



Constitutional rights and education: An international comparative study[☆]



Sebastian Edwards^{a,*}, Alvaro Garcia Marin^b

^a Anderson Graduate School of Management, UCLA & National Bureau of Economic Research, 110 Westwood Plaza, C502 Entrepreneurs Hall, Los Angeles, CA 90095-1481, USA

^b Universidad de Chile, Facultad de Economía y Negocios, Chile Diagonal Paraguay 257, Santiago, Chile

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ABSTRACT

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We investigate whether the inclusion of *educational rights* in political constitutions affects the quality of education. We rely on data for 61 countries that participated in the 2012 PISA tests. Our results are strong and robust to the estimation technique (least squares or instrumental variables): there is no evidence that including the right to education in the constitution has been associated with higher test scores. The quality of education depends on socioeconomic, structural, and policy variables, such as expenditure per student, the teacher-pupil ratio, and families' background. These results are important for emerging countries that are discussing the adoption of new constitutions, such as Thailand and Chile. *Journal of Comparative Economics* 43 (4) (2015) 938–955. Anderson Graduate School of Management, UCLA & National Bureau of Economic Research, 110 Westwood Plaza, C502 Entrepreneurs Hall, Los Angeles, CA 90095-1481, USA; Universidad de Chile, Facultad de Economía y Negocios, Chile Diagonal Paraguay 257, Santiago, Chile.

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1. Introduction

There is consensus among development experts that improving the provision of education – its coverage and, in particular, its quality – is an important component of any comprehensive development strategy. Improved education is expected to result in higher productivity, better jobs, and faster income growth. Moreover, a quality educational system is likely to result in better social conditions and lower inequality. What is less clear, however, is *how* to improve the quality of education. A number of developing countries have put emphasis on teachers' training and salaries, while others are beginning to focus on the provision of preschool education. Chile is a good example of an emerging nation that is trying to make a qualitative change in its educational system. In spite of having made significant economic progress since the return of democracy in 1990, Chile continues to have a highly skewed income distribution – its Gini coefficient is 0.52, one of the highest in all of Latin America. In 2014, the second administration of President Michelle Bachelet embarked on an ambitious program of educational reform. At the center of this

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* Corresponding author.

E-mail addresses: sebastian.edwards@anderson.ucla.edu, sebased53@gmail.com (S. Edwards), afgarcia@ucla.edu (A. Garcia Marin).

effort is the idea that education is a social right, and that the market should not play a role – as it has until now – in its provision.¹ This change in the nature of education is expected to take place through the adoption of a new constitution that will strengthen social rights.²

Constitutions – or constitutional arrangements – are the most important determinants of political institutions.³ They establish the form of government, define the electoral system, specify the rights and obligations of the population, and stipulate the extent to which property (and other) rights are protected. A number of economists have studied the relationship between constitutions and economic performance. In their classical study, North and Weingast (1989) argued that the constitutional arrangements adopted by England after the Glorious Revolution (and, in particular, after the Bill of Rights) allowed the government to make a credible precommitment that it would not confiscate property in an arbitrary fashion and without compensation. This commitment provided the bases for England's economic success during the 18th and 19th centuries. In their 2005 book *The Economics Effect of Constitutions*, Persson and Tabellini (2005) analyze, both theoretically and empirically, the effects of constitutions on economic policies and economic outcomes. Their analysis is centered on two key distinctions of the political and constitutional organization of a country: presidential vs. parliamentary systems, and majoritarian vs. proportional electoral rules. However, Persson and Tabellini do not analyze how different constitutional rights are related to economic outcomes. Other authors that have addressed the relationship between constitutional arrangements and economics include North (2006) and Qian and Weingast (1997).

In this paper we deal with an aspect of the relation between constitutions and economic performance that, to our knowledge, has not been addressed before: we investigate whether the inclusion of *social constitutional rights* – what constitutional scholars call “positive constitutional rights” – affects social performance. More specifically, we analyze whether including the right to education in the constitution is related to better “educational outcomes.” Another way of phrasing the question is this: Do countries that enshrine and protect the right to education at the constitutional level have better educational results (as measured by standardized tests) than jurisdictions that do not grant such level of protection? In order to address this issue we use data from 61 countries that participated in the OECD's 2012 PISA test on education achievement. The information on social rights protection is taken from the data assembled by *Project Constitute* that covers 191 countries and distinguishes three levels of constitutional protection to education.⁴

This question has an important policy dimension, as constitutions are amended, or completely changed, quite often – on average, every 20 years or so.⁵ For example, between the years 2000 and 2013, 45 countries – most of them developing nations – adopted brand new political charters. Many of these nations are new democracies and/or countries that have gone through major social conflicts and civil wars. Examples of recent new constitutions include Afghanistan, Burundi, Egypt, and Zimbabwe. Developing countries that are currently discussing new constitutions include Chile and Thailand.⁶

Those drafting new constitutions – members of Constitutional Assemblies or other bodies – have to decide which rights to incorporate in the new constitution. Should education, shelter, and the right to a pension, among other social rights, be protected at the constitutional level? Or, should countries restrict constitutional rights to the traditional ones, such as the right to free speech, property rights, and right to privacy? Examples of countries that include social rights in their constitutions are France and Germany; the United States, Australia, and Norway, on the other hand, are countries that do not include social (positive) rights in their constitutions.

Supporters of social rights have argued that when these are enacted in the constitution, political bodies – the legislatures and the executive – are forced to enact laws, rules, and regulations geared at providing strong and high quality social services. That is, the inclusion of social rights in constitutions is seen as a way of motivating and compelling legislatures to move in a certain direction.⁷ Whether this works or not is, to a large extent, an empirical question. In spite of the importance of this issue, there has been no systematic academic work on the subject.

The rest of the paper is organized as follows: In Section 2 we provide some background on constitutional rights and education. A preliminary and unconditional analysis of the data suggests that countries that provide a stronger degree of constitutional protection to education have had *lower* PISA scores than countries that do not protect these rights (notice that no causality direction is made at this juncture). In Section 3 we expand the analysis, and estimate a series of regressions that explain differences in PISA scores across countries; we use both least squares and instrumental variables. The results obtained suggest that, once other factors are taken into account, constitutional protection has no significant relation to educational outcomes. These results are ro-

¹ Since 1980 Chile has had a vouchers' system that allows families to use public monies to send their children to (some) private schools that charge a relatively low tuition.

² See Ginsburg (2014) for a discussion on the Chilean constitutional debate from a comparative perspective.

³ We refer to “constitutional arrangements” to the constitutional ordering in countries, such as England, that do not have a written and precisely codified constitution.

⁴ <https://www.constituteproject.org/>.

⁵ See the detailed data on these constitutions assembled in Project Constitute. This project is constantly adding new constitutions. When we began our research project information on 191 constitutions had been assembled. In April 2015 data on 194 political charters had been compiled.

⁶ On July 22, 2014, the Thai military issued a new draft or interim constitution, and announced the formation of a Reform Committee comprised of 36 members to draft a new permanent constitution. Once approved, this would become Thailand's 12th constitution since 1932. In 2013 Michelle Bachelet was elected president of Chile by a large majority. An important component of her political platform was reforming Chile's constitution, eliminating any vestige of the military dictatorship that ruled the nation for 17 years. She has repeatedly argued that the new constitution will strengthen social rights, and in particular the right to education. On Chile's economic history, including the performance of the education sector, see, for example, Edwards (2010).

⁷ Zackin (2013).

bust to the equation specification and estimation technique. In [Section 4](#) we present a robustness analysis and some extensions. We use alternative covariates, deal with collinearity, make several adjustments to the sample, and analyze whether there has been a connection between constitutional provisions on education and the dispersion of test scores. This extensive robustness examination confirms the results that indicate that there has been no connection between constitutional provisions and test scores (either means or dispersion). Finally, in [Section 5](#) we provide some reflections on enforceability of constitutional rights. We also present some final thoughts, including possible directions for future research. The paper also has an appendix where we present further results, summary statistics for all the data used in the analysis, and data sources.

2. Preliminary analysis

Constitutional scholars distinguish between “negative” constitutional rights, and “positive” constitutional rights. The former are aimed at protecting individuals from the overreach of the State, and include property rights, the right of contract, equal protection, the right to privacy, and freedom of speech, among others. Positive constitutional rights, in contrast, detail the obligations of the State toward individuals, and include the rights to education, health, and shelter. Their aim is to protect the people from poverty and devastation. Although every constitution – or constitutional arrangement – contains negative rights, not every national constitution enshrines positive rights. In that regard, the United States is an interesting case. The U.S. Constitution includes a long and detailed list of negative rights – the Bill of Rights – but does not recognize any positive or social right.⁸ This is the case in spite of efforts made by many politicians, and in particular by President Franklin D. Roosevelt, to amend the constitution to include social rights.⁹

Positive or social constitutional rights have been codified in articles 22 through 27 of the United Nation’s *Universal Declaration of Human Rights of 1948*, and include the right to receive social security payments in old age (Article 22), the right to work (Article 23), the right to equal pay for equal work (Article 23), the right to an income that allows a family to live with dignity (Article 23), the right to join trade unions (Article 23), the right to leisure and rest (Article 24), the right to food, clothing, housing, medical care and social services (Article 25), the right to child care (Article 25), the right to education (Article 26), the right to participate in cultural activities (Article 27), and the right to benefit from artistic creation (Article 27).

Project Constitute has compiled detailed information on 191 written constitutions. This data set includes a complete English version of each charter, the date of enactment, the requirements for amending each constitution, and the date and contents of the most recent constitutional reforms. *Project Constitute* distinguishes three types of constitutional protection to education: the provision of free education, compulsory education, and equal access to higher education. According to these data, 129 constitutions establish that the state should provide free education up to a certain level, usually up to the end of secondary education (for more details see our discussion below); 120 out of the 191 constitutions include constitutional provisions that make education (at least to some level) compulsory; and 61 constitutions ensure equal access to higher education. In addition to these direct educational rights, in 76 of the 191 constitutions there are explicit limitations to the employment of children.¹⁰

In 2012 the OECD administered its PISA (*Program for International Student Assessment*) test to thousands of 15 year old students in 65 countries.¹¹ This exam measures skills and knowledge in math, science and reading through common standardized tests. The sample includes all OECD countries, plus a number of invited nations and territories. There are detailed data on the constitutions of 61 out of the 65 countries that participated in the 2012 PISA test.¹² Out of these 61 countries, 7 had no constitutional provisions on education; 11 had one constitutional provision; 27 included two provisions; and 16 had all three provisions identified by *Project Constitute* (free education, compulsory education, and equal access to tertiary education). Out of the 61 countries in the sample, 49 establish, at the constitutional level, the right to free education, 45 countries established that education (to a certain level) is mandatory, and 19 included the right to equal access to higher education. The question that we address in this paper is whether providing stronger constitutional protection is related to performance in these standardized tests, once we control for other variables, and possible endogeneity issues.

Before proceeding, a comment about the sample: countries that participate in the PISA test have not been randomly selected. The group is comprised of all member of the OECD, plus some nations that are especially invited to participate in the test. As a result of this, countries in this sample have a significantly higher income per capita than nations that do not participate in the PISA (the median GDP per capita is \$22 thousand for participating countries and \$8 thousand for the world as a whole). In addition, the percentage of countries without any educational constitutional rights is smaller in our sample than in the world as a whole: 11.5% of the nations that participated in the PISA do not protect education at the constitutional level; for the 191 nations covered the *Project Constitute* sample this percentage is 23.5%.

In [Table 1](#) present the average scores in the PISA 2012 tests. Column 1 contains data for the reading test, column 2 for the science test, and column 3 for the reading test. In each column we present the mean score for the 61 countries in the sample. We

⁸ In the U.S. state constitutions do include social rights. See the discussion below.

⁹ Sunstein (2004).

¹⁰ See [Table A.1](#) in the Appendix. Constitutions are so dynamic and change so fast around the world that in the process of revising this paper the number of constitutions that enshrined and protected the right to education kept changing. The data provided here are for early August 2014.

¹¹ The PISA test is administered periodically. Before 2012, it was given in 2009. We also performed a number of tests using the 2009 scores. The results obtained were very similar to those reported in this paper, and are available on request (See [Section 4](#)).

¹² *Project Constitute* has no data on constitutional rights for New Zealand, Tunisia, the United Kingdom, and Vietnam. The 2012 PISA test included results for Shanghai, Hong Kong, and Macao. We assigned to all three the constitutional rights of China’s constitution. Taiwan also participated in the test; we used the island’s constitution to define the strength to which educational rights are protected.

Table 1
PISA 2102 test summary results by number of constitutional provisions.

Const. rights index	Average PISA 2012 score			Number of countries
	(1) Reading	(2) Science	(3) Math	
0	508.3	509.6	504.3	7
1	486.1	495.8	498.5	11
2	469.6	472.9	467.3	27
3	456.4	460.1	452.6	16
All	473.5	477.9	473.3	61

Notes: The constitutional rights index (0–3) equals the sum of the following 0–1 dummies: (1) Equal access to higher education guaranteed, (2) Compulsory education, and (3) Free education.

Table 2
Tests for equality of means for PISA 2012 test scores.

Method	df	Value	Probability
Panel A: reading score			
Anova <i>F</i> -test	(3, 57)	2.45144	0.0726
Welch <i>F</i> -test ^a	(3, 24.7702)	6.010349	0.0032
Panel B: science score			
Anova <i>F</i> -test	(3, 57)	2.270873	0.09
Welch <i>F</i> -test ^a	(3, 23.6725)	3.820243	0.023
Panel C: math score			
Anova <i>F</i> -test	(3, 57)	2.468596	0.0712
Welch <i>F</i> -test ^a	(3, 21.9051)	2.977062	0.0537

^a Test allows for unequal cell variances.

also present the scores for four subgroups, corresponding to the number of constitutional provisions on education (scale from 0 to 3). As may be seen, in every one of the columns there are strict descending test scores: countries with *stronger* constitutional provisions on education have *lower* scores than nations with *weaker* (fewer) provisions. These differences in scores tend to be large. For instance, in the reading test there is more than a 50 points differential between the mean score for countries without any provisions (508 points) and countries with the maximum number of three provisions (456 points). In fact, this gap is larger than one standard deviation for the test results for the 61 countries in the sample. In [Table A.2](#) in the appendix we present summary statistics for all the data used in this investigation.

In [Table 2](#) we present formal tests for the equality of means of the test scores in the four subgroups of constitutional protection. We rely on both an Anova *F*-test and a Welch *F*-test. As may be seen, in all cases the null hypothesis of equality of means is rejected at conventional levels, confirming that differences in performance are statistically significant.

The preliminary results in [Tables 1](#) and [2](#) are very general and, in no way, establish causality. They do provide, however, interesting background information on the relationship between constitutional rights and educational performance. They also set the stage for a more formal regression analysis that controls for other variables, including countries' stage of development and policies toward education, explores some causality issues, and analyzes possible channels through which constitutional provisions may affect educational outcomes.

3. Regression results

It is possible to think of two channels through which constitutional rights may affect the quality of education: the first one – which we call the “direct production function channel” – is the simplest one: Once the right to education is enshrined in the constitution, the legislature is required to pass laws aimed at providing more and better “inputs” for the education “production function.” For example, there would be more funds for training teachers, higher investment in school infrastructure, and funds to have smaller classes (lower pupil–teacher ratio). All of this would result in better test scores. The second channel is what we call the “cultural channel.” It is possible that countries that protect education in the constitution develop a national atmosphere, or national ethos, that celebrates and encourages education: teaching would become a well paid, sought-after, and highly respected profession (as in Finland); attending college could become a prestigious achievement (as in Korea); and doing well in international tests would be a source of national pride (as in China). This “cultural channel” would improve the efficiency or productivity of the educational process; that is, it would work in a similar way to TFP in standard growth models. This simple mechanics may be captured by an education production function,

$$E = AI^\alpha O^\beta \quad (1)$$

where E is a (quality adjusted) measure of “educational services,” I refers to material inputs, O is other inputs, including family background. The amount of I , in turn, depends on the fraction of the government budget (G) devoted to education. This fraction is denoted by θ , which is assumed to depend on the strength of constitutional protection to education (c). That is, $I = \theta(c) G$, and $\theta' > 0$, $\theta'' < 0$. Finally, the productivity parameter A is assumed to depend on institutional variables and culture, including, as noted, on the country’s cultural and social commitment towards education. The latter, in turn, is assumed to depend (at least partially) on the extent to which the constitution protects the right to education. That is, $A = A(c)$, and $A' > 0$.¹³

If any of the two channels described above is indeed at work, we would expect that a simple bivariate regression of test scores (a proxy for the educational services variable E) on a constitutional rights index would result in significantly positive coefficient: stronger constitutional protection to education would be associated with better outcomes (higher test scores). Once education policy variables or inputs (class size, percentage of trained teachers, quality of infrastructure, and so on) are introduced into the regression, we would expect that the size of the “constitutional rights” coefficient would be smaller, but still significantly positive, as it would be capturing the “cultural” channel (A) in Eq. (1). Some important caveats: First, it is possible to have “reversed causality.” Countries with poor educational outcomes may try to remedy the situation by strengthening the constitutional provisions on education. If this is the case, least square estimates will generate biased coefficients. We deal with this issue in Section 3.2, where we report results from instrumental variables estimates. Second, timing is likely to matter, as there would be a lag between the adoption of the constitutional rights and their (possible) effect on educational outcomes. We address this issue in Section 4.

3.1. Basic results

In this section we present the empirical formulation and report base-case regression results. Consider the following equation

$$\log(\text{score}_j) = \alpha_0 + \alpha_1 \text{constrights} + \sum \beta_i x_{ij} + u_j \quad (2)$$

where $\log(\text{score}_j)$ is the natural logarithm of the average number of points obtained in the PISA test by country j , and constrights is an index of the strength of educational rights in that country’s constitution. In the base-case we use an index that ranges from 0 to 3, and is the simple count of the number of education-related provisions included in that nation’s constitution; higher values represent a stronger constitutional mandate toward education (see Section 4 for results with alternative indexes). The basic information for constructing this index was taken from *Project Constitute*. In the extensions section of the paper we introduce the components of this index one by one, as a way of analyzing the relative importance of the different constitutional provisions on education.¹⁴

The x_{ij} variables capture other covariates, including variables related to the education “production function,” and to the socioeconomic characteristics of the families – see below for details. Finally, u_j is an error term; in the estimation we allow for u_j to be heteroskedastic; in what follows we report Huber–White corrected standard errors.

In the regressions reported below we follow the traditional literature on school performance and included the following controls (see the Appendix for data sources):¹⁵

- *Logarithm of per capita GDP*. This variable captures the level of development of the country in question and its sign is expected to be positive. We also introduced this variable squared, as a way to allow for a nonlinear impact of income per capita on test scores.
- *Pupil to full time teachers ratio*: This is a traditional “production function” variable in the school performance literature. We expect its coefficient to be negative. More crowded classes will tend to generate weaker results.
- *Percentage of schools with a library*: This is another “production function” covariate, and provides a measure of the quality of the school system teaching infrastructure. We expect its sign to be positive in the regressions.
- *Percentage of private schools*: Defined as the percentage of students that study in private schools in country j . This variable measures the organizational structure of the school system, and the extent to which it relies on the private provision of education. Its sign in the regression analysis is not determined a priori.
- *Percentage of fathers that work full time*: This is a family related variable, and captures the degree of financial stability in the students’ families. Its coefficient is expected to be positive.
- *Percentage of immigrant families*: This variable is defined as the percentage of students in the school system that come from immigrant families; for many of these children the country’s official language is not their own. This variable measures the diversity of the country. Under most circumstances we would expect its sign to be negative.

¹³ As we argue in Section 5, a more complete framework would also incorporate the degree of enforceability of rights.

¹⁴ We are grateful to a referee for suggesting the use of a disaggregated index.

¹⁵ For a review see, for example, Hanushek and Woessmann (2010). Much of the recent of the literature on education performance has relied on micro data, and has considered individual students’ test scores as the basic unit of observation. In that research most of the x_{ij} covariates refer to the students’ attributes, characteristics of the students’ family, and characteristics of the educational establishment where he/she is studying. Our analysis, however, focuses on country averages, and not on individual data. One consequence of this is, the number of covariates with available data is smaller than in traditional studies. See Section 4 for some comments on this issue.

Table 3
Log of PISA scores: OLS, White-corrected standard errors.

	Reading			Science			Math		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Constitution index	−0.0382*** (0.0115)	−0.00374 (0.00990)	−0.00323 (0.00908)	−0.0375*** (0.0123)	−0.00239 (0.0104)	−0.00166 (0.00895)	−0.0414*** (0.0143)	−0.00134 (0.0131)	−0.000377 (0.0116)
log per capita GDP	–	1.042** (0.447)	0.669 (0.401)	–	1.317*** (0.453)	0.877** (0.382)	–	1.368** (0.549)	0.845* (0.447)
log per capita GDP squared	–	−0.0476** (0.0231)	−0.0295 (0.0203)	–	−0.0615** (0.0234)	−0.0405** (0.0197)	–	−0.0633** (0.0285)	−0.0387 (0.0231)
Pupil–teacher ratio	–	−0.223*** (0.0637)	−0.252*** (0.0610)	–	−0.248*** (0.0722)	−0.275*** (0.0678)	–	−0.259*** (0.0796)	−0.287*** (0.0811)
% Schools with library	–	0.133* (0.0742)	0.173** (0.0674)	–	0.178* (0.0936)	0.222** (0.0830)	–	0.223** (0.0945)	0.275*** (0.0843)
% Private schools	–	0.0341 (0.0327)	0.0707** (0.0348)	–	0.0358 (0.0342)	0.0781** (0.0357)	–	0.0442 (0.0425)	0.0939** (0.0457)
% Fathers work full time	–	–	0.243 (0.156)	–	–	0.330** (0.139)	–	–	0.423*** (0.146)
% Immigrant family	–	–	−0.356* (0.197)	–	–	−0.358* (0.213)	–	–	−0.382 (0.256)
Constant	6.232*** (0.0205)	0.460 (2.164)	2.161 (1.908)	6.240*** (0.0224)	−0.934 (2.183)	1.082 (1.812)	6.237*** (0.0274)	−1.311 (2.642)	1.091 (2.111)
Observations	54	54	54	54	54	54	54	54	54
R-squared	0.140	0.734	0.768	0.119	0.731	0.773	0.118	0.728	0.777

Note: Huber–White-corrected standard errors in parentheses.

*** Significant at 1%.

** Significant at 5%.

* Significant at 10%.

In the extensions reported in Section 4 we report regressions with additional covariates, including whether the parents had high school (or higher) education, among others.

In Table 3 we present the results obtained from OLS; Huber–White-corrected standard errors are reported.¹⁶ The first three columns in Table 3 are for the reading test, the next three are for science, and the last three include the results for the math tests. For each test we first report the results from simple bivariate regressions, where *constrights* is the only regressor. In regressions (2) we add the log of GDP per capita in 2009 and the log of GDP per capita squared, and the three “production function” variables listed above. Regressions (3) add family related variables, including the percentage of students that are immigrants and the job status of the father.¹⁷

The results are summarized below. Notice that in presenting this summary we make an effort to avoid implications of causality. Indeed, we interpret the results in this subsection as measuring correlation; we address issues related to endogeneity in Section 3.2, where we present results from instrumental instruments estimates:

- In all bivariate regressions the sign of the constitutional rights index is significantly *negative*. That is, when no additional variables are included, the relation between the protection of educational rights in the constitution and educational outcomes is negative. Countries with stronger social constitutional rights that protect education have had, on average, weaker performance in the PISA tests. This confirms the results from our nonparametric tests in Section 2. As noted, this may also reflect “reversed causality.” We deal with this issue below.
- Once other covariates are added, the coefficients of constitutional rights protection cease to be significant at conventional levels (they are still negative, however).
- Regressions (2) and (3) indicate that country, school system, and family characteristics are related, in statistically significant ways, with test scores. More specifically:
 - Richer countries tend to have significantly higher test scores. This positive relation moves at decreasing rates (the coefficient of the squared GDP is significantly negative). The results in regression (2), for example, suggest that with other covariates evaluated at their mean values, test scores in math would be maximized when GDP per capita reaches USD 49,300.¹⁸
 - There is a negative relationship between the pupil to teachers ratio and test scores – in every equations this coefficient is significant at conventional levels. This confirms findings from micro data based research on educational performance. Fewer students per teacher enhance the learning experience. An important implication is that, as the basic “production

¹⁶ For comparability, we restrict the sample to the set of countries with information available for all the covariates.

¹⁷ In the regressions reported in the body of the paper we excluded Qatar, a clear outlier with a very high GDP per capita and very low values for the other variables in the regressions. Regressions that include Qatar are presented in Tables A.3 in the appendix. As may be seen, the main results are not affected by the exclusion of this observation. The only difference between the regressions with and without Qatar has to do with the estimated coefficient of the squared term of GDP per capita, and thus with the value of GDP per capita at which the test scores are maximized. We thank a referee for calling our attention to this point.

¹⁸ The corresponding values for the reading and science tests are USD 56,691 and 44,682, respectively.

Table 4
Logarithm of PISA score, 2012: instrumental variables.

	Reading			Science			Math		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Constitution index	−0.0649*** (0.0164)	−0.0185 (0.0132)	−0.0232** (0.0114)	−0.0609*** (0.0184)	−0.0153 (0.0168)	−0.0200 (0.0145)	−0.0625*** (0.0202)	−0.00885 (0.0193)	−0.0102 (0.0159)
log per capita GDP	–	1.168*** (0.391)	0.848** (0.361)	–	1.427*** (0.414)	1.042*** (0.374)	–	1.432*** (0.507)	0.933** (0.413)
log per capita GDP squared	–	−0.0547*** (0.0202)	−0.0394** (0.0184)	–	−0.0677*** (0.0215)	−0.0496** (0.0194)	–	−0.0669** (0.0263)	−0.0436** (0.0215)
Pupil–teacher ratio	–	−0.244*** (0.0645)	−0.282*** (0.0620)	–	−0.266*** (0.0718)	−0.302*** (0.0700)	–	−0.270*** (0.0767)	−0.301*** (0.0769)
% Schools with library	–	0.124* (0.0717)	0.160** (0.0710)	–	0.170* (0.0891)	0.211** (0.0832)	–	0.219** (0.0890)	0.268*** (0.0801)
% Private schools	–	0.0406 (0.0298)	0.0788** (0.0330)	–	0.0414 (0.0317)	0.0855** (0.0340)	–	0.0475 (0.0383)	0.0979** (0.0420)
% Fathers work full time	–	–	0.228 (0.157)	–	–	0.316** (0.141)	–	–	0.415*** (0.139)
% Immigrant family	–	–	−0.362* (0.189)	–	–	−0.364* (0.202)	–	–	−0.385 (0.237)
Constant	6.281*** (0.0292)	−0.0527 (1.892)	1.427 (1.713)	6.283*** (0.0333)	−1.383 (1.979)	0.408 (1.747)	6.276*** (0.0365)	−1.571 (2.427)	0.731 (1.942)
Observations	54	54	54	54	54	54	54	54	54
R-squared	0.071	0.719	0.741	0.073	0.721	0.753	0.087	0.725	0.772

Note: In this table we use the following variables as instruments of constitutions: the legal origin of the constitutions (de Silanes et al., 1999), the year of independence (we assign 1700 to countries that were never colonized) and regional dummies. Huber–White-corrected standard errors in parentheses.

*** Significant at 1%.

** Significant at 5%.

* Significant at 10%.

function” approach suggests, higher expenditure on instruction – more teachers in the classroom – is related to better test results. (When square terms of the pupil’s ratio were included, the coefficient was not significant – estimates not reported due to space considerations).

- The school system infrastructure – in this case measured by the percentage of schools with libraries – is also important. Its coefficient is significantly positive. Better infrastructure is related to better test scores.
- Interestingly, the regressions in Table 4 indicate that countries with a higher fraction of private sector provision of education have better scores. This result may be dependent on the sample, and merits further research.
- These results also confirm that family attributes are fundamentally related to school performance and test scores. The coefficients of fathers’ employment situation and of the percentage of immigrant families are significant and have the expected signs. (We explore this issue further in Section 4 where we include other covariates including the OECD’s ESCS index and the educational attainment of the mother.)

The finding that social constitutional rights are not correlated with educational outcomes is somewhat puzzling. Most people – although, maybe not most economists – would have expected a positive correlation: countries that have a stronger constitutional mandate to protect and promote education will tend to have – through the channels discussed above – a higher quality educational system and, thus, higher test scores. On the other hand, skeptical observers may have expected no relation between the two variables. After all, in many countries – and in particular in many poorer ones – constitutional provisions are not always enforced; they are stated on paper, but politicians and judges tend to ignore them (more on this in Section 5). In addition, and as noted, there is the possibility of “reversed causality.” In an effort to understand better what is behind these results, in the subsections that follow we present instrumental variables estimates, we investigate the issue of timing and lagged effects of constitutional reforms, we explore alternative specifications, we disaggregate the rights index, we consider the possible existence of nonlinearities, and we investigate the relation between the constitutional rights index and a number of additional “production function” covariates.

3.2. Instrumental variables

As pointed out above, a potential limitation of the results in Table 3 is that they may be capturing a situation of reverse causality: it is possible that countries with weak educational systems – and low test scores – have attempted to improve outcomes by strengthening constitutional provisions that protect education. There are several ways of addressing this issue. A natural way of doing it is to estimate instrumental variable versions of Eq. (1). We present such estimates in Table 4 (in Section 4 we discuss other approaches). The following instruments were used: The “legal origin” variables developed by La Porta et al. (2008) in their path breaking work on corporate governance and economic performance. These authors analyzed the *historical* origins of legislation protecting minority investors in a score of countries. They distinguished between five such origins: United Kingdom, French,

German, Scandinavian and Socialist. The attractiveness of this variable as an instrument is that it has deep historical roots that, in most cases, go back centuries, and predate most constitutions in our analysis. Legal origin also precedes, by many decades, the development of standardized tests that measure the performance of education. In that regard, the “legal origin” variable is a truly exogenous variable that is correlated with the type of constitution a country adopts, but that is not affected by PISA test scores.¹⁹ We also used the year of independence of each country as an instrument. For countries that were never colonized (and for countries with very early independence) we used the date 1700. The final set of instruments is the region where the country is located. We distinguish between North America, South America, Asia, Europe, and North Africa and Middle East.

The instrumental variable results in Table 4 confirm the findings reported in Table 3. In particular, there is evidence that production function variables, including family and “productive inputs” variables, are important in explaining cross country variations in test scores (our measure for the quality of education). But, more important for the subject matter of this paper, in every one of the nine regressions reported in Table 4 the coefficient of the constitutional rights index is negative. As before, these coefficients are statistically significant in the three bivariate regressions; in every multivariate regression, but one, the coefficient of this variable is negative but not significant. Notice that the point estimates are larger, in absolute terms, in the IV regressions than in the OLS estimates. These results, then, suggest that, for this sample of 54 countries, there is no connection between enshrining constitutional rights in the constitution and test score results. The quality of education depends on policy variables that countries may put in place independently of what the constitution says; they also depend on family background. In the sections that follow we investigate this issue further by exploring a number of extensions and undertaking a battery of robustness tests.

4. Robustness and extensions

We performed a number of robustness tests, added covariates, and considered a series of extensions. In this subsection we discuss the most important of them (in some cases we summarize the results without providing detailed tables; many of these, however, are provided in the Appendix and/or are available on request):

Constitutional rights index: In testing for robustness we considered two additional indexes that measure the extent of constitutional protection to education. First, we used a simple dummy that took the value of one if the country in question had any constitutional provision that supported the right to education, and zero otherwise. This indicator, then, treats all countries with any provision equally. Second, we constructed an exponential constitutional index, where adding another pro-education provision in the constitution has a more than additive effect on the index. In this case the constitutional indicator can take the values 1, 2.7, 7.4, and 20.1. The results using these indicators did not change the gist of our main findings: the constitutional right indicators had negative coefficients (in some cases significant), and the other covariates were significant and had the expected signs.

In Table 5 we present instrumental variable results with disaggregated constitutional rights indicators. In the first three columns for each test we introduce each component of our original index individually, while in the fourth column we include the three indexes jointly. As may be seen, the coefficients of the “free education” and “compulsory education” variables are never significant. Interestingly, the coefficient of the right to “access higher education” is significantly *negative*. A possible explanation for this result has to do with redistribution of resources away from basic and secondary education and towards the tertiary segment. This resource reallocation would tend to impact the quality of secondary education, the level at which the PISA test is given. The results in this table also show that the coefficients of the production function and socioeconomic variables continue to have the expected signs and to be, mostly, significant.

PISA Test for 2009: As a way of confirming for the robustness of these results we re-estimated our equations using the 2009 PISA test scores. The main conclusions were maintained: there is no evidence that countries with stronger protection at the constitutional level have had higher test scores than countries with weaker or no constitutional protection. This is the case for both the OLS and IV estimates.

Nonlinearities and interactions: We also explored whether constitutional rights play an interactive role in explaining cross-country differences in test scores. We interacted the constitutional rights index(es) with the “productive inputs” covariates, and with the family attributes. We found that there was no interactive effect. We also explored whether some of the explanatory variables entered into the test scores regressions in a nonlinear way. The only one that appeared to be important was GDP per capita.

When were constitutional rights included in the constitution?: We investigated whether the number of years that educational rights have been protected by the constitution makes a difference. We follow two strategies to explore this “timing” issue. First, we excluded from the sample countries that have protected education at the constitutional levels for less than 10 years (countries without constitutional provisions were still included). The results confirm the findings reported above, in the sense that there is no relation between constitutional rights and PISA test scores. Second, we added the interaction between the constitutional rights index and the number of year since the last time the country added an educational right. Since the year in which education is included as a constitutional right may be endogenous as well – newer, poorer countries, or countries with initially worse educational outcomes may be more inclined to include education protection in their constitutions – we add instruments for both the constitutional index and its interaction.²⁰ The results obtained for the instrumental variable estimates are reported in

¹⁹ A “first-stage” regression of constitutional rights on the legal origin variables shows that these are indeed significant as a group; the *R*-square is 0.45.

²⁰ We include the same instruments as in the baseline case and their interactions with the year of independence.

Table 5
Logarithm of PISA score, 2012; effect of different educational provisions on average test scores. Instrumental variables estimation.

	Reading				Science				Math			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Free education	−0.0353 (0.0301)		−	−0.0265 (0.0398)	−0.0335 (0.0353)	−	−	−0.0321 (0.0452)	−0.0376 (0.0438)	−	−	−0.0596 (0.0433)
Compulsory education	−	−0.0154 (0.0201)	−	0.00986 (0.0402)	−	−0.00475 (0.0271)	−	0.0235 (0.0503)	−	0.0216 (0.0257)	−	0.0581 (0.0420)
Access to high education	−	−	−0.0906*** (0.0349)	−0.0877** (0.0365)	−	−	−0.0917** (0.0363)	−0.0924** (0.0399)	−	−	−0.0687* (0.0375)	−0.0750* (0.0400)
log per capita GDP	0.732** (0.361)	0.689** (0.348)	0.925*** (0.347)	0.954** (0.358)	0.950*** (0.360)	0.878*** (0.335)	1.151*** (0.375)	1.162*** (0.395)	0.940** (0.415)	0.773** (0.378)	1.058*** (0.395)	1.048** (0.423)
log per capita GDP squared	−0.0330* (0.0185)	−0.0308* (0.0176)	−0.0426** (0.0177)	−0.0441** (0.0185)	−0.0446** (0.0187)	−0.0406** (0.0173)	−0.0545*** (0.0194)	−0.0549*** (0.0207)	−0.0440** (0.0216)	−0.0345* (0.0197)	−0.0496** (0.0204)	−0.0484** (0.0224)
Pupil–teacher ratio	−0.253*** (0.0552)	−0.257*** (0.0541)	−0.312*** (0.0896)	−0.307*** (0.0903)	−0.277*** (0.0622)	−0.276*** (0.0634)	−0.337*** (0.0961)	−0.328*** (0.102)	−0.292*** (0.0719)	−0.273*** (0.0695)	−0.335*** (0.0876)	−0.312*** (0.0959)
% Schools with library	0.150** (0.0663)	0.179*** (0.0612)	0.158* (0.0936)	0.137 (0.0906)	0.200** (0.0816)	0.225*** (0.0752)	0.206* (0.114)	0.177 (0.113)	0.248*** (0.0780)	0.269*** (0.0804)	0.262** (0.103)	0.204* (0.106)
% Private schools	0.0715** (0.0308)	0.0760** (0.0322)	0.0619 (0.0391)	0.0594 (0.0403)	0.0794** (0.0322)	0.0795** (0.0334)	0.0698* (0.0415)	0.0616 (0.0438)	0.0960** (0.0412)	0.0845** (0.0428)	0.0881* (0.0457)	0.0661 (0.0491)
% Fathers work full time	0.238* (0.144)	0.257* (0.149)	0.130 (0.157)	0.121 (0.161)	0.324** (0.132)	0.335*** (0.128)	0.214 (0.159)	0.190 (0.164)	0.415*** (0.136)	0.407*** (0.124)	0.336** (0.159)	0.272* (0.155)
% Immigrant family	−0.398** (0.175)	−0.328* (0.186)	−0.426* (0.234)	−0.473* (0.255)	−0.399** (0.193)	−0.349* (0.197)	−0.429* (0.257)	−0.510* (0.277)	−0.429* (0.241)	−0.419* (0.239)	−0.436 (0.272)	−0.614** (0.287)
Constant	1.931 (1.716)	2.077 (1.673)	1.048 (1.653)	0.955 (1.679)	0.811 (1.691)	1.080 (1.592)	−0.105 (1.766)	−0.121 (1.823)	0.733 (1.950)	1.391 (1.796)	0.171 (1.868)	0.262 (1.955)
Observations	54	54	54	54	54	54	54	54	54	54	54	54
R-squared	0.773	0.760	0.632	0.645	0.777	0.772	0.637	0.644	0.783	0.783	0.720	0.728

Note: In this table we use the following variables as instruments of constitutions: the legal origin of the constitutions (de Silanes et al., 1999), the year of independence (we assign 1700 to countries that were never colonized) and regional dummies. Huber–White-corrected standard errors in parentheses.

*** Significant at 1%.

** Significant at 5%.

* Significant at 10%.

Table 6

Logarithm of PISA score, 2012 using number of years since last educational right is in force. Instrumental variables estimation.

	Reading (1)	Science (2)	Math (3)
Constitution index	−0.00312 (0.0172)	−0.0161 (0.0154)	0.0102 (0.0194)
*Years last educational addition	−0.00143 (0.00114)	−0.000897 (0.000954)	−0.00200 (0.00124)
Years last educational addition	0.00233 (0.00221)	0.00155 (0.00193)	0.00329 (0.00261)
log per capita GDP	1.011*** (0.347)	0.843** (0.352)	0.919** (0.377)
log per capita GDP squared	−0.0479*** (0.0179)	−0.0391** (0.0178)	−0.0427** (0.0194)
Pupil–teacher ratio	−0.272*** (0.0721)	−0.267*** (0.0712)	−0.266*** (0.0909)
% Schools with library	0.233*** (0.0838)	0.169** (0.0754)	0.298*** (0.0854)
% Private schools	0.0655 (0.0408)	0.0707* (0.0403)	0.0699 (0.0456)
% Fathers work full time	0.324** (0.161)	0.230 (0.183)	0.422** (0.166)
% Immigrant family	−0.340 (0.224)	−0.367* (0.213)	−0.350 (0.253)
Constant	0.485 (1.631)	1.426 (1.660)	0.722 (1.770)
Observations	53	53	53
R-squared	0.740	0.723	0.760

Note: Years since the last educational addition corresponds to the difference between the year 2012 and the year in which the last educational right was included in the constitution. We use the following variables as instruments of constitutions: the legal origin of the constitutions (de Silanes et al., 1999), regional dummies, year of independence (we assign 1700 to countries that were never colonized), and the interaction of the legal variables and regional dummies with the year of independence. Huber–White–corrected standard errors in parentheses.

*** Significant at 1%.

** Significant at 5%.

* Significant at 10%.

Table 6. As may be seen, the interaction between constitutional rights and the length over which the last educational right has been in force is non-significant at conventional levels, while the level of the index stays non-significant or negative (for the case of the reading test, see specification 2). Complete results, including OLS estimates, are available on request.

The education of mothers and mean educational attainment: According to the literature, the education of parents – and in particular of mothers – is a reliable predictor of test performance.²¹ In **Table 7** we report instrumental variable results that include the following two covariates: percentage of mothers with a high school diploma, and educational attainment of the adult population in the country in question (25 years and older). As may be seen, the inclusion of these covariates does not affect our main results. The constitutional protection has a negative coefficient; in this case the estimates are significant across equations. The other covariates continue to perform adequately; the coefficients of mothers' education and of the population's attainment are positive and in the majority of the regressions they are significant. These results indicate, once again, that there are no positive effects of constitutional provisions on performance, and that the latter depends on infrastructure and socioeconomic characteristics.²²

Enrollment and performance: The PISA test is given to 15 year olds from a large number of countries. Most of the nations that participate in this test are OECD members and have a high income per capita and full secondary education coverage. However, there are a number of invited countries and territories that, typically, have a much lower level of development and educational coverage than the OECD members. This brings up the following question: Could the results be affected by the fact that in some countries the cohort of 15 year olds that stay in school is rather small? In order to address this issue we use data from UNESCO to identify those nations with a low coverage of education for 15 year olds. In **Table 8** we present results from instrumental variables regressions where we have excluded countries with very low coverage (for each test we exclude the nations with the 3, 5 and 10 lowest coverage for 15 year olds). As may be seen, these results continue to support the conclusions reached earlier and indicate that the results are robust.²³

²¹ See, for example, Hanushek and Woessmann (2010). We thank a referee for suggesting considering these covariates.

²² In these regressions we exclude the other socioeconomic variables due to collinearity reasons. See the discussion below.

²³ We are grateful to a referee for suggesting this extension and robustness test.

Table 7

Logarithm of PISA score, 2012 using alternatives measures of parents education: instrumental variables.

	Reading		Science		Math	
	(1)	(2)	(1)	(2)	(1)	(2)
Constitution Index	−0.0519*** (0.0158)	−0.0461*** (0.0170)	−0.0463*** (0.0176)	−0.0388** (0.0194)	−0.0477** (0.0201)	−0.0402* (0.0220)
% Mothers with high-school diploma	0.00106 (0.000679)	–	.00153** (0.000690)	–	.00159** (0.000748)	–
Educational attainment pop ≥25 years old	–	.0126 (0.00867)	–	.0175* (0.00937)	–	.0183* (0.0110)
Pupil–teacher ratio	−0.374*** (0.115)	−0.420** (0.111)	−0.360*** (0.126)	−0.431*** (0.126)	−0.406*** (0.145)	−0.479*** (0.150)
% Schools with library	0.0721 (0.120)	0.0840 (0.120)	0.119 (0.132)	0.135 (0.134)	0.155 (0.138)	0.172 (0.136)
% Private schools	0.0990** (0.0435)	0.0833** (0.0376)	0.111** (0.0439)	0.0878** (0.0396)	0.131** (0.0533)	0.107** (0.0476)
Constant	6.162*** (0.149)	6.093*** (0.178)	6.081*** (0.162)	5.992*** (0.204)	6.039*** (0.168)	5.946*** (0.206)
Observations	54	54	54	54	54	54
R-squared	0.314	0.340	0.338	0.361	0.335	0.353

Note: In this table we use the following variables as instruments of constitutions: the legal origin of the constitutions (de Silanes et al., 1999), regional dummies, year of independence (we assign 1700 to countries that were never colonized), and regional dummies with the year of independence. Huber–White-corrected standard errors in parentheses.

*** Significant at 1%.

** Significant at 5%.

* Significant at 10%.

Table 8

Logarithm of PISA score, 2012: excluding countries with low enrollment rates in lower secondary education (instrumental variables).

	Reading			Science			Math		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Constitution index	−0.0207* (0.0115)	−0.0187 (0.0118)	−0.0124 (0.0104)	−0.0172 (0.0150)	−0.0141 (0.0152)	−0.00671 (0.0130)	−0.00702 (0.0159)	−0.00489 (0.0165)	0.00281 (0.0149)
log per capita GDP	1.194*** (0.404)	1.438*** (0.486)	1.490*** (0.473)	1.237** (0.486)	1.710*** (0.526)	1.701*** (0.505)	1.240** (0.484)	1.702*** (0.597)	1.796*** (0.598)
log per capita GDP squared	−0.0566*** (0.0202)	−0.0684*** (0.0238)	−0.0709*** (0.0232)	−0.0593** (0.0246)	−0.0821*** (0.0263)	−0.0818*** (0.0253)	−0.0587** (0.0247)	−0.0810*** (0.0297)	−0.0857*** (0.0297)
Pupil–teacher ratio	−0.265*** (0.0623)	−0.240*** (0.0681)	−0.213*** (0.0709)	−0.294*** (0.0740)	−0.248*** (0.0742)	−0.237*** (0.0744)	−0.280*** (0.0774)	−0.236*** (0.0804)	−0.194** (0.0843)
% Schools with library	0.159** (0.0674)	0.158** (0.0649)	0.197*** (0.0624)	0.213*** (0.0817)	0.214*** (0.0777)	0.254*** (0.0749)	0.267*** (0.0801)	0.272*** (0.0794)	0.314*** (0.0798)
% Private schools	0.0655** (0.0314)	0.0605** (0.0302)	0.0523* (0.0314)	0.0766** (0.0339)	0.0674** (0.0327)	0.0581* (0.0320)	0.0858** (0.0410)	0.0773* (0.0398)	0.0821** (0.0391)
% Fathers work full time	0.188 (0.164)	0.147 (0.178)	0.182 (0.173)	0.296** (0.149)	0.217 (0.155)	0.262* (0.146)	0.375** (0.146)	0.298* (0.166)	0.323* (0.171)
% Immigrant family	−0.316* (0.182)	−0.319* (0.176)	−0.296 (0.184)	−0.340* (0.202)	−0.342* (0.193)	−0.277 (0.181)	−0.338 (0.234)	−0.335 (0.224)	−0.330 (0.219)
Constant	−0.281 (1.936)	−1.520 (2.379)	−1.861 (2.312)	−0.565 (2.329)	−2.955 (2.542)	−2.981 (2.442)	−0.799 (2.314)	−3.134 (2.924)	−3.687 (2.937)
Exclude low enrollment rates	Lowest 3	Lowest 5	Lowest 10	Lowest 3	Lowest 5	Lowest 10	Lowest 3	Lowest 5	Lowest 10
Observations	51	49	44	51	49	44	51	49	44
R-squared	0.738	0.704	0.730	0.738	0.720	0.753	0.759	0.733	0.746

Note: In this table we exclude the 3, 5 and 10 countries with the lowest enrollment rates in lower secondary education. We use the following variables as instruments of constitutions: the legal origin of the constitutions (de Silanes, La Porta and Schleifer, 1999), regional dummies, year of independence (we assign 1700 to countries that were never colonized), and regional dummies with the year of independence. Huber–White-corrected standard errors in parentheses.

*** Significant at 1%.

** Significant at 5%.

* Significant at 10%.

The ESCS index: As noted, collinearity is a recurrent problem in this type of study. In particular, variables that capture families' socioeconomic conditions tend to be highly correlated among themselves. One way of addressing this issue is by using a composite index that summarizes in a single indicator households' background. A useful measure is the OECD's *Index of Economic, Social, and Cultural Status* (ESCS). This index is calculated as the first principal component of a number of specific variables (home ownership, number of books at home, computer and internet connection at home, the existence of a quiet place to study, higher parental education, and higher parental job status). The index has a mean of zero, corresponding to the average student that took the PISA test that year, and a standard deviation of 1. In Table 9 we present instrumental variable results using the ESCS index as a way of capturing families' characteristics. As may be seen, the results confirm those reported above: productive inputs, level of

Table 9
Logarithm of PISA Score, 2012 using ECSC Index: Instrumental Variables

	Reading			Science			Math		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Constitution index	−0.0399** (0.0170)	−0.0335** (0.0157)	−0.0192 (0.0132)	−0.0330* (0.0197)	−0.0265 (0.0183)	−0.0155 (0.0169)	−0.0329 (0.0232)	−0.0268 (0.0227)	−0.00951 (0.0194)
ECSC index	0.0917*** (0.0206)	0.0873*** (0.0248)	−0.0171 (0.0196)	0.107*** (0.0244)	0.105*** (0.0281)	−0.00372 (0.0234)	0.114*** (0.0268)	0.112*** (0.0308)	−0.0187 (0.0270)
Pupil–teacher ratio	–	−0.262*** (0.0933)	−0.269*** (0.0738)	–	−0.253*** (0.0934)	−0.271*** (0.0778)	–	−0.288*** (0.110)	−0.297*** (0.0934)
% Schools with library	–	0.115 (0.0953)	0.120 (0.0743)	–	0.168 (0.109)	0.169* (0.0906)	–	0.208* (0.112)	0.214** (0.0915)
% Private schools	–	0.104*** (0.0387)	0.0299 (0.0311)	–	0.110*** (0.0410)	0.0391 (0.0324)	–	0.130** (0.0509)	0.0357 (0.0421)
log per capita GDP	–	–	1.227*** (0.404)	–	–	1.440*** (0.430)	–	–	1.496*** (0.529)
log per capita GDP squared	–	–	−0.0573*** (0.0207)	–	–	−0.0683*** (0.0222)	–	–	−0.0697** (0.0273)
Constant	6.259*** (0.0312)	6.166*** (0.0932)	−0.375 (1.963)	6.260*** (0.0366)	6.116*** (0.109)	−1.454 (2.069)	6.251*** (0.0432)	6.074*** (0.111)	−1.923 (2.556)
Observations	54	54	54	54	54	54	54	54	54
R-squared	0.366	0.466	0.721	0.392	0.485	0.721	0.366	0.465	0.727

Note: See text for definition of the ECSC index. In this table we use the following variables as instruments of constitutions: the legal origin of the constitutions (de Silanes et al., 1999), regional dummies, year of independence (we assign 1700 to countries that were never colonized), and regional dummies with the year of independence. Huber–White–corrected standard errors in parentheses.

*** Significant at 1%.

** Significant at 5%.

* Significant at 10%.

development, and household socioeconomic characteristics go a long way in explaining cross country variations in test scores. The coefficient of the constitutional rights variable continues to be negative, and in many of the regressions is not significant.

Coverage of free and compulsory education: One of the constitutional protections to education is the provision that mandates education to be free.²⁴ However, not every country has a legal requirement to provide free education to the same level. In some nations the law establishes that primary education is free, while in others it is primary and secondary education; still in others free education also covers the tertiary segment. In order to analyze whether the extent of free or compulsory education made a difference, we computed two alternative educational indexes (0–3) that capture whether each country's constitution explicitly provides coverage for (i) at least primary education, and (ii) for both primary and secondary education. The results obtained in this case are presented in Table 10. As may be seen, the main conclusions from our previous regressions are not affected in any significant way.

Additional covariates: In a number of specifications we included other covariates that capture educational inputs, as well as families' characteristics. Due to collinearity, and not surprisingly, the coefficients for these additional variables tended to be insignificant. However, when we substituted these variables for some of those in Tables 3 and 4, the coefficients had the expected sign and were significant. For example, when we replaced the pupil–teacher ratio with the percentage of teachers with a teaching certificate, the coefficient of the latter variable was positive and significant: 0.0007 with a *t*-statistic of 2.20. More important, when these alternative specifications were used, the main findings regarding constitutional rights did not change: we obtained negative and mostly insignificant coefficients (results available on request). We also included a variable that indicates whether that particular country has a constitutional protection that limits the employment of children. The results obtained, which are provided in Table A.4 in the Appendix, indicate that this protection has no effect on test scores.

Test scores dispersion: Social constitutional rights – including the right to education – have an egalitarian bend to them. Their aim is to protect *all citizens* from misfortune and adversity, and to ensure a minimum delivery of social services to the population. Indeed, in many cases, many analysts consider that the main role of educational rights is to ensure that differences in educational outcomes across citizens are not very large. In that regard, we may be missing the point by analyzing the relation between the strength of constitutional protection to education and the *level* of test scores, rather than the relation between rights and some kind of measure of outcomes dispersion. As a way of addressing this issue we estimated a series of regressions with the (log of the) interquartile range – or difference in scores between the third and first quartile – as the dependent variable. Countries with lower dispersion in test scores (or more egalitarian educational outcomes) will exhibit lower interquartile ranges. The question is whether the size of this range is smaller in countries that provide stronger constitutional protection to education. The results obtained for the instrumental variables estimates are reported in Table 11. As may be seen, with two exceptions, for every test and specification the coefficients of constitutional rights are non significant at conventional levels; in the one regression where the coefficient is significant (science test, specification 1) the coefficient is *negative*. Complete results, including OLS estimates,

²⁴ 129 out of the 191 countries in *Project Constitute* have this provision.

Table 10

Logarithm of PISA score, 2012. Different thresholds for free and compulsory education: instrumental variables.

	Reading			Science			Math		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Const. index (baseline)	-0.0199*	-	-	-0.0161	-	-	-0.00654	-	-
	(0.0120)			(0.0154)			(0.0173)		
Const. index (at least primary)	-	-0.0122	-	-	-0.0176	-	-	-0.00724	-
		(0.0105)			(0.0112)			(0.0143)	
Const. index (at least secondary)	-	-	-0.0293*	-	-	-0.0185	-	-	0.000856
			(0.0160)			(0.0184)			(0.0211)
log per capita GDP	0.822**	0.698*	1.028***	1.013***	0.942***	1.113***	0.907**	0.878**	0.840*
	(0.364)	(0.364)	(0.307)	(0.372)	(0.361)	(0.361)	(0.416)	(0.393)	(0.446)
log per capita GDP squared	-0.0380**	-0.0312*	-0.0482***	-0.0481**	-0.0442**	-0.0528***	-0.0421*	-0.0406**	-0.0385*
	(0.0185)	(0.0184)	(0.0154)	(0.0193)	(0.0185)	(0.0186)	(0.0216)	(0.0202)	(0.0231)
Pupil–teacher ratio	-0.278***	-0.258***	-0.235***	-0.298***	-0.286***	-0.266***	-0.297***	-0.293***	-0.289***
	(0.0614)	(0.0551)	(0.0622)	(0.0694)	(0.0668)	(0.0655)	(0.0768)	(0.0696)	(0.0693)
% Schools with library	0.159**	0.164**	0.118	0.208**	0.211**	0.183**	0.266***	0.267***	0.269***
	(0.0699)	(0.0656)	(0.0734)	(0.0821)	(0.0835)	(0.0841)	(0.0810)	(0.0812)	(0.0952)
% Private schools	0.0773**	0.0619**	0.0555*	0.0837**	0.0668**	0.0684**	0.0961**	0.0892**	0.0938**
	(0.0327)	(0.0309)	(0.0329)	(0.0335)	(0.0337)	(0.0337)	(0.0420)	(0.0415)	(0.0438)
% Fathers work full time	0.235	0.225	0.149	0.327**	0.298*	0.277**	0.425***	0.413***	0.436***
	(0.157)	(0.157)	(0.145)	(0.140)	(0.155)	(0.139)	(0.139)	(0.149)	(0.156)
% Immigrant family	-0.356*	-0.343*	-0.330*	-0.353*	-0.345*	-0.335*	-0.376	-0.373	-0.371
	(0.190)	(0.183)	(0.189)	(0.202)	(0.202)	(0.203)	(0.241)	(0.241)	(0.238)
Constant	1.531	2.072	0.578	0.521	0.863	0.0420	0.837	0.975	1.113
	(1.724)	(1.735)	(1.451)	(1.738)	(1.705)	(1.669)	(1.957)	(1.859)	(2.064)
Observations	53	53	53	53	53	53	53	53	53
R-squared	0.747	0.768	0.762	0.760	0.762	0.771	0.773	0.775	0.775

Note: In this table we use the following variables as instruments of constitutions: the legal origin of the constitutions (de Silanes et al., 1999), regional dummies, year of independence (we assign 1700 to countries that were never colonized), and regional dummies with the year of independence. Huber–White-corrected standard errors in parentheses.

*** Significant at 1%.

** Significant at 5%.

* Significant at 10%.

Table 11

Impact of constitutional arrangements on PISA 2012 interquartile range: instrumental variables estimation.

	Reading IQR	Science IQR	Math IQR
Specification 1	-0.0176	-0.0631***	-0.0373*
	(0.0201)	(0.0197)	(0.0202)
Specification 2	-0.00248	-0.0269	0.0105
	(0.0295)	(0.0256)	(0.0275)
Specification 3	-0.00493	-0.0314	0.00424
	(0.0278)	(0.0244)	(0.0255)

Note: The dependent variable in this table is the interquartile range (difference between third and first quartile) of each test score. We use the following variables as instruments of constitutions: the legal origin of the constitutions (de Silanes et al., 1999), regional dummies, year of independence (we assign 1700 to countries that were never colonized), and regional dummies with the year of independence. Huber–White-corrected standard errors in parentheses. **Significant at 5%.

*** Significant at 1%.

* Significant at 10%.

are available on request. As a way of investigating the dispersion issue further we also estimated a series of regressions with test scores for different percentiles of each country's distributions. The results confirmed those summarized above. Table A.5 in the Appendix presents instrumental variables results with disaggregated constitutional rights indicators. As it may be seen, in most cases the coefficients are non-significant, confirming our findings when using the aggregate index.

Constitutional rights and educational inputs: As noted, some authors have argued that in countries that grant a constitutional status to the right to education, legislatures will be required to provide higher funding to that sector; it is expected that through that channel the quality of education would improve (Zackin, 2013). In order to investigate the relationship between the strength of social constitutional rights and productive educational inputs we calculated the (partial) correlation coefficients between four

such inputs – pupil–teacher ratio, percentage of teachers with teaching certificate, percentage of schools with libraries, and percentage of students in private schools – and the constitutional rights index. Pair-wise correlations between input variables and constitutional rights are rather low, but statistically different from zero (p -values). This suggests that the “productive inputs” channel discussed above may be rather weak. As we argue in [Section 5](#), a more definitive result on this issue would require additional research.

5. Concluding remarks, reflections on enforcement, and future research

In this paper we find no evidence supporting the view that countries that enshrine the right to education in the constitution have higher quality educational systems than countries that do not. Moreover, our results suggest that there is no relation between the strength of constitutional protection and the dispersion of test scores. These results hold independently of whether we perform simple bivariate regressions or if we control for covariates that capture countries’ stage of development, educational inputs, and families’ characteristics. The results are also robust to the estimation method (OLS or IV), to the definition of the constitutional rights index, the covariates included in the regressions, the year in which the test was taken, or the year when constitutional rights on education were introduced into the constitutional charter.

These are important findings for poor and middle income countries that are trying to improve the quality of their educational systems. It is not enough to have the right to education incorporated in the constitution. There is a need to introduce specific policies and measures that strengthen socioeconomic conditions in the country – and in particular among vulnerable families – and that would improve specific “productive inputs.” In addition, it is likely that better performance could be attained by implementing policies that offset the disadvantages that stem from weak family backgrounds. Policies aimed at providing universal preschool education are geared in this direction.

In a research project currently in progress we take advantage of the fact that although the U.S. Constitution does not refer to positive (social) rights, all of the states in the Union include educational rights in their own constitutions. The strength, purview, and specificity of these rights vary significantly across states, giving us the possibility of analyzing whether stronger constitutional protection is related to better educational outcomes. The results obtained in this U.S. study confirm those reported in this paper. We find no evidence supporting the view that states with more detailed and stronger constitutional provisions on education have better educational outcomes. We do find, however, that school inputs (class size and the like) and families’ socioeconomic conditions (parent’s education, among other) go a long way toward explaining differences in performance across states in the United States. An attractive feature of this data set at the U.S. states level is that in all of them the constitutional provisions protecting education were introduced many decades ago – in some cases even two centuries ago – greatly reducing potential endogeneity problems.

The most plausible explanation for the cross country results presented in this paper is related to the difficulty in enforcing constitutional provisions on social rights. Indeed, it is possible to think that the strength of the “cultural channel” discussed in [Section 3](#) will depend on the degree of constitutional protection *and* on the institutional and practical mechanisms available to enforce these rights. Enforceability of social rights has recently been discussed by a number of legal scholars. For example, in her recent book [Zackin \(2013, p. 92\)](#) states that “constitutional provisions must be judicially enforceable in order to be considered rights at all.” And, referring to educational rights in U.S. states’ constitutions she asks: “Can we really call these constitutional educational provisions rights even though most were not written with the idea that citizens could enforce their individual claims through court? Can mandates on governments have any meaning unless courts are willing to enforce them?”²⁵

Of course, this point does not apply excusably to the United States. In fact, citizens’ ability to enforce constitutional provisions – and, in particular, provisions on social rights – are very difficult in poorer and middle income countries, where there is no tradition of judicial review (as in the United States), constitutional tribunals are slow and rigid, and courts are not truly independent.²⁶

The discussion presented above suggests some direction for future research: an effort could be made to develop cross country measures or indexes of the degree of enforceability of constitutional rights (both negative and positive). An additional line of research would focus on countries that have gone through constitutional reforms that have added (or expanded) constitutional educational provisions. This would allow performing *diffs-in-diffs* analyses on the extent to which these provisions have indeed helped countries achieve better educational outcomes. Another line of research suggested by our results has to do with the relationship between constitutional provisions and productive educational inputs. Our research suggests, at a preliminary level, that there is a somewhat weak and non-significant relation between these variables. This issue, however, merits further analysis. Two relevant questions are: How have legislatures reacted to constitutional provisions? Has the adoption of these constitutional provisions been translated into higher and better inputs? A related research topic is whether the teaching profession is different in countries with strong social constitutional provisions than in countries with weaker provisions. In this respect, two variables of particular interest are the strength and role of teachers’ unions, and teachers work conditions (including salaries).

Yet another topic for future research has to do with the potential tradeoff between quantity and quality: most constitutional rights on education – and certainly the three highlighted by *Project Constitute* – refer to the provision of, and access to, education. They mandate that education should be obligatory and free, and that access to higher education has to be equal to everyone.

²⁵ [Zackin \(2013\)](#), p. 92. See also [Sunstein \(2004, 2006\)](#) and the literature cited there.

²⁶ See, for example, [Brinks and Gauri \(2010\)](#), [Landau \(2012\)](#), and [Wiles \(2006\)](#).

These provisions do not say anything about quality or efficiency. A finer combing of different constitutions that identifies those countries that make an explicit reference to quality or “adequacy” would be useful. Indeed, in our in-progress work on test performance across states in the United States we find that those states with explicit reference to “efficiency,” “quality” or “adequacy” of the educational system in their constitutions have had better performance than those that do not include this language, once other variables are taken into account.

The list of topics for future research is long and ambitious. Addressing it would throw additional light into the important topic of the relation of constitutional rights and economic and social performance. In the meantime, the results presented in this paper suggest that, from the practical, comparative, and historical perspectives, including constitutional provisions into constitutions are neither a necessary or sufficient conditions for improving the quality of education.

Appendix A. Additional regressions

Tables A.1–A.5

Appendix B. Data sources

- *Constitutional index*: Corresponds to the sum of three categories, each of them equal to one if the country establishes the respective social right in its constitutions and zero otherwise: (1) Equal access to higher education guaranteed, (2) Compulsory education, and (3) Free education. *Source*: <http://www.constituteproject.org>.

Table A.1

Country count by type and number of constitutional rights.

	Free education	Compulsory education	Equal access to higher education	Limit child work	Total
Panel A: count by type of educational constitutional rights					
All countries in constitute project	129	120	61	76	191
with PISA 2012 score	49	45	19	22	61
with information for all covariates	43	40	16	20	54
Panel B: count by number of educational constitutional rights					
	Const. rights index = 0	Const. rights index = 1	Const. rights index = 2	Const. rights index = 3	Total
All countries in constitute project	45	30	68	48	191
with PISA 2012 score	7	11	27	16	61
with information for all covariates	7	10	22	15	54

Table A.2

Summary statistics.

Variable	Obs.	Mean	Median	SD	Min	Max
Constitutional rights index	54	1.833	2.000	0.986	0.000	3.000
Free education	54	0.796	1.000	0.407	0.000	1.000
Compulsory education	54	0.741	1.000	0.442	0.000	1.000
Equal access to higher education	54	0.296	0.000	0.461	0.000	1.000
Limit child work	54	0.370	0.000	0.487	0.000	1.000
Mean PISA score 2012, sciences	54	481.6	494.0	50.0	373.0	580.0
Mean PISA score 2012, reading	54	476.8	488.0	46.5	384.0	570.0
Mean PISA score 2012, math	54	477.1	484.5	55.4	368.0	613.0
Interquartile rage PISA 2012, sciences	54	123.3	124.5	14.7	91.8	166.8
Interquartile rage PISA 2012, reading	54	120.8	120.5	13.7	91.0	151.7
Interquartile rage PISA 2012, math	54	124.3	125.2	13.2	100.2	169.7
Per capita GDP	54	23,013	21,174	13,817	3,799	58,286
Pupil–teacher ratio	54	0.171	0.150	0.077	0.088	0.538
% Schools with library	54	0.914	0.951	0.084	0.658	1.000
% Private schools	54	0.190	0.107	0.232	0.001	0.960
% Fathers work full time	54	0.756	0.787	0.106	0.430	0.930
% Immigrant family	54	0.054	0.048	0.053	0.001	0.228
ESCS index	54	−0.257	−0.140	0.522	−1.550	0.720
Years from last educational addition	53	21.6	15.0	20.4	0.0	96.0
British legal origin	54	0.148	0.000	0.359	0.000	1.000
French legal origin	54	0.333	0.000	0.476	0.000	1.000
Socialist legal origin	54	0.315	0.000	0.469	0.000	1.000
German legal origin	54	0.111	0.000	0.317	0.000	1.000
Scandinavian legal origin	54	0.093	0.000	0.293	0.000	1.000
Independence year	54	1836	1822	107	1700	2006
% Mothers with high school diploma	54	70.7	77.2	21.6	19.1	96.8
Years of ed. attainment at age 25 or older	54	11	11	2	7	13

Table A.3
Logarithm of PISA score, 2012 including Qatar (instrumental variables)

	Reading			Science			Math		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Constitution index	−0.0662*** (0.0163)	−0.0308** (0.0147)	−0.0274** (0.0110)	−0.0623*** (0.0183)	−0.0258 (0.0170)	−0.0217 (0.0133)	−0.0641*** (0.0200)	−0.0219 (0.0195)	−0.0131 (0.0143)
log per capita GDP	−	1.806*** (0.413)	1.109*** (0.349)	−	2.058*** (0.414)	1.260*** (0.326)	−	2.194*** (0.499)	1.217*** (0.359)
log per capita GDP squared	−	−0.0885*** (0.0211)	−0.0537*** (0.0174)	−	−0.101*** (0.0212)	−0.0616*** (0.0165)	−	−0.107*** (0.0256)	−0.0591*** (0.0182)
Pupil–teacher ratio	−	−0.291*** (0.0754)	−0.309*** (0.0627)	−	−0.311*** (0.0818)	−0.324*** (0.0669)	−	−0.324*** (0.0895)	−0.330*** (0.0752)
% Schools with library	−	0.107 (0.0813)	0.160** (0.0770)	−	0.154 (0.0966)	0.212** (0.0871)	−	0.199** (0.0969)	0.270*** (0.0847)
% Private schools	−	0.0675** (0.0337)	0.102*** (0.0336)	−	0.0679** (0.0340)	0.105*** (0.0332)	−	0.0795* (0.0410)	0.123*** (0.0407)
% Fathers work full time	−	−	0.304* (0.167)	−	−	0.387*** (0.147)	−	−	0.506*** (0.154)
% Immigrant family	−	−	−0.418** (0.185)	−	−	−0.414** (0.197)	−	−	−0.449** (0.229)
Constant	6.280*** (0.0292)	−3.006 (2.026)	0.207 (1.668)	6.282*** (0.0332)	−4.311** (2.022)	−0.625 (1.539)	6.275*** (0.0364)	−5.105** (2.441)	−0.608 (1.708)
Observations	55	55	55	55	55	55	55	55	55
R-squared	0.067	0.673	0.734	0.069	0.690	0.758	0.083	0.691	0.772

Note: This table replicates Table 4 in the main text including Qatar in the sample. In this table we use the following variables as instruments of constitutions: the legal origin of the constitutions (de Silanes et al., 1999), the year of independence (we assign 1700 to countries that were never colonized) and regional dummies. Huber–White-corrected standard errors in parentheses.

*** Significant at 1%.

** Significant at 5%.

* Significant at 10%.

Table A.4
Logarithm of PISA score, 2012. Effect of provisions limiting child work (instrumental variables).

	Reading (1)	Science (2)	Math (3)
Limit child work	−0.00345 (0.0525)	−0.0262 (0.0458)	−0.0467 (0.0562)
log per capita GDP	0.645* (0.361)	0.898*** (0.325)	0.905** (0.370)
log per capita GDP squared	−0.0282 (0.0188)	−0.0421** (0.0170)	−0.0429** (0.0195)
Pupil–teacher ratio	−0.244*** (0.0546)	−0.248*** (0.0579)	−0.242*** (0.0747)
% Schools with library	0.177** (0.0847)	0.242*** (0.0904)	0.308*** (0.101)
% Private schools	0.0694** (0.0308)	0.0772** (0.0326)	0.0934** (0.0428)
% Fathers work full time	0.250 (0.160)	0.367** (0.152)	0.488*** (0.171)
% Immigrant family	−0.354** (0.179)	−0.349* (0.190)	−0.366 (0.224)
Constant	2.260 (1.720)	0.994 (1.547)	0.841 (1.754)
Observations	54	54	54
R-squared	0.766	0.769	0.767

Note: In this table we use the following variables as instruments of constitutions: the legal origin of the constitutions (de Silanes et al., 1999), the year of independence (we assign 1700 to countries that were never colonized) and regional dummies. Huber–White-corrected standard errors in parentheses.

*** Significant at 1%.

** Significant at 5%.

* Significant at 10%.

Table A.5

Impact of constitutional arrangements on PISA 2012 interquartile range: instrumental variables estimation.

	Reading				Science				Math			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Free education	-0.0295 (0.0642)			-0.0315 (0.0684)	-0.0409 (0.0584)			-0.00393 (0.0522)	-0.0435 (0.0486)			-0.100* (0.0525)
Compulsory education		-0.0148 (0.0485)		-0.0102 (0.0518)		-0.0607 (0.0448)		-0.0549 (0.0409)		0.0612 (0.0521)		0.110** (0.0441)
Access to high education			0.0375 (0.0622)	0.0487 (0.0647)			-0.0464 (0.0527)	-0.0258 (0.0537)				-0.0363 (0.0525)
log per capita GDP	0.0694 (0.731)	0.0396 (0.701)	-0.125 (0.690)	-0.0459 (0.759)	0.0317 (0.625)	0.119 (0.590)	0.0708 (0.638)	0.192 (0.665)	1.155** (0.462)	0.846* (0.462)	1.156** (0.487)	1.114* (0.577)
log per capita GDP squared	-0.00410 (0.0374)	-0.00260 (0.0359)	0.00624 (0.0348)	0.00156 (0.0391)	-0.000393 (0.0321)	-0.00591 (0.0304)	-0.00195 (0.0321)	-0.00955 (0.0342)	-0.057** (0.0241)	-0.0378 (0.0243)	-0.0552** (0.0249)	-0.0515* (0.0303)
Pupil-teacher ratio	-0.0426 (0.181)	-0.0475 (0.184)	-0.0120 (0.188)	-0.0148 (0.194)	0.000294 (0.233)	-0.0310 (0.241)	-0.0266 (0.230)	-0.0462 (0.237)	-0.0860 (0.169)	-0.0424 (0.168)	-0.105 (0.165)	-0.0631 (0.176)
% Schools with library	-0.353** (0.157)	-0.328** (0.141)	-0.325** (0.142)	-0.342** (0.156)	-0.212 (0.155)	-0.168 (0.143)	-0.192 (0.148)	-0.177 (0.157)	0.323 (0.147)	0.0470 (0.133)	0.0558 (0.140)	-0.0458 (0.144)
% Private schools	-0.133*** (0.0513)	-0.128** (0.0562)	-0.131** (0.0519)	-0.124** (0.0629)	-0.128** (0.0604)	-0.105* (0.0586)	-0.134** (0.0558)	-0.109* (0.0582)	0.0515 (0.0551)	0.0226 (0.0515)	0.0459 (0.0525)	0.00327 (0.0598)
% Fathers work full time	0.245 (0.255)	0.262 (0.254)	0.299 (0.258)	0.314 (0.268)	0.502*** (0.195)	0.555*** (0.206)	0.452** (0.204)	0.517** (0.215)	0.353 (0.236)	0.319 (0.230)	0.317 (0.245)	0.196 (0.221)
% Immigrant family	0.222 (0.280)	0.283 (0.277)	0.287 (0.285)	0.275 (0.312)	0.141 (0.274)	0.296 (0.265)	0.155 (0.264)	0.260 (0.252)	-0.321 (0.336)	-0.372 (0.374)	-0.296 (0.333)	-0.620* (0.374)
Constant	4.714 (3.447)	4.811 (3.354)	5.515* (3.314)	5.222 (3.551)	4.377 (2.921)	3.980 (2.798)	4.150 (3.042)	3.667 (3.113)	-1.389 (2.127)	-0.152 (2.112)	-1.453 (2.277)	-1.197 (2.639)
Observations	54	54	54	54	54	54	54	54	54	54	54	54
R-squared	0.221	0.236	0.180	0.148	0.508	0.537	0.517	0.532	0.553	0.540	0.530	0.528

Note: We use the following variables as instruments of constitutions: the legal origin of the constitutions (de Silanes et al., 1999), regional dummies, year of independence (we assign 1700 to countries that were never colonized), and interaction of the legal variables and regional dummies with the year of independence. Huber-White-corrected standard errors in parentheses.

*** Significant at 1%.

** Significant at 5%.

* Significant at 10%.

- *Years since the last educational right added*: Correspond to the difference between the year 2012 and the year in which the last educational right was included in the constitution. Consider the three educational rights used in the construction of the constitutional index. Source: <http://comparativeconstitutionsproject.org/>.
- *Per capita GDP*: In constant 2005 dollars. Source: World Bank Development Indicators.
- *PISA variables*. Mean country scores on math, reading and sciences for the 2009 and 2012 tests.
- *School, student and family variables*. Mean country values, constructed from information provided by the participants in the PISA test.
 - *Percentage of fathers that work full time*: Mean value of the "Working Full Time" category. Question ID ST16Q01.
 - *Percentage of immigrant families*: Percentage of students born in a country different that the country of the test. Question ID ST17Q01.
 - *Percentage of private schools*: Percentage computed from the total of schools participating in the PISA test. Question ID SC02Q01.
 - *Percentage of schools with library*: Percentage computed from the total of schools participating in the PISA test. Question ID ST40Q01.
 - *Pupil to full time teacher ratio*: Ratio of total number of boys (question ID SC06Q01) and girls (Question ID SC06Q02) to total full time teachers (Question ID SC09Q11).
 - *Percentage of homes with more than 100 books*: Question ID ST22Q01.
- *Legal origin*: Identifies the legal origin of the Company Law of Commercial Code of each country. There are five possible origins: (1) English Common Law; (2) French Commercial Code; (3) German Commercial Code; (4) Scandinavian Commercial Code; (5) Socialist/Communist Laws. Source: La Porta et al., 1998.
- *Independence year*: Equals to 1700 for countries that were never colonized.

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