <b>-0.63</b> (0.10) | <b>0.66</b> (0.05)   |      |   |      |   |      |   |      |
| Mexico   | -1.09 (0.03) | -1.89 (0.04)              | -0.99 (0.06) | -1.52 (0.09)                | <b>-0.80</b> (0.05) | 0.09 (0.06)                             | <b>-0.44</b> (0.09) | <b>0.90</b> (0.07)   |      |   |      |   |      |   |      |
| Netherlands  | 0.35 (0.03)  | 0.09 (0.05)               | 0.39 (0.05)  | c c                         | <b>-0.26</b> (0.04) | 0.04 (0.05)                             | c c                 | <b>0.30</b> (0.07)   |      |   |      |   |      |   |      |
| Portugal   | -0.05 (0.04) | -0.91 (0.04)              | -0.67 (0.05) | -0.95 (0.08)                | <b>-0.86</b> (0.06) | <b>-0.62</b> (0.07)                     | <b>-0.90</b> (0.09) | <b>0.25</b> (0.06)   |      |   |      |   |      |   |      |
| Spain  | -0.05 (0.03) | -0.72 (0.06)              | -0.73 (0.03) | -1.07 (0.06)                | <b>-0.67</b> (0.05) | <b>-0.68</b> (0.03)                     | <b>-1.02</b> (0.06) | -0.01 (0.06)   |      |   |      |   |      |   |      |
| Switzerland  | 0.15 (0.03)  | -0.30 (0.03)              | 0.09 (0.04)  | -0.22 (0.10)                | <b>-0.44</b> (0.03) | -0.05 (0.04)                            | <b>-0.37</b> (0.10) | <b>0.39</b> (0.04)   |      |   |      |   |      |   |      |
| Turkey   | -1.11 (0.05) | -1.96 (0.15)              | -1.35 (0.06) | c c                         | <b>-0.85</b> (0.14) | <b>-0.24</b> (0.06)                     | c c                 | <b>0.61</b> (0.15)   |      |   |      |   |      |   |      |
| United States  | 0.25 (0.04)  | -0.23 (0.10)              | -0.41 (0.07) | -0.18 (0.12)                | <b>-0.48</b> (0.10) | <b>-0.66</b> (0.07)                     | <b>-0.42</b> (0.12) | -0.18 (0.11)   |      |   |      |   |      |   |      |
| <b>Partners</b>                                      |              |                           |              |                             |                     |   |                     |  |      |   |      |   |      |   |      |
| Argentina  | -0.94 (0.04) | -1.62 (0.19)              | -0.93 (0.13) | -1.06 (0.17)                | <b>-0.69</b> (0.19) | 0.01 (0.14)                             | -0.12 (0.17)        | <b>0.70</b> (0.24)   |      |   |      |   |      |   |      |
| Brazil   | -0.98 (0.04) | -1.70 (0.04)              | -1.27 (0.03) | -1.52 (0.08)                | <b>-0.72</b> (0.04) | <b>-0.29</b> (0.04)                     | <b>-0.54</b> (0.08) | <b>0.43</b> (0.04)   |      |   |      |   |      |   |      |
| Colombia   | -1.04 (0.06) | -1.61 (0.07)              | -1.09 (0.05) | -1.37 (0.13)                | <b>-0.58</b> (0.07) | -0.05 (0.06)                            | <b>-0.33</b> (0.14) | <b>0.52</b> (0.09)   |      |   |      |   |      |   |      |
| Dubai (UAE)  | 0.48 (0.01)  | 0.00 (0.05)               | 0.13 (0.05)  | -0.18 (0.11)                | <b>-0.48</b> (0.05) | <b>-0.35</b> (0.05)                     | <b>-0.66</b> (0.11) | 0.13 (0.07)  |      |   |      |   |      |   |      |
| Hong Kong-China                                      | -0.72 (0.04) | -1.34 (0.05)              | -1.02 (0.07) | -0.87 (0.31)                | <b>-0.61</b> (0.06) | <b>-0.30</b> (0.07)                     | -0.14 (0.30)        | <b>0.31</b> (0.07)   |      |   |      |   |      |   |      |
| Indonesia  | -1.49 (0.06) | -1.90 (0.05)              | -1.34 (0.18) | -1.76 (0.07)                | <b>-0.41</b> (0.07) | 0.15 (0.18)                             | <b>-0.27</b> (0.08) | <b>0.56</b> (0.17)   |      |   |      |   |      |   |      |
| Latvia   | -0.08 (0.03) | -0.63 (0.08)              | -0.46 (0.07) | -0.48 (0.21)                | <b>-0.55</b> (0.09) | <b>-0.39</b> (0.07)                     | -0.40 (0.22)        | 0.16 (0.11)  |      |   |      |   |      |   |      |
| Macao-China  | -0.62 (0.02) | -0.99 (0.03)              | -0.70 (0.02) | -0.81 (0.04)                | <b>-0.37</b> (0.04) | <b>-0.08</b> (0.03)                     | <b>-0.19</b> (0.04) | <b>0.29</b> (0.04)   |      |   |      |   |      |   |      |
| Panama   | -0.65 (0.10) | -1.55 (0.10)              | -1.00 (0.07) | -0.80 (0.20)                | <b>-0.90</b> (0.15) | <b>-0.35</b> (0.14)                     | -0.16 (0.15)        | <b>0.54</b> (0.10)   |      |   |      |   |      |   |      |
| Peru   | -1.10 (0.06) | -2.07 (0.05)              | -1.49 (0.06) | -1.80 (0.08)                | <b>-0.97</b> (0.07) | <b>-0.39</b> (0.08)                     | <b>-0.70</b> (0.11) | <b>0.58</b> (0.07)   |      |   |      |   |      |   |      |
| Qatar  | 0.56 (0.01)  | 0.15 (0.04)               | 0.28 (0.04)  | 0.25 (0.06)                 | <b>-0.41</b> (0.04) | <b>-0.27</b> (0.04)                     | <b>-0.30</b> (0.06) | <b>0.14</b> (0.06)   |      |   |      |   |      |   |      |
| Trinidad and Tobago                                  | -0.49 (0.02) | -0.80 (0.03)              | -0.83 (0.11) | -0.69 (0.11)                | <b>-0.31</b> (0.04) | <b>-0.33</b> (0.12)                     | -0.20 (0.10)        | -0.03 (0.12)   |      |   |      |   |      |   |      |
| Tunisia  | -0.92 (0.08) | -1.87 (0.06)              | -1.34 (0.06) | -1.73 (0.07)                | <b>-0.95</b> (0.09) | <b>-0.41</b> (0.09)                     | <b>-0.81</b> (0.10) | <b>0.53</b> (0.07)   |      |   |      |   |      |   |      |
| Uruguay  | -0.33 (0.03) | -1.45 (0.04)              | -1.09 (0.05) | -1.58 (0.06)                | <b>-1.12</b> (0.05) | <b>-0.76</b> (0.05)                     | <b>-1.25</b> (0.06) | <b>0.36</b> (0.05)   |      |   |      |   |      |   |      |

Note: Values that are statistically significant are indicated in bold.

Table A.6. Reading performance and grade repetition, Model 1, Model 2

|                     | Model 1        |        |               |        |               | R <sup>2</sup> | Model 2       |               |           |                |        |               |        |               |        |               | R <sup>2</sup> |             |               |      |
|---------------------|----------------|--------|---------------|--------|---------------|----------------|---------------|---------------|-----------|----------------|--------|---------------|--------|---------------|--------|---------------|----------------|-------------|---------------|------|
|                     | Intercept      |        | drepN         |        | drep1         |                | drep12        |               | Intercept |                | drepN  |               | drep1  |               | drep12 |               |                | ESCS        |               |      |
|                     | Inter-<br>cept | S.E.   | Reg.<br>coef. | S.E.   | Reg.<br>coef. |                | S.E.          | Reg.<br>coef. | S.E.      | Inter-<br>cept | S.E.   | Reg.<br>coef. | S.E.   | Reg.<br>coef. | S.E.   | Reg.<br>coef. |                | S.E.        | Reg.<br>coef. | S.E. |
| <b>OECD</b>         |                |        |               |        |               |                |               |               |           |                |        |               |        |               |        |               |                |             |               |      |
| Austria             | <b>448.2</b>   | (6.5)  | <b>35.4</b>   | (6.7)  | <b>-74.0</b>  | (8.7)          | <b>-76.0</b>  | (14.6)        | 0.06      | <b>447.9</b>   | (5.9)  | <b>30.2</b>   | (6.0)  | <b>-57.2</b>  | (8.5)  | <b>-64.5</b>  | (13.3)         | <b>42.9</b> | (2.3)         | 0.19 |
| Belgium             | <b>474.1</b>   | (3.7)  | <b>75.2</b>   | (3.5)  | <b>-53.8</b>  | (4.1)          | <b>-79.3</b>  | (6.8)         | 0.29      | <b>471.6</b>   | (3.5)  | <b>65.6</b>   | (3.2)  | <b>-41.8</b>  | (4.1)  | <b>-66.3</b>  | (7.0)          | <b>30.4</b> | (1.4)         | 0.37 |
| Chile               | <b>401.8</b>   | (3.9)  | <b>67.8</b>   | (3.9)  | <b>-32.9</b>  | (5.1)          | <b>-29.0</b>  | (14.7)        | 0.18      | <b>423.5</b>   | (3.5)  | <b>58.3</b>   | (3.6)  | <b>-25.2</b>  | (4.6)  | -25.5         | (14.3)         | <b>26.6</b> | (1.3)         | 0.31 |
| France              | <b>445.6</b>   | (6.9)  | <b>97.8</b>   | (7.8)  | <b>-57.1</b>  | (7.7)          | <b>-71.1</b>  | (15.2)        | 0.36      | <b>454.4</b>   | (6.8)  | <b>87.6</b>   | (7.6)  | <b>-45.6</b>  | (7.7)  | <b>-62.1</b>  | (15.0)         | <b>30.8</b> | (2.7)         | 0.41 |
| Germany             | <b>477.5</b>   | (4.4)  | <b>44.0</b>   | (4.8)  | <b>-67.5</b>  | (5.3)          | <b>-78.9</b>  | (11.5)        | 0.13      | <b>473.0</b>   | (4.0)  | <b>38.3</b>   | (4.3)  | <b>-52.0</b>  | (5.3)  | <b>-56.3</b>  | (12.0)         | <b>35.6</b> | (1.7)         | 0.25 |
| Hungary             | <b>409.5</b>   | (7.6)  | <b>98.6</b>   | (7.9)  | <b>-45.6</b>  | (12.1)         | <b>-32.9</b>  | (13.2)        | 0.18      | <b>445.5</b>   | (5.4)  | <b>66.3</b>   | (5.3)  | <b>-36.2</b>  | (10.1) | <b>-36.6</b>  | (10.9)         | <b>39.1</b> | (2.0)         | 0.35 |
| Ireland             | <b>419.4</b>   | (14.7) | <b>86.6</b>   | (14.9) | 23.3          | (16.2)         | c             | c             | 0.06      | <b>431.0</b>   | (14.3) | <b>72.4</b>   | (14.3) | 15.0          | (15.8) | c             | c              | <b>37.6</b> | (2.0)         | 0.17 |
| Italy               | <b>417.6</b>   | (3.1)  | <b>83.5</b>   | (3.2)  | <b>-54.4</b>  | (10.8)         | <b>-137.6</b> | (20.7)        | 0.12      | <b>428.7</b>   | (2.7)  | <b>74.1</b>   | (2.8)  | <b>-38.5</b>  | (11.3) | <b>-112.5</b> | (18.6)         | <b>27.9</b> | (1.1)         | 0.21 |
| Luxembourg          | <b>455.2</b>   | (3.3)  | <b>55.3</b>   | (3.6)  | <b>-73.1</b>  | (5.1)          | <b>-91.7</b>  | (8.9)         | 0.26      | <b>449.1</b>   | (3.0)  | <b>50.4</b>   | (3.3)  | <b>-54.3</b>  | (5.0)  | <b>-78.2</b>  | (8.3)          | <b>28.5</b> | (1.3)         | 0.35 |
| Mexico              | <b>397.3</b>   | (6.1)  | <b>47.2</b>   | (5.7)  | <b>-46.1</b>  | (5.4)          | <b>-88.8</b>  | (11.0)        | 0.18      | <b>416.9</b>   | (5.9)  | <b>49.1</b>   | (5.4)  | <b>-28.3</b>  | (5.2)  | <b>-78.1</b>  | (10.8)         | <b>19.8</b> | (0.9)         | 0.27 |
| Netherlands         | <b>521.4</b>   | (8.1)  | 7.2           | (7.3)  | <b>-63.9</b>  | (7.9)          | c             | c             | 0.11      | <b>509.0</b>   | (8.3)  | 8.5           | (7.2)  | <b>-54.5</b>  | (7.4)  | c             | c              | <b>31.2</b> | (1.8)         | 0.20 |
| Portugal            | <b>437.8</b>   | (3.8)  | <b>90.7</b>   | (4.4)  | <b>-29.8</b>  | (4.5)          | <b>-44.4</b>  | (5.2)         | 0.38      | <b>449.3</b>   | (3.5)  | <b>80.1</b>   | (3.8)  | <b>-25.6</b>  | (4.2)  | <b>-39.5</b>  | (5.0)          | <b>17.3</b> | (1.2)         | 0.43 |
| Spain               | <b>432.9</b>   | (2.6)  | <b>83.4</b>   | (2.4)  | <b>-21.0</b>  | (4.4)          | <b>-66.0</b>  | (4.9)         | 0.32      | <b>444.9</b>   | (2.4)  | <b>72.3</b>   | (2.0)  | <b>-21.3</b>  | (4.3)  | <b>-60.5</b>  | (4.9)          | <b>16.3</b> | (1.5)         | 0.35 |
| Switzerland         | <b>486.2</b>   | (4.2)  | <b>32.6</b>   | (4.6)  | <b>-65.5</b>  | (5.1)          | <b>-65.9</b>  | (13.0)        | 0.14      | <b>482.8</b>   | (4.1)  | <b>30.9</b>   | (4.5)  | <b>-52.0</b>  | (5.0)  | <b>-55.1</b>  | (13.0)         | <b>33.8</b> | (2.0)         | 0.24 |
| Turkey              | <b>411.2</b>   | (4.9)  | <b>63.6</b>   | (5.5)  | <b>-45.5</b>  | (8.6)          | c             | c             | 0.11      | <b>447.7</b>   | (5.2)  | <b>57.1</b>   | (5.1)  | <b>-29.1</b>  | (9.0)  | c             | c              | <b>27.0</b> | (1.4)         | 0.26 |
| United States       | <b>422.9</b>   | (7.7)  | <b>92.8</b>   | (7.8)  | -6.7          | (10.1)         | -6.4          | (14.8)        | 0.13      | <b>437.9</b>   | (7.8)  | <b>68.8</b>   | (7.7)  | -13.2         | (8.2)  | -14.6         | (14.6)         | <b>36.2</b> | (2.6)         | 0.25 |
| <b>Partners</b>     |                |        |               |        |               |                |               |               |           |                |        |               |        |               |        |               |                |             |               |      |
| Argentina           | <b>353.4</b>   | (5.3)  | <b>82.9</b>   | (6.9)  | <b>-55.6</b>  | (7.4)          | <b>-50.4</b>  | (9.1)         | 0.24      | <b>380.1</b>   | (5.1)  | <b>69.4</b>   | (5.5)  | <b>-41.7</b>  | (7.3)  | <b>-43.1</b>  | (8.7)          | <b>31.4</b> | (2.0)         | 0.35 |
| Brazil              | <b>384.9</b>   | (2.5)  | <b>61.7</b>   | (3.2)  | <b>-41.0</b>  | (3.3)          | <b>-54.6</b>  | (4.2)         | 0.21      | <b>412.3</b>   | (2.7)  | <b>55.4</b>   | (3.1)  | <b>-31.7</b>  | (3.3)  | <b>-49.1</b>  | (4.3)          | <b>21.6</b> | (1.4)         | 0.28 |
| Colombia            | <b>398.3</b>   | (4.5)  | <b>34.5</b>   | (4.2)  | <b>-39.1</b>  | (5.4)          | <b>-28.0</b>  | (8.3)         | 0.11      | <b>425.3</b>   | (4.4)  | <b>33.3</b>   | (4.0)  | <b>-26.0</b>  | (4.7)  | <b>-21.1</b>  | (8.5)          | <b>24.8</b> | (1.7)         | 0.24 |
| Dubai (UAE)         | <b>378.6</b>   | (6.2)  | <b>94.8</b>   | (6.4)  | 7.2           | (8.8)          | <b>-72.5</b>  | (13.6)        | 0.10      | <b>373.2</b>   | (5.6)  | <b>78.7</b>   | (5.8)  | 12.6          | (7.7)  | <b>-59.1</b>  | (13.1)         | <b>44.6</b> | (1.5)         | 0.20 |
| Hong Kong-China     | <b>477.1</b>   | (6.5)  | <b>66.8</b>   | (6.6)  | 7.5           | (8.3)          | c             | c             | 0.09      | <b>491.6</b>   | (6.7)  | <b>62.6</b>   | (6.6)  | 11.9          | (8.1)  | c             | c              | <b>14.1</b> | (1.9)         | 0.12 |
| Indonesia           | <b>354.4</b>   | (8.5)  | <b>56.0</b>   | (8.8)  | 5.0           | (8.6)          | <b>29.3</b>   | (9.3)         | 0.08      | <b>374.8</b>   | (9.4)  | <b>58.3</b>   | (8.4)  | 13.6          | (8.3)  | <b>35.8</b>   | (9.1)          | <b>15.2</b> | (2.3)         | 0.14 |
| Latvia              | <b>417.1</b>   | (7.0)  | <b>77.0</b>   | (6.9)  | <b>-20.5</b>  | (8.9)          | c             | c             | 0.12      | <b>428.6</b>   | (7.1)  | <b>67.3</b>   | (6.9)  | -16.4         | (9.7)  | c             | c              | <b>24.8</b> | (2.4)         | 0.19 |
| Macao-China         | <b>458.4</b>   | (1.8)  | <b>58.3</b>   | (2.2)  | <b>-11.8</b>  | (3.3)          | <b>-39.4</b>  | (3.8)         | 0.21      | <b>463.5</b>   | (1.9)  | <b>57.7</b>   | (2.2)  | <b>-9.7</b>   | (3.4)  | <b>-38.7</b>  | (3.8)          | <b>7.1</b>  | (1.1)         | 0.22 |
| Panama              | <b>330.1</b>   | (6.1)  | <b>75.9</b>   | (7.9)  | <b>-33.3</b>  | (9.7)          | 3.4           | (13.0)        | 0.18      | <b>357.2</b>   | (6.1)  | <b>66.4</b>   | (5.7)  | -18.3         | (10.2) | -1.6          | (9.2)          | <b>27.1</b> | (3.1)         | 0.31 |
| Peru                | <b>341.4</b>   | (5.1)  | <b>53.7</b>   | (6.1)  | <b>-41.7</b>  | (5.1)          | <b>-58.6</b>  | (7.8)         | 0.17      | <b>393.1</b>   | (5.3)  | <b>40.0</b>   | (4.7)  | <b>-21.6</b>  | (5.0)  | <b>-47.7</b>  | (8.0)          | <b>34.7</b> | (2.0)         | 0.35 |
| Qatar               | <b>302.4</b>   | (3.9)  | <b>83.6</b>   | (4.1)  | <b>24.0</b>   | (6.3)          | <b>-38.7</b>  | (6.7)         | 0.07      | <b>296.2</b>   | (3.9)  | <b>77.7</b>   | (4.1)  | <b>27.0</b>   | (6.4)  | <b>-38.0</b>  | (6.6)          | <b>21.8</b> | (1.2)         | 0.10 |
| Trinidad and Tobago | <b>295.9</b>   | (12.8) | <b>152.3</b>  | (13.0) | <b>61.2</b>   | (13.3)         | -15.4         | (18.0)        | 0.17      | <b>322.1</b>   | (13.3) | <b>141.8</b>  | (13.4) | <b>60.2</b>   | (13.9) | -20.3         | (18.4)         | <b>31.7</b> | (1.8)         | 0.24 |
| Tunisia             | <b>371.2</b>   | (3.5)  | <b>74.7</b>   | (4.8)  | <b>-35.8</b>  | (5.1)          | <b>-52.3</b>  | (4.5)         | 0.34      | <b>383.6</b>   | (3.9)  | <b>70.9</b>   | (4.4)  | <b>-30.9</b>  | (5.2)  | <b>-48.7</b>  | (4.6)          | <b>9.3</b>  | (1.3)         | 0.36 |
| Uruguay             | <b>384.4</b>   | (4.0)  | <b>84.0</b>   | (4.7)  | <b>-43.5</b>  | (4.5)          | <b>-57.2</b>  | (5.6)         | 0.31      | <b>408.7</b>   | (4.3)  | <b>67.1</b>   | (4.4)  | <b>-35.6</b>  | (4.2)  | <b>-46.4</b>  | (5.5)          | <b>22.2</b> | (1.4)         | 0.38 |

Note: The outcome variable is student performance in reading (PV1READ to PV5READ). Values that are statistically significant are indicated in bold. When there are too few observations (fewer than 30 students or less than five schools with valid data) it is indicated as "c".

Table A.6. Reading performance and grade repetition, Model 3 (cont.)

|                     |                     | Model 3             |                     |                     |                   |                    |                     |                    |      |            |      |            |      |            |      | R <sup>2</sup> |
|---------------------|---------------------|---------------------|---------------------|---------------------|-------------------|--------------------|---------------------|--------------------|------|------------|------|------------|------|------------|------|----------------|
| Intercept           |                     | drepN               |                     | drep1               |                   | drep12             |                     | ESCS               |      | MALE       |      | MIGLAN     |      | rAGE       |      |                |
| Intercept           | S.E.                | Reg. coef.          | S.E.                | Reg. coef.          | S.E.              | Reg. coef.         | S.E.                | Reg. coef.         | S.E. | Reg. coef. | S.E. | Reg. coef. | S.E. | Reg. coef. | S.E. |                |
| <b>OECD</b>         |                     |                     |                     |                     |                   |                    |                     |                    |      |            |      |            |      |            |      |                |
| Austria             | <b>486.7</b> (6.0)  | <b>24.0</b> (5.5)   | <b>-58.7</b> (8.4)  | <b>-61.9</b> (13.0) | <b>39.9</b> (2.3) | <b>-40.0</b> (4.5) | <b>-27.4</b> (5.5)  | <b>-19.6</b> (3.0) | 0.25 |            |      |            |      |            |      |                |
| Belgium             | <b>487.8</b> (3.8)  | <b>62.3</b> (3.2)   | <b>-44.0</b> (4.0)  | <b>-66.1</b> (6.9)  | <b>29.2</b> (1.2) | <b>-20.3</b> (2.7) | <b>-17.7</b> (3.6)  | 3.1 (2.2)          | 0.39 |            |      |            |      |            |      |                |
| Chile               | <b>437.5</b> (3.8)  | <b>56.1</b> (3.5)   | <b>-25.3</b> (4.5)  | -26.2 (13.8)        | <b>26.8</b> (1.3) | <b>-16.5</b> (3.1) | <b>-55.0</b> (12.3) | <b>-6.7</b> (2.0)  | 0.33 |            |      |            |      |            |      |                |
| France              | <b>475.4</b> (7.4)  | <b>83.4</b> (7.7)   | <b>-45.8</b> (7.4)  | <b>-60.1</b> (14.4) | <b>29.0</b> (2.4) | <b>-30.7</b> (3.3) | <b>-27.5</b> (5.8)  | 0.8 (2.7)          | 0.44 |            |      |            |      |            |      |                |
| Germany             | <b>505.8</b> (4.1)  | <b>34.7</b> (4.2)   | <b>-52.5</b> (5.3)  | <b>-55.7</b> (12.2) | <b>33.0</b> (1.7) | <b>-36.1</b> (3.3) | <b>-24.4</b> (3.8)  | <b>-14.7</b> (2.8) | 0.30 |            |      |            |      |            |      |                |
| Hungary             | <b>474.5</b> (5.7)  | <b>61.9</b> (5.4)   | <b>-38.1</b> (9.8)  | <b>-34.3</b> (10.8) | <b>40.0</b> (2.0) | <b>-38.2</b> (3.0) | -1.5 (10.0)         | <b>-11.1</b> (2.5) | 0.39 |            |      |            |      |            |      |                |
| Ireland             | <b>465.2</b> (14.3) | <b>67.0</b> (14.4)  | 9.6 (15.6)          | c c                 | <b>38.3</b> (1.9) | <b>-40.2</b> (3.7) | <b>-18.5</b> (6.6)  | <b>-13.4</b> (2.7) | 0.23 |            |      |            |      |            |      |                |
| Italy               | <b>461.9</b> (2.8)  | <b>66.8</b> (2.8)   | <b>-33.4</b> (11.0) | <b>-94.8</b> (20.1) | <b>26.4</b> (1.1) | <b>-39.0</b> (2.3) | <b>-26.7</b> (2.4)  | <b>-6.9</b> (1.5)  | 0.26 |            |      |            |      |            |      |                |
| Luxembourg          | <b>453.7</b> (6.2)  | <b>51.4</b> (3.3)   | <b>-51.6</b> (5.0)  | <b>-71.0</b> (8.2)  | <b>29.8</b> (1.3) | <b>-35.1</b> (2.2) | <b>22.0</b> (5.7)   | <b>-20.0</b> (2.7) | 0.39 |            |      |            |      |            |      |                |
| Mexico              | <b>439.0</b> (5.9)  | <b>43.3</b> (5.4)   | <b>-28.7</b> (5.2)  | <b>-70.9</b> (10.6) | <b>19.2</b> (0.8) | <b>-20.5</b> (1.3) | <b>-60.8</b> (5.5)  | <b>-10.4</b> (1.5) | 0.31 |            |      |            |      |            |      |                |
| Netherlands         | <b>525.3</b> (8.5)  | 6.1 (7.4)           | <b>-54.9</b> (7.6)  | c c                 | <b>30.5</b> (2.1) | <b>-22.4</b> (2.6) | -11.3 (7.6)         | -3.3 (3.0)         | 0.22 |            |      |            |      |            |      |                |
| Portugal            | <b>468.5</b> (3.3)  | <b>75.4</b> (3.7)   | <b>-25.5</b> (4.0)  | <b>-37.5</b> (5.0)  | <b>18.3</b> (1.2) | <b>-28.3</b> (2.0) | <b>-16.1</b> (3.9)  | -2.7 (1.9)         | 0.46 |            |      |            |      |            |      |                |
| Spain               | <b>463.2</b> (2.5)  | <b>69.0</b> (2.0)   | <b>-21.3</b> (4.4)  | <b>-60.2</b> (4.7)  | <b>16.5</b> (1.4) | <b>-20.9</b> (1.6) | <b>-14.4</b> (2.9)  | <b>-4.1</b> (1.7)  | 0.37 |            |      |            |      |            |      |                |
| Switzerland         | <b>516.2</b> (3.9)  | <b>28.1</b> (4.2)   | <b>-52.0</b> (4.5)  | <b>-52.4</b> (12.5) | <b>31.3</b> (2.0) | <b>-36.7</b> (2.2) | <b>-22.1</b> (2.5)  | <b>-12.4</b> (2.4) | 0.29 |            |      |            |      |            |      |                |
| Turkey              | <b>470.5</b> (5.7)  | <b>51.1</b> (5.1)   | <b>-28.1</b> (9.2)  | c c                 | <b>26.0</b> (1.5) | <b>-32.4</b> (3.1) | -14.9 (8.7)         | -3.1 (2.3)         | 0.31 |            |      |            |      |            |      |                |
| United States       | <b>452.9</b> (7.8)  | <b>66.6</b> (7.5)   | -14.3 (8.0)         | -14.4 (14.5)        | <b>37.5</b> (2.7) | <b>-22.5</b> (2.7) | 6.4 (3.5)           | <b>-6.3</b> (2.5)  | 0.26 |            |      |            |      |            |      |                |
| <b>Partners</b>     |                     |                     |                     |                     |                   |                    |                     |                    |      |            |      |            |      |            |      |                |
| Argentina           | <b>398.7</b> (5.4)  | <b>65.8</b> (5.4)   | <b>-40.1</b> (7.2)  | <b>-40.8</b> (8.9)  | <b>32.1</b> (1.9) | <b>-28.7</b> (3.1) | <b>-20.8</b> (9.7)  | -3.7 (2.9)         | 0.37 |            |      |            |      |            |      |                |
| Brazil              | <b>432.5</b> (2.9)  | <b>51.8</b> (3.1)   | <b>-31.5</b> (3.4)  | <b>-47.3</b> (4.4)  | <b>22.9</b> (1.3) | <b>-25.1</b> (1.8) | <b>-65.5</b> (8.9)  | <b>-8.1</b> (2.0)  | 0.31 |            |      |            |      |            |      |                |
| Colombia            | <b>435.3</b> (4.6)  | <b>32.0</b> (4.1)   | <b>-26.6</b> (4.8)  | <b>-20.9</b> (8.5)  | <b>25.1</b> (1.7) | <b>-10.1</b> (2.9) | <b>-66.1</b> (14.4) | <b>-6.4</b> (2.9)  | 0.25 |            |      |            |      |            |      |                |
| Dubai (UAE)         | <b>362.9</b> (5.7)  | <b>63.3</b> (5.3)   | 12.6 (7.0)          | <b>-44.2</b> (11.5) | <b>37.0</b> (1.5) | <b>-48.3</b> (2.5) | <b>72.3</b> (2.9)   | <b>-11.0</b> (2.6) | 0.32 |            |      |            |      |            |      |                |
| Hong Kong-China     | <b>511.4</b> (6.8)  | <b>60.7</b> (6.5)   | 10.9 (8.0)          | c c                 | <b>14.7</b> (2.0) | <b>-30.3</b> (3.6) | 2.7 (4.3)           | <b>-5.9</b> (2.4)  | 0.15 |            |      |            |      |            |      |                |
| Indonesia           | <b>399.1</b> (9.8)  | <b>50.2</b> (8.4)   | 11.5 (8.4)          | <b>31.2</b> (8.6)   | <b>17.0</b> (2.0) | <b>-34.2</b> (3.0) | 6.6 (4.1)           | -3.2 (2.4)         | 0.21 |            |      |            |      |            |      |                |
| Latvia              | <b>462.3</b> (7.0)  | <b>56.0</b> (6.6)   | -17.7 (9.2)         | c c                 | <b>26.0</b> (2.4) | <b>-42.6</b> (2.6) | -7.6 (5.5)          | -2.9 (2.8)         | 0.26 |            |      |            |      |            |      |                |
| Macao-China         | <b>484.6</b> (3.0)  | <b>54.9</b> (2.2)   | <b>-10.9</b> (3.4)  | <b>-37.7</b> (3.8)  | <b>6.5</b> (1.1)  | <b>-25.4</b> (1.7) | <b>-5.4</b> (2.0)   | <b>-5.6</b> (2.2)  | 0.25 |            |      |            |      |            |      |                |
| Panama              | <b>375.6</b> (8.7)  | <b>63.2</b> (5.8)   | -17.3 (9.3)         | -1.3 (9.3)          | <b>26.8</b> (2.8) | <b>-20.6</b> (6.7) | <b>-39.7</b> (14.3) | -5.7 (5.2)         | 0.34 |            |      |            |      |            |      |                |
| Peru                | <b>407.9</b> (5.8)  | <b>35.4</b> (4.6)   | <b>-22.6</b> (5.1)  | <b>-46.1</b> (7.7)  | <b>33.0</b> (1.9) | <b>-16.4</b> (2.9) | <b>-59.1</b> (7.3)  | -4.2 (2.6)         | 0.37 |            |      |            |      |            |      |                |
| Qatar               | <b>297.9</b> (4.1)  | <b>64.6</b> (3.8)   | <b>22.3</b> (6.0)   | <b>-31.6</b> (6.9)  | <b>19.5</b> (1.1) | <b>-39.1</b> (1.7) | <b>51.9</b> (2.0)   | <b>-6.0</b> (1.7)  | 0.18 |            |      |            |      |            |      |                |
| Trinidad and Tobago | <b>360.7</b> (12.5) | <b>129.1</b> (12.3) | <b>52.8</b> (12.7)  | -27.1 (17.2)        | <b>32.9</b> (1.8) | <b>-50.5</b> (2.9) | <b>-25.8</b> (9.5)  | -1.8 (2.9)         | 0.29 |            |      |            |      |            |      |                |
| Tunisia             | <b>399.1</b> (4.5)  | <b>67.3</b> (4.4)   | <b>-32.7</b> (5.4)  | <b>-48.3</b> (4.6)  | <b>9.9</b> (1.3)  | <b>-20.2</b> (2.1) | c c                 | <b>-6.0</b> (2.1)  | 0.38 |            |      |            |      |            |      |                |
| Uruguay             | <b>431.0</b> (4.6)  | <b>61.5</b> (4.3)   | <b>-35.1</b> (4.1)  | <b>-46.0</b> (5.2)  | <b>23.6</b> (1.4) | <b>-33.8</b> (2.8) | <b>-20.8</b> (8.7)  | -3.0 (2.2)         | 0.41 |            |      |            |      |            |      |                |

Note: The outcome variable is student performance in reading (PV1READ to PV5READ). Values that are statistically significant are indicated in bold. When there are too few observations (fewer than 30 students or less than five schools with valid data) it is indicated as "c".

Table A.7. Reading performance, grade repetition and students' background characteristics, Model 4

|                     | Model 4      |        |              |        |              |        |              |        |             |        |              |       |              |        |              |       |             |        |              | R <sup>2</sup> |      |
|---------------------|--------------|--------|--------------|--------|--------------|--------|--------------|--------|-------------|--------|--------------|-------|--------------|--------|--------------|-------|-------------|--------|--------------|----------------|------|
|                     | Intercept    |        | drepN        |        | drep1        |        | drep12       |        | ESCS        |        | MALE         |       | MIGLAN       |        | rAGE         |       | drepN*ESCS  |        | drep1*ESCS   |                |      |
|                     | Intercept    | S.E.   | Reg. coef.   | S.E.   | Reg. coef.   | S.E.   | Reg. coef.   | S.E.   | Reg. coef.  | S.E.   | Reg. coef.   | S.E.  | Reg. coef.   | S.E.   | Reg. coef.   | S.E.  | Reg. coef.  | S.E.   | Reg. coef.   |                | S.E. |
| <b>OECD</b>         |              |        |              |        |              |        |              |        |             |        |              |       |              |        |              |       |             |        |              |                |      |
| Austria             | <b>487.1</b> | (6.0)  | <b>23.6</b>  | (5.5)  | <b>-68.0</b> | (8.4)  | <b>-64.1</b> | (13.3) | <b>31.2</b> | (4.7)  | <b>-40.0</b> | (4.5) | <b>-28.2</b> | (5.5)  | <b>-19.9</b> | (3.0) | <b>10.7</b> | (5.0)  | -15.4        | (9.3)          | 0.25 |
| Belgium             | <b>488.1</b> | (3.9)  | <b>60.6</b>  | (3.4)  | <b>-46.9</b> | (4.3)  | <b>-68.6</b> | (6.7)  | <b>23.4</b> | (3.1)  | <b>-20.1</b> | (2.7) | <b>-17.6</b> | (3.6)  | 3.2          | (2.2) | <b>9.1</b>  | (3.4)  | -1.9         | (4.2)          | 0.39 |
| Chile               | <b>432.9</b> | (3.9)  | <b>61.5</b>  | (3.7)  | <b>-27.7</b> | (6.6)  | -27.0        | (13.9) | <b>21.1</b> | (2.8)  | <b>-16.4</b> | (3.1) | <b>-54.9</b> | (12.1) | <b>-6.8</b>  | (2.0) | <b>7.2</b>  | (2.9)  | -0.7         | (4.7)          | 0.33 |
| France              | <b>473.0</b> | (7.8)  | <b>85.4</b>  | (8.1)  | <b>-49.9</b> | (8.5)  | <b>-62.4</b> | (14.5) | <b>21.3</b> | (5.7)  | <b>-30.6</b> | (3.3) | <b>-27.2</b> | (5.7)  | 1.0          | (2.7) | <b>12.5</b> | (6.3)  | -1.8         | (7.4)          | 0.45 |
| Germany             | <b>506.5</b> | (4.2)  | <b>33.5</b>  | (4.2)  | <b>-56.7</b> | (5.5)  | <b>-58.7</b> | (12.0) | <b>28.2</b> | (4.0)  | <b>-36.1</b> | (3.3) | <b>-24.8</b> | (3.8)  | <b>-14.7</b> | (2.8) | 6.8         | (4.6)  | -6.7         | (6.9)          | 0.31 |
| Hungary             | <b>474.6</b> | (7.6)  | <b>62.0</b>  | (7.0)  | <b>-52.5</b> | (16.2) | <b>-34.3</b> | (10.8) | <b>40.0</b> | (5.6)  | <b>-38.3</b> | (3.0) | -1.6         | (9.8)  | <b>-11.2</b> | (2.4) | 0.6         | (5.7)  | -12.4        | (10.2)         | 0.39 |
| Ireland             | <b>463.1</b> | (14.7) | <b>69.1</b>  | (14.8) | 11.3         | (15.8) | c            | c      | <b>31.5</b> | (10.8) | <b>-40.2</b> | (3.7) | <b>-18.4</b> | (6.6)  | <b>-13.5</b> | (2.7) | 7.3         | (11.1) | 2.9          | (11.7)         | 0.23 |
| Italy               | <b>460.1</b> | (2.7)  | <b>68.6</b>  | (2.6)  | <b>-45.1</b> | (14.0) | <b>-98.7</b> | (19.5) | <b>22.1</b> | (3.1)  | <b>-38.9</b> | (2.3) | <b>-26.8</b> | (2.5)  | <b>-7.0</b>  | (1.5) | 5.2         | (3.2)  | -9.6         | (12.5)         | 0.26 |
| Luxembourg          | <b>456.6</b> | (6.2)  | <b>47.5</b>  | (3.5)  | <b>-56.6</b> | (5.5)  | <b>-75.9</b> | (8.6)  | <b>19.5</b> | (2.5)  | <b>-34.8</b> | (2.2) | <b>21.1</b>  | (5.6)  | <b>-19.9</b> | (2.7) | <b>15.0</b> | (2.9)  | 4.1          | (4.4)          | 0.40 |
| Mexico              | <b>436.2</b> | (6.7)  | <b>47.8</b>  | (6.3)  | <b>-46.5</b> | (7.4)  | <b>-72.4</b> | (10.7) | <b>16.5</b> | (2.7)  | <b>-20.5</b> | (1.3) | <b>-60.9</b> | (5.5)  | <b>-10.3</b> | (1.5) | 4.4         | (2.9)  | <b>-8.1</b>  | (3.6)          | 0.31 |
| Netherlands         | <b>530.7</b> | (9.0)  | -0.3         | (8.2)  | <b>-60.0</b> | (8.3)  | c            | c      | <b>16.6</b> | (6.5)  | <b>-22.3</b> | (2.6) | -11.9        | (7.8)  | -3.0         | (3.0) | <b>16.1</b> | (6.6)  | 9.1          | (7.4)          | 0.22 |
| Portugal            | <b>465.5</b> | (3.6)  | <b>78.5</b>  | (4.0)  | <b>-25.0</b> | (4.3)  | <b>-38.8</b> | (5.2)  | <b>13.8</b> | (2.5)  | <b>-28.3</b> | (2.0) | <b>-15.8</b> | (3.9)  | -2.6         | (1.9) | <b>5.8</b>  | (2.8)  | 1.8          | (3.7)          | 0.46 |
| Spain               | <b>461.6</b> | (2.7)  | <b>70.6</b>  | (2.1)  | <b>-23.1</b> | (5.4)  | <b>-60.9</b> | (4.8)  | <b>14.3</b> | (2.0)  | <b>-20.9</b> | (1.6) | <b>-14.3</b> | (2.9)  | <b>-4.1</b>  | (1.7) | 3.2         | (1.8)  | -2.6         | (4.2)          | 0.38 |
| Switzerland         | <b>517.1</b> | (3.9)  | <b>27.0</b>  | (4.2)  | <b>-54.4</b> | (4.7)  | <b>-55.1</b> | (12.6) | <b>22.7</b> | (3.4)  | <b>-36.6</b> | (2.2) | <b>-22.4</b> | (2.5)  | <b>-12.5</b> | (2.4) | <b>10.4</b> | (4.1)  | 3.2          | (4.7)          | 0.29 |
| Turkey              | <b>451.0</b> | (8.7)  | <b>72.4</b>  | (8.3)  | <b>-51.9</b> | (24.3) | c            | c      | <b>11.6</b> | (3.9)  | <b>-32.3</b> | (3.1) | -14.2        | (8.6)  | -3.3         | (2.3) | <b>16.0</b> | (3.9)  | -7.7         | (11.1)         | 0.31 |
| United States       | <b>454.0</b> | (8.8)  | <b>65.4</b>  | (8.6)  | -16.9        | (10.7) | -15.0        | (14.7) | <b>40.0</b> | (6.6)  | <b>-22.4</b> | (2.7) | 6.3          | (3.5)  | <b>-6.5</b>  | (2.5) | -1.9        | (7.1)  | -9.2         | (12.3)         | 0.26 |
| <b>Partners</b>     |              |        |              |        |              |        |              |        |             |        |              |       |              |        |              |       |             |        |              |                |      |
| Argentina           | <b>391.4</b> | (6.2)  | <b>74.9</b>  | (6.4)  | <b>-60.0</b> | (11.3) | <b>-42.8</b> | (9.0)  | <b>23.6</b> | (3.1)  | <b>-28.7</b> | (3.1) | -18.2        | (9.8)  | -3.8         | (2.9) | <b>12.8</b> | (4.0)  | <b>-12.5</b> | (6.1)          | 0.38 |
| Brazil              | <b>422.2</b> | (3.0)  | <b>67.8</b>  | (3.8)  | <b>-47.8</b> | (5.3)  | <b>-49.4</b> | (4.5)  | <b>14.7</b> | (1.8)  | <b>-24.7</b> | (1.8) | <b>-64.2</b> | (9.2)  | <b>-8.5</b>  | (2.1) | <b>13.9</b> | (2.5)  | <b>-7.6</b>  | (2.8)          | 0.32 |
| Colombia            | <b>431.0</b> | (5.7)  | <b>38.7</b>  | (5.7)  | <b>-31.2</b> | (7.5)  | <b>-22.1</b> | (8.2)  | <b>21.0</b> | (2.8)  | <b>-10.3</b> | (3.0) | <b>-67.5</b> | (14.2) | <b>-6.4</b>  | (2.9) | <b>6.3</b>  | (3.2)  | -1.5         | (3.9)          | 0.25 |
| Dubai (UAE)         | <b>362.9</b> | (5.5)  | <b>63.3</b>  | (5.1)  | 12.6         | (6.8)  | <b>-44.2</b> | (11.5) | <b>36.9</b> | (4.7)  | <b>-48.3</b> | (2.5) | <b>72.3</b>  | (2.9)  | <b>-11.0</b> | (2.6) | 0.0         | (5.1)  | 0.2          | (7.4)          | 0.32 |
| Hong Kong-China     | <b>512.3</b> | (8.4)  | <b>60.0</b>  | (8.3)  | 7.1          | (10.4) | c            | c      | <b>15.6</b> | (5.8)  | <b>-30.3</b> | (3.6) | 2.7          | (4.3)  | <b>-5.9</b>  | (2.4) | -0.7        | (5.9)  | -3.0         | (6.0)          | 0.15 |
| Indonesia           | <b>387.0</b> | (13.4) | <b>63.9</b>  | (12.1) | 7.2          | (14.0) | <b>27.6</b>  | (8.7)  | 8.4         | (5.3)  | <b>-33.7</b> | (3.0) | 6.7          | (4.0)  | -3.0         | (2.4) | <b>10.0</b> | (4.9)  | 0.3          | (5.8)          | 0.21 |
| Latvia              | <b>458.1</b> | (7.0)  | <b>60.3</b>  | (6.7)  | -20.8        | (12.4) | c            | c      | <b>16.7</b> | (7.1)  | <b>-42.7</b> | (2.6) | -7.2         | (5.5)  | -3.0         | (2.7) | 10.3        | (6.8)  | -2.5         | (12.2)         | 0.26 |
| Macao-China         | <b>482.9</b> | (3.4)  | <b>57.1</b>  | (2.9)  | -7.4         | (5.2)  | <b>-38.0</b> | (3.8)  | 4.0         | (2.1)  | <b>-25.4</b> | (1.7) | <b>-5.5</b>  | (2.0)  | <b>-5.6</b>  | (2.2) | 3.3         | (2.3)  | 4.3          | (4.4)          | 0.25 |
| Panama              | <b>371.2</b> | (8.9)  | <b>69.7</b>  | (7.5)  | <b>-51.6</b> | (12.2) | -0.7         | (9.7)  | <b>23.1</b> | (4.4)  | <b>-19.4</b> | (6.6) | <b>-36.5</b> | (14.1) | -6.1         | (5.1) | 7.7         | (4.5)  | <b>-20.7</b> | (5.3)          | 0.35 |
| Peru                | <b>386.8</b> | (7.0)  | <b>60.0</b>  | (7.3)  | <b>-23.4</b> | (8.4)  | <b>-50.4</b> | (7.6)  | <b>19.0</b> | (3.4)  | <b>-15.9</b> | (2.9) | <b>-60.4</b> | (7.3)  | -4.0         | (2.6) | <b>17.3</b> | (4.0)  | 3.5          | (4.3)          | 0.38 |
| Qatar               | <b>301.0</b> | (4.1)  | <b>60.7</b>  | (3.8)  | <b>19.2</b>  | (5.8)  | <b>-32.0</b> | (6.8)  | <b>8.3</b>  | (3.7)  | <b>-39.0</b> | (1.7) | <b>51.8</b>  | (2.0)  | <b>-5.9</b>  | (1.7) | <b>12.6</b> | (3.7)  | <b>10.5</b>  | (5.2)          | 0.18 |
| Trinidad and Tobago | <b>345.3</b> | (17.9) | <b>145.7</b> | (17.4) | <b>62.1</b>  | (18.3) | -24.2        | (17.5) | 14.6        | (9.8)  | <b>-50.4</b> | (2.9) | <b>-25.4</b> | (9.5)  | -1.5         | (2.9) | <b>21.4</b> | (10.0) | 11.1         | (10.4)         | 0.29 |
| Tunisia             | <b>385.9</b> | (5.3)  | <b>84.3</b>  | (6.0)  | <b>-28.7</b> | (7.6)  | <b>-52.1</b> | (4.5)  | 0.2         | (2.1)  | <b>-19.7</b> | (2.1) | c            | c      | <b>-6.0</b>  | (2.2) | <b>14.0</b> | (2.7)  | 4.9          | (3.6)          | 0.39 |
| Uruguay             | <b>418.0</b> | (5.2)  | <b>75.6</b>  | (5.1)  | <b>-32.2</b> | (6.1)  | <b>-51.7</b> | (5.2)  | <b>11.9</b> | (2.4)  | <b>-33.3</b> | (2.7) | <b>-21.8</b> | (8.7)  | -3.3         | (2.2) | <b>15.5</b> | (2.6)  | 4.9          | (3.2)          | 0.41 |

Note: The outcome variable is student performance in reading (PV1READ to PV5READ). Values that are statistically significant are indicated in bold. When there are too few observations (fewer than 30 students or less than five schools with valid data) it is indicated as "c".

Table A.7. Reading performance, grade repetition and students' background characteristics, Model 5 (cont.)

|                     | Model 5      |        |              |        |              |        |              |        |             |       |              |        |              |        |              |       |              |        |              | R <sup>2</sup> |      |
|---------------------|--------------|--------|--------------|--------|--------------|--------|--------------|--------|-------------|-------|--------------|--------|--------------|--------|--------------|-------|--------------|--------|--------------|----------------|------|
|                     | Intercept    |        | drepN        |        | drep1        |        | drep12       |        | ESCS        |       | MALE         |        | MIGLAN       |        | rAGE         |       | drepN*MALE   |        | drep1*MALE   |                |      |
|                     | Intercept    | S.E.   | Reg. coef.   | S.E.   | Reg. coef.   | S.E.   | Reg. coef.   | S.E.   | Reg. coef.  | S.E.  | Reg. coef.   | S.E.   | Reg. coef.   | S.E.   | Reg. coef.   | S.E.  | Reg. coef.   | S.E.   | Reg. coef.   |                | S.E. |
| <b>OECD</b>         |              |        |              |        |              |        |              |        |             |       |              |        |              |        |              |       |              |        |              |                |      |
| Austria             | <b>488.5</b> | (7.7)  | <b>22.5</b>  | (8.3)  | <b>-74.8</b> | (12.9) | <b>-61.8</b> | (13.0) | <b>40.0</b> | (2.3) | <b>-43.2</b> | (9.0)  | <b>-27.2</b> | (5.4)  | <b>-19.6</b> | (3.0) | 2.5          | (10.0) | 29.6         | (15.9)         | 0.25 |
| Belgium             | <b>483.9</b> | (4.3)  | <b>67.1</b>  | (4.3)  | <b>-39.0</b> | (5.4)  | <b>-66.2</b> | (6.9)  | <b>29.2</b> | (1.2) | <b>-13.6</b> | (4.6)  | <b>-17.7</b> | (3.6)  | 3.1          | (2.2) | -8.4         | (5.1)  | -9.1         | (6.8)          | 0.39 |
| Chile               | <b>436.7</b> | (5.2)  | <b>56.8</b>  | (6.0)  | <b>-20.3</b> | (7.9)  | -26.2        | (13.9) | <b>26.9</b> | (1.3) | <b>-15.0</b> | (6.4)  | <b>-54.9</b> | (12.3) | <b>-6.8</b>  | (2.0) | -1.1         | (7.4)  | -8.4         | (11.7)         | 0.33 |
| France              | <b>474.2</b> | (7.3)  | <b>84.0</b>  | (8.1)  | <b>-39.8</b> | (8.9)  | <b>-60.3</b> | (14.5) | <b>29.0</b> | (2.4) | <b>-28.6</b> | (6.6)  | <b>-27.6</b> | (5.8)  | 0.8          | (2.7) | -0.9         | (7.8)  | -11.2        | (11.1)         | 0.45 |
| Germany             | <b>505.1</b> | (5.6)  | <b>35.5</b>  | (5.9)  | <b>-51.9</b> | (6.8)  | <b>-55.6</b> | (12.2) | <b>33.0</b> | (1.7) | <b>-34.9</b> | (6.8)  | <b>-24.4</b> | (3.8)  | <b>-14.7</b> | (2.8) | -1.4         | (7.5)  | -1.0         | (11.4)         | 0.30 |
| Hungary             | <b>467.2</b> | (8.1)  | <b>69.5</b>  | (8.4)  | -26.6        | (14.0) | <b>-34.7</b> | (10.6) | <b>39.9</b> | (2.0) | <b>-26.8</b> | (8.3)  | -1.1         | (9.8)  | <b>-11.2</b> | (2.5) | -11.8        | (9.0)  | -19.7        | (17.9)         | 0.39 |
| Ireland             | <b>459.9</b> | (14.5) | <b>72.1</b>  | (14.9) | 17.5         | (16.5) | c            | c      | <b>38.3</b> | (1.9) | -29.3        | (22.5) | <b>-18.5</b> | (6.7)  | <b>-13.5</b> | (2.7) | -10.5        | (22.7) | -15.9        | (24.3)         | 0.23 |
| Italy               | <b>461.9</b> | (4.2)  | <b>66.7</b>  | (4.4)  | -15.7        | (14.8) | <b>-94.7</b> | (20.2) | <b>26.4</b> | (1.1) | <b>-39.0</b> | (5.5)  | <b>-26.8</b> | (2.4)  | <b>-6.9</b>  | (1.5) | 0.2          | (5.2)  | -28.5        | (20.4)         | 0.26 |
| Luxembourg          | <b>448.3</b> | (6.5)  | <b>57.4</b>  | (4.4)  | <b>-40.4</b> | (6.6)  | <b>-72.4</b> | (8.1)  | <b>29.9</b> | (1.3) | <b>-24.1</b> | (5.8)  | <b>21.6</b>  | (5.7)  | <b>-19.9</b> | (2.7) | -11.5        | (6.8)  | <b>-21.3</b> | (9.7)          | 0.39 |
| Mexico              | <b>426.8</b> | (6.4)  | <b>55.4</b>  | (6.1)  | <b>-13.0</b> | (6.6)  | <b>-71.0</b> | (10.6) | <b>19.2</b> | (0.8) | -2.9         | (4.9)  | <b>-60.6</b> | (5.5)  | <b>-10.4</b> | (1.5) | <b>-17.6</b> | (5.0)  | <b>-23.7</b> | (6.7)          | 0.31 |
| Netherlands         | <b>517.1</b> | (13.3) | 14.2         | (11.4) | <b>-45.0</b> | (12.7) | c            | c      | <b>30.6</b> | (2.1) | -8.7         | (12.5) | -11.3        | (7.6)  | -3.3         | (3.0) | -13.8        | (12.6) | -16.9        | (15.6)         | 0.22 |
| Portugal            | <b>469.0</b> | (3.6)  | <b>73.9</b>  | (3.9)  | <b>-20.5</b> | (5.1)  | <b>-37.5</b> | (5.1)  | <b>18.3</b> | (1.2) | <b>-29.0</b> | (4.4)  | <b>-16.2</b> | (3.9)  | -2.7         | (1.9) | 3.3          | (4.7)  | -9.1         | (6.6)          | 0.46 |
| Spain               | <b>463.4</b> | (3.1)  | <b>69.3</b>  | (3.0)  | <b>-31.8</b> | (6.4)  | <b>-60.2</b> | (4.7)  | <b>16.5</b> | (1.4) | <b>-21.2</b> | (2.8)  | <b>-14.4</b> | (2.8)  | <b>-4.2</b>  | (1.7) | -0.9         | (3.4)  | <b>20.0</b>  | (9.2)          | 0.38 |
| Switzerland         | <b>516.0</b> | (4.8)  | <b>28.7</b>  | (5.3)  | <b>-54.6</b> | (6.9)  | <b>-52.4</b> | (12.5) | <b>31.3</b> | (2.0) | <b>-36.5</b> | (7.4)  | <b>-22.1</b> | (2.5)  | <b>-12.4</b> | (2.4) | -1.1         | (8.4)  | 4.9          | (9.9)          | 0.29 |
| Turkey              | <b>473.0</b> | (8.8)  | <b>48.3</b>  | (8.6)  | <b>-26.2</b> | (13.3) | c            | c      | <b>26.0</b> | (1.5) | <b>-36.1</b> | (7.4)  | -14.9        | (8.7)  | -3.2         | (2.3) | 4.2          | (8.1)  | -2.7         | (15.7)         | 0.31 |
| United States       | <b>451.4</b> | (10.9) | <b>67.7</b>  | (10.7) | -8.5         | (12.2) | -14.5        | (14.5) | <b>37.5</b> | (2.7) | -20.0        | (14.5) | 6.5          | (3.5)  | <b>-6.3</b>  | (2.5) | -1.7         | (14.9) | -10.3        | (16.8)         | 0.26 |
| <b>Partners</b>     |              |        |              |        |              |        |              |        |             |       |              |        |              |        |              |       |              |        |              |                |      |
| Argentina           | <b>395.3</b> | (6.0)  | <b>71.4</b>  | (6.0)  | <b>-46.4</b> | (10.0) | <b>-41.3</b> | (8.9)  | <b>32.1</b> | (2.0) | <b>-22.2</b> | (6.2)  | <b>-20.7</b> | (9.7)  | -3.8         | (2.9) | -11.6        | (7.1)  | 11.7         | (14.4)         | 0.37 |
| Brazil              | <b>432.1</b> | (3.6)  | <b>52.0</b>  | (3.9)  | <b>-29.4</b> | (4.4)  | <b>-47.3</b> | (4.4)  | <b>22.9</b> | (1.3) | <b>-24.4</b> | (3.9)  | <b>-65.6</b> | (8.9)  | <b>-8.1</b>  | (2.0) | -0.3         | (4.9)  | -4.2         | (6.0)          | 0.31 |
| Colombia            | <b>437.7</b> | (4.8)  | <b>29.8</b>  | (4.9)  | <b>-32.4</b> | (5.8)  | <b>-20.7</b> | (8.5)  | <b>25.1</b> | (1.7) | <b>-14.5</b> | (7.2)  | <b>-65.7</b> | (14.5) | <b>-6.3</b>  | (2.9) | 3.7          | (7.8)  | 11.3         | (9.9)          | 0.25 |
| Dubai (UAE)         | <b>374.7</b> | (8.1)  | <b>50.2</b>  | (8.0)  | 12.9         | (10.4) | <b>-42.9</b> | (11.6) | <b>37.0</b> | (1.5) | <b>-65.7</b> | (10.2) | <b>72.3</b>  | (2.9)  | <b>-11.1</b> | (2.6) | 20.1         | (10.9) | -5.7         | (14.3)         | 0.32 |
| Hong Kong-China     | <b>517.8</b> | (9.8)  | <b>53.7</b>  | (9.5)  | 7.1          | (11.8) | c            | c      | <b>14.7</b> | (2.0) | <b>-41.1</b> | (11.9) | 2.6          | (4.3)  | <b>-5.9</b>  | (2.4) | 12.0         | (11.8) | 6.3          | (13.4)         | 0.15 |
| Indonesia           | <b>398.1</b> | (10.6) | <b>51.6</b>  | (10.1) | 7.6          | (10.9) | <b>31.3</b>  | (8.5)  | <b>16.9</b> | (2.0) | <b>-32.9</b> | (9.6)  | 6.6          | (4.1)  | -3.2         | (2.4) | -2.4         | (9.7)  | 6.3          | (11.2)         | 0.21 |
| Latvia              | <b>478.8</b> | (10.8) | <b>38.6</b>  | (10.6) | -20.9        | (12.9) | c            | c      | <b>25.9</b> | (2.4) | <b>-65.1</b> | (12.1) | -8.0         | (5.5)  | -3.0         | (2.8) | <b>24.6</b>  | (12.4) | 2.8          | (15.3)         | 0.26 |
| Macao-China         | <b>485.8</b> | (3.5)  | <b>52.4</b>  | (3.2)  | -8.0         | (4.6)  | <b>-37.6</b> | (3.8)  | <b>6.5</b>  | (1.1) | <b>-27.4</b> | (3.4)  | <b>-5.5</b>  | (2.0)  | <b>-5.6</b>  | (2.2) | 4.9          | (4.1)  | -5.7         | (6.2)          | 0.25 |
| Panama              | <b>370.3</b> | (8.6)  | <b>69.5</b>  | (7.2)  | -10.6        | (12.1) | -1.3         | (9.4)  | <b>26.7</b> | (2.8) | -11.8        | (8.0)  | <b>-39.7</b> | (14.4) | -5.7         | (5.2) | -10.9        | (10.4) | -11.4        | (14.6)         | 0.34 |
| Peru                | <b>407.8</b> | (7.1)  | <b>36.4</b>  | (6.8)  | <b>-26.5</b> | (7.7)  | <b>-46.1</b> | (7.7)  | <b>33.0</b> | (1.9) | -16.2        | (8.4)  | <b>-58.8</b> | (7.3)  | -4.2         | (2.6) | -1.9         | (9.7)  | 7.6          | (11.0)         | 0.37 |
| Qatar               | <b>309.4</b> | (5.3)  | <b>51.8</b>  | (5.2)  | 15.2         | (8.8)  | <b>-29.5</b> | (7.0)  | <b>19.6</b> | (1.1) | <b>-58.7</b> | (7.3)  | <b>51.9</b>  | (2.0)  | <b>-6.0</b>  | (1.7) | <b>22.1</b>  | (7.6)  | 11.5         | (11.6)         | 0.18 |
| Trinidad and Tobago | <b>364.7</b> | (15.5) | <b>123.1</b> | (15.4) | <b>55.3</b>  | (16.4) | -27.6        | (16.9) | <b>32.9</b> | (1.8) | <b>-56.4</b> | (16.4) | <b>-25.9</b> | (9.5)  | -1.9         | (2.9) | 10.2         | (16.3) | -5.8         | (18.5)         | 0.29 |
| Tunisia             | <b>402.2</b> | (4.8)  | <b>61.9</b>  | (4.6)  | <b>-30.0</b> | (5.3)  | <b>-48.3</b> | (4.6)  | <b>9.9</b>  | (1.3) | <b>-25.4</b> | (3.5)  | c            | c      | <b>-5.9</b>  | (2.1) | <b>10.7</b>  | (4.2)  | -7.3         | (6.2)          | 0.38 |
| Uruguay             | <b>433.8</b> | (4.9)  | <b>57.4</b>  | (5.1)  | <b>-35.6</b> | (5.5)  | <b>-46.1</b> | (5.2)  | <b>23.7</b> | (1.4) | <b>-38.8</b> | (4.7)  | <b>-21.1</b> | (8.7)  | -3.1         | (2.2) | 8.0          | (5.9)  | 0.7          | (7.9)          | 0.41 |

Note: The outcome variable is student performance in reading (PV1READ to PV5READ). Values that are statistically significant are indicated in bold. When there are too few observations (fewer than 30 students or less than five schools with valid data) it is indicated as "c".

Table A.7. Reading performance, grade repetition and students' background characteristics, Model 6 (cont.)

|                     |              | Model 6    |              |            |              |            |              |            |             |            |              |            |              |            |              |              |              |              |             |                |      |
|---------------------|--------------|------------|--------------|------------|--------------|------------|--------------|------------|-------------|------------|--------------|------------|--------------|------------|--------------|--------------|--------------|--------------|-------------|----------------|------|
| Intercept           |              | drepN      |              | drep1      |              | drep12     |              | ESCS       |             | MALE       |              | MIGLAN     |              | rAGE       |              | drepN*MIGLAN |              | drep1*MIGLAN |             | R <sup>2</sup> |      |
| Intercept           | S.E.         | Reg. coef. | S.E.         | Reg. coef. | S.E.         | Reg. coef. | S.E.         | Reg. coef. | S.E.        | Reg. coef. | S.E.         | Reg. coef. | S.E.         | Reg. coef. | S.E.         | Reg. coef.   | S.E.         | Reg. coef.   | S.E.        |                |      |
| <b>OECD</b>         |              |            |              |            |              |            |              |            |             |            |              |            |              |            |              |              |              |              |             |                |      |
| Austria             | <b>488.1</b> | (6.5)      | <b>22.6</b>  | (6.0)      | <b>-68.0</b> | (9.0)      | <b>-61.4</b> | (13.2)     | <b>40.0</b> | (2.3)      | <b>-39.8</b> | (4.5)      | <b>-33.2</b> | (9.4)      | <b>-19.6</b> | (3.0)        | 4.9          | (11.2)       | 32.6        | (16.6)         | 0.25 |
| Belgium             | <b>490.0</b> | (3.9)      | <b>60.4</b>  | (3.6)      | <b>-51.6</b> | (4.3)      | <b>-65.8</b> | (6.9)      | <b>29.2</b> | (1.2)      | <b>-20.4</b> | (2.7)      | <b>-24.3</b> | (6.4)      | 3.2          | (2.2)        | 5.5          | (6.7)        | <b>21.2</b> | (8.1)          | 0.39 |
| Chile               | <b>437.5</b> | (3.8)      | <b>56.2</b>  | (3.5)      | <b>-24.7</b> | (4.6)      | -26.1        | (13.9)     | <b>26.9</b> | (1.3)      | <b>-16.5</b> | (3.1)      | -43.7        | (35.8)     | <b>-6.7</b>  | (2.0)        | -8.4         | (37.2)       | -71.4       | (40.2)         | 0.33 |
| France              | <b>474.9</b> | (7.9)      | <b>84.8</b>  | (8.2)      | <b>-49.4</b> | (8.4)      | <b>-60.2</b> | (14.4)     | <b>28.8</b> | (2.4)      | <b>-30.6</b> | (3.3)      | <b>-25.5</b> | (9.3)      | 0.7          | (2.7)        | -9.6         | (12.0)       | 14.8        | (14.6)         | 0.45 |
| Germany             | <b>502.9</b> | (4.4)      | <b>38.4</b>  | (4.6)      | <b>-55.7</b> | (6.5)      | <b>-57.5</b> | (12.0)     | <b>33.0</b> | (1.7)      | <b>-36.0</b> | (3.3)      | -11.9        | (7.3)      | <b>-14.6</b> | (2.8)        | <b>-18.0</b> | (7.6)        | 5.5         | (12.4)         | 0.31 |
| Hungary             | <b>475.0</b> | (5.7)      | <b>61.4</b>  | (5.3)      | <b>-40.6</b> | (10.1)     | <b>-32.7</b> | (10.9)     | <b>40.0</b> | (2.0)      | <b>-38.3</b> | (3.0)      | -26.9        | (34.6)     | <b>-11.1</b> | (2.5)        | 25.1         | (32.4)       | 53.2        | (40.1)         | 0.39 |
| Ireland             | <b>460.1</b> | (15.6)     | <b>72.4</b>  | (15.9)     | 12.7         | (16.5)     | c            | c          | <b>38.2</b> | (1.9)      | <b>-40.3</b> | (3.7)      | -5.2         | (24.4)     | <b>-13.4</b> | (2.7)        | -16.2        | (24.9)       | 4.4         | (27.3)         | 0.23 |
| Italy               | <b>459.9</b> | (3.2)      | <b>69.1</b>  | (3.3)      | <b>-51.4</b> | (14.0)     | <b>-97.6</b> | (19.8)     | <b>26.4</b> | (1.1)      | <b>-38.9</b> | (2.3)      | <b>-18.1</b> | (5.4)      | <b>-6.9</b>  | (1.5)        | -11.6        | (6.0)        | 35.1        | (19.3)         | 0.26 |
| Luxembourg          | <b>431.2</b> | (9.7)      | <b>79.9</b>  | (11.9)     | -21.4        | (17.3)     | <b>-70.6</b> | (8.2)      | <b>29.9</b> | (1.3)      | <b>-35.3</b> | (2.2)      | <b>46.4</b>  | (10.5)     | <b>-20.1</b> | (2.7)        | <b>-30.6</b> | (12.9)       | -32.5       | (18.0)         | 0.39 |
| Mexico              | <b>440.7</b> | (5.9)      | <b>41.7</b>  | (5.4)      | <b>-32.1</b> | (5.2)      | <b>-66.6</b> | (10.6)     | <b>19.1</b> | (0.8)      | <b>-20.6</b> | (1.3)      | <b>-95.1</b> | (23.0)     | <b>-10.4</b> | (1.5)        | 29.5         | (23.1)       | <b>53.1</b> | (22.8)         | 0.31 |
| Netherlands         | <b>525.4</b> | (7.8)      | 6.2          | (7.0)      | <b>-56.7</b> | (7.4)      | c            | c          | <b>30.6</b> | (2.1)      | <b>-22.4</b> | (2.6)      | -12.8        | (18.7)     | -3.3         | (3.0)        | -1.9         | (20.2)       | 10.2        | (20.1)         | 0.22 |
| Portugal            | <b>467.4</b> | (3.5)      | <b>77.1</b>  | (3.8)      | <b>-25.3</b> | (4.2)      | <b>-37.3</b> | (5.0)      | <b>18.2</b> | (1.2)      | <b>-28.2</b> | (2.0)      | -2.9         | (7.1)      | -2.7         | (1.9)        | <b>-22.9</b> | (8.7)        | -2.1        | (10.9)         | 0.46 |
| Spain               | <b>462.8</b> | (2.5)      | <b>69.5</b>  | (2.2)      | <b>-21.4</b> | (5.3)      | <b>-60.1</b> | (4.7)      | <b>16.5</b> | (1.4)      | <b>-20.9</b> | (1.6)      | <b>-13.0</b> | (3.6)      | <b>-4.1</b>  | (1.7)        | -2.3         | (3.9)        | 0.2         | (9.3)          | 0.37 |
| Switzerland         | <b>517.3</b> | (4.1)      | <b>27.2</b>  | (4.4)      | <b>-55.9</b> | (5.2)      | <b>-51.4</b> | (12.5)     | <b>31.3</b> | (2.0)      | <b>-36.7</b> | (2.2)      | <b>-25.8</b> | (6.3)      | <b>-12.4</b> | (2.4)        | 2.5          | (7.7)        | 11.1        | (8.8)          | 0.29 |
| Turkey              | <b>470.1</b> | (5.9)      | <b>51.5</b>  | (5.4)      | <b>-27.2</b> | (8.5)      | c            | c          | <b>26.0</b> | (1.5)      | <b>-32.4</b> | (3.1)      | -5.4         | (14.1)     | -3.1         | (2.3)        | -10.2        | (16.7)       | -12.7       | (35.7)         | 0.31 |
| United States       | <b>455.7</b> | (8.3)      | <b>64.1</b>  | (8.1)      | <b>-21.5</b> | (9.5)      | -14.3        | (14.5)     | <b>37.5</b> | (2.8)      | <b>-22.5</b> | (2.7)      | -4.5         | (13.3)     | <b>-6.3</b>  | (2.5)        | 9.4          | (13.6)       | 26.1        | (16.6)         | 0.26 |
| <b>Partners</b>     |              |            |              |            |              |            |              |            |             |            |              |            |              |            |              |              |              |              |             |                |      |
| Argentina           | <b>398.1</b> | (5.3)      | <b>66.4</b>  | (5.2)      | <b>-37.9</b> | (7.0)      | <b>-40.7</b> | (8.8)      | <b>32.1</b> | (2.0)      | <b>-28.7</b> | (3.1)      | -7.7         | (19.9)     | -3.6         | (2.9)        | -13.1        | (19.7)       | -30.4       | (23.8)         | 0.37 |
| Brazil              | <b>432.3</b> | (2.9)      | <b>52.2</b>  | (3.1)      | <b>-31.5</b> | (3.4)      | <b>-47.5</b> | (4.4)      | <b>22.8</b> | (1.3)      | <b>-25.1</b> | (1.8)      | <b>-51.6</b> | (15.0)     | <b>-8.1</b>  | (2.0)        | -32.7        | (25.9)       | -2.9        | (23.7)         | 0.31 |
| Colombia            | <b>434.9</b> | (4.6)      | <b>32.5</b>  | (4.1)      | <b>-26.2</b> | (4.8)      | <b>-20.8</b> | (8.5)      | <b>25.2</b> | (1.7)      | <b>-10.0</b> | (2.9)      | -28.9        | (15.5)     | <b>-6.4</b>  | (2.9)        | <b>-61.5</b> | (26.5)       | -25.3       | (44.0)         | 0.25 |
| Dubai (UAE)         | <b>357.8</b> | (7.2)      | <b>68.9</b>  | (7.7)      | 18.0         | (10.3)     | <b>-42.8</b> | (11.6)     | <b>37.0</b> | (1.5)      | <b>-48.2</b> | (2.5)      | <b>79.8</b>  | (8.7)      | <b>-11.0</b> | (2.6)        | -8.2         | (9.6)        | -8.1        | (13.3)         | 0.32 |
| Hong Kong-China     | <b>504.5</b> | (8.6)      | <b>68.6</b>  | (8.7)      | 5.2          | (11.9)     | c            | c          | <b>14.6</b> | (2.0)      | <b>-30.3</b> | (3.6)      | 16.9         | (10.6)     | <b>-5.7</b>  | (2.4)        | -17.3        | (10.6)       | 4.3         | (13.4)         | 0.15 |
| Indonesia           | <b>389.9</b> | (11.6)     | <b>60.4</b>  | (10.6)     | 16.1         | (11.1)     | <b>26.7</b>  | (9.1)      | <b>16.9</b> | (2.0)      | <b>-34.1</b> | (3.1)      | <b>23.9</b>  | (10.3)     | -3.2         | (2.4)        | -19.4        | (11.1)       | -10.8       | (10.9)         | 0.21 |
| Latvia              | <b>462.0</b> | (7.2)      | <b>56.2</b>  | (6.8)      | -15.8        | (9.6)      | c            | c          | <b>26.0</b> | (2.4)      | <b>-42.7</b> | (2.6)      | -4.3         | (19.4)     | -2.9         | (2.8)        | -2.8         | (20.5)       | -14.0       | (27.3)         | 0.26 |
| Macao-China         | <b>482.4</b> | (3.5)      | <b>61.1</b>  | (3.5)      | <b>-18.9</b> | (7.1)      | <b>-37.6</b> | (3.8)      | <b>6.4</b>  | (1.1)      | <b>-25.3</b> | (1.7)      | -2.4         | (3.2)      | <b>-5.6</b>  | (2.2)        | <b>-8.3</b>  | (4.0)        | 10.1        | (7.9)          | 0.25 |
| Panama              | <b>376.7</b> | (8.8)      | <b>61.5</b>  | (5.9)      | -15.6        | (8.4)      | -1.3         | (9.4)      | <b>26.9</b> | (2.8)      | <b>-20.6</b> | (6.7)      | <b>-51.3</b> | (17.2)     | -5.7         | (5.2)        | 21.2         | (19.5)       | -5.6        | (29.4)         | 0.34 |
| Peru                | <b>408.1</b> | (5.9)      | <b>35.5</b>  | (4.7)      | <b>-25.3</b> | (4.9)      | <b>-45.9</b> | (7.7)      | <b>32.9</b> | (1.9)      | <b>-16.3</b> | (2.9)      | <b>-64.6</b> | (14.6)     | -4.3         | (2.6)        | -5.0         | (16.2)       | 26.0        | (14.5)         | 0.38 |
| Qatar               | <b>307.4</b> | (4.6)      | <b>52.8</b>  | (4.9)      | <b>18.4</b>  | (7.0)      | <b>-32.4</b> | (6.7)      | <b>19.5</b> | (1.1)      | <b>-39.0</b> | (1.8)      | <b>31.6</b>  | (7.1)      | <b>-5.8</b>  | (1.7)        | <b>23.4</b>  | (7.4)        | 9.3         | (10.6)         | 0.18 |
| Trinidad and Tobago | <b>365.9</b> | (13.4)     | <b>123.9</b> | (13.0)     | <b>46.9</b>  | (13.6)     | -30.7        | (17.3)     | <b>32.9</b> | (1.8)      | <b>-50.4</b> | (2.9)      | <b>-69.4</b> | (25.6)     | -1.8         | (2.9)        | 42.0         | (27.1)       | 54.3        | (28.1)         | 0.29 |
| Tunisia             | <b>399.1</b> | (4.5)      | <b>67.2</b>  | (4.4)      | <b>-32.7</b> | (5.4)      | <b>-48.3</b> | (4.6)      | <b>9.9</b>  | (1.3)      | <b>-20.2</b> | (2.1)      | c            | c          | <b>-6.0</b>  | (2.1)        | c            | c            | c           | c              | 0.38 |
| Uruguay             | <b>431.2</b> | (4.6)      | <b>61.3</b>  | (4.4)      | <b>-35.5</b> | (4.2)      | <b>-46.0</b> | (5.2)      | <b>23.6</b> | (1.4)      | <b>-33.8</b> | (2.7)      | -28.5        | (18.2)     | -3.0         | (2.2)        | 9.2          | (22.1)       | 12.3        | (24.6)         | 0.41 |

Note: The outcome variable is student performance in reading (PV1READ to PV5READ). Values that are statistically significant are indicated in bold. When there are too few observations (fewer than 30 students or less than five schools with valid data) it is indicated as "c".

Table A.7. Reading performance, grade repetition and students' background characteristics, Model 7 (cont.)

|                     | Model 7      |        |              |        |              |        |              |        |             |       |              |       |              |        |              |        |             |        | R <sup>2</sup> |            |      |
|---------------------|--------------|--------|--------------|--------|--------------|--------|--------------|--------|-------------|-------|--------------|-------|--------------|--------|--------------|--------|-------------|--------|----------------|------------|------|
|                     | Intercept    |        | drepN        |        | drep1        |        | drep12       |        | ESCS        |       | MALE         |       | MIGLAN       |        | rAGE         |        | drepN*rAGE  |        |                | drep1*rAGE |      |
|                     | Intercept    | S.E.   | Reg. coef.   | S.E.   | Reg. coef.   | S.E.   | Reg. coef.   | S.E.   | Reg. coef.  | S.E.  | Reg. coef.   | S.E.  | Reg. coef.   | S.E.   | Reg. coef.   | S.E.   | Reg. coef.  | S.E.   |                | Reg. coef. | S.E. |
| <b>OECD</b>         |              |        |              |        |              |        |              |        |             |       |              |       |              |        |              |        |             |        |                |            |      |
| Austria             | <b>487.7</b> | (6.3)  | <b>23.5</b>  | (6.0)  | <b>-77.8</b> | (9.9)  | <b>-61.7</b> | (13.0) | <b>40.0</b> | (2.3) | <b>-39.9</b> | (4.5) | <b>-27.3</b> | (5.5)  | <b>-22.1</b> | (7.7)  | 1.2         | (8.4)  | <b>42.2</b>    | (14.5)     | 0.25 |
| Belgium             | <b>485.4</b> | (5.3)  | <b>65.6</b>  | (5.1)  | <b>-42.0</b> | (6.2)  | <b>-66.6</b> | (6.8)  | <b>29.2</b> | (1.2) | <b>-20.4</b> | (2.7) | <b>-17.7</b> | (3.5)  | 7.7          | (5.3)  | -6.2        | (5.8)  | -3.9           | (7.2)      | 0.39 |
| Chile               | <b>438.4</b> | (4.4)  | <b>55.0</b>  | (4.5)  | <b>-24.2</b> | (6.6)  | -26.3        | (13.9) | <b>26.8</b> | (1.3) | <b>-16.5</b> | (3.1) | <b>-54.9</b> | (12.3) | -8.3         | (4.9)  | 2.3         | (5.4)  | -1.9           | (9.6)      | 0.33 |
| France              | <b>478.0</b> | (7.1)  | <b>80.6</b>  | (7.4)  | <b>-53.1</b> | (9.2)  | <b>-59.0</b> | (14.6) | <b>29.0</b> | (2.4) | <b>-30.6</b> | (3.3) | <b>-27.7</b> | (5.7)  | -4.4         | (7.9)  | 5.6         | (8.3)  | 12.3           | (10.3)     | 0.45 |
| Germany             | <b>506.1</b> | (4.9)  | <b>34.4</b>  | (5.5)  | <b>-53.5</b> | (7.4)  | <b>-55.5</b> | (12.2) | <b>33.0</b> | (1.7) | <b>-36.1</b> | (3.3) | <b>-24.4</b> | (3.8)  | <b>-15.4</b> | (6.1)  | 0.7         | (6.6)  | 2.8            | (11.8)     | 0.30 |
| Hungary             | <b>477.5</b> | (6.2)  | <b>58.9</b>  | (6.3)  | <b>-51.5</b> | (13.6) | <b>-33.4</b> | (10.4) | <b>40.0</b> | (2.0) | <b>-38.1</b> | (3.0) | -1.7         | (10.0) | <b>-20.1</b> | (10.7) | 8.9         | (11.0) | 27.0           | (17.7)     | 0.39 |
| Ireland             | <b>482.8</b> | (18.8) | <b>50.1</b>  | (19.2) | -16.0        | (20.4) | c            | c      | <b>38.3</b> | (1.8) | <b>-40.1</b> | (3.7) | <b>-18.4</b> | (6.7)  | <b>-45.9</b> | (21.2) | 30.9        | (20.6) | <b>50.9</b>    | (21.8)     | 0.23 |
| Italy               | <b>462.4</b> | (3.2)  | <b>66.1</b>  | (3.2)  | -26.0        | (17.4) | <b>-94.6</b> | (19.9) | <b>26.4</b> | (1.1) | <b>-39.0</b> | (2.3) | <b>-26.7</b> | (2.5)  | -8.1         | (4.5)  | 1.5         | (4.6)  | -14.2          | (23.5)     | 0.26 |
| Luxembourg          | <b>453.8</b> | (6.3)  | <b>51.1</b>  | (4.0)  | <b>-51.3</b> | (5.3)  | <b>-70.9</b> | (8.3)  | <b>29.8</b> | (1.3) | <b>-35.1</b> | (2.2) | <b>22.1</b>  | (5.7)  | <b>-20.5</b> | (6.6)  | 0.9         | (7.1)  | -0.7           | (10.2)     | 0.39 |
| Mexico              | <b>437.7</b> | (6.2)  | <b>45.4</b>  | (5.8)  | <b>-30.6</b> | (5.8)  | <b>-70.9</b> | (10.6) | <b>19.2</b> | (0.8) | <b>-20.5</b> | (1.3) | <b>-60.8</b> | (5.5)  | -7.9         | (6.0)  | -3.9        | (6.3)  | 3.6            | (7.5)      | 0.31 |
| Netherlands         | <b>521.9</b> | (7.9)  | 11.7         | (7.9)  | <b>-58.6</b> | (8.3)  | c            | c      | <b>30.3</b> | (2.1) | <b>-22.4</b> | (2.6) | -11.3        | (7.6)  | 7.6          | (13.9) | -15.5       | (14.1) | 2.3            | (14.3)     | 0.22 |
| Portugal            | <b>469.5</b> | (3.8)  | <b>74.9</b>  | (4.5)  | <b>-30.0</b> | (4.5)  | <b>-37.3</b> | (5.0)  | <b>18.3</b> | (1.2) | <b>-28.3</b> | (2.0) | <b>-16.3</b> | (3.9)  | -4.9         | (4.5)  | 1.2         | (5.3)  | 9.4            | (5.4)      | 0.46 |
| Spain               | <b>462.4</b> | (2.8)  | <b>70.5</b>  | (2.6)  | <b>-28.4</b> | (7.5)  | <b>-60.4</b> | (4.7)  | <b>16.5</b> | (1.4) | <b>-21.0</b> | (1.6) | <b>-14.4</b> | (2.9)  | -2.6         | (3.4)  | -3.0        | (3.4)  | 11.3           | (10.5)     | 0.37 |
| Switzerland         | <b>517.3</b> | (5.1)  | <b>26.2</b>  | (5.5)  | <b>-50.0</b> | (6.3)  | <b>-52.6</b> | (12.5) | <b>31.2</b> | (2.0) | <b>-36.7</b> | (2.2) | <b>-22.1</b> | (2.5)  | <b>-14.6</b> | (6.4)  | 3.6         | (7.3)  | -4.0           | (8.7)      | 0.29 |
| Turkey              | <b>471.5</b> | (6.9)  | <b>50.3</b>  | (6.8)  | <b>-36.8</b> | (11.7) | c            | c      | <b>26.0</b> | (1.5) | <b>-32.5</b> | (3.1) | -14.6        | (8.7)  | -5.4         | (6.7)  | 1.8         | (7.2)  | 19.5           | (13.7)     | 0.31 |
| United States       | <b>451.3</b> | (9.5)  | <b>68.4</b>  | (9.3)  | -13.7        | (11.4) | -14.5        | (14.6) | <b>37.5</b> | (2.7) | <b>-22.5</b> | (2.7) | 6.4          | (3.4)  | -2.5         | (11.3) | -4.3        | (11.5) | -1.9           | (14.7)     | 0.26 |
| <b>Partners</b>     |              |        |              |        |              |        |              |        |             |       |              |       |              |        |              |        |             |        |                |            |      |
| Argentina           | <b>395.8</b> | (5.7)  | <b>69.8</b>  | (6.2)  | <b>-37.0</b> | (11.1) | <b>-41.1</b> | (8.8)  | <b>32.1</b> | (1.9) | <b>-28.7</b> | (3.1) | <b>-20.7</b> | (9.8)  | 2.2          | (5.9)  | -7.9        | (6.9)  | -6.2           | (11.1)     | 0.37 |
| Brazil              | <b>430.3</b> | (3.2)  | <b>56.0</b>  | (3.8)  | <b>-33.1</b> | (5.2)  | <b>-47.5</b> | (4.4)  | <b>22.9</b> | (1.3) | <b>-25.1</b> | (1.8) | <b>-65.6</b> | (9.0)  | -3.3         | (3.6)  | <b>-8.5</b> | (3.9)  | 2.4            | (6.4)      | 0.31 |
| Colombia            | <b>434.8</b> | (5.5)  | <b>32.7</b>  | (5.4)  | <b>-26.4</b> | (7.3)  | <b>-20.9</b> | (8.4)  | <b>25.1</b> | (1.7) | <b>-10.1</b> | (2.9) | <b>-66.0</b> | (14.4) | -5.3         | (6.5)  | -1.5        | (6.8)  | -0.4           | (8.2)      | 0.25 |
| Dubai (UAE)         | <b>366.4</b> | (6.9)  | <b>59.3</b>  | (6.5)  | 14.9         | (10.4) | <b>-44.6</b> | (11.5) | <b>37.0</b> | (1.5) | <b>-48.3</b> | (2.5) | <b>72.1</b>  | (2.9)  | <b>-19.5</b> | (9.3)  | 9.8         | (10.0) | -2.5           | (15.9)     | 0.32 |
| Hong Kong-China     | <b>506.7</b> | (8.4)  | <b>66.6</b>  | (8.3)  | 8.1          | (9.9)  | c            | c      | <b>14.8</b> | (2.0) | <b>-30.4</b> | (3.6) | 2.8          | (4.3)  | 5.0          | (11.3) | -13.4       | (11.3) | 4.1            | (13.2)     | 0.15 |
| Indonesia           | <b>396.2</b> | (10.9) | <b>52.6</b>  | (10.0) | 19.4         | (10.1) | <b>31.1</b>  | (8.5)  | <b>17.0</b> | (2.0) | <b>-34.2</b> | (3.0) | 6.6          | (4.1)  | 2.9          | (8.0)  | -5.2        | (8.2)  | -15.2          | (9.8)      | 0.21 |
| Latvia              | <b>460.1</b> | (8.3)  | <b>58.3</b>  | (8.3)  | -14.4        | (14.5) | c            | c      | <b>26.0</b> | (2.4) | <b>-42.6</b> | (2.6) | -7.6         | (5.5)  | 2.1          | (10.7) | -5.2        | (11.4) | -6.7           | (17.9)     | 0.26 |
| Macao-China         | <b>484.0</b> | (3.1)  | <b>55.3</b>  | (2.7)  | -8.1         | (4.7)  | <b>-37.7</b> | (3.8)  | <b>6.5</b>  | (1.1) | <b>-25.4</b> | (1.7) | <b>-5.4</b>  | (2.0)  | -4.4         | (3.0)  | -0.8        | (3.4)  | -5.3           | (5.1)      | 0.25 |
| Panama              | <b>376.0</b> | (9.0)  | <b>62.9</b>  | (8.1)  | -19.1        | (12.4) | -1.3         | (9.3)  | <b>26.8</b> | (2.8) | <b>-20.6</b> | (6.6) | <b>-39.7</b> | (14.4) | -6.4         | (7.9)  | 0.6         | (9.8)  | 3.6            | (17.0)     | 0.34 |
| Peru                | <b>407.0</b> | (7.2)  | <b>36.1</b>  | (5.9)  | <b>-20.1</b> | (7.5)  | <b>-46.1</b> | (7.7)  | <b>33.0</b> | (1.9) | <b>-16.4</b> | (2.9) | <b>-59.0</b> | (7.3)  | -2.5         | (7.6)  | -1.3        | (7.3)  | -4.9           | (10.1)     | 0.37 |
| Qatar               | <b>296.8</b> | (5.1)  | <b>65.8</b>  | (5.1)  | <b>23.7</b>  | (7.9)  | <b>-31.7</b> | (6.9)  | <b>19.5</b> | (1.1) | <b>-39.1</b> | (1.7) | <b>51.8</b>  | (2.0)  | -3.6         | (7.5)  | -2.5        | (8.0)  | -3.0           | (12.7)     | 0.18 |
| Trinidad and Tobago | <b>367.7</b> | (16.8) | <b>123.0</b> | (16.7) | <b>42.1</b>  | (17.6) | -25.7        | (16.8) | <b>33.0</b> | (1.8) | <b>-50.5</b> | (2.9) | <b>-25.8</b> | (9.4)  | -15.1        | (18.5) | 11.6        | (18.7) | 19.8           | (19.0)     | 0.29 |
| Tunisia             | <b>400.3</b> | (4.6)  | <b>66.3</b>  | (5.3)  | <b>-37.8</b> | (5.7)  | <b>-48.3</b> | (4.6)  | <b>9.9</b>  | (1.3) | <b>-20.2</b> | (2.1) | c            | c      | <b>-8.2</b>  | (2.8)  | 2.0         | (4.0)  | 9.7            | (6.3)      | 0.38 |
| Uruguay             | <b>431.9</b> | (4.9)  | <b>60.0</b>  | (5.1)  | <b>-34.7</b> | (6.1)  | <b>-45.9</b> | (5.2)  | <b>23.6</b> | (1.4) | <b>-33.8</b> | (2.8) | <b>-20.8</b> | (8.7)  | -5.0         | (4.8)  | 3.2         | (5.7)  | -0.3           | (8.4)      | 0.41 |

Note: The outcome variable is student performance in reading (PV1READ to PV5READ). Values that are statistically significant are indicated in bold. When there are too few observations (fewer than 30 students or less than five schools with valid data) it is indicated as "c".



Table A.8. Students' attitudes towards school and grade repetition, Model 8, Model 9

|                     | Model 8      |        |             |        |              |        | Model 9      |        |                |              |        |             |        |              |        |              |        |              |        |                |
|---------------------|--------------|--------|-------------|--------|--------------|--------|--------------|--------|----------------|--------------|--------|-------------|--------|--------------|--------|--------------|--------|--------------|--------|----------------|
|                     | Intercept    |        | drepN       |        | drep1        |        | drep12       |        | R <sup>2</sup> | Intercept    |        | drepN       |        | drep1        |        | drep12       |        | ESCS         |        | R <sup>2</sup> |
|                     | Intercept    | S.E.   | Reg. coef.  | S.E.   | Reg. coef.   | S.E.   | Reg. coef.   | S.E.   |                | Intercept    | S.E.   | Reg. coef.  | S.E.   | Reg. coef.   | S.E.   | Reg. coef.   | S.E.   | Reg. coef.   | S.E.   |                |
| <b>OECD</b>         |              |        |             |        |              |        |              |        |                |              |        |             |        |              |        |              |        |              |        |                |
| Austria             | <b>-0.17</b> | (0.07) | <b>0.26</b> | (0.06) | <b>0.32</b>  | (0.10) | 0.01         | (0.26) | 0.01           | <b>-0.17</b> | (0.07) | <b>0.26</b> | (0.06) | <b>0.32</b>  | (0.10) | 0.01         | (0.27) | -0.01        | (0.02) | 0.01           |
| Belgium             | <b>-0.14</b> | (0.03) | 0.02        | (0.03) | <b>0.15</b>  | (0.04) | -0.05        | (0.08) | 0.00           | <b>-0.14</b> | (0.03) | 0.01        | (0.03) | <b>0.16</b>  | (0.04) | -0.03        | (0.08) | <b>0.03</b>  | (0.01) | 0.00           |
| Chile               | <b>0.15</b>  | (0.04) | <b>0.19</b> | (0.05) | -0.07        | (0.07) | -0.06        | (0.18) | 0.01           | <b>0.13</b>  | (0.05) | <b>0.20</b> | (0.05) | -0.07        | (0.07) | -0.07        | (0.18) | -0.03        | (0.02) | 0.01           |
| France              | <b>-0.13</b> | (0.04) | <b>0.27</b> | (0.05) | <b>0.23</b>  | (0.07) | 0.13         | (0.16) | 0.01           | <b>-0.13</b> | (0.04) | <b>0.27</b> | (0.05) | <b>0.24</b>  | (0.07) | 0.13         | (0.16) | 0.02         | (0.02) | 0.01           |
| Germany             | <b>-0.25</b> | (0.05) | <b>0.16</b> | (0.05) | <b>0.21</b>  | (0.07) | -0.22        | (0.20) | 0.00           | <b>-0.24</b> | (0.05) | <b>0.17</b> | (0.05) | <b>0.17</b>  | (0.07) | -0.26        | (0.21) | <b>-0.09</b> | (0.02) | 0.01           |
| Hungary             | <b>-0.19</b> | (0.09) | 0.16        | (0.10) | 0.05         | (0.10) | 0.08         | (0.16) | 0.00           | -0.18        | (0.10) | 0.15        | (0.10) | 0.06         | (0.10) | 0.08         | (0.16) | 0.01         | (0.02) | 0.00           |
| Ireland             | 0.23         | (0.17) | -0.08       | (0.17) | -0.17        | (0.18) | c            | c      | 0.00           | 0.27         | (0.18) | -0.14       | (0.18) | -0.20        | (0.19) | c            | c      | <b>0.14</b>  | (0.02) | 0.02           |
| Italy               | <b>-0.12</b> | (0.02) | <b>0.17</b> | (0.03) | 0.20         | (0.16) | -0.33        | (0.26) | 0.00           | <b>-0.12</b> | (0.02) | <b>0.17</b> | (0.03) | 0.19         | (0.16) | -0.35        | (0.26) | -0.01        | (0.01) | 0.00           |
| Luxembourg          | <b>-0.28</b> | (0.04) | <b>0.16</b> | (0.05) | <b>0.25</b>  | (0.06) | 0.16         | (0.13) | 0.00           | <b>-0.27</b> | (0.04) | <b>0.18</b> | (0.05) | <b>0.21</b>  | (0.06) | 0.13         | (0.13) | <b>-0.06</b> | (0.02) | 0.01           |
| Mexico              | <b>0.25</b>  | (0.05) | <b>0.28</b> | (0.05) | <b>-0.19</b> | (0.05) | <b>-0.50</b> | (0.10) | 0.04           | <b>0.30</b>  | (0.05) | <b>0.29</b> | (0.05) | <b>-0.15</b> | (0.05) | <b>-0.48</b> | (0.10) | <b>0.05</b>  | (0.01) | 0.04           |
| Netherlands         | <b>-0.29</b> | (0.06) | 0.06        | (0.06) | 0.10         | (0.07) | c            | c      | 0.00           | <b>-0.30</b> | (0.06) | 0.06        | (0.06) | 0.11         | (0.07) | c            | c      | <b>0.03</b>  | (0.01) | 0.00           |
| Portugal            | <b>0.12</b>  | (0.05) | <b>0.32</b> | (0.05) | <b>0.15</b>  | (0.06) | 0.08         | (0.08) | 0.02           | <b>0.11</b>  | (0.05) | <b>0.33</b> | (0.05) | <b>0.14</b>  | (0.06) | 0.07         | (0.08) | -0.01        | (0.01) | 0.02           |
| Spain               | -0.01        | (0.03) | <b>0.25</b> | (0.03) | <b>0.19</b>  | (0.05) | 0.02         | (0.05) | 0.01           | 0.00         | (0.03) | <b>0.25</b> | (0.03) | <b>0.19</b>  | (0.05) | 0.02         | (0.05) | 0.01         | (0.01) | 0.01           |
| Switzerland         | <b>-0.11</b> | (0.05) | <b>0.11</b> | (0.04) | <b>0.27</b>  | (0.05) | 0.13         | (0.18) | 0.00           | <b>-0.10</b> | (0.05) | <b>0.11</b> | (0.04) | <b>0.25</b>  | (0.05) | 0.12         | (0.18) | -0.03        | (0.02) | 0.00           |
| Turkey              | 0.08         | (0.05) | <b>0.13</b> | (0.05) | 0.21         | (0.19) | c            | c      | 0.00           | -0.08        | (0.06) | <b>0.16</b> | (0.05) | 0.14         | (0.18) | c            | c      | <b>-0.12</b> | (0.02) | 0.02           |
| United States       | 0.08         | (0.08) | 0.15        | (0.09) | 0.13         | (0.11) | -0.15        | (0.18) | 0.00           | 0.13         | (0.07) | 0.08        | (0.08) | 0.11         | (0.10) | -0.17        | (0.18) | <b>0.12</b>  | (0.02) | 0.01           |
| <b>Partners</b>     |              |        |             |        |              |        |              |        |                |              |        |             |        |              |        |              |        |              |        |                |
| Argentina           | <b>0.08</b>  | (0.03) | 0.05        | (0.05) | 0.10         | (0.07) | -0.14        | (0.11) | 0.00           | 0.06         | (0.03) | 0.06        | (0.04) | 0.08         | (0.07) | -0.15        | (0.11) | -0.03        | (0.02) | 0.00           |
| Brazil              | <b>0.37</b>  | (0.03) | <b>0.12</b> | (0.03) | -0.02        | (0.04) | <b>-0.16</b> | (0.05) | 0.01           | <b>0.37</b>  | (0.03) | <b>0.12</b> | (0.03) | -0.02        | (0.04) | <b>-0.16</b> | (0.05) | 0.00         | (0.01) | 0.01           |
| Colombia            | <b>0.38</b>  | (0.05) | <b>0.15</b> | (0.05) | -0.11        | (0.06) | 0.02         | (0.10) | 0.01           | <b>0.40</b>  | (0.05) | <b>0.14</b> | (0.05) | -0.10        | (0.06) | 0.03         | (0.10) | 0.02         | (0.02) | 0.01           |
| Dubai (UAE)         | <b>-0.12</b> | (0.05) | <b>0.21</b> | (0.05) | 0.02         | (0.07) | -0.14        | (0.14) | 0.01           | <b>-0.12</b> | (0.05) | <b>0.21</b> | (0.05) | 0.02         | (0.07) | -0.15        | (0.14) | -0.01        | (0.02) | 0.01           |
| Hong Kong-China     | <b>-0.59</b> | (0.05) | <b>0.11</b> | (0.05) | <b>0.13</b>  | (0.05) | c            | c      | 0.00           | <b>-0.55</b> | (0.05) | <b>0.10</b> | (0.05) | <b>0.15</b>  | (0.05) | c            | c      | <b>0.04</b>  | (0.01) | 0.00           |
| Indonesia           | 0.05         | (0.09) | <b>0.48</b> | (0.09) | <b>0.27</b>  | (0.11) | <b>0.42</b>  | (0.12) | 0.01           | 0.07         | (0.09) | <b>0.48</b> | (0.09) | <b>0.28</b>  | (0.11) | <b>0.43</b>  | (0.12) | 0.01         | (0.01) | 0.01           |
| Latvia              | 0.10         | (0.08) | 0.11        | (0.08) | -0.19        | (0.12) | c            | c      | 0.01           | 0.11         | (0.08) | 0.11        | (0.07) | -0.19        | (0.12) | c            | c      | 0.01         | (0.02) | 0.01           |
| Macao-China         | <b>-0.49</b> | (0.02) | <b>0.06</b> | (0.03) | 0.05         | (0.03) | -0.01        | (0.04) | 0.00           | <b>-0.45</b> | (0.02) | 0.05        | (0.03) | 0.07         | (0.04) | 0.00         | (0.04) | <b>0.06</b>  | (0.01) | 0.01           |
| Panama              | <b>0.23</b>  | (0.08) | <b>0.26</b> | (0.08) | -0.05        | (0.11) | -0.02        | (0.12) | 0.02           | <b>0.27</b>  | (0.08) | <b>0.24</b> | (0.07) | -0.02        | (0.11) | -0.02        | (0.12) | <b>0.05</b>  | (0.02) | 0.02           |
| Peru                | <b>0.16</b>  | (0.05) | 0.08        | (0.06) | <b>-0.17</b> | (0.06) | <b>-0.33</b> | (0.10) | 0.01           | <b>0.24</b>  | (0.06) | 0.06        | (0.06) | <b>-0.14</b> | (0.06) | <b>-0.32</b> | (0.10) | <b>0.05</b>  | (0.01) | 0.02           |
| Qatar               | <b>-0.24</b> | (0.04) | <b>0.13</b> | (0.04) | 0.01         | (0.06) | -0.14        | (0.08) | 0.00           | <b>-0.25</b> | (0.04) | <b>0.12</b> | (0.04) | 0.01         | (0.06) | -0.14        | (0.08) | <b>0.04</b>  | (0.01) | 0.00           |
| Trinidad and Tobago | -0.17        | (0.13) | <b>0.71</b> | (0.13) | <b>0.55</b>  | (0.14) | -0.33        | (0.18) | 0.02           | -0.17        | (0.13) | <b>0.71</b> | (0.13) | <b>0.55</b>  | (0.14) | -0.33        | (0.18) | 0.00         | (0.02) | 0.02           |
| Tunisia             | <b>0.43</b>  | (0.04) | <b>0.18</b> | (0.05) | 0.06         | (0.05) | <b>-0.20</b> | (0.07) | 0.01           | <b>0.39</b>  | (0.05) | <b>0.19</b> | (0.05) | 0.05         | (0.05) | <b>-0.21</b> | (0.07) | -0.02        | (0.01) | 0.02           |
| Uruguay             | <b>0.11</b>  | (0.03) | 0.08        | (0.04) | 0.09         | (0.05) | -0.11        | (0.06) | 0.00           | <b>0.09</b>  | (0.04) | <b>0.09</b> | (0.04) | 0.08         | (0.05) | -0.12        | (0.06) | -0.02        | (0.02) | 0.00           |

Note: The outcome variable is the index of student attitude towards school (ATSCHL). Values that are statistically significant are indicated in bold. When there are too few observations (fewer than 30 students or less than five schools with valid data) it is indicated as "c".

Table A.8. Students' attitudes towards school and grade repetition, Model 10 (cont.)

|                     | Model 10     |        |             |        |              |        |              |        |              |        |              |        |              |        | R <sup>2</sup> |            |      |
|---------------------|--------------|--------|-------------|--------|--------------|--------|--------------|--------|--------------|--------|--------------|--------|--------------|--------|----------------|------------|------|
|                     | Intercept    |        | drepN       |        | drep1        |        | drep12       |        | ESCS         |        | MALE         |        | MIGLAN       |        |                | rAGE       |      |
|                     | Intercept    | S.E.   | Reg. coef.  | S.E.   | Reg. coef.   | S.E.   | Reg. coef.   | S.E.   | Reg. coef.   | S.E.   | Reg. coef.   | S.E.   | Reg. coef.   | S.E.   |                | Reg. coef. | S.E. |
| <b>OECD</b>         |              |        |             |        |              |        |              |        |              |        |              |        |              |        |                |            |      |
| Austria             | <b>-0.21</b> | (0.07) | <b>0.28</b> | (0.06) | <b>0.32</b>  | (0.10) | -0.01        | (0.26) | 0.01         | (0.02) | -0.02        | (0.04) | <b>0.20</b>  | (0.06) | 0.01           | (0.04)     | 0.01 |
| Belgium             | <b>-0.14</b> | (0.04) | 0.01        | (0.03) | <b>0.15</b>  | (0.04) | -0.04        | (0.08) | <b>0.04</b>  | (0.01) | <b>-0.05</b> | (0.02) | <b>0.07</b>  | (0.03) | 0.01           | (0.02)     | 0.01 |
| Chile               | 0.10         | (0.05) | <b>0.21</b> | (0.05) | -0.07        | (0.07) | -0.07        | (0.18) | -0.03        | (0.02) | <b>0.08</b>  | (0.03) | <b>-0.35</b> | (0.15) | -0.04          | (0.04)     | 0.01 |
| France              | -0.03        | (0.05) | <b>0.25</b> | (0.05) | <b>0.24</b>  | (0.07) | 0.16         | (0.15) | <b>0.05</b>  | (0.02) | <b>-0.19</b> | (0.03) | <b>0.25</b>  | (0.05) | -0.04          | (0.03)     | 0.03 |
| Germany             | <b>-0.18</b> | (0.06) | <b>0.16</b> | (0.06) | <b>0.16</b>  | (0.07) | -0.29        | (0.21) | <b>-0.07</b> | (0.02) | <b>-0.14</b> | (0.04) | <b>0.11</b>  | (0.05) | 0.00           | (0.03)     | 0.02 |
| Hungary             | -0.13        | (0.10) | 0.14        | (0.10) | 0.04         | (0.10) | 0.08         | (0.16) | 0.01         | (0.02) | <b>-0.09</b> | (0.04) | 0.04         | (0.08) | 0.01           | (0.03)     | 0.00 |
| Ireland             | 0.31         | (0.18) | -0.15       | (0.18) | -0.21        | (0.19) | c            | c      | <b>0.14</b>  | (0.02) | -0.03        | (0.04) | -0.03        | (0.06) | -0.02          | (0.04)     | 0.02 |
| Italy               | -0.03        | (0.03) | <b>0.16</b> | (0.03) | 0.20         | (0.15) | -0.31        | (0.26) | -0.01        | (0.01) | <b>-0.12</b> | (0.02) | -0.01        | (0.03) | -0.02          | (0.01)     | 0.01 |
| Luxembourg          | <b>-0.28</b> | (0.08) | <b>0.17</b> | (0.05) | <b>0.21</b>  | (0.06) | 0.15         | (0.13) | <b>-0.06</b> | (0.02) | <b>-0.12</b> | (0.03) | 0.09         | (0.06) | -0.03          | (0.03)     | 0.01 |
| Mexico              | <b>0.46</b>  | (0.05) | <b>0.24</b> | (0.05) | <b>-0.16</b> | (0.05) | <b>-0.44</b> | (0.10) | <b>0.05</b>  | (0.01) | <b>-0.17</b> | (0.02) | <b>-0.29</b> | (0.04) | <b>-0.07</b>   | (0.02)     | 0.05 |
| Netherlands         | <b>-0.36</b> | (0.07) | 0.06        | (0.06) | 0.09         | (0.07) | c            | c      | <b>0.05</b>  | (0.01) | 0.02         | (0.03) | <b>0.16</b>  | (0.04) | <b>0.07</b>    | (0.02)     | 0.01 |
| Portugal            | <b>0.23</b>  | (0.05) | <b>0.30</b> | (0.05) | <b>0.14</b>  | (0.06) | 0.09         | (0.08) | 0.00         | (0.01) | <b>-0.20</b> | (0.03) | 0.05         | (0.06) | -0.02          | (0.03)     | 0.03 |
| Spain               | <b>0.10</b>  | (0.04) | <b>0.23</b> | (0.03) | <b>0.19</b>  | (0.05) | 0.02         | (0.05) | 0.01         | (0.01) | <b>-0.14</b> | (0.02) | <b>-0.09</b> | (0.03) | 0.01           | (0.02)     | 0.02 |
| Switzerland         | -0.10        | (0.05) | <b>0.11</b> | (0.04) | <b>0.25</b>  | (0.05) | 0.08         | (0.18) | 0.00         | (0.02) | <b>-0.17</b> | (0.03) | <b>0.18</b>  | (0.04) | <b>0.06</b>    | (0.03)     | 0.02 |
| Turkey              | -0.01        | (0.07) | <b>0.14</b> | (0.05) | 0.15         | (0.18) | c            | c      | <b>-0.12</b> | (0.02) | <b>-0.13</b> | (0.03) | -0.10        | (0.08) | 0.03           | (0.03)     | 0.02 |
| United States       | <b>0.16</b>  | (0.08) | 0.07        | (0.08) | 0.10         | (0.10) | -0.18        | (0.18) | <b>0.14</b>  | (0.02) | -0.06        | (0.03) | <b>0.12</b>  | (0.04) | -0.05          | (0.04)     | 0.02 |
| <b>Partners</b>     |              |        |             |        |              |        |              |        |              |        |              |        |              |        |                |            |      |
| Argentina           | 0.03         | (0.04) | 0.06        | (0.04) | 0.08         | (0.07) | -0.15        | (0.11) | -0.03        | (0.02) | 0.02         | (0.03) | 0.09         | (0.11) | 0.04           | (0.03)     | 0.00 |
| Brazil              | <b>0.40</b>  | (0.03) | <b>0.11</b> | (0.03) | -0.02        | (0.04) | <b>-0.15</b> | (0.05) | 0.00         | (0.01) | <b>-0.06</b> | (0.02) | <b>-0.39</b> | (0.12) | 0.01           | (0.02)     | 0.01 |
| Colombia            | <b>0.42</b>  | (0.06) | <b>0.14</b> | (0.05) | -0.10        | (0.06) | 0.03         | (0.10) | 0.02         | (0.02) | -0.02        | (0.04) | -0.16        | (0.27) | 0.00           | (0.03)     | 0.01 |
| Dubai (UAE)         | -0.06        | (0.06) | <b>0.19</b> | (0.05) | 0.00         | (0.07) | -0.13        | (0.14) | -0.01        | (0.02) | <b>-0.12</b> | (0.03) | 0.03         | (0.04) | -0.02          | (0.03)     | 0.01 |
| Hong Kong-China     | <b>-0.59</b> | (0.05) | <b>0.10</b> | (0.05) | <b>0.14</b>  | (0.05) | c            | c      | <b>0.04</b>  | (0.01) | 0.01         | (0.02) | 0.04         | (0.02) | 0.03           | (0.02)     | 0.00 |
| Indonesia           | 0.09         | (0.10) | <b>0.45</b> | (0.09) | <b>0.26</b>  | (0.11) | <b>0.40</b>  | (0.12) | <b>0.03</b>  | (0.01) | <b>-0.09</b> | (0.03) | <b>0.10</b>  | (0.04) | 0.04           | (0.03)     | 0.02 |
| Latvia              | <b>0.22</b>  | (0.08) | 0.06        | (0.07) | -0.20        | (0.12) | c            | c      | 0.02         | (0.02) | <b>-0.16</b> | (0.04) | 0.00         | (0.06) | 0.01           | (0.03)     | 0.01 |
| Macao-China         | <b>-0.47</b> | (0.03) | 0.05        | (0.03) | 0.07         | (0.04) | 0.00         | (0.04) | <b>0.06</b>  | (0.01) | -0.01        | (0.02) | 0.03         | (0.02) | 0.00           | (0.02)     | 0.01 |
| Panama              | <b>0.28</b>  | (0.09) | <b>0.25</b> | (0.07) | 0.01         | (0.12) | -0.03        | (0.11) | <b>0.05</b>  | (0.02) | 0.07         | (0.06) | <b>-0.40</b> | (0.14) | -0.03          | (0.05)     | 0.03 |
| Peru                | <b>0.28</b>  | (0.06) | 0.04        | (0.06) | <b>-0.14</b> | (0.06) | <b>-0.31</b> | (0.10) | <b>0.04</b>  | (0.01) | <b>-0.07</b> | (0.03) | <b>-0.35</b> | (0.08) | 0.02           | (0.03)     | 0.03 |
| Qatar               | <b>-0.38</b> | (0.04) | 0.07        | (0.04) | -0.01        | (0.06) | -0.12        | (0.08) | <b>0.03</b>  | (0.01) | -0.04        | (0.02) | <b>0.27</b>  | (0.02) | 0.04           | (0.02)     | 0.02 |
| Trinidad and Tobago | -0.01        | (0.14) | <b>0.66</b> | (0.14) | <b>0.52</b>  | (0.14) | -0.34        | (0.18) | 0.00         | (0.02) | <b>-0.19</b> | (0.04) | -0.11        | (0.10) | -0.04          | (0.03)     | 0.03 |
| Tunisia             | <b>0.52</b>  | (0.05) | <b>0.15</b> | (0.05) | 0.03         | (0.05) | <b>-0.22</b> | (0.07) | -0.02        | (0.01) | <b>-0.19</b> | (0.03) | c            | c      | -0.02          | (0.03)     | 0.03 |
| Uruguay             | <b>0.12</b>  | (0.05) | <b>0.08</b> | (0.04) | 0.08         | (0.05) | -0.11        | (0.06) | -0.02        | (0.02) | -0.04        | (0.03) | -0.14        | (0.08) | 0.00           | (0.03)     | 0.00 |

Note: The outcome variable is the index of student attitude towards school (ATSCHL). Values that are statistically significant are indicated in bold. When there are too few observations (fewer than 30 students or less than five schools with valid data) it is indicated as "c".

Table A.9. **Students' attitudes towards school, grade repetition and students' background characteristics, Model 11**

|                     |                    | Model 11           |                    |                    |                    |                    |                    |                    |                    |                    |      |            |      |            |      | R <sup>2</sup> |            |      |            |      |
|---------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|------|------------|------|------------|------|----------------|------------|------|------------|------|
| Intercept           |                    | drepN              |                    | drep1              |                    | drep12             |                    | ESCS               |                    | MALE               |      | MIGLAN     |      | rAGE       |      |                | drepN*ESCS |      | drep1*ESCS |      |
| Intercept           | S.E.               | Reg. coef.         | S.E.               | Reg. coef.         | S.E.               | Reg. coef.         | S.E.               | Reg. coef.         | S.E.               | Reg. coef.         | S.E. | Reg. coef. | S.E. | Reg. coef. | S.E. |                | Reg. coef. | S.E. | Reg. coef. | S.E. |
| <b>OECD</b>         |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |      |            |      |            |      |                |            |      |            |      |
| Austria             | -0.22 (0.07)       | <b>0.28</b> (0.06) | <b>0.30</b> (0.11) | 0.02 (0.26)        | 0.09 (0.08)        | -0.02 (0.04)       | <b>0.20</b> (0.06) | 0.01 (0.04)        | -0.08 (0.08)       | -0.13 (0.15)       | 0.01 |            |      |            |      |                |            |      |            |      |
| Belgium             | -0.14 (0.04)       | 0.00 (0.04)        | <b>0.14</b> (0.04) | -0.04 (0.08)       | 0.03 (0.03)        | -0.05 (0.02)       | <b>0.07</b> (0.03) | 0.01 (0.02)        | 0.02 (0.03)        | -0.04 (0.06)       | 0.01 |            |      |            |      |                |            |      |            |      |
| Chile               | 0.08 (0.06)        | <b>0.24</b> (0.06) | -0.04 (0.09)       | -0.07 (0.18)       | -0.06 (0.05)       | <b>0.08</b> (0.03) | -0.35 (0.15)       | -0.04 (0.03)       | 0.03 (0.05)        | 0.04 (0.07)        | 0.01 |            |      |            |      |                |            |      |            |      |
| France              | -0.02 (0.06)       | <b>0.24</b> (0.05) | <b>0.19</b> (0.08) | 0.17 (0.15)        | 0.08 (0.06)        | -0.20 (0.03)       | <b>0.24</b> (0.05) | -0.04 (0.04)       | -0.03 (0.06)       | -0.09 (0.08)       | 0.03 |            |      |            |      |                |            |      |            |      |
| Germany             | -0.18 (0.06)       | <b>0.16</b> (0.06) | <b>0.17</b> (0.08) | -0.29 (0.21)       | -0.08 (0.05)       | -0.14 (0.04)       | <b>0.11</b> (0.05) | 0.00 (0.03)        | 0.01 (0.06)        | 0.07 (0.08)        | 0.02 |            |      |            |      |                |            |      |            |      |
| Hungary             | -0.15 (0.11)       | 0.16 (0.11)        | 0.06 (0.15)        | 0.08 (0.16)        | -0.02 (0.09)       | -0.09 (0.04)       | 0.03 (0.08)        | 0.01 (0.03)        | 0.03 (0.09)        | 0.02 (0.14)        | 0.00 |            |      |            |      |                |            |      |            |      |
| Ireland             | 0.38 (0.21)        | -0.21 (0.20)       | -0.27 (0.22)       | c c                | <b>0.37</b> (0.18) | -0.03 (0.04)       | -0.03 (0.06)       | -0.02 (0.04)       | -0.23 (0.18)       | -0.23 (0.20)       | 0.02 |            |      |            |      |                |            |      |            |      |
| Italy               | -0.03 (0.03)       | <b>0.16</b> (0.03) | -0.11 (0.17)       | -0.31 (0.25)       | -0.01 (0.03)       | -0.12 (0.02)       | -0.01 (0.03)       | -0.02 (0.01)       | 0.00 (0.03)        | -0.34 (0.13)       | 0.01 |            |      |            |      |                |            |      |            |      |
| Luxembourg          | -0.28 (0.08)       | <b>0.19</b> (0.05) | <b>0.27</b> (0.07) | 0.16 (0.13)        | -0.04 (0.04)       | -0.12 (0.03)       | 0.09 (0.06)        | -0.03 (0.03)       | -0.05 (0.04)       | 0.11 (0.06)        | 0.02 |            |      |            |      |                |            |      |            |      |
| Mexico              | <b>0.53</b> (0.04) | <b>0.18</b> (0.04) | -0.32 (0.06)       | -0.40 (0.10)       | <b>0.12</b> (0.03) | -0.17 (0.02)       | -0.29 (0.04)       | -0.07 (0.02)       | -0.07 (0.03)       | -0.12 (0.03)       | 0.05 |            |      |            |      |                |            |      |            |      |
| Netherlands         | -0.36 (0.07)       | 0.06 (0.07)        | 0.09 (0.07)        | c c                | 0.05 (0.08)        | 0.02 (0.03)        | <b>0.16</b> (0.04) | <b>0.07</b> (0.02) | 0.00 (0.09)        | 0.01 (0.08)        | 0.01 |            |      |            |      |                |            |      |            |      |
| Portugal            | <b>0.23</b> (0.06) | <b>0.30</b> (0.06) | 0.16 (0.09)        | 0.09 (0.08)        | 0.00 (0.04)        | -0.20 (0.03)       | 0.05 (0.06)        | -0.02 (0.03)       | 0.00 (0.04)        | 0.02 (0.07)        | 0.03 |            |      |            |      |                |            |      |            |      |
| Spain               | <b>0.11</b> (0.04) | <b>0.22</b> (0.04) | <b>0.20</b> (0.07) | 0.02 (0.05)        | 0.02 (0.02)        | -0.14 (0.02)       | -0.09 (0.03)       | 0.01 (0.02)        | -0.02 (0.03)       | 0.01 (0.06)        | 0.02 |            |      |            |      |                |            |      |            |      |
| Switzerland         | -0.10 (0.05)       | <b>0.11</b> (0.04) | <b>0.24</b> (0.06) | 0.09 (0.18)        | 0.00 (0.06)        | -0.17 (0.03)       | <b>0.18</b> (0.04) | <b>0.06</b> (0.03) | 0.00 (0.06)        | -0.05 (0.08)       | 0.02 |            |      |            |      |                |            |      |            |      |
| Turkey              | 0.18 (0.10)        | -0.06 (0.10)       | -0.44 (0.49)       | c c                | 0.01 (0.06)        | -0.13 (0.03)       | -0.11 (0.08)       | 0.03 (0.03)        | -0.14 (0.06)       | -0.35 (0.22)       | 0.03 |            |      |            |      |                |            |      |            |      |
| United States       | <b>0.17</b> (0.08) | 0.06 (0.09)        | 0.10 (0.12)        | -0.18 (0.17)       | <b>0.18</b> (0.09) | -0.06 (0.03)       | <b>0.12</b> (0.04) | -0.05 (0.04)       | -0.04 (0.09)       | 0.01 (0.13)        | 0.02 |            |      |            |      |                |            |      |            |      |
| <b>Partners</b>     |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |      |            |      |            |      |                |            |      |            |      |
| Argentina           | 0.04 (0.04)        | 0.04 (0.05)        | 0.04 (0.11)        | -0.15 (0.11)       | 0.00 (0.04)        | 0.02 (0.03)        | 0.09 (0.11)        | 0.04 (0.03)        | -0.03 (0.04)       | -0.04 (0.07)       | 0.00 |            |      |            |      |                |            |      |            |      |
| Brazil              | <b>0.43</b> (0.03) | 0.08 (0.04)        | -0.11 (0.06)       | -0.14 (0.05)       | 0.03 (0.02)        | -0.06 (0.02)       | -0.40 (0.12)       | 0.01 (0.02)        | -0.03 (0.02)       | -0.06 (0.03)       | 0.01 |            |      |            |      |                |            |      |            |      |
| Colombia            | <b>0.45</b> (0.06) | 0.11 (0.06)        | -0.17 (0.08)       | 0.04 (0.10)        | 0.05 (0.03)        | -0.02 (0.04)       | -0.17 (0.27)       | 0.00 (0.03)        | -0.03 (0.04)       | -0.05 (0.04)       | 0.01 |            |      |            |      |                |            |      |            |      |
| Dubai (UAE)         | -0.06 (0.06)       | <b>0.20</b> (0.06) | 0.00 (0.07)        | -0.13 (0.14)       | 0.01 (0.05)        | -0.12 (0.03)       | 0.03 (0.04)        | -0.02 (0.03)       | -0.02 (0.06)       | -0.04 (0.08)       | 0.01 |            |      |            |      |                |            |      |            |      |
| Hong Kong-          |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |      |            |      |            |      |                |            |      |            |      |
| China               | -0.59 (0.06)       | 0.10 (0.06)        | 0.13 (0.08)        | c c                | 0.04 (0.05)        | 0.01 (0.02)        | 0.04 (0.02)        | 0.03 (0.02)        | 0.00 (0.05)        | -0.01 (0.06)       | 0.00 |            |      |            |      |                |            |      |            |      |
| Indonesia           | 0.11 (0.12)        | <b>0.43</b> (0.13) | <b>0.27</b> (0.13) | <b>0.40</b> (0.13) | 0.05 (0.05)        | -0.09 (0.03)       | <b>0.10</b> (0.04) | 0.04 (0.03)        | -0.02 (0.06)       | 0.00 (0.06)        | 0.02 |            |      |            |      |                |            |      |            |      |
| Latvia              | <b>0.22</b> (0.09) | 0.06 (0.08)        | -0.20 (0.15)       | c c                | 0.03 (0.11)        | -0.16 (0.04)       | 0.00 (0.06)        | 0.01 (0.03)        | -0.01 (0.11)       | 0.00 (0.14)        | 0.01 |            |      |            |      |                |            |      |            |      |
| Macao-China         | -0.50 (0.03)       | <b>0.09</b> (0.04) | 0.10 (0.05)        | 0.00 (0.04)        | 0.02 (0.02)        | -0.01 (0.02)       | 0.03 (0.02)        | 0.00 (0.02)        | <b>0.07</b> (0.03) | 0.04 (0.04)        | 0.01 |            |      |            |      |                |            |      |            |      |
| Panama              | <b>0.26</b> (0.09) | <b>0.26</b> (0.08) | 0.27 (0.18)        | -0.03 (0.11)       | 0.02 (0.04)        | 0.06 (0.06)        | -0.42 (0.14)       | -0.03 (0.05)       | 0.01 (0.05)        | <b>0.18</b> (0.07) | 0.03 |            |      |            |      |                |            |      |            |      |
| Peru                | 0.16 (0.09)        | 0.17 (0.09)        | 0.02 (0.11)        | -0.34 (0.10)       | -0.04 (0.04)       | -0.06 (0.03)       | -0.35 (0.08)       | 0.02 (0.03)        | <b>0.09</b> (0.04) | <b>0.11</b> (0.05) | 0.03 |            |      |            |      |                |            |      |            |      |
| Qatar               | -0.38 (0.04)       | 0.07 (0.04)        | 0.00 (0.07)        | -0.12 (0.08)       | 0.05 (0.05)        | -0.04 (0.02)       | <b>0.27</b> (0.02) | 0.04 (0.02)        | -0.02 (0.05)       | -0.04 (0.06)       | 0.02 |            |      |            |      |                |            |      |            |      |
| Trinidad and Tobago | 0.08 (0.20)        | <b>0.56</b> (0.20) | <b>0.49</b> (0.21) | -0.36 (0.19)       | 0.11 (0.11)        | -0.19 (0.04)       | -0.12 (0.10)       | -0.04 (0.03)       | -0.14 (0.11)       | -0.02 (0.12)       | 0.03 |            |      |            |      |                |            |      |            |      |
| Tunisia             | <b>0.56</b> (0.06) | 0.10 (0.07)        | 0.01 (0.09)        | -0.20 (0.07)       | 0.01 (0.02)        | -0.19 (0.03)       | c c                | -0.02 (0.03)       | -0.05 (0.03)       | -0.01 (0.05)       | 0.03 |            |      |            |      |                |            |      |            |      |
| Uruguay             | <b>0.13</b> (0.06) | 0.07 (0.05)        | 0.12 (0.08)        | -0.11 (0.06)       | -0.01 (0.03)       | -0.05 (0.03)       | -0.14 (0.08)       | 0.00 (0.03)        | -0.01 (0.03)       | 0.02 (0.05)        | 0.00 |            |      |            |      |                |            |      |            |      |

Note: The outcome variable is the index of student attitude towards school (ATSCHL). Values that are statistically significant are indicated in bold. When there are too few observations (fewer than 30 students or less than five schools with valid data) it is indicated as "c".

Table A.9. **Students' attitudes towards school, grade repetition and students' background characteristics, Model 12 (cont.)**

| Model 12            |                     |                    |                     |                     |                     |                     |                     |                     |              |                     |      |            |      | R <sup>2</sup> |            |      |            |      |            |      |
|---------------------|---------------------|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|--------------|---------------------|------|------------|------|----------------|------------|------|------------|------|------------|------|
| Intercept           |                     | drepN              |                     | drep1               |                     | drep12              |                     | ESCS                |              | MALE                |      | MIGLAN     |      |                | rAGE       |      | drepN*MALE |      | drep1*MALE |      |
| Intercept           | S.E.                | Reg. coef.         | S.E.                | Reg. coef.          | S.E.                | Reg. coef.          | S.E.                | Reg. coef.          | S.E.         | Reg. coef.          | S.E. | Reg. coef. | S.E. |                | Reg. coef. | S.E. | Reg. coef. | S.E. | Reg. coef. | S.E. |
| <b>OECD</b>         |                     |                    |                     |                     |                     |                     |                     |                     |              |                     |      |            |      |                |            |      |            |      |            |      |
| Austria             | -0.22 (0.09)        | <b>0.28</b> (0.09) | <b>0.52</b> (0.17)  | -0.01 (0.26)        | 0.01 (0.02)         | -0.01 (0.11)        | <b>0.19</b> (0.06)  | 0.01 (0.04)         | 0.00 (0.11)  | -0.37 (0.27)        | 0.01 |            |      |                |            |      |            |      |            |      |
| Belgium             | -0.13 (0.05)        | 0.00 (0.05)        | <b>0.12</b> (0.05)  | -0.04 (0.08)        | <b>0.04</b> (0.01)  | -0.07 (0.05)        | <b>0.07</b> (0.03)  | 0.01 (0.02)         | 0.01 (0.06)  | 0.07 (0.07)         | 0.01 |            |      |                |            |      |            |      |            |      |
| Chile               | 0.12 (0.06)         | <b>0.19</b> (0.07) | 0.07 (0.11)         | -0.07 (0.18)        | -0.03 (0.02)        | 0.06 (0.08)         | <b>-0.34</b> (0.15) | -0.04 (0.03)        | 0.05 (0.09)  | -0.23 (0.13)        | 0.01 |            |      |                |            |      |            |      |            |      |
| France              | -0.03 (0.06)        | <b>0.25</b> (0.05) | <b>0.24</b> (0.07)  | 0.16 (0.15)         | <b>0.05</b> (0.02)  | <b>-0.20</b> (0.07) | <b>0.25</b> (0.05)  | -0.04 (0.04)        | 0.01 (0.08)  | -0.01 (0.13)        | 0.03 |            |      |                |            |      |            |      |            |      |
| Germany             | -0.24 (0.07)        | <b>0.22</b> (0.07) | <b>0.31</b> (0.10)  | -0.27 (0.21)        | <b>-0.07</b> (0.02) | -0.04 (0.09)        | <b>0.11</b> (0.05)  | 0.00 (0.03)         | -0.11 (0.10) | -0.28 (0.15)        | 0.02 |            |      |                |            |      |            |      |            |      |
| Hungary             | -0.23 (0.16)        | 0.25 (0.16)        | 0.16 (0.19)         | 0.08 (0.16)         | 0.01 (0.02)         | 0.07 (0.16)         | 0.04 (0.08)         | 0.01 (0.03)         | -0.17 (0.16) | -0.20 (0.27)        | 0.01 |            |      |                |            |      |            |      |            |      |
| Ireland             | 0.27 (0.23)         | -0.10 (0.23)       | -0.17 (0.23)        | c c                 | <b>0.14</b> (0.02)  | 0.06 (0.27)         | -0.03 (0.06)        | -0.02 (0.04)        | -0.09 (0.27) | -0.08 (0.29)        | 0.02 |            |      |                |            |      |            |      |            |      |
| Italy               | 0.01 (0.03)         | <b>0.11</b> (0.03) | 0.03 (0.41)         | -0.29 (0.26)        | -0.01 (0.01)        | <b>-0.19</b> (0.04) | -0.01 (0.03)        | -0.02 (0.01)        | 0.08 (0.04)  | 0.27 (0.47)         | 0.01 |            |      |                |            |      |            |      |            |      |
| Luxembourg          | -0.32 (0.09)        | <b>0.20</b> (0.07) | <b>0.35</b> (0.08)  | 0.14 (0.13)         | <b>-0.06</b> (0.02) | -0.04 (0.08)        | 0.08 (0.06)         | -0.02 (0.03)        | -0.05 (0.09) | <b>-0.26</b> (0.12) | 0.01 |            |      |                |            |      |            |      |            |      |
| Mexico              | <b>0.44</b> (0.05)  | <b>0.27</b> (0.05) | <b>-0.16</b> (0.07) | <b>-0.44</b> (0.10) | <b>0.05</b> (0.01)  | <b>-0.14</b> (0.06) | <b>-0.29</b> (0.04) | <b>-0.07</b> (0.02) | -0.04 (0.06) | 0.01 (0.07)         | 0.05 |            |      |                |            |      |            |      |            |      |
| Netherlands         | <b>-0.38</b> (0.11) | 0.09 (0.10)        | 0.07 (0.12)         | c c                 | <b>0.05</b> (0.01)  | 0.06 (0.13)         | <b>0.16</b> (0.04)  | <b>0.07</b> (0.02)  | -0.06 (0.11) | 0.04 (0.15)         | 0.01 |            |      |                |            |      |            |      |            |      |
| Portugal            | <b>0.23</b> (0.07)  | <b>0.31</b> (0.07) | 0.13 (0.10)         | 0.09 (0.08)         | 0.00 (0.01)         | <b>-0.19</b> (0.07) | 0.05 (0.06)         | -0.02 (0.03)        | -0.01 (0.08) | 0.02 (0.11)         | 0.03 |            |      |                |            |      |            |      |            |      |
| Spain               | 0.08 (0.04)         | <b>0.25</b> (0.04) | <b>0.22</b> (0.08)  | 0.02 (0.05)         | 0.01 (0.01)         | <b>-0.11</b> (0.05) | <b>-0.08</b> (0.03) | 0.01 (0.02)         | -0.04 (0.06) | -0.06 (0.11)        | 0.02 |            |      |                |            |      |            |      |            |      |
| Switzerland         | -0.07 (0.06)        | 0.07 (0.06)        | <b>0.27</b> (0.08)  | 0.08 (0.18)         | 0.00 (0.02)         | <b>-0.23</b> (0.07) | <b>0.18</b> (0.04)  | <b>0.06</b> (0.03)  | 0.08 (0.07)  | -0.04 (0.12)        | 0.02 |            |      |                |            |      |            |      |            |      |
| Turkey              | -0.04 (0.10)        | 0.17 (0.09)        | 0.23 (0.28)         | c c                 | <b>-0.12</b> (0.02) | -0.08 (0.10)        | -0.11 (0.08)        | 0.03 (0.03)         | -0.05 (0.10) | -0.11 (0.25)        | 0.02 |            |      |                |            |      |            |      |            |      |
| United States       | <b>0.21</b> (0.10)  | 0.02 (0.11)        | 0.09 (0.15)         | -0.17 (0.18)        | <b>0.14</b> (0.02)  | -0.14 (0.13)        | <b>0.12</b> (0.04)  | -0.05 (0.04)        | 0.09 (0.13)  | 0.02 (0.19)         | 0.02 |            |      |                |            |      |            |      |            |      |
| <b>Partners</b>     |                     |                    |                     |                     |                     |                     |                     |                     |              |                     |      |            |      |                |            |      |            |      |            |      |
| Argentina           | 0.05 (0.05)         | 0.03 (0.06)        | 0.04 (0.10)         | -0.15 (0.11)        | -0.03 (0.02)        | -0.03 (0.07)        | 0.09 (0.11)         | 0.04 (0.03)         | 0.06 (0.08)  | 0.07 (0.13)         | 0.00 |            |      |                |            |      |            |      |            |      |
| Brazil              | <b>0.37</b> (0.03)  | <b>0.14</b> (0.04) | 0.04 (0.05)         | <b>-0.15</b> (0.05) | 0.00 (0.01)         | -0.01 (0.05)        | <b>-0.40</b> (0.12) | 0.01 (0.02)         | -0.05 (0.06) | -0.11 (0.08)        | 0.01 |            |      |                |            |      |            |      |            |      |
| Colombia            | <b>0.44</b> (0.05)  | <b>0.13</b> (0.06) | -0.17 (0.09)        | 0.03 (0.10)         | 0.02 (0.02)         | -0.06 (0.08)        | -0.15 (0.27)        | 0.00 (0.03)         | 0.02 (0.09)  | 0.13 (0.14)         | 0.01 |            |      |                |            |      |            |      |            |      |
| Dubai (UAE)         | 0.02 (0.10)         | 0.11 (0.09)        | -0.04 (0.12)        | -0.12 (0.14)        | -0.01 (0.02)        | <b>-0.24</b> (0.11) | 0.03 (0.04)         | -0.02 (0.03)        | 0.13 (0.12)  | 0.05 (0.16)         | 0.01 |            |      |                |            |      |            |      |            |      |
| Hong Kong-          |                     |                    |                     |                     |                     |                     |                     |                     |              |                     |      |            |      |                |            |      |            |      |            |      |
| China               | <b>-0.57</b> (0.06) | 0.07 (0.06)        | <b>0.14</b> (0.07)  | c c                 | <b>0.04</b> (0.01)  | -0.02 (0.09)        | 0.04 (0.02)         | 0.03 (0.02)         | 0.04 (0.10)  | -0.01 (0.10)        | 0.00 |            |      |                |            |      |            |      |            |      |
| Indonesia           | 0.07 (0.14)         | <b>0.47</b> (0.14) | <b>0.31</b> (0.16)  | <b>0.40</b> (0.12)  | <b>0.03</b> (0.01)  | -0.06 (0.14)        | <b>0.10</b> (0.04)  | 0.04 (0.03)         | -0.03 (0.14) | -0.07 (0.15)        | 0.02 |            |      |                |            |      |            |      |            |      |
| Latvia              | <b>0.40</b> (0.11)  | -0.12 (0.12)       | <b>-0.49</b> (0.17) | c c                 | 0.02 (0.02)         | <b>-0.40</b> (0.17) | 0.01 (0.06)         | 0.01 (0.03)         | 0.25 (0.18)  | 0.41 (0.24)         | 0.02 |            |      |                |            |      |            |      |            |      |
| Macao-China         | <b>-0.47</b> (0.03) | 0.05 (0.03)        | 0.07 (0.04)         | 0.00 (0.04)         | <b>0.06</b> (0.01)  | -0.01 (0.03)        | 0.03 (0.02)         | 0.00 (0.02)         | 0.00 (0.04)  | 0.00 (0.07)         | 0.01 |            |      |                |            |      |            |      |            |      |
| Panama              | <b>0.29</b> (0.10)  | <b>0.24</b> (0.09) | -0.02 (0.14)        | -0.03 (0.11)        | <b>0.05</b> (0.02)  | 0.05 (0.09)         | <b>-0.40</b> (0.14) | -0.03 (0.05)        | 0.01 (0.12)  | 0.06 (0.13)         | 0.03 |            |      |                |            |      |            |      |            |      |
| Peru                | <b>0.29</b> (0.08)  | 0.03 (0.08)        | <b>-0.20</b> (0.09) | <b>-0.31</b> (0.10) | <b>0.04</b> (0.01)  | -0.08 (0.08)        | <b>-0.34</b> (0.08) | 0.02 (0.03)         | 0.00 (0.08)  | 0.11 (0.09)         | 0.03 |            |      |                |            |      |            |      |            |      |
| Qatar               | <b>-0.42</b> (0.06) | 0.11 (0.06)        | 0.00 (0.09)         | -0.13 (0.08)        | <b>0.03</b> (0.01)  | 0.03 (0.07)         | <b>0.27</b> (0.02)  | 0.04 (0.02)         | -0.08 (0.08) | -0.03 (0.13)        | 0.02 |            |      |                |            |      |            |      |            |      |
| Trinidad and Tobago |                     |                    |                     |                     |                     |                     |                     |                     |              |                     |      |            |      |                |            |      |            |      |            |      |
|                     | -0.24 (0.17)        | <b>0.89</b> (0.17) | <b>0.79</b> (0.17)  | -0.33 (0.18)        | 0.00 (0.02)         | 0.16 (0.18)         | -0.12 (0.10)        | -0.04 (0.03)        | -0.34 (0.19) | <b>-0.42</b> (0.19) | 0.03 |            |      |                |            |      |            |      |            |      |
| Tunisia             | <b>0.47</b> (0.06)  | <b>0.20</b> (0.06) | <b>0.14</b> (0.07)  | <b>-0.21</b> (0.07) | -0.02 (0.01)        | <b>-0.12</b> (0.06) | c c                 | -0.02 (0.03)        | -0.09 (0.07) | <b>-0.24</b> (0.10) | 0.03 |            |      |                |            |      |            |      |            |      |
| Uruguay             | <b>0.15</b> (0.06)  | 0.05 (0.06)        | 0.04 (0.08)         | -0.12 (0.06)        | -0.02 (0.02)        | -0.10 (0.08)        | -0.15 (0.08)        | 0.00 (0.03)         | 0.07 (0.08)  | 0.09 (0.11)         | 0.00 |            |      |                |            |      |            |      |            |      |

Note: The outcome variable is the index of student attitude towards school (ATSCHL). Values that are statistically significant are indicated in bold. When there are too few observations (fewer than 30 students or less than five schools with valid data) it is indicated as "c".

Table A.9. **Students' attitudes towards school, grade repetition and students' background characteristics, Model 13 (cont.)**

|                     |                     | Model 13           |                     |                     |                     |                     |                     |                     |                     |                     |      |            |      |            |      |                  |      |                  |      |                |
|---------------------|---------------------|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|------|------------|------|------------|------|------------------|------|------------------|------|----------------|
| Intercept           |                     | drepN              |                     | drep1               |                     | drep12              |                     | ESCS                |                     | MALE                |      | MIGLAN     |      | rAGE       |      | drepN*<br>MIGLAN |      | drep1*<br>MIGLAN |      | R <sup>2</sup> |
| Intercept           | S.E.                | Reg. coef.         | S.E.                | Reg. coef.          | S.E.                | Reg. coef.          | S.E.                | Reg. coef.          | S.E.                | Reg. coef.          | S.E. | Reg. coef. | S.E. | Reg. coef. | S.E. | Reg. coef.       | S.E. | Reg. coef.       | S.E. |                |
| <b>OECD</b>         |                     |                    |                     |                     |                     |                     |                     |                     |                     |                     |      |            |      |            |      |                  |      |                  |      |                |
| Austria             | -0.28 (0.07)        | <b>0.35</b> (0.07) | <b>0.38</b> (0.13)  | -0.03 (0.25)        | 0.01 (0.02)         | -0.02 (0.04)        | <b>0.45</b> (0.13)  | 0.01 (0.04)         | <b>-0.29</b> (0.13) | -0.23 (0.30)        | 0.01 |            |      |            |      |                  |      |                  |      |                |
| Belgium             | <b>-0.15</b> (0.04) | 0.03 (0.04)        | <b>0.15</b> (0.05)  | -0.04 (0.08)        | <b>0.04</b> (0.01)  | <b>-0.05</b> (0.02) | <b>0.10</b> (0.05)  | 0.01 (0.02)         | -0.06 (0.05)        | 0.01 (0.10)         | 0.01 |            |      |            |      |                  |      |                  |      |                |
| Chile               | 0.10 (0.05)         | <b>0.21</b> (0.05) | -0.07 (0.07)        | -0.07 (0.18)        | -0.03 (0.02)        | <b>0.08</b> (0.03)  | -0.21 (0.41)        | -0.04 (0.03)        | -0.18 (0.40)        | 0.15 (0.52)         | 0.01 |            |      |            |      |                  |      |                  |      |                |
| France              | -0.03 (0.05)        | <b>0.24</b> (0.05) | <b>0.21</b> (0.08)  | 0.16 (0.15)         | <b>0.05</b> (0.02)  | <b>-0.19</b> (0.03) | <b>0.20</b> (0.10)  | -0.05 (0.04)        | 0.03 (0.12)         | 0.13 (0.18)         | 0.03 |            |      |            |      |                  |      |                  |      |                |
| Germany             | <b>-0.17</b> (0.06) | <b>0.15</b> (0.06) | 0.14 (0.09)         | -0.28 (0.21)        | <b>-0.07</b> (0.02) | <b>-0.14</b> (0.03) | 0.06 (0.12)         | 0.00 (0.03)         | 0.06 (0.13)         | 0.07 (0.16)         | 0.02 |            |      |            |      |                  |      |                  |      |                |
| Hungary             | -0.13 (0.10)        | 0.14 (0.10)        | 0.08 (0.11)         | 0.06 (0.16)         | 0.01 (0.02)         | <b>-0.09</b> (0.04) | 0.26 (0.60)         | 0.01 (0.03)         | -0.19 (0.64)        | -0.73 (0.72)        | 0.01 |            |      |            |      |                  |      |                  |      |                |
| Ireland             | 0.27 (0.22)         | -0.10 (0.22)       | -0.17 (0.23)        | c c                 | <b>0.14</b> (0.02)  | -0.03 (0.04)        | 0.08 (0.27)         | -0.02 (0.04)        | -0.11 (0.29)        | -0.11 (0.33)        | 0.02 |            |      |            |      |                  |      |                  |      |                |
| Italy               | -0.04 (0.03)        | <b>0.17</b> (0.03) | 0.17 (0.16)         | -0.32 (0.26)        | -0.01 (0.01)        | <b>-0.12</b> (0.02) | 0.03 (0.07)         | -0.02 (0.01)        | -0.06 (0.07)        | 0.03 (0.31)         | 0.01 |            |      |            |      |                  |      |                  |      |                |
| Luxembourg          | -0.29 (0.16)        | 0.18 (0.18)        | 0.22 (0.26)         | 0.15 (0.13)         | <b>-0.06</b> (0.02) | <b>-0.12</b> (0.03) | 0.10 (0.16)         | -0.03 (0.03)        | -0.01 (0.18)        | -0.01 (0.25)        | 0.01 |            |      |            |      |                  |      |                  |      |                |
| Mexico              | <b>0.48</b> (0.04)  | <b>0.23</b> (0.04) | <b>-0.18</b> (0.05) | <b>-0.39</b> (0.10) | <b>0.05</b> (0.01)  | <b>-0.17</b> (0.02) | <b>-0.60</b> (0.19) | <b>-0.07</b> (0.02) | 0.30 (0.20)         | 0.43 (0.23)         | 0.05 |            |      |            |      |                  |      |                  |      |                |
| Netherlands         | <b>-0.33</b> (0.06) | 0.03 (0.06)        | 0.04 (0.07)         | c c                 | <b>0.05</b> (0.01)  | 0.02 (0.03)         | -0.05 (0.15)        | <b>0.07</b> (0.02)  | 0.18 (0.17)         | 0.31 (0.17)         | 0.01 |            |      |            |      |                  |      |                  |      |                |
| Portugal            | <b>0.22</b> (0.05)  | <b>0.32</b> (0.05) | <b>0.15</b> (0.06)  | 0.09 (0.08)         | 0.00 (0.01)         | <b>-0.20</b> (0.03) | 0.19 (0.14)         | -0.02 (0.03)        | -0.21 (0.14)        | -0.11 (0.18)        | 0.03 |            |      |            |      |                  |      |                  |      |                |
| Spain               | <b>0.08</b> (0.04)  | <b>0.25</b> (0.04) | <b>0.14</b> (0.06)  | 0.02 (0.05)         | 0.01 (0.01)         | <b>-0.14</b> (0.02) | -0.03 (0.05)        | 0.01 (0.02)         | -0.10 (0.05)        | 0.12 (0.10)         | 0.02 |            |      |            |      |                  |      |                  |      |                |
| Switzerland         | <b>-0.12</b> (0.06) | <b>0.13</b> (0.05) | <b>0.27</b> (0.08)  | 0.07 (0.18)         | 0.00 (0.02)         | <b>-0.17</b> (0.03) | <b>0.24</b> (0.11)  | <b>0.06</b> (0.03)  | -0.07 (0.11)        | -0.07 (0.14)        | 0.02 |            |      |            |      |                  |      |                  |      |                |
| Turkey              | -0.01 (0.07)        | <b>0.13</b> (0.06) | 0.18 (0.15)         | c c                 | <b>-0.12</b> (0.02) | <b>-0.13</b> (0.03) | -0.11 (0.25)        | 0.03 (0.03)         | 0.03 (0.27)         | -0.15 (0.49)        | 0.02 |            |      |            |      |                  |      |                  |      |                |
| United States       | <b>0.19</b> (0.08)  | 0.03 (0.08)        | 0.10 (0.12)         | -0.17 (0.18)        | <b>0.14</b> (0.02)  | -0.06 (0.03)        | -0.02 (0.19)        | -0.05 (0.04)        | 0.16 (0.21)         | 0.04 (0.22)         | 0.02 |            |      |            |      |                  |      |                  |      |                |
| <b>Partners</b>     |                     |                    |                     |                     |                     |                     |                     |                     |                     |                     |      |            |      |            |      |                  |      |                  |      |                |
| Argentina           | 0.02 (0.04)         | 0.06 (0.04)        | 0.07 (0.08)         | -0.15 (0.11)        | -0.03 (0.02)        | 0.02 (0.03)         | 0.11 (0.13)         | 0.04 (0.03)         | -0.04 (0.22)        | 0.04 (0.27)         | 0.00 |            |      |            |      |                  |      |                  |      |                |
| Brazil              | <b>0.40</b> (0.03)  | <b>0.11</b> (0.03) | -0.01 (0.04)        | <b>-0.15</b> (0.05) | 0.00 (0.01)         | <b>-0.06</b> (0.02) | -0.20 (0.24)        | 0.01 (0.02)         | -0.27 (0.27)        | -0.39 (0.29)        | 0.01 |            |      |            |      |                  |      |                  |      |                |
| Colombia            | <b>0.42</b> (0.05)  | <b>0.14</b> (0.05) | -0.09 (0.06)        | 0.03 (0.10)         | 0.02 (0.02)         | -0.03 (0.04)        | -0.02 (0.37)        | 0.00 (0.03)         | 0.19 (0.47)         | -0.95 (0.51)        | 0.01 |            |      |            |      |                  |      |                  |      |                |
| Dubai (UAE)         | -0.13 (0.10)        | <b>0.27</b> (0.10) | 0.13 (0.12)         | -0.11 (0.14)        | -0.01 (0.02)        | <b>-0.12</b> (0.03) | 0.14 (0.11)         | -0.02 (0.03)        | -0.11 (0.12)        | -0.20 (0.15)        | 0.01 |            |      |            |      |                  |      |                  |      |                |
| Hong Kong-China     | <b>-0.59</b> (0.07) | 0.11 (0.07)        | 0.11 (0.09)         | c c                 | <b>0.04</b> (0.01)  | 0.01 (0.02)         | 0.05 (0.10)         | 0.03 (0.02)         | -0.02 (0.10)        | 0.03 (0.12)         | 0.00 |            |      |            |      |                  |      |                  |      |                |
| Indonesia           | -0.04 (0.10)        | <b>0.59</b> (0.11) | <b>0.41</b> (0.12)  | <b>0.33</b> (0.12)  | <b>0.03</b> (0.01)  | <b>-0.09</b> (0.03) | <b>0.36</b> (0.10)  | 0.04 (0.03)         | <b>-0.27</b> (0.11) | <b>-0.28</b> (0.13) | 0.02 |            |      |            |      |                  |      |                  |      |                |
| Latvia              | <b>0.22</b> (0.08)  | 0.06 (0.08)        | -0.18 (0.13)        | c c                 | 0.02 (0.02)         | <b>-0.16</b> (0.04) | 0.03 (0.15)         | 0.01 (0.03)         | -0.02 (0.18)        | -0.13 (0.29)        | 0.01 |            |      |            |      |                  |      |                  |      |                |
| Macao-China         | <b>-0.46</b> (0.04) | 0.05 (0.05)        | 0.05 (0.06)         | 0.00 (0.04)         | <b>0.06</b> (0.01)  | -0.01 (0.02)        | 0.03 (0.04)         | 0.00 (0.02)         | 0.00 (0.06)         | 0.02 (0.07)         | 0.01 |            |      |            |      |                  |      |                  |      |                |
| Panama              | <b>0.32</b> (0.08)  | <b>0.21</b> (0.07) | -0.11 (0.11)        | -0.05 (0.11)        | <b>0.05</b> (0.02)  | 0.06 (0.05)         | <b>-0.82</b> (0.18) | -0.03 (0.06)        | <b>0.40</b> (0.20)  | <b>0.96</b> (0.22)  | 0.04 |            |      |            |      |                  |      |                  |      |                |
| Peru                | <b>0.27</b> (0.06)  | 0.05 (0.06)        | <b>-0.14</b> (0.07) | <b>-0.31</b> (0.10) | <b>0.04</b> (0.01)  | <b>-0.07</b> (0.03) | -0.25 (0.20)        | 0.02 (0.03)         | -0.13 (0.19)        | -0.10 (0.20)        | 0.03 |            |      |            |      |                  |      |                  |      |                |
| Qatar               | <b>-0.31</b> (0.06) | -0.02 (0.06)       | -0.02 (0.09)        | -0.13 (0.08)        | <b>0.03</b> (0.01)  | -0.04 (0.02)        | 0.13 (0.08)         | 0.04 (0.02)         | <b>0.16</b> (0.08)  | 0.03 (0.12)         | 0.02 |            |      |            |      |                  |      |                  |      |                |
| Trinidad and Tobago | 0.01 (0.15)         | <b>0.64</b> (0.15) | <b>0.49</b> (0.15)  | -0.36 (0.19)        | 0.00 (0.02)         | <b>-0.19</b> (0.04) | -0.29 (0.27)        | -0.04 (0.03)        | 0.11 (0.29)         | 0.34 (0.34)         | 0.03 |            |      |            |      |                  |      |                  |      |                |
| Tunisia             | <b>0.52</b> (0.05)  | <b>0.16</b> (0.05) | 0.03 (0.05)         | <b>-0.22</b> (0.07) | -0.02 (0.01)        | <b>-0.19</b> (0.03) | c c                 | -0.02 (0.03)        | c c                 | c c                 | 0.03 |            |      |            |      |                  |      |                  |      |                |
| Uruguay             | <b>0.12</b> (0.05)  | <b>0.09</b> (0.04) | 0.09 (0.05)         | -0.12 (0.06)        | -0.02 (0.02)        | -0.04 (0.03)        | -0.01 (0.25)        | 0.00 (0.03)         | -0.17 (0.26)        | -0.17 (0.32)        | 0.00 |            |      |            |      |                  |      |                  |      |                |

Note: The outcome variable is the index of student attitude towards school (ATSCHL). Values that are statistically significant are indicated in bold. When there are too few observations (fewer than 30 students or less than five schools with valid data) it is indicated as "c".

Table A.9. **Students' attitudes towards school, grade repetition and students' background characteristics, Model 14 (cont.)**

| Model 14            |                     |                     |                     |                     |                     |                     |                     |                     |                    |                     |      |            |      | R <sup>2</sup> |            |      |            |      |            |      |
|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|--------------------|---------------------|------|------------|------|----------------|------------|------|------------|------|------------|------|
| Intercept           |                     | drepN               |                     | drep1               |                     | drep12              |                     | ESCS                |                    | MALE                |      | MIGLAN     |      |                | rAGE       |      | drepN*rAGE |      | drep1*rAGE |      |
| Intercept           | S.E.                | Reg. coef.          | S.E.                | Reg. coef.          | S.E.                | Reg. coef.          | S.E.                | Reg. coef.          | S.E.               | Reg. coef.          | S.E. | Reg. coef. | S.E. |                | Reg. coef. | S.E. | Reg. coef. | S.E. | Reg. coef. | S.E. |
| <b>OECD</b>         |                     |                     |                     |                     |                     |                     |                     |                     |                    |                     |      |            |      |                |            |      |            |      |            |      |
| Austria             | -0.13 (0.08)        | <b>0.19</b> (0.08)  | <b>0.27</b> (0.12)  | 0.00 (0.26)         | 0.01 (0.02)         | -0.02 (0.04)        | <b>0.19</b> (0.06)  | -0.18 (0.15)        | 0.21 (0.16)        | 0.13 (0.19)         | 0.01 |            |      |                |            |      |            |      |            |      |
| Belgium             | <b>-0.12</b> (0.05) | -0.02 (0.05)        | <b>0.15</b> (0.07)  | -0.03 (0.08)        | <b>0.04</b> (0.01)  | <b>-0.05</b> (0.02) | <b>0.07</b> (0.03)  | -0.02 (0.05)        | 0.05 (0.05)        | 0.00 (0.08)         | 0.01 |            |      |                |            |      |            |      |            |      |
| Chile               | <b>0.14</b> (0.06)  | <b>0.17</b> (0.06)  | -0.08 (0.08)        | -0.07 (0.18)        | -0.03 (0.02)        | <b>0.08</b> (0.03)  | <b>-0.35</b> (0.15) | -0.10 (0.07)        | 0.08 (0.08)        | 0.02 (0.14)         | 0.01 |            |      |                |            |      |            |      |            |      |
| France              | -0.03 (0.06)        | <b>0.23</b> (0.07)  | <b>0.26</b> (0.08)  | 0.16 (0.15)         | <b>0.05</b> (0.02)  | <b>-0.19</b> (0.03) | <b>0.25</b> (0.05)  | -0.06 (0.08)        | 0.03 (0.09)        | -0.03 (0.13)        | 0.03 |            |      |                |            |      |            |      |            |      |
| Germany             | <b>-0.17</b> (0.07) | <b>0.14</b> (0.07)  | 0.14 (0.08)         | -0.28 (0.20)        | <b>-0.07</b> (0.02) | <b>-0.14</b> (0.04) | <b>0.11</b> (0.05)  | -0.03 (0.07)        | 0.04 (0.08)        | 0.04 (0.12)         | 0.02 |            |      |                |            |      |            |      |            |      |
| Hungary             | -0.12 (0.11)        | 0.13 (0.11)         | 0.09 (0.16)         | 0.08 (0.16)         | 0.01 (0.02)         | <b>-0.09</b> (0.04) | 0.04 (0.08)         | 0.00 (0.16)         | 0.02 (0.17)        | -0.07 (0.26)        | 0.00 |            |      |                |            |      |            |      |            |      |
| Ireland             | <b>0.73</b> (0.24)  | <b>-0.57</b> (0.24) | <b>-0.61</b> (0.26) | c c                 | <b>0.14</b> (0.02)  | -0.03 (0.04)        | -0.03 (0.06)        | <b>-0.75</b> (0.26) | <b>0.74</b> (0.26) | <b>0.68</b> (0.30)  | 0.02 |            |      |                |            |      |            |      |            |      |
| Italy               | -0.02 (0.03)        | <b>0.14</b> (0.03)  | <b>0.36</b> (0.17)  | -0.31 (0.26)        | -0.01 (0.01)        | <b>-0.12</b> (0.02) | -0.01 (0.03)        | -0.05 (0.04)        | 0.04 (0.05)        | -0.31 (0.23)        | 0.01 |            |      |                |            |      |            |      |            |      |
| Luxembourg          | <b>-0.30</b> (0.08) | <b>0.17</b> (0.05)  | <b>0.27</b> (0.07)  | 0.14 (0.13)         | <b>-0.06</b> (0.02) | <b>-0.11</b> (0.03) | 0.09 (0.06)         | 0.01 (0.08)         | -0.01 (0.08)       | -0.15 (0.09)        | 0.01 |            |      |                |            |      |            |      |            |      |
| Mexico              | <b>0.45</b> (0.04)  | <b>0.26</b> (0.05)  | <b>-0.18</b> (0.06) | <b>-0.44</b> (0.10) | <b>0.05</b> (0.01)  | <b>-0.17</b> (0.02) | <b>-0.29</b> (0.04) | -0.04 (0.07)        | -0.04 (0.08)       | 0.04 (0.09)         | 0.05 |            |      |                |            |      |            |      |            |      |
| Netherlands         | <b>-0.41</b> (0.06) | 0.12 (0.06)         | 0.12 (0.07)         | c c                 | <b>0.05</b> (0.01)  | 0.02 (0.03)         | <b>0.16</b> (0.04)  | 0.22 (0.13)         | -0.17 (0.13)       | -0.10 (0.14)        | 0.01 |            |      |                |            |      |            |      |            |      |
| Portugal            | <b>0.25</b> (0.05)  | <b>0.27</b> (0.06)  | <b>0.18</b> (0.07)  | 0.09 (0.09)         | 0.00 (0.01)         | <b>-0.20</b> (0.03) | 0.05 (0.06)         | -0.05 (0.08)        | 0.06 (0.08)        | -0.06 (0.10)        | 0.03 |            |      |                |            |      |            |      |            |      |
| Spain               | <b>0.08</b> (0.04)  | <b>0.25</b> (0.04)  | <b>0.20</b> (0.10)  | 0.02 (0.05)         | 0.01 (0.01)         | <b>-0.14</b> (0.02) | <b>-0.08</b> (0.03) | 0.03 (0.03)         | -0.03 (0.04)       | -0.03 (0.12)        | 0.02 |            |      |                |            |      |            |      |            |      |
| Switzerland         | -0.09 (0.07)        | 0.10 (0.07)         | <b>0.20</b> (0.07)  | 0.08 (0.18)         | 0.00 (0.02)         | <b>-0.17</b> (0.03) | <b>0.18</b> (0.04)  | 0.03 (0.09)         | 0.02 (0.09)        | 0.09 (0.10)         | 0.02 |            |      |                |            |      |            |      |            |      |
| Turkey              | -0.01 (0.08)        | 0.14 (0.07)         | 0.02 (0.19)         | c c                 | <b>-0.12</b> (0.02) | <b>-0.13</b> (0.03) | -0.10 (0.08)        | 0.03 (0.12)         | -0.01 (0.13)       | 0.29 (0.23)         | 0.03 |            |      |                |            |      |            |      |            |      |
| United States       | <b>0.18</b> (0.09)  | 0.04 (0.09)         | 0.13 (0.12)         | -0.18 (0.18)        | <b>0.14</b> (0.02)  | -0.06 (0.03)        | <b>0.12</b> (0.04)  | -0.10 (0.13)        | 0.06 (0.13)        | -0.05 (0.16)        | 0.02 |            |      |                |            |      |            |      |            |      |
| <b>Partners</b>     |                     |                     |                     |                     |                     |                     |                     |                     |                    |                     |      |            |      |                |            |      |            |      |            |      |
| Argentina           | 0.09 (0.05)         | -0.02 (0.06)        | -0.06 (0.10)        | -0.15 (0.11)        | -0.03 (0.02)        | 0.02 (0.03)         | 0.09 (0.11)         | -0.09 (0.06)        | <b>0.15</b> (0.07) | <b>0.26</b> (0.12)  | 0.01 |            |      |                |            |      |            |      |            |      |
| Brazil              | <b>0.38</b> (0.03)  | <b>0.13</b> (0.05)  | 0.05 (0.05)         | <b>-0.15</b> (0.05) | 0.00 (0.01)         | <b>-0.06</b> (0.02) | <b>-0.39</b> (0.12) | 0.06 (0.04)         | -0.05 (0.05)       | -0.12 (0.06)        | 0.01 |            |      |                |            |      |            |      |            |      |
| Colombia            | <b>0.39</b> (0.07)  | <b>0.18</b> (0.08)  | -0.08 (0.08)        | 0.03 (0.10)         | 0.02 (0.02)         | -0.02 (0.04)        | -0.16 (0.27)        | 0.06 (0.09)         | -0.08 (0.11)       | -0.04 (0.13)        | 0.01 |            |      |                |            |      |            |      |            |      |
| Dubai (UAE)         | 0.02 (0.07)         | 0.11 (0.07)         | -0.02 (0.10)        | -0.15 (0.14)        | -0.01 (0.02)        | <b>-0.12</b> (0.03) | 0.03 (0.04)         | <b>-0.20</b> (0.09) | <b>0.21</b> (0.10) | 0.08 (0.15)         | 0.01 |            |      |                |            |      |            |      |            |      |
| Hong Kong-          |                     |                     |                     |                     |                     |                     |                     |                     |                    |                     |      |            |      |                |            |      |            |      |            |      |
| China               | <b>-0.65</b> (0.07) | <b>0.16</b> (0.07)  | <b>0.24</b> (0.08)  | c c                 | <b>0.04</b> (0.01)  | 0.01 (0.02)         | 0.04 (0.02)         | 0.17 (0.11)         | -0.15 (0.11)       | -0.22 (0.12)        | 0.01 |            |      |                |            |      |            |      |            |      |
| Indonesia           | 0.05 (0.11)         | <b>0.48</b> (0.12)  | <b>0.39</b> (0.12)  | <b>0.39</b> (0.12)  | <b>0.03</b> (0.01)  | <b>-0.09</b> (0.03) | <b>0.10</b> (0.04)  | 0.14 (0.11)         | -0.08 (0.12)       | <b>-0.24</b> (0.12) | 0.02 |            |      |                |            |      |            |      |            |      |
| Latvia              | 0.20 (0.11)         | 0.08 (0.11)         | -0.32 (0.17)        | c c                 | 0.02 (0.02)         | <b>-0.16</b> (0.04) | 0.00 (0.06)         | 0.05 (0.17)         | -0.05 (0.17)       | 0.16 (0.25)         | 0.01 |            |      |                |            |      |            |      |            |      |
| Macao-China         | <b>-0.42</b> (0.03) | -0.01 (0.04)        | 0.01 (0.05)         | 0.00 (0.04)         | <b>0.06</b> (0.01)  | -0.01 (0.02)        | 0.03 (0.02)         | <b>-0.08</b> (0.03) | <b>0.12</b> (0.04) | 0.11 (0.07)         | 0.01 |            |      |                |            |      |            |      |            |      |
| Panama              | <b>0.30</b> (0.12)  | 0.22 (0.12)         | 0.02 (0.17)         | -0.03 (0.11)        | <b>0.05</b> (0.02)  | 0.06 (0.06)         | <b>-0.40</b> (0.14) | -0.06 (0.12)        | 0.05 (0.13)        | -0.01 (0.16)        | 0.03 |            |      |                |            |      |            |      |            |      |
| Peru                | <b>0.30</b> (0.07)  | 0.00 (0.07)         | -0.13 (0.08)        | <b>-0.31</b> (0.10) | <b>0.04</b> (0.01)  | <b>-0.07</b> (0.03) | <b>-0.35</b> (0.08) | -0.03 (0.08)        | 0.07 (0.09)        | -0.02 (0.13)        | 0.03 |            |      |                |            |      |            |      |            |      |
| Qatar               | <b>-0.35</b> (0.06) | 0.04 (0.06)         | -0.15 (0.08)        | -0.12 (0.08)        | <b>0.03</b> (0.01)  | -0.04 (0.02)        | <b>0.27</b> (0.02)  | -0.03 (0.07)        | 0.06 (0.08)        | <b>0.29</b> (0.12)  | 0.02 |            |      |                |            |      |            |      |            |      |
| Trinidad and Tobago |                     |                     |                     |                     |                     |                     |                     |                     |                    |                     |      |            |      |                |            |      |            |      |            |      |
|                     | -0.03 (0.14)        | <b>0.69</b> (0.15)  | <b>0.52</b> (0.14)  | -0.35 (0.19)        | 0.00 (0.02)         | <b>-0.19</b> (0.04) | -0.11 (0.10)        | 0.00 (0.20)         | -0.05 (0.21)       | -0.01 (0.21)        | 0.03 |            |      |                |            |      |            |      |            |      |
| Tunisia             | <b>0.51</b> (0.06)  | <b>0.18</b> (0.06)  | 0.00 (0.07)         | <b>-0.22</b> (0.07) | -0.02 (0.01)        | <b>-0.19</b> (0.03) | c c                 | 0.00 (0.05)         | -0.05 (0.06)       | 0.04 (0.09)         | 0.03 |            |      |                |            |      |            |      |            |      |
| Uruguay             | <b>0.16</b> (0.05)  | 0.04 (0.05)         | 0.00 (0.07)         | -0.11 (0.06)        | -0.02 (0.02)        | -0.04 (0.03)        | -0.14 (0.08)        | -0.09 (0.06)        | 0.10 (0.07)        | 0.16 (0.09)         | 0.01 |            |      |                |            |      |            |      |            |      |

Note: The outcome variable is the index of student attitude towards school (ATSCHL). Values that are statistically significant are indicated in bold. When there are too few observations (fewer than 30 students or less than five schools with valid data) it is indicated as "c".

Table A.10. Total number of observations and percentage of missing values

|                     | Number of total cases | DREPN/<br>DREP1/<br>DREP12 | ESCS | MALE | MIGLAN | rAGE | ATSCHL | Missing in either:<br>ESCS, MALE,<br>MIGLAN or rAGE | Missing in either:<br>ESCS, MALE,<br>MIGLAN, rAGE or<br>ATSCHL |
|---------------------|-----------------------|----------------------------|------|------|--------|------|--------|---|--|
|                     |                       | %                          | %    | %    | %      | %    | %      | %   | %  |
| Austria             | 6 590                 | 4.2                        | 2.4  | 0.0  | 1.2    | 0.0  | 8.9    | 6.0   | 10.9   |
| Belgium             | 8 501                 | 4.1                        | 1.5  | 0.0  | 0.8    | 0.0  | 8.3    | 5.2   | 9.8  |
| Chile               | 5 669                 | 2.0                        | 1.6  | 0.0  | 1.6    | 0.0  | 5.5    | 2.2   | 6.2  |
| France              | 4 298                 | 1.5                        | 1.7  | 0.0  | 0.6    | 0.0  | 4.4    | 2.9   | 6.6  |
| Germany             | 4 979                 | 10.4                       | 8.5  | 0.0  | 7.6    | 0.0  | 14.5   | 12.2  | 16.2   |
| Hungary             | 4 605                 | 0.5                        | 0.3  | 0.0  | 0.2    | 0.0  | 5.0    | 0.9   | 5.8  |
| Ireland             | 3 937                 | 2.5                        | 2.4  | 0.0  | 2.2    | 0.0  | 6.2    | 3.0   | 6.9  |
| Italy               | 30 905                | 0.8                        | 0.2  | 0.0  | 0.4    | 0.0  | 3.4    | 1.3   | 4.6  |
| Luxembourg          | 4 622                 | 0.7                        | 1.7  | 0.0  | 0.8    | 0.0  | 6.7    | 2.5   | 8.4  |
| Mexico              | 38 250                | 1.7                        | 0.5  | 0.0  | 0.6    | 0.0  | 4.9    | 2.1   | 6.6  |
| Netherlands         | 4 760                 | 3.3                        | 1.1  | 0.0  | 0.6    | 0.0  | 7.6    | 4.0   | 8.5  |
| Portugal            | 6 298                 | 0.8                        | 0.4  | 0.0  | 0.3    | 0.0  | 3.6    | 1.0   | 4.3  |
| Spain               | 25 887                | 0.7                        | 0.7  | 0.0  | 0.5    | 0.0  | 4.9    | 1.1   | 5.4  |
| Switzerland         | 11 812                | 1.1                        | 0.5  | 0.0  | 0.7    | 0.0  | 7.2    | 2.0   | 8.8  |
| Turkey              | 4 996                 | 0.7                        | 0.6  | 0.0  | 0.2    | 0.0  | 5.7    | 1.2   | 6.5  |
| United States       | 5 233                 | 3.0                        | 0.8  | 0.0  | 0.8    | 0.0  | 4.7    | 3.8   | 7.8  |
| Argentina           | 4 596                 | 2.1                        | 0.8  | 0.0  | 0.7    | 0.0  | 4.4    | 3.2   | 6.7  |
| Brazil              | 20 127                | 1.9                        | 0.9  | 0.0  | 1.2    | 0.0  | 6.1    | 3.1   | 8.0  |
| Colombia            | 7 921                 | 1.0                        | 0.4  | 0.0  | 0.4    | 0.0  | 6.3    | 1.2   | 7.0  |
| Dubai (UAE)         | 5 620                 | 1.4                        | 0.6  | 0.0  | 1.2    | 0.0  | 6.8    | 2.4   | 8.4  |
| Hong Kong-China     | 4 837                 | 0.2                        | 0.5  | 0.0  | 0.1    | 0.0  | 4.9    | 0.5   | 5.2  |
| Indonesia           | 5 136                 | 1.4                        | 0.3  | 0.0  | 0.3    | 0.0  | 3.7    | 1.7   | 5.1  |
| Latvia              | 4 502                 | 0.4                        | 0.6  | 0.0  | 0.2    | 0.0  | 3.9    | 1.1   | 4.8  |
| Macao-China         | 5 952                 | 0.2                        | 0.2  | 0.0  | 0.3    | 0.0  | 4.5    | 0.5   | 4.9  |
| Panama              | 3 969                 | 8.7                        | 7.9  | 0.0  | 7.1    | 0.0  | 14.9   | 10.7  | 18.5   |
| Peru                | 5 985                 | 1.3                        | 0.7  | 0.0  | 1.0    | 0.0  | 9.4    | 1.9   | 10.4   |
| Qatar               | 9 078                 | 1.6                        | 1.4  | 0.0  | 1.4    | 0.0  | 14.6   | 2.5   | 15.6   |
| Trinidad and Tobago | 4 778                 | 1.8                        | 2.9  | 0.0  | 1.7    | 0.0  | 6.9    | 4.3   | 9.6  |
| Tunisia             | 4 955                 | 1.2                        | 0.3  | 0.0  | 0.1    | 0.0  | 3.7    | 1.4   | 4.8  |
| Uruguay             | 5 957                 | 0.7                        | 1.1  | 0.0  | 0.7    | 0.0  | 7.2    | 1.4   | 8.0  |

## APPENDIX B

### *Plausible values*

Plausible Values are “random numbers drawn from the distribution of scores that could be reasonably assigned to each individual – that is, the marginal posterior distribution” (OECD, 2012). The PISA Data Analysis Manual compared the estimates based on PVs and those based on classical IRT estimates such as the Maximum Likelihood Estimates or Weighted Maximum Likelihood Estimates, and presented several methodological advantages of PVs (OECD, 2009). The manual also concluded that PVs return unbiased estimates of population performance parameters, percentage of students per sub-group, and bivariate or multivariate relationships between performance and background variables.\*

For each assessment domain, five Plausible Values (PVs) are generated. For example, for reading, each student has five variables: **PV1READ**, **PV2READ**, **PV3READ**, **PV4READ** and **PV5READ**.

The required statistic and its respective standard error have to be computed for each plausible value and combined at the very end to obtain the final estimate and its correct standard error. There are six major steps (OECD, 2009):

1. Any analysis that involves five PVs requires 405 estimates: 81 estimates (one with the student final weights and 80 with replicate weights) by five PVs.
2. The final estimate is the average of five estimates derived with each of five PVs with the student final weights.
3. The final sampling variance is the average of five sampling variances (i.e. a sampling variance should be computed for each of five PVs, first). See Section 3.2 on “Replicate Weights” for the equation on computing a sampling variance.
4. The measurement-error variance is derived by aggregating the differences between each of the five estimates with five PVs with the student final weights and the final estimate (see Step 2). For example, when population mean ( $\hat{\mu}$ ) is estimated:

$$\text{MeasurementErrorVariance} = \frac{1}{4} \sum_{i=1}^5 (\hat{\mu}_i - \hat{\mu})^2$$

\* Regression coefficients are unbiased even with Weighted Maximum Likelihood Estimates (WLEs) or Expected A Posteriori Estimator (EAP), but PVs are necessary for obtaining correct standard errors for regression coefficients.



5. The final error variance is computed by combining the sampling variance and the measurement-error variance:

$$(\text{error variance}) = (\text{sampling variance}) + 1.2 (\text{measurement-error variance})$$

6. The final standard error is the square root of the error variance.

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