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Better Schools for Europe

by

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I. Introduction

Pupils, parents, teachers, and governments in many European countries were not amused by the findings of the latest international evaluation of student performance in mathematics and natural science (TIMSS). For instance, British, French, and German pupils did not perform significantly better than their peers in the United States, where the public is deeply alarmed over the state of the schooling system, and much worse than pupils from several Asian countries. Up to now, convincing explanations are largely missing for the poor educational performance of European students. As diagnosed by Psacharopoulos (2000), European research on the economics of education in general lags considerably behind research on the United States and even on developing countries. But understanding the striking international differences in student performance may hold the key for future economic prosperity because a well-educated labor force will provide a competitive edge in tomorrow's knowledge-based society.

We try to identify which economic factors might be responsible for the large international differences in student performance. We present time series evidence for a number of European countries which suggests that rising educational expenditures obviously did not improve student performance. This finding is largely in line with the international literature on the (in)effectiveness of schooling expenditures and implies that schooling is often provided inefficiently in Europe. Therefore, we speculate that a reform of the institutions which govern the incentives within European schooling systems may be needed to achieve improved student performance.

To test this working hypothesis, we use the cross-country TIMSS data to identify institutional differences across national schooling systems. We find that for a given amount of schooling resources, the performance of pupils in many European countries could be vastly improved by changing the institutions which govern the incentives of students, teachers, and the school administration. Among the institutional features that appear to be most conducive to student performance are nation-wide examinations, administrative control mechanisms in curricular and budgetary matters, school autonomy in process and personnel decisions, choice of teaching methods by individual teachers, limited influence of teacher unions, and competition from private educational institutions.

Overall, our results show that the effectiveness of resource use in the schooling sector has declined more rapidly in many European countries than in the United States. What has been called a "productivity collapse" of US schools (Hanushek 1997) appears to be a small problem when compared with the situation in countries like France, Germany, and the United Kingdom. Given past experience, more educational expenditures will not necessarily suffice to turn failing European schools around. Rather than throwing money at the problem, a reform of schooling institutions is needed to get better schools for Europe.

II. Educational Expenditures and Student Performance: Schooling Productivity

In the average EU country, schooling accounts for a larger fraction of Gross Domestic Product (GDP) and employment than many manufacturing industries. Nevertheless, very little is known about changes in the productivity of schooling. Like other services, schooling is most likely a sector with stagnant productivity. Similar to performing a symphony or a haircut, schooling is labor intensive and the applied technology may not have changed much over the past quarter century, which is in stark contrast to technological developments in manufacturing industries. The labor input required to produce an automobile has declined significantly, but performing a symphony or a haircut requires the same amount of labor input as ever. Schooling may not be very different.

The productivity of public schooling can be measured as unit of schooling output per unit of schooling input. Schooling output is the number of students taught at public schools and schooling input is public spending on education at the primary and secondary level. A plausible first guess would be that schooling productivity, like haircut productivity or symphony productivity, does not change by much over time: in all cases, the consumer is part of the product, the production is labor intensive, and the technology is tried and tested. What hinders productivity growth is the combination of these features. Therefore, schooling like many other services is most likely to be a sector with stagnant productivity, where the same amount of input resources always produces the same amount of output.

Abstracting from all detail, it is quite instructive to consider what would happen in a perfectly flexible economy, if schooling actually displays stagnant productivity while all other sectors face a constant positive rate of productivity growth. The outcome would be what Baumol (1967) has called the cost disease of services. With a functioning labor market, the wages of workers in the stagnant-productivity sector would have to increase in line with those of workers in the other sectors where labor productivity increases. Hence with an efficient allocation of resources, the price per unit of output of the stagnant-productivity sector would rise with the average rate of productivity growth of the other dynamic sectors. Applying this insight to the case of schooling suggests that a constant-quality unit of schooling output should become more costly over time.

In addition, one could even predict the efficient *size* of the expected cost increase of schooling if the average rate of productivity growth of the dynamic sectors of the economy were known. So if average productivity would grow with 2 percent per year and efficiency conditions prevail, then the price of schooling (and of all other stagnant-productivity sectors) should grow by 2 percent as well. Putting this insight upside down, public expenditures per student should rise by 2 percent if schooling productivity had remained constant. However, if public expenditures per student would grow by more than the benchmark figure defined by productivity growth of the dynamic sectors of the economy, then either schooling productivity must have declined or the quality of schooling output in the form of student performance must have increased. We begin with the latter possibility.

The main problem with an empirical estimation of the predicted effects lies indeed with a correct measurement of potential changes in the quality of schooling output. In principle, changes in the quality of schooling output can be measured by the results of student achievement tests at various points in time. However, consistent time-series data on the cognitive achievement of students in standardized tests are available only for the case of the United States.[1] These tests suggest that there has been no substantial change in the average performance of US students in 1970-1994 (Hanushek 1997).

In addition to the time series US evidence, international test scores in various subjects are available for students of different age in selected years. Subject to specific assumptions about the level and the distribution of the reported test results and using the intertemporally constant performance of US students as a benchmark in each case, we have constructed a measure which proxies qualitative changes in the performance of students from selected countries relative to the performance of US students.

Table 1 presents our results for the calculated changes in the average performance of students from selected European countries in two subjects, namely natural science and mathematics.[2] A figure below 100 indicates that the performance of students declined relative to the constant performance of US students. Accordingly, a figure above 100 indicates that the performance increased. The overall impression from these calculations is that the performance of students has by and large remained constant, independent of the specific statistical assumptions chosen to calculate the index of schooling output. Overall, the estimated deviations from the constant US value of 100 appear to be small.[3] Perhaps with the exception of Sweden, there is no systematic evidence that the average student from a European country has made significant advances in cognitive achievement in 1970-1994.

Given that the quality of schooling output as measured by the performance of students actually did not change by much, and not for the better, it remains to be seen whether the actual rise in the price of schooling in these European countries would suggest stagnant productivity of schooling. As outlined above, this would be the case if the rise in the price of schooling would match the rate of productivity growth of the dynamic sectors of the economy.

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[1] The National Assessment of Educational Progress (NAEP) began to monitor the performance of students aged 9, 13 and 17 years in mathematics and science in the early 1970s. The NAEP has used the same assessment content and the same administration procedures over time, so the reported average test scores of US students are intertemporally comparable.

[2] Changes in the performance of students were calculated under alternative statistical assumptions (hypotheses H1-H3) about the level and the distribution of the underlying test results to check for the robustness of the applied procedures.

[3] This does not mean that there are no differences in the *level* of performance of students across countries, but our findings suggest that existing international differences in the performance of students *did not change* by much over the last 25 years.

Different from many other service sectors, there is a straightforward way to calculate the price of schooling. While it is somewhat difficult to disentangle the price component from the quantity component in services such as banking and insurance, the case of schooling can be settled more easily because a direct measure of quantity is available. Since total expenditure is defined as price times quantity, the price of a unit of public schooling output follows as total current public expenditure on primary and secondary education divided by the number of students enrolled. Given that student quality did not change over time, inflation-adjusted changes in expenditures per student reflect changes in the price of schooling.

Alternative deflators can be used to derive a measure of the price of schooling which indicates changes in schooling productivity. One possibility to assess changes in the productivity of schooling is to compare the GDP-deflated increase in the price of schooling with measures of total factor productivity (TFP) growth. Using consistent estimates of TFP growth for G7 countries from Dougherty and Jorgenson (1997) that match the relevant time period as closely as possible, our general finding is that the increase in the GDP-deflated price of schooling exceeds the TFP growth rates in the four large European countries by an order of magnitude (Figure 1). These findings do not fit together with the assumption of an efficient allocation of schooling resources, with Sweden and the Netherlands as possible exceptions. In all other cases, our results point to a decline in schooling productivity in European countries which is substantially larger than in the United States.

Almost the same result reappears if changes in the productivity of schooling are proxied by comparing the increase in the (nominal) price of schooling with the increase in the price of labor-intensive service categories like „producers of government services“ and „community, social, and personal services“ as reported in UN National Accounts data. Presuming that these two service categories exhibit stagnant productivity, any positive change in the price of schooling relative to these service-sector deflators should indicate a relative decline in schooling productivity.[4] Figure 2 shows declining schooling productivity for all European countries, and the amount of the productivity decline is substantially larger in most cases than in the United States. The two exceptions are again Sweden and the Netherlands.

Our figures imply that it does not matter much in practice whether changes in the GDP-deflated price of schooling are compared with the growth rate of TFP or whether changes in the price of schooling are compared with changes in prices of other services. On both counts, there is a huge decline in schooling productivity in many European countries in 1970-1994. For instance, an average annual decline in schooling productivity of more than 3 percent over a time span of 25 years, as in Germany, Italy, and France, could only be discussed away if the average performance of pupils in the 1994 achievement tests would have been more than twice as good as in 1970. But we do not find any evidence for improved student performance in these countries. By contrast, the only countries

[4] This approach has the advantage that no estimates of TFP growth are needed. The disadvantage is that it relies on presumed rather than observed stagnant productivity in specific other services.

where we find a slight improvement in student performance are those which report the lowest average increase in schooling resources per pupil, namely Sweden and the Netherlands.

Even substantial increases in schooling resources did not boost schooling quality. This finding confirms a large microeconometric literature, which failed to identify a positive relation between additional schooling inputs and student performance (cf. Hanushek 1996, Hoxby 2000). We conclude that the schooling sector can be regarded as inefficient in many European countries. Our interpretation of the evidence suggests that there is a need for institutional reform of European schooling systems. In the age of globalization, countries with inefficient schooling systems are likely to face a loss of international competitiveness, which will limit the possibilities for further economic development. Therefore, it is important to understand which institutional reforms might work in order to increase the productivity of schooling.

III. Policies to Increase the Productivity of Schooling: Institutions Matter

In most European countries (and worldwide), the great majority of schools is publicly financed and managed. The institutions and policies established by various levels of government create incentives for students, teachers, and the school administration to use available resources in ways that maximize the individual utility of these actors, given the constraints they face. Such a behavior may not be conducive to student performance under all circumstances. In many sectors competition imposes penalties on firms that fail to use their resources efficiently. But schooling may be different. A lack of competition could lead to an inefficient allocation of resources, which in turn will result in rising costs and rising prices as reported in the previous section.

Within a country's educational system, institutions determine the ways in which a society finances and manages its schools, how a society assesses student performance, and who is empowered to make basic educational decisions, such as which curricula to follow, teachers to hire, and textbooks to purchase. The challenge of all these institutions is to create a set of incentives that encourages students, teachers, and the school administration to behave in ways that do not necessarily further their narrowly defined own interests but instead further students' educational performance. For instance, without the right incentives, teachers may avoid using the most promising teaching techniques, preferring to use the techniques most convenient to themselves. In terms of policy, one might speculate that if a country assesses the performance of students with some sort of national exam and uses this information to monitor teachers, teachers will focus more on raising student achievement than would otherwise be the case.

To find out which schooling institutions are most conducive to student performance, we turn to the international evidence on student achievement. This is because the institutions within a country do not vary enough and are relatively stable over time. So testing how different institutions may impact on student achievement is almost impossible on the basis of within-country studies. Only the international evidence, which encompasses

many education systems with a wide variety of institutional structures, has the potential to show whether institutions heavily impact student performance. Our working hypothesis is that differences in educational institutions explain more of the international variation in student performance than differences in the resources which countries devote to schooling.

We use microdata from the Third International Mathematics and Science Study (TIMSS) to analyze how various institutions impact on educational performance at the student level. We focus on the middle school years, where students enrolled in the two adjacent grades containing the largest proportion of 13-year-old students were tested, which are 7th and 8th graders in most countries. Overall, our data set includes data on more than 250,000 individual students, who form a representative sample of a population of more than 30 million students in the 39 countries considered. Roughly two thirds of these countries are in Europe.

TIMSS not only contains student-level data on cognitive achievement, but also on family background and schooling resources, and it contains various institutional data: class-level data on teachers, and school- and country-level data on the distribution of decision-making powers within the education system. Further country-level data on institutional features of the education system are taken from the OECD educational indicators.

We deal with four main institutional features of a country's educational system: centralized exams; the distribution of decision-making power between schools and their governing bodies; the level of influence that teachers and teacher unions have on school policy; and the extent of competition from the private-school sector. But before we can test the empirical relevance of these factors, we must control for the possible effects of family background and availability of schooling resources on student performance. Without giving detailed results here, we find that the educational level achieved by parents is strongly positively related to their children's educational performance. Our results for the impact of school spending are consistent with the literature: we find no strong positive relationship between spending and student performance.[5]

Centralized exams

Of the 39 countries in the TIMSS sample, 15 have some kind of centralized exams, in the sense that an administrative body beyond the schooling level writes and administers the exams to all students. This can profoundly alter the incentive structure within the educational system by making performance comparable across classes and schools. It makes it easier to tell whether a given student's poor performance is an exception within a class or whether the whole class is doing poorly relative to the country as a whole. Centralized exams introduce transparency: parents can assess the performance of children, teachers, and schools; heads of school can assess the performance of teachers; and the government and administration can assess the performance of different schools. Hence we should expect centralized exams to boost student performance.

[5] Hanushek and Kimko (2000) find equivalent evidence on the lack of resource effects for previous cross-country achievement tests.

Our findings presented in Table 2 support these considerations (see results under heading No. 1), replicating previous evidence based on country-level estimations (Bishop 1997). All other things equal, students in countries with centralized exams scored 16 points higher in math, 11 higher in science, although the science finding is not statistically significant due to the small number of countries in the sample.[6] Furthermore, students in schools where external exams or standardized tests heavily influence the curriculum scored 4 points higher in math, though there appears to be no effect in science.[7] This probably suggests that science tests may lend themselves less readily to standardization.

Decision-making between schools and their governing bodies
Across countries in the TIMSS sample, some school systems are characterized by a high degree of administrative centralization, so that decisions on a wide range of issues are taken out of the individual schools' hands. Other school systems are highly decentralized; so most decisions are made at the local level. For instance, schools have a high degree of autonomy in the Netherlands, where 73 percent of decisions are taken at the local level, according to the OECD (1998). By contrast, Greece, Norway, and Portugal allow local school personnel to make less than 25 percent of decisions.

Whether granting more autonomy to schools will boost student performance is hard to predict. On the one hand, the educators within a given school should know more than central administrators about the most effective teaching strategies tailored for their time- and location-specific sample of students. Heads of schools should also have more knowledge than central administrators of which teachers to hire and of who deserves promotion or a raise in salary, given a fixed overall school budget. On the other hand, putting decisions on the size of the school budget in the hands of school personnel may make it easier for school personnel to reduce their workload. Hence more school autonomy may be good for student performance if, and only if, there are external standards and assessments which can control for school performance.

We begin by looking at the impact of a centrally designed curriculum and a centralized list of approved textbooks on student performance. These are essentially decisions about what schools are expected to cover. We find that students in countries with centralized curricula scored 11 points better in math, 6 in science (Table 2, results under heading No. 2). Students in countries with centralized textbook approval scored 10 points better in math, 6 in science. These findings seem suggestive even though the small number of independent observations causes statistically insignificant regression coefficients.

Moreover, students in schools that had primary responsibility for setting their own budget scored 6 points worse in math and 3 in science (the science effect is again statistically insignificant). But giving schools autonomy in purchasing their supplies goes hand in

[6] The math effect is statistically significant at the 15 percent level, and when imputed data are excluded in a more robust specification (not reported in Table 2), it is statistically significant at the 10 percent level.

[7] In contrast to the figure reported in Table 2, the science effect is statistically insignificantly positive in a more robust specification which excludes imputed data.

hand with superior achievement. This is also true for decisions on hiring teachers. Students in schools that hire their own teachers scored 13 points higher in math, 5 in science. Students in schools that determine their own structure of teacher salaries scored 11 points higher in math, 15 in science. Taken together, it seems that centralized decision-making on curriculum issues prevents schools from allocating resources inefficiently and thus raises student achievement. In turn, an easing of process and management regulations may allow schools to tailor their instruction in ways that fit their students.

The influence of teachers

Besides a student's family, teachers probably have the largest impact on student achievement. Teachers often face conflicting interests. Like all other employees, they clearly have a genuine interest in increasing their income at a given workload or decreasing their workload at a given income. But seeing their students learning also gives teachers pleasure, which encourages them to work harder no matter what their money income may be. Furthermore, teachers who perform poorly may face negative consequences from their heads of school or from parents.

Since teachers account for a relatively large fraction of the workforce, they are also a potentially powerful political interest group when acting collectively. The very aim of teacher unions is to promote the interests of teachers, namely mainly increasing their pay and decreasing their workload. Other things equal, strong teacher unions may result in weak student performance if they act to increase school resources but reduce the productivity with which these resources are used (Hoxby 1996). By contrast, the predicted effect on student performance is uncertain when teachers act individually. A high degree of teacher leeway in making decisions about which textbooks to buy should be conducive to student learning, since they know best how to teach their students. But a high degree of influence in determining salary levels or the amount of subject matter to be covered should be detrimental to student performance.

Our empirical results come close to confirming the expected effects (Table 2, see results under heading No. 3). Students in schools whose principals reported that teachers had primary responsibility for determining the school budget scored 13 points worse in math, 5 in science. Likewise, students of class teachers who reported that they had a lot of influence on the subject matter to be taught performed worse in science, while the effect in math was insignificant.[8] But students scored 14 points better in math and 7 points better in science if teachers had primary responsibility for buying supplies. As expected, teachers' influence on the curriculum needs to be divided according to how they exercise it. Students in schools where each teacher individually had a lot of influence on the curriculum performed 12 points better in math, 11 points in science. But in schools where teachers acting collectively as a union had a lot of influence over the curriculum, students performed 32 points worse in math, 18 points in science.

[8] In the more robust specification excluding imputed data, the science effect is larger and statistically significant.

Competition from private schools

The level of competition that public schools face from private schools is another important institutional feature. Because the loss of students to private schools may harm the heads of public schools in terms of reputation and money income, increased competition from private schools should have a positive effect on the efficiency of resource use in public schools. As a result, aggregate student performance may increase if the share of privately managed educational institutions increases.

The degree of competition from private schools varies greatly worldwide (Robitaille 1997). For instance in Europe, Austria, the Czech Republic, Denmark, France, Germany, Hungary, Iceland, Norway, Spain, and Sweden have virtually no financially independent private schools in the sense that they receive less than half of their core funding from government agencies. Less than 1 percent of Dutch schools are financially independent. But the Netherlands has by far the highest share of students attending privately *managed* schools (76 percent), followed by the United Kingdom (36 percent). Our empirical results, based on OECD data, suggest that students in countries with larger shares of their enrollment in privately managed schools scored significantly higher in both math and science.[9] If the share of enrollment in privately managed schools was 14 percentage points (or 1 standard deviation) higher, students scored 10 points better in math, 9 in science. The effect was even larger when only those private institutions that were financially independent were considered.

Viewed from a different perspective, the Netherlands and Belgium are by far the countries with the largest share of public funds going to private educational institutions (75 percent and 63 percent). By contrast, less than half a percent of public funding goes to private schools in Austria, Greece, and Ireland. We find that students from countries with a higher share of public-education spending going to private institutions performed better in math and science (though the effect in science is statistically insignificant). The effect was even stronger when only those expenditures were counted which went to independent private institutions that received less than half of their core funding from government. Our empirical results imply that if the share of public funds going to independent private schools rose by 1 percentage point (or 1 standard deviation), there was a 10 point increase in math achievement. This suggests that student performance is higher in educational systems where taxpayers' money is allocated by private schools rather than by the public schooling system.

Overall, our empirical results reveal that having centralized exams and a large private schooling sector seems to be conducive to student performance. Generally, school autonomy seems to have a positive impact - but only when schools are given extensive decision-making powers over the purchase of supplies, the hiring and rewarding of teachers within a given budget, and the choosing of instructional methods. Giving schools power over designing the curriculum syllabus, approving textbook lists, and determining the school budget seems to be detrimental to student performance. The effect

[9] Since these results are based on a different sample of countries, namely OECD countries, they are only referred to in the text and not in Table 2.

of teachers' influence seems to depend on how it is exercised. Students seem to benefit from their teachers' having influence over the curriculum, but only when they act as individuals and not as part of a union.

IV. Better Schools for Europe

In the emerging knowledge economy, nothing seems to be more important for the wealth of nations than a skilled and well-educated workforce. If Europe wants to prosper in the future, it has to get its schools right. Since early learning begets later learning (Heckman 1999), a sound basic education lays a lasting foundation on which specialized learning can build later on. And since specialized knowledge can quickly depreciate in the rapidly changing environments of a global economy, the basic knowledge learned in schools is the only enduring knowledge asset.

An obvious problem for education policy is that spending more money on schools did not have any payoff in Europe over the last quarter of a century. If Europe wants to increase the educational performance of its students, it must get right the institutional structure of its schooling systems. Our results show that differences in schooling institutions matter much more for international differences in student performance than differences in educational expenditures. For instance, a student who would face institutions that were all conducive to student performance would have scored more than 200 points higher on the TIMSS math test (and 150 points) on the science test than a student who faced institutions that were all detrimental to student performance. Such a test-score difference is five times as large as the difference produced by one year of schooling.

Hence the educational policy in Europe should not focus on providing more resources to schools. Rather, educational policy should focus on improving the institutional environment in which schools function. Spending more money within an institutional system that sets poor incentives will not improve student performance. More attention should be paid on how effective schooling systems can be organized. Educational policies will only be successful if they generate incentives within schooling systems to improve on performance and save on cost.

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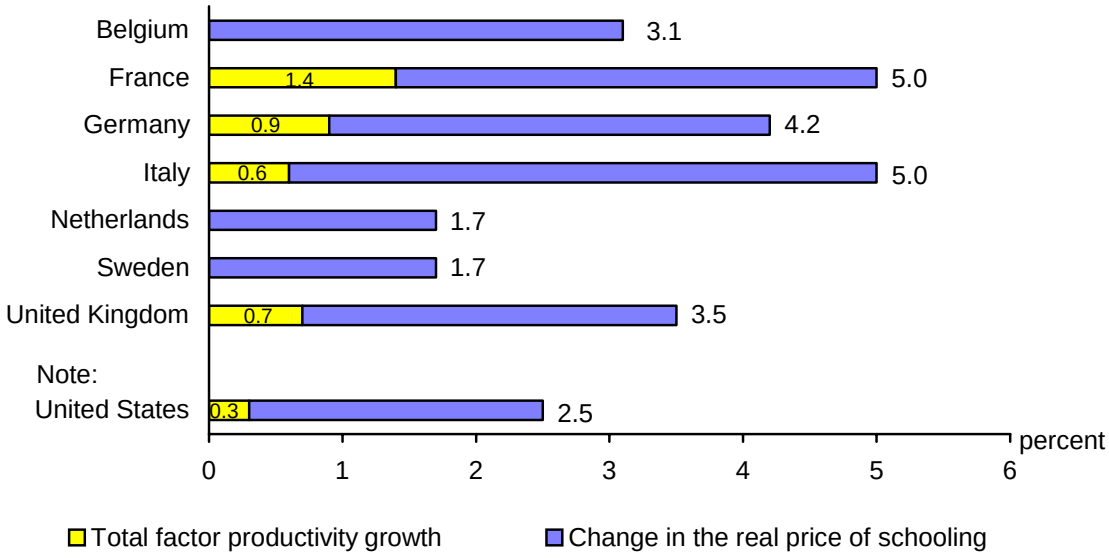
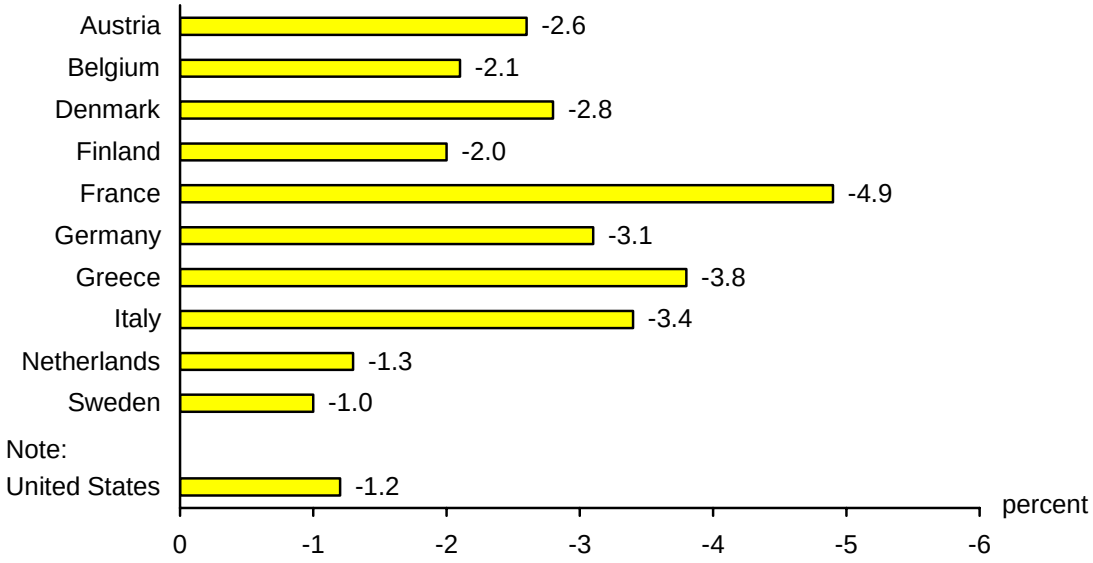
Figure 1 — Changes in the Real Price of Schooling[a] and Total Factor Productivity Growth[b], 1970–1994



[a] Change in the real price of schooling equals average annual change in public expenditures per student enrolled in primary and secondary education (UNESCO data), deflated with the GDP-deflator (UN data). — [b] Available only for selected countries.

Figure 2 — Changes in the Price of Schooling Relative to Other Labor-Intensive Service Sectors, 1970–1994[a]



[a] Difference between the average annual change in the price of schooling (UNESCO data) and the average annual change in the price of government services and community, social, and personal services (UN data).

Table 1: Changes in the Quality of Schooling Output in Selected European Countries, 1970-1994[a]

	H1	H2	H3
Belgium	95.3	95.4	96.7
France	93.4	93.4	93.6
Germany	95.2	95.4	97.1
Italy	101.3	101.3	101.4
Netherlands	101.7	101.9	103.5
Sweden	104.3	104.5	105.6
United Kingdom	91.8	92.1	93.6

[a] Average index based on the performance of students in standardized international achievement tests in natural science and mathematics, relative to the constant performance of US students; 1970=100; H1-H3 indicate alternative assumptions about mean and standard deviation of the test distributions.

Table 2: Selected Institutional Effects on Student Performance[a]

	Math		Science	
	Coeff.	Robust S.E.	Coeff.	Robust S.E.
1. Centralized exams				
Central examinations	16.062	(10.574)	10.650	(8.743)
External exams influence curriculum	4.271[‡]	(2.199)	-4.364[†]	(1.881)
2. Decision-making between schools and their governing bodies				
Central curriculum	10.776	(11.440)	5.573	(10.105)
Central textbook approval	9.559	(11.411)	6.157	(10.102)
School responsibility				
School budget	-5.852[†]	(2.450)	-3.451	(2.356)
Purchasing supplies	0.538	(3.488)	2.867	(3.308)
Hiring teachers	12.723[*]	(1.772)	5.247[*]	(1.473)
Determining teacher salaries	10.588[*]	(2.112)	15.162[*]	(1.817)
3. The influence of teachers				
Teachers' responsibility				
School budget	-13.318[*]	(3.805)	-4.583	(3.025)
Subject matter	-0.830	(1.585)	-1.213	(1.186)
Purchasing supplies	14.148[*]	(2.576)	6.837[*]	(2.062)
Strong influence on curriculum				
Teacher individually	11.952[*]	(1.730)	10.768[*]	(1.536)
Subject teachers	-6.855[*]	(1.897)	-4.573[*]	(1.625)
School teachers collectively	-12.659[*]	(1.836)	-5.034[*]	(1.575)
Teacher unions	-32.329[*]	(5.979)	-18.395[*]	(5.533)
Observations	266545		266545	
Schools (PSUs)	6107		6107	
Countries	39		39	
R^2 (adj.)	0.22		0.19	

[*] Significant at the 1 percent level based on robust standard errors.
[†] Significant at the 5 percent level based on robust standard errors.
[‡] Significant at the 10 percent level based on robust standard errors.

[a] Dependent variable is the TIMSS international test score, in math and in science. Results are based on weighted least squares regressions using sampling weights for the stratified survey data. The reported results control for a host of variables including grade level, student characteristics, family background, parental educational level, educational resource measures, and teacher characteristics. Robust standard errors based on robust linear regression are presented in parentheses, which account for the clustered data structure with countries as strata and schools as primary sampling units (PSUs). For the variables which are measured at the country level - central examinations, central curriculum, and central textbook approval - the reported robust standard errors are based on countries as PSUs.