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EDUCATION AND
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A prevailing view at the start of the transition was that education and training systems were among the few creations of the former communist countries that did not need fixing to function effectively in the capitalist world. It became apparent early in the transition, however, that this impression was profoundly mistaken. The accession countries soon encountered problems in maintaining their relatively advanced education systems as output and revenues fell and as ideologically motivated decentralization policies made local governments responsible for managing and financing most schools. At the same time, rising unemployment of graduates signaled a mismatch of education with the evolving skill needs of the competitive economy.

In many ways the accession countries face the same challenges as all of the countries in the Organisation for Economic Co-operation and Development (OECD). Globalization and competition are forcing all countries to rethink the role of education and training. The accelerated pace of technological change and evolving markets require a more agile and more adaptable labor force if economies are to remain competitive. Education programs need to do a better job of developing students' skills in critical thinking and application across the boundaries of conventional disciplines. Opportunities for lifelong learning need to be enriched to develop job-specific skills, to help keep skills up-to-date, and to retool skills for career changes. These challenges are considerably more difficult to meet in the accession countries for two reasons: they

require a more radical change from the structure and focus of the former system; and they are exacerbated by the economic and budgetary contraction that accompanied the transition.

This chapter examines the education and training challenges facing the accession countries as a result both of the transition and of the broader changes affecting all countries.¹ It focuses largely on changes in formal education at the primary and secondary levels, because it is at these levels that the equity-efficiency trade-offs are most acute and that incomplete decentralization policies are hampering reform. Questions of higher education finance are dealt with briefly in the text, and in greater detail in annex 7A.

THE LOGIC OF TRANSITION: EDUCATION

Understanding the current stresses and strains on the education systems of accession countries must begin with the systems of the past. That context coupled with the upheavals of economic transformation has pushed and distorted the evolution of the education systems and sets boundaries on the speed and direction of change.

The inherited system

Education in the accession countries prior to the transition covered virtually the entire population through the secondary level and was of high quality relative to the needs of the former system (Laporte and Schweitzer 1994). Access to higher education was, however, strictly controlled, basically limited to meeting the known needs for scientific and technical skills in the economy. Schools and universities were relatively well provisioned and maintained. The teaching profession enjoyed high prestige and attracted highly qualified candidates. The teaching process reinforced the ideological preeminence of societal needs over individual needs. As in the Soviet Union, education was intended to play an important role in creating a proletarian intelligentsia and promoting social mobility for groups that had been excluded from education and higher-level jobs under the prior order. In the process, however, it helped create a new intellectual and political elite. Preferential access to secondary and higher education for children of peasant and working-class families was an instrument of this policy (Fitzpatrick 1979). Pedagogy encouraged conformity with the established order. It discouraged personal inquisitiveness and individual initiative that might undermine the social order.

This system was no accident. The centrally planned process of economic production and directed consumption both enabled and required a close match

of the education and training system with the process of economic production. Physical production targets were set long in advance and technology was relatively static, so specific skill needs could be projected with considerable accuracy. Vocational and technical training were often offered in conjunction with in-enterprise training. Upon completion of education and training, graduates were assigned to jobs—often to lifetime jobs in the enterprises where they trained. Job stability, not job mobility, was encouraged. Wages and salaries were set normatively, rather than on the basis of marginal productivity, and played no role in allocating skills to where they were most needed. Salaries for highly educated workers were often lower than for jobs with minimal skill requirements. Both the structure of the economy and the focus of education emphasized manufacturing. Service-sector production was neglected; so were the skills—including humanities, business, and social sciences—associated with the service sector. The role of education as an instrument of personal growth and enrichment did not exist.

This system was internally consistent, but inefficient—for both individual welfare and productive efficiency. Education inputs were financed on the basis of centrally established norms. Input-based financing provided neither the opportunity nor the incentive to improve efficiency, resulting in gross overcapacity in facilities and staffing by comparison to OECD standards. The process of financing inputs was also ineffective as a quality control mechanism in comparison to approaches that more directly address program outputs such as enrollments, graduates, learning achievement, and labor-market relevance of skills. The broad coverage and relatively high quality of compulsory education masked the inequities of a system that remained highly elitist at higher levels, and that focused inordinate attention and resources on the most highly performing students.

The impacts of transition

The transition involved numerous changes in the economy that led to a major reconfiguration in the composition and types of skills needed in the labor market. Fundamental reforms were needed if education programs were to respond to those changes. However, it was difficult for education programs to reform effectively because the transition also led to a collapse of the traditional sources of financing for education programs. Political changes that accompanied the transition also affected education programs. A major motivation for the transition was the desire for more responsive government with greater input at the local level. In all of the accession countries, one of the first acts of the transition governments was to decentralize responsibility for finance and delivery of

basic education. As discussed below, the manner in which decentralization occurred seriously affected the quality and equity of education programs in the accession countries.

Impacts on economic output

The economies of the accession countries were deeply affected by the breakup of the Soviet Union and the dissolution of the Soviet economic block. Output levels fell sharply at the start of the transition in most of the accession countries, which led to a collapse in the revenues available for education. Although the output declines were not as steep or as prolonged as in the Commonwealth of Independent States,² they were nonetheless significant (figure 2.2). In most of the accession countries, the cumulative decline in output was at least as large as the fall in output in Europe and the United States during the Great Depression of the 1930s (see chapter 2 of this volume, and World Bank 2002). The decline in production and income in the accession countries and the even steeper declines in the former Soviet Union compelled enterprises to find new markets for their products and to compete more vigorously with other suppliers in selling to those markets. Public revenues fell even more steeply than national output, as the formal-sector tax base bore the brunt of the output decline.

Impacts on labor markets and skill requirements

The transition launched three broad trends with mutually reinforcing effects on labor markets and skill requirements:

- First, market liberalization meant that production was driven by consumer choice rather than by central production targets. Prices of outputs and inputs were freed from administrative control. Wage and salary levels were no longer normatively set but were free to reflect differences in productivity and to signal emerging scarcities and redundancies in specific labor-market skills. Market liberalization led to a major reconfiguration of the structure of production and the creation of entirely new industries, especially in the service sector. It also led to major adjustments in the returns to skills: earnings in most low-skill occupations, especially in the manufacturing sector, fell sharply relative to salaries in occupations requiring higher skill levels.
- Second, the opening of the accession economies and the disappearance of subsidies and guaranteed markets required that enterprises compete to survive. This created powerful new incentives for efficiency in production. Inefficient enterprises—including many of the largest employers—closed or were restructured. Efficient enterprises and enterprises that responded to

long-stifled consumer demand prospered. Market stability was replaced by more rapid succession of economic specializations or “niches.”

- Third, freer flows of trade, of financial resources, of information, and of human capital interacted with an acceleration of technological change throughout the global economy, reinforcing the other demands for change in the accession economies. New applications such as the replacement of mechanical control with digital control in manufacturing; the substitution of robotics and production teams for repetitive, assembly line tasks; miniaturization; substitution of lighter, cleaner, and cheaper materials; and the proliferation of web-based information, communications, and marketing lowered the value of “old” skills. Improved information and communications technology contributed to these changes in various ways. It accelerated technological change by speeding the diffusion of new technologies. It also accelerated the evolution of markets by enabling just-in-time provision of inputs to production, thereby reducing the need for inventories of inputs, and, as a result, reducing the buffering effect of inventories.

These fundamental changes in the economy introduced less predictability in labor-market skill requirements. The immediate consequences were dramatic. The shrinking of many traditional activities (often in the manufacturing sector) and the growth of other activities (often in the service sector) transformed the demand for skills, making many skills redundant and creating excess demand for others. Open and sizable unemployment appeared. Lifetime employment became the exception rather than the rule. The more typical pattern that appears to be replacing it is a need to change jobs—and often occupations—several times in the course of one’s working life.

Impacts on education budgets

At the same time that the transition brought with it the need for these fundamental changes in education programs, it also made funding education more difficult. Real GDP declined early in the 1990s in all of the accession countries (figure 2.2), but there was considerable variation in the degree of recovery at the end of the decade (table 7.1). In 2000, real GDP remained seriously below its 1990 level in Bulgaria, Estonia, Latvia, Lithuania, and Romania, but had recovered to at least its 1990 level in the Czech Republic, Hungary, Poland, the Slovak Republic, and Slovenia. The impacts on education budgets were even more diverse. In some cases, the allocations of public budget compensated for the effect of falling GDP on governmental resources; in others, it reinforced that effect. In Bulgaria, budget allocations accentuated the decline in GDP and contributed to the most severe decline in education expenditures in the acces-

TABLE 7.1 Real changes in GDP and public expenditures on education, 1990–2000

	<i>Real GDP in 2000 as % of 1990 GDP</i>	<i>Real expenditures on education as % of 1990 level</i>	
		<i>1995</i>	<i>2000</i>
Bulgaria	82.1	52.6	40.3
Czech Republic	99.9	118.3	96.0
Estonia	86.1	91.2	108.5
Hungary	108.0	93.5	98.6
Latvia	62.3	86.5	116.1
Lithuania	68.4	69.1	70.1
Poland	143.2	154.6	211.0
Romania	82.9	154.8	128.9
Slovak Republic	105.1	90.1	81.3
Slovenia	120.1	117.8	139.5

Source: World Bank database.

Note: Expenditure figures refer to consolidated (central plus local) general budget.

sion countries: real education expenditures in Bulgaria in the year 2000 were just 40 percent of their 1990 level. In Estonia, Latvia, and Romania, budget allocations played a strong compensatory role: real public outlays for education rose in spite of falling GDP over the decade. In Poland and Slovenia, budget allocations reinforced the effect of rising GDP: real education expenditures increased even more than GDP. In Lithuania, increasing budget allocations protected education expenditures from falling as deeply as GDP over the 1990s. In the Czech Republic, budget allocations protected real education expenditures in the first half of the decade, then moved to other priorities leaving lower real spending for education during the second half of the decade. In Hungary and the Slovak Republic, GDP grew over the decade, but real public outlays for education fell; falling budget shares more than offset the effect of growing GDP. (Note, however, that the student population in most the accession countries also declined over the period, so the declines in spending per pupil are not as sharp as seen in the declines of total real expenditure. These declines, discussed below, are generally insufficient to reverse the decreases in spending in table 7.1 with the possible exception of Hungary, but they reinforce the spending growth in Estonia, Latvia, Romania, and Slovenia).

The accession governments' initial response to collapsing revenues and collapsing education budgets at the start of the transition focused on reducing expenditures and diversifying financing sources. Reduced expenditures occurred

largely through sharply reduced budget outlays for preschool education, suspension of expenditures for renewing educational materials, arrears in teacher salary payments at the start of the transition, and falling real salary levels thereafter. Sources of financing were diversified through five sets of actions:

- Decentralizing the responsibility for financing and managing most primary and secondary education programs from central to regional and local governments
- Introducing student fees and other user charges (including “contracted” provision of secondary and higher education within public schools and universities for students with entry scores below the threshold for budget-financed admission)
- Requiring parents to purchase textbooks and other educational materials that had formerly been provided free by schools
- Expanding private education
- Allowing schools to raise and retain funds through actions such as rental or sale of unneeded facilities and provision of paid extracurricular courses.

In addition, many teachers and school principals generated income through paid tutoring and solicitation of informal payments from students and parents.

These actions led to a number of adverse consequences for education programs, including the closure of many preschools and a decline in preschool enrollment early in the transition. The increased reliance on financing from local governments and households with different capacities contributed to the emergence of large differences in education quality. This may have contributed to the declines in coverage that were observed for primary and secondary education in Bulgaria and for secondary education in Romania. Reliance on extra-budgetary sources of financing often created perverse incentives, such as the incentive for teachers not to cover the complete curriculum in class to create a demand for paid, extramural tutorial instruction; and the incentive for production activities in vocational schools and service provision in general secondary schools—such as offering computer classes to the community—to displace educational activities. Although it is difficult to document, corruption in the form of solicitation of informal payments for better examination scores and for admission to university programs also became (and remains) a serious concern in some of the accession countries.

Changing education quality

Student assessment provides the best indication of changes in education quality with regard to learning achievement. For the accession countries, the most

inclusive source of internationally comparable data on what students learn is the Trends in International Mathematics and Science Study (TIMSS), which was carried out for a nationally representative sample of eighth-grade students in 24 countries in 1995, 39 countries in 1999, and 45 countries in 2003.³ Seven accession countries—Bulgaria, Hungary, Latvia, Lithuania, Romania, the Slovak Republic, and Slovenia—participated in all three assessments, and the Czech Republic participated in both the 1995 and 1999 surveys. As shown in table 7.2, four of the accession countries had mean math and science scores above the international—largely OECD—average in 1995. By 1999, the pattern of performance was changing. Only two countries were above the international average in both subjects (the Slovak Republic and Hungary), while the Czech Republic remained above the international average in science. Latvia's and Lithuania's average math and science scores improved significantly in 1999, but not enough to take them above the international average. The international average fell sharply in 2003, because of the inclusion of a number of low-scoring developing countries in the assessment. Thus, the comparison to the average is not as meaningful in 2003, but the fact that Bulgaria and Romania are close to the new, lower average level is telling. Estonia, which first participated in 2003, outscored all of the accession countries.

TABLE 7.2 TIMSS eighth grade student assessment results for science and math for eight accession countries, 1995 and 1999

	<i>Mathematics mean score</i>			<i>Science mean score</i>		
	<i>1995</i>	<i>1999</i>	<i>2003</i>	<i>1995</i>	<i>1999</i>	<i>2003</i>
Czech Republic	546	520	n.a.	555	539	n.a.
Slovak Republic	534	534	<i>508</i>	532	535	<i>517</i>
Hungary	527	532	529	537	552	543
Bulgaria	527	511	<i>476</i>	545	518	<i>479</i>
International Average	519	521	466	518	521	473
Slovenia	494	n.a.	493	514	n.a.	520
Latvia	488	505	505	476	503	513
Romania	474	472	475	471	472	470
Lithuania	472	482	502	464	488	519

Source: International Association for the Evaluation of Educational Achievement 2000a, 2000b; National Center for Education Statistics 2004.

Note: Scores for 2003 in **bold** indicate significant increases and in *italics* indicate significant decreases between 1995 and 2003. n.a. = Not available. The Czech Republic did not participate in 2003 and changes in schooling ages make the 1999 scores for Slovenia not comparable to the 2003 scores. The significantly lower international average for 2003 reflects the addition of many low-scoring developing countries during that year.

Tracking the changes over time is illuminating. Latvia and Lithuania showed very significant gains between 1995 and 2003 in both subjects, and Slovenia had significant science gains. In contrast, the Slovak Republic and Bulgaria showed significant declines over the 1995–2003 period. The Czech Republic, which did not participate in the most recent testing, dropped sharply between 1995 and 1999.⁴

Because Bulgaria experienced the largest real decline in public budgets for education during the decade and the largest drop in combined math and science scores, it is tempting to suspect a direct relationship between education expenditures and student assessment results. However, the data in tables 7.1 and 7.2 show, as do many other studies, that there is no simple relationship between education expenditures (or changes in education expenditures) and average levels of student achievement (or changes in average student achievement). In contrast to Bulgaria's experience, Lithuania achieved dramatically improved average scores despite lower expenditures on education, and scores in Romania remained constant even with significant increases in expenditure from 1990.

Increases in educational inequality

As chapter 2 describes, the economic dislocation of transition and the policy actions to respond to it led to a sharp increase in income inequality in the accession countries. Income inequality among households worsened during the decade in all of the accession countries, with the average Gini coefficient⁵ rising from 0.23 at the start of the decade to 0.32 by 2000 (World Bank 2002). Increasing reliance on financing from households and local communities led to greater between-school differences in the availability of teaching and learning resources. Local governments vary widely in their capacity to mobilize resources from local taxes and other sources (including parental contributions). Thus, the shifting of financing responsibilities to local communities and to parents has meant that schools in poor communities are often poorly maintained and poorly equipped with teaching and learning materials, while schools in more prosperous communities are often well maintained and well equipped.

These transition-related differences in the objective aspects of teaching and the learning environment may well have exacerbated differences in student learning achievement, particularly between urban and rural areas. The most systematic differences in educational performance in the accession countries are the differences between urban and rural schools. In Romania, for example, fourth grade students in rural areas consistently perform below their urban counterparts (table 7.3). This gap is consistent with not only the poorer resource endowment of rural communities and rural schools, but also the generally lower

TABLE 7.3 Urban-rural differences in fourth grade assessment in romania

<i>Subject</i>	<i>Location</i>	<i>Share at each level of performance (%)</i>			
		<i>Low</i>	<i>Medium</i>	<i>Good</i>	<i>Very good</i>
Mother tongue	Urban	3.5	6.9	18.8	70.8
	Rural	17.0	17.1	29.9	36.1
Mathematics	Urban	4.5	7.4	28.0	60.2
	Rural	17.2	19.6	32.0	31.2
Sciences	Urban	1.2	6.3	31.8	60.7
	Rural	8.2	17.9	40.3	33.6

Source: Stoica 2002.

qualifications and experience of teachers in rural areas, the poverty of rural households that makes it hard for them to afford education-related purchases, the lower educational status of rural parents, and the relative lack of educational stimuli in the rural environment. Cost differences exacerbate the resource differences between urban and rural areas. Costs of education are higher in rural areas than in urban areas because dispersion of population leads to uneconomically small class sizes, large transport costs, or both. Dispersed rural population complicates the task of school rationalization. In Lithuania, for example, 13 percent of rural comprehensive schools have an average of 5 students per class in grades six through nine, 23 percent have 7 students per class, and 31 percent have 10 students per class—class sizes that appear too small to be rational (Economic Research Centre 1999). Heating and utility costs also tend to be higher for rural schools. Because these intrinsic sources of higher unit costs of education are most prevalent in areas with the smallest revenue base, they tend to reinforce the differences in educational quality that result from urban-rural differences in household income and local revenue capacity.

One of the few other sources of international comparative data on education quality differences within the accession countries is the Programme for International Student Assessment (PISA) for 2000.⁶ This study was carried out by the OECD for a sample of 15-year-olds in 31 countries (including Bulgaria, the Czech Republic, Hungary, Latvia, Poland, and Romania,) in 2000. By comparison to the TIMSS surveys, the PISA surveys make a particular effort to assess students' skills in application and synthesis of concepts—the generic skills that are most relevant to the needs of the global economy. Mean scores for the six accession countries represented in the survey are all below the OECD average, ranging from the Czech Republic (2 percent [eight points] below the OECD average) to Romania (14 percent [72 points] below the OECD average) (table 7.4). In all the accession countries except Hungary, there is greater

TABLE 7.4 PISA Student assessment results for literacy for 15-year-olds for OECD and six accession countries, 2000

	Mean score	Total variation in student results ^a	Percentage of total variation resulting from between-school variation ^a
OECD average	500	100.0	36.0
Czech Republic	492	100.0	51.9
Hungary	480	95.0	71.2
Poland	479	107.3	67.0
Latvia	458	112.5	35.1
Bulgaria	430	112.1	66.1
Romania	428	n.a.	n.a.

Source: OECD and UNESCO Institute of Statistics 2003.

Note: ^a expressed as a percentage of the average variation in student performance in OECD countries.

dispersion of student assessment results than the OECD average. In all but Latvia, much more of the variation in student assessment results is explained by between-school differences than is true for the OECD average. These greater between-school differences in student achievement in Bulgaria, the Czech Republic, Hungary, and Poland may reflect greater between-school differences in financing that have emerged under the transition. Unfortunately, there are no time series data that would allow confirmation of these results over time. There is a strong suspicion, for example, that many of the urban-rural outcome differences have existed for some time—since before transition. Regardless of their time trends and their causes, these sizeable between-school differences in what students learn should be a cause for concern—for reasons of both economic performance and equity—in countries that aspire to educate all students to international standards.

Another international study that sheds further light on education and skill requirements in the accession countries is the survey carried out by the International Adult Literacy Survey, the OECD, and Statistics Canada in the mid-1990s (OECD and Statistics Canada 1997). This study examines adults' understanding of concepts and their ability to apply them effectively in 11 OECD countries and Poland. It finds that 75 percent of the Polish population ages 16 to 65 years performed below the level judged necessary by labor-market experts and employers to function effectively in an information-rich workplace—far below the level recorded for the OECD countries. The same study found much lower levels of unemployment and higher levels of earnings among workers of higher functional literacy proficiency in all the countries surveyed.

Follow-up work supported by Statistics Canada documented the deterioration of functional literacy skills over time unless these skills are maintained through subsequent training or work experience in an information-rich work environment (Coulombe, Tremblay, and Marchand 2004). An implication of these findings is that the education system of Poland—and presumably of the other accession countries as well—does a better job of imparting concepts than the ability to apply concepts. It also suggests that whatever practical skills the education system does manage to impart deteriorate more rapidly than they would in a more information-rich working environment and an environment that offers more opportunities for lifelong learning.

Reform directions

The impacts of transition implied that the inherited education and training programs, however appropriate they may have been for the former system, were unlikely to meet the skill requirements of the new market economy. This, in turn, implied a need for urgent reforms in two broad areas: content and structure; and finance and management. This section describes what reforms are needed in both these areas as result of the transition. It also explains the main reasons the transition requires these reforms.

Reform of content and structure

Transition implies a need for change in the content and structure of education and training programs to respond to the economic changes described above—the instability and unpredictability of labor-force skill requirements, the higher technical content of occupations in all branches of economic activity, the more rapid succession of technologies and market niches, and the changing nature of work itself.

EDUCATION AND TRAINING CONTENT. To survive in this dynamic new world, individuals need not only to keep their technical skills up-to-date but also to fundamentally change their approach to work. Increasingly, labor-market success requires that individuals become inquisitive, flexible, adept at working as members of teams, knowledgeable about sources of reliable information, and alert to evolving opportunities (OECD 2001; World Bank 1999, 2003). Getting and keeping a job is no longer assured; it requires initiative. Education programs need a fundamental reorientation to respond to these needs. The inherited education systems in the accession countries were generally strong in conveying factual knowledge—especially in mathematics and natural science programs. They were not as good at developing critical think-

ing skills and skills of application and synthesis. The content of education programs needs to be changed to give more attention to higher-order skills of application and synthesis and critical thinking. This calls for a different approach to teaching, and for access to a richer environment of educational resources for students and teachers.

EDUCATION AND TRAINING STRUCTURE. The structure of education and training also needs to change to become more responsive to evolving needs of the economy. Several types of changes are called for. The emerging demand for skills in areas such as foreign languages and computer applications means that the traditional distinction between academic and vocational or technical specializations is increasingly obsolete, because many of the most highly demanded skills in labor markets are typically offered in structured academic programs. The streaming or tracking of students into specialized vocational and technical programs and the highly selective admission into higher education need to be softened and made less ultimate. To the extent that specialized programs of vocational and technical education are offered in secondary and higher education, they need to be developed in ways that provide generalizable skills—skills that will not become obsolete immediately with changes in technology and industrial structure. The transition of the educational structure will be facilitated by providing better information to parents and students about the career implications of alternative educational choices and by promoting more student involvement in decisions about the changing structure of education and training programs.

Specialized training programs also need to be developed to provide relevant adult training opportunities for people in and out of the labor market. Adult training and continuing education are important for three reasons: to upgrade skills to keep workers competitive in occupations with changing technology, to provide occupational mobility by equipping workers with new skills to change occupations, and for personal enrichment. In view of the nonexistence of such programs under the inherited system, responding to this need constitutes a major challenge, involving the development of a framework for training providers and of appropriate incentives and financing mechanisms for delivery of training by a diverse range of providers.

Reform of finance and management

Reform of education finance and management is needed for two reasons. First, efficiency in the use of education resources (staff, facilities, materials, and budgets) must be improved. While not a new problem, the budget pressures of the transition made it more urgent, and the decentralization measures that were

expected to bring improved efficiency failed to do so. Second, reform was needed to correct the problems of declining education quality and increasing educational inequality described above.

The manner in which the accession countries decentralized the responsibility for delivery of primary and secondary education had major effects on budget resources for education. Decentralization in the accession countries typically involved financing teacher salaries from the state budget but devolving responsibility for school maintenance and provision of educational materials (and often even teacher training) to local governments. In principle, the decentralization of responsibilities for education finance and management to local governments offers the potential to make the management of education more efficient and the content of education more responsive to local needs. It could also encourage the mobilization of additional resources for education. However, fundamental problems in the design of decentralization policy in the accession countries have blocked the attainment of these benefits.

Teacher and classroom utilization in the accession countries was low at the start of the transition by comparison to the OECD countries and deteriorated further during the 1990s (table 7.5). Fertility declines led to declining school-age population—and often enrollments—in all the accession countries except Poland and the Slovak Republic. Rather than using this opportunity to reconfigure schools to improve school efficiency, local and central governments tended to cooperate in maintaining existing teaching positions, schools, and classrooms—letting adjustment come through decreases in student-teacher ratios. (The same pattern was also apparent, but to a lesser degree, in the OECD countries.) Country norms on minimum teaching hours in the accession countries are also low by OECD standards. For example, teaching hours in primary schooling average 583 hours per year in Hungary and 724 hours in the Czech Republic compared with 958 hours in the United States, and 788 hours in the OECD as a whole (OECD 2000). These problems of persistent inefficiency in use of education resources reflect a lack of incentives in the financing and management formula for schools, and are discussed later in this chapter.

Shortcomings in financing and management contributed to quality and inequity problems in higher education, where rapid enrollment growth and declining budgets early in the transition led to a serious deterioration of teaching and learning conditions, including the obsolescence and nonrenewal of educational equipment and materials of all kinds. Mobilization of additional resources and more selective use of existing resources are clearly needed to improve the quality of higher education. Changes in financing and management of higher education are also needed to address problems of equity and efficiency, as described later in this chapter and in annex 7A.

TABLE 7.5 Changes in student-to-teacher ratios, accession countries and OECD comparators

	Average annual population growth in %, 1990–97	Student-to-teacher ratio in primary education	
		1990	1997
Bulgaria	-0.7	14.8	13.9
Czech Republic	-0.1	19.6	14.5
Estonia	-1.2	10.5	11.7
Hungary	-0.3	12.5	12.2
Latvia	-1.1	—	12.0
Lithuania	-0.1	12.0	11.3
Poland	0.2	16.7	15.4
Romania	-0.4	16.7	14.8
Slovak Republic	0.2	19.4	17.1
Slovenia	-0.1	15.4	13.5
OECD average	—	20.9	17.1
Japan	-0.2	—	21.4
Republic of Korea	0.6	—	31.0
United Kingdom	0.4	—	22.0
New Zealand	1.3	—	24.7

Source: Population growth from World Development Indicators. Accession country student-to-teacher ratios from UNICEF-ICDC database, as provided in Berryman 2000.

Note: — Not available.

EDUCATION UNDER ACCESSION

European Union (EU) accession conditionality consists of three parts:

- Specific legislation addresses education and training only in terms of inclusiveness goals, because the EU has consistently treated education as falling under the competence of the member states.
- Other relevant legislation under the Growth and Stability Pact affects education and training only indirectly through fiscal conditionality.
- Nonbinding coordination includes three specific targets for education and training programs in member states, including the accession countries. These are: to increase the percentage of 22-year-olds who have completed at least upper secondary education to 85 percent in each member state by 2010; to increase the number of working adults (ages 25 to 64) receiving training and continuing education to an EU-wide average of 12.5 percent by 2010; and to reduce the number of students who drop out of school before completing compulsory education to 10 percent in each member

state by 2010 (European Union 2003). These targets are monitored in the annual Joint Assessments of Employment Priorities as part of the Open Method of Coordination exercise.

This section first describes the challenges involved in meeting current EU conditionality affecting education and training. Next, it examines whether and to what extent broader EU conditionality has been helpful in addressing the reform needs summarized earlier.

Meeting EU accession conditionality

Meeting the formal requirements of accession involves (a) filling the remaining gaps in enrollments and school attendance (largely a matter of devising more effective strategies for addressing the educational and noneducational causes of early drop outs) and (b) beginning to develop an effective capacity for adult training. However, the older EU members themselves are finding that maintaining competitiveness in the global knowledge economy requires considerable changes in their own education systems. These changes and their implications for the accession countries are discussed later in this chapter.

Closing the gaps in school enrollment

Despite the difficulties experienced by the accession countries during the 1990s, official data on school enrollments generally show improved coverage of preschool, primary, and, especially, higher education (expressed as a percentage of the relevant age group enrolled in school) in the accession countries (table 7.6). Registered enrollments actually declined as a percentage of the age group in two countries at the preschool level (Lithuania and the Slovak Republic), in four countries at the primary level (Bulgaria, the Czech Republic, Hungary, and Latvia), and in five countries at the secondary level (Bulgaria, the Czech Republic, Latvia, Lithuania, and, especially, Romania).⁷ Most of the registered decline in secondary enrollments occurred in vocational and technical education. In Romania, for example, the enrollment in secondary vocational and technical education declined from 78 percent of the age group in 1990 to 44 percent in 1999, while enrollment in general secondary education increased from 12 percent of the age group to 26 percent in 1999.⁸ Where it occurred, the decline in secondary enrollments—especially in secondary vocational enrollments—reflects both the weakened links with enterprises during the transition and a perception that vocational secondary education no longer ensures jobs for graduates. (Many of the enterprises that had traditionally recruited secondary vocational students at the completion of their training

TABLE 7.6 Enrollment ratios through the transition

	Preschool net enrollment ratio (%)		Primary gross enrollment ratio (%)		Secondary gross enrollment ratio (%)		University gross enrollment ratio (%)	
	1990	1999	1990	1999	1990	1999	1990	1999
Bulgaria	66	66	99	95	77	76	26	35
Czech Republic	75	85	99	98	79	76	17	26
Estonia	67	74	95	98	57	72	34	45
Hungary	85	87	99	99	73	99	12	29
Latvia	45	61	95	92	70	69	21	46
Lithuania	56	52	93	96	70	65	27	39
Poland	47	50	98	98	89	100	17	43
Romania	53	66	93	99	90	70	9	23
Slovak Republic	72	70	98	108	78	80	14	23
Slovenia	56	70	95	97	—	93	23	51

Source: UNICEF 2001.

Note: — Not available. Figures shown are gross enrollment ratios, which tend to overstate actual coverage because they include over-age students in the numerator but not in the denominator.

closed or reduced their staffing and no longer recruited graduating students.) Part of the decline, however, may also reflect the pressure for some students to enter the labor market at an early age to augment falling household income. The expansion of higher education enrollments during the 1990s was striking, amounting to more than a doubling of enrollments in many of the accession countries. This rapid growth came about both through a liberalized university admission process (especially for fee-paid contract courses) and through rapid development of private higher education.

Although the figures in table 7.6 do not specifically show compulsory education enrollment rates or completion rates, most of the accession countries have reached the 90 percent completion goal for compulsory education. Three accession countries (Hungary, Poland, and Slovenia) have already surpassed the EU secondary completion goal. The other seven accession countries, however, face a considerable gap in secondary enrollments. Closing this gap will require sustained effort and imaginative policies to achieve the 85 percent completion goal by 2010. This will need to include both educational initiatives (such as counseling and tutoring for students with learning difficulties) and economic initiatives (such as targeted subsidies to poor students to defray the cost of school transport and purchase or rental of textbooks and school supplies). One specific and important schooling challenge in the accession countries is to raise the low completion rates and low performance levels of Roma children (box 7.1).

**BOX 7.1 A Special Dimension of Education Coverage:
Education of Roma Children**

An important dimension of the problem of education coverage in the accession countries is the widespread phenomenon of low school attendance among Roma children. Roma children often start school, but drop out during the initial grades of primary schooling. Language is one of the problems that Roma children face in school. Although all of the accession countries offer minority-language instruction for other ethnic groups, Roma students do not benefit from these programs because there is no consensus on an appropriate version of the Romany language. In addition to the linguistic problem that Roma children face in school, there are other handicaps of Roma families that contribute to low school attendance.^a Parents are often illiterate and do not appreciate the importance of education. Low income makes it difficult for most Roma households to purchase the textbooks and other school supplies that parents are expected to provide. Roma children often work in the informal sector to supplement meager family income. Many Roma children do not have a reasonable command of any of the languages of instruction in schools. Many Roma families lack legal status and are therefore denied access to schools, health care, and other services. Roma often marry and start childbearing as early as age 12. Of those Roma children who do complete primary school, few attend secondary school or go on to university education. Recent survey data show that school attendance among primary-school-age Roma children is 61.5 percent in Bulgaria, 86.2 percent in Hungary, and 72.0 percent in Romania.^b Another problem is that Roma children who do attend primary school are often stigmatized by being assigned to schools for the handicapped, because of their lack of command of the national language and other educational handicaps resulting from their environment.

A number of approaches to improving the educational performance of Roma children and other at-risk groups have proven successful in the region, including preschool education in the Romany language or in a multilingual environment, parental education, assistance in legal registration, and assistance in job placement or self employment at completion of schooling. The experience with Roma-targeted programs in the region shows that an inclusive approach that combines these dimensions of support offers the best prospects for raising school participation and school performance among the Roma population—especially when it involves child-centered learning methodologies and the commitment of the Roma community. Other successful measures to improve Roma school attendance and educational performance include provision of financial incentives to schools that attract and

Box 7.1 *Continued*

retain Roma students, provision of catch-up classes for Roma drop-outs and tutoring for Roma students, special training for teachers of Roma children and provision of linguistic and cultural mediators in schools with Roma students, and offering of optional Romany language and culture classes. At a July 2003 international conference, the accession countries with the largest Roma minorities committed themselves to developing and implementing a 10-year action program to improve the social inclusion of their Roma minorities through better education, health care, housing, and job opportunities. The countries and agencies that sponsored the conference agreed to develop a Roma Education Fund to help finance educational interventions under this initiative.

The challenges for integration of the Roma population in Central and Eastern Europe and some of the successful approaches for doing so are summarized in Ringold, Orenstein, and Wilkens 2003.

Data from six-country study on living conditions carried out by Yale University Department of Sociology.

Providing adult training

Considerable effort will be required on the part of the accession countries to meet the goal of providing training for 12.5 percent of the adult labor force each year. The Beyond Accession section below argues that meeting this goal is not so much a matter of providing financing or incentives for adult training as it is of providing a supportive legal and regulatory framework.

Has EU accession conditionality helped motivate needed reform?

EU accession conditionality does address reform needs for education and training in the accession countries and it helps motivate improved coverage of primary and secondary education and the initial development of adult training. However, this section argues that the potential benefit of these measures is likely to be less than intended for three reasons: first, the conditionality misses the crucial distinction between registered enrollments and actual attendance (see box 7.2); second, it does not address the need to reverse the decline in education quality in the accession countries; and, third, the quantitative target for adult training does not provide guidance regarding the appropriate content of training or the most viable means for achieving it. The fiscal constraints

BOX 7.2 School Attendance and School Enrollments

Although official enrollment data show generally improving coverage of education in the accession countries, household survey data consistently show that actual school attendance is well below enrollment ratios based on administrative data and is often declining. Survey data also reveal significant gaps in attendance in rural areas, in areas with ethnic minorities, and among the poor. For example, recent survey results show average attendance rates in primary education of 87 percent in Bulgaria, 90 percent in Hungary, and 88 percent in Romania—all well below the enrollment ratios based on official enrollment data. Enrollment estimates based on administrative data tend to overstate actual education coverage because there are incentives to overstate enrollments to increase budget resources and maintain existing teaching positions. Aggregate enrollment ratios based on administrative data also do not reveal the often sizeable differences in school attendance among different groups. In Bulgaria, for example, survey data show that

- school attendance rates are lower for rural population than for urban population, especially for secondary education (where remoteness of schools is often a constraint);
- school attendance rates for the poor are much lower than for the non-poor at all levels of education;
- Roma have much lower rates of school attendance than either ethnic Bulgarians or Bulgarian ethnic Turks for all levels of education (see table).

Bulgaria: rates of school attendance by level, 1995, 1997, and 2001 *percent*

	<i>Preschool education</i>			<i>Primary education</i>			<i>Secondary education</i>		
	1995	1997	2001	1995	1997	2001	1995	1997	2001
Total	44	14	22	87	88	90	47	55	46
Population									
Males	42	12	21	88	88	90	49	54	46
Females	46	15	24	85	88	89	45	56	46
Urban	46	13	24	88	90	92	52	63	53
Rural	40	14	20	83	84	84	31	32	22
Nonpoor	47	16	26	89	93	94	49	60	52
Poor	8	11	10	54	81	70	20	46	13
Bulgarians	44	15	26	90	93	94	55	66	56
Turks	53	10	19	88	93	90	10	30	34
Roma	25	5	16	55	58	71	3	5	6

Source: Bulgaria Integrated Household Survey, 1995, 1997, 2001 data.

imposed by the Growth and Stability Pact could have hindered an appropriate budgetary response to the problem of declining education quality. The information presented in previous sections and table 7.1 suggests that this was not generally the case, with the possible exceptions of Bulgaria, Lithuania, and the Slovak Republic. On balance, then, it appears that EU accession conditionality did little either to help or hinder the accession countries in pursuing the education and training reforms required both by the transition, and by the challenges that they face as members of the EU.

BEYOND ACCESSION: THE NEW DEMANDS ON EDUCATION

As described earlier in the chapter, the central reforms in education and training required by the transition involve changes in the content and structure of education programs to respond to new skill requirements of the competitive market economy, and reforms in finance and management of education programs to respond to the collapse of public revenues, and to improve quality, efficiency, and equity of education and training programs. It was argued above that EU accession conditionality makes little contribution either to advancing or hindering these reforms. This concluding section argues that the main challenge facing the accession countries in the education and training sector is to successfully complete these reforms in three broad areas:

- Making education and training programs responsive to the needs of a global economy
- Addressing issues in finance and management
- Making education and training programs more inclusive

Because many countries in the EU and elsewhere are moving aggressively to make their education systems more responsive to the needs of the global knowledge economy, the accession countries need to make considerable progress just to keep even with their competition. Improving their relative competitive position will require an even greater effort.

Responding to the needs of the global economy

Education reforms launched in the accession countries during the transition focused on devising a new financing and governance structure that

- was consistent with the (politically-driven) decentralization policies pursued in all of the accession countries;

- offered the prospect of reversing the sharp fall in education finance experienced in all the accession countries during the early years of transition;
- would provide the right internal incentives to make education programs efficient and responsive to changing needs of the economy.

Reforms also aimed to address the content and pedagogy needs of the global market economy, but these substantive aspects of reform were largely displaced by the urgent need for reform of education governance and finance. As they complete the reforms in management and financing of their education systems during the next decade, the accession countries will need to give greater attention to substantive reforms that are needed to make their education systems more responsive to the needs of the global economy. No longer is it a question of the accession countries simply catching up to education programs in the older EU countries. Instead, it is a question of the EU countries and the accession countries together struggling to respond to the needs of a global economy.

Education plays a key role in supporting the process of development from low-income, resourced-based economies to high-income, knowledge-based economies. A recent study of global competitiveness (Schwab, Porter, and Sachs 2001) identifies three successive stages of economic development—factor-driven growth, investment-driven growth, and innovation-driven growth—and characterizes the role of education in each of those stages, as shown in table 7.7.

Together with supportive macroeconomic and financial policy and infrastructure investments, education plays a key role in developing the necessary human capital at each of these successive stages of development. Regarding educational coverage, the accession countries appear to have reached the highest level of educational attainment at the start of transition (although, as we have seen, there are concerns about school attendance by at-risk groups). The TIMSS results presented in table 7.2 support this conclusion. But why, then, do the PISA assessment results (table 7.3) show them performing so poorly? The TIMSS assessment tests students' mastery of the formal curriculum. Test questions follow the material as it is typically presented in class. In this limited application, the discipline and pedagogy of the inherited education programs led to impressive results. The PISA test instrument specifically aims to assess students' mastery of higher-order skills such as synthesizing knowledge across disciplinary boundaries, integrating uncertainty into analysis, monitoring their own learning progress, and knowing where to access relevant information. These are exactly the skills that are needed for most of the fastest growing jobs in the global economy, as revealed by the experience of the OECD countries and the accession countries themselves (OECD and Statistics Canada 2000;

TABLE 7.7 The role of education in the stages of economic development

<i>Development stage</i>	<i>Key economic challenges</i>	<i>Focus of economic production</i>	<i>Education and labor-market requirements</i>
Factor-driven growth	Get factor markets working properly to mobilize land, labor, and capital.	Natural resource extraction, assembly, labor-intensive manufacturing. Primary sector is dominant.	Basic education, low-level skills, disciplined work habits.
Investment-driven growth	Attract foreign direct investment and imported technology to exploit land, labor, and capital and begin to link the national economy with the global economy.	Manufacturing and outsourced service exports. Secondary sector is dominant.	Universal secondary education, improved secondary vocational and technical education, life-long learning to retool and update skills, flexible labor markets (easy entry, easy exit).
Innovation-driven growth	Generate high rate of innovation, and adaptation and commercialization of new technologies.	Innovative products and services at the global technology frontier. Tertiary sector is dominant.	Highly developed higher education, especially in science and engineering specializations; high rates of social learning, especially science-based learning; dynamic R&D sector linking higher education programs and innovating firms.

Source: Adapted from Schwab, Porter, and Sachs 2001.

Note: R&D = Research and development.

World Bank 2003). These skills were also deliberately neglected in the former communist education systems. A clear message in the low PISA scores for the six accession countries that participated—and probably for the other accession countries as well—is that education systems need to do a much better job in developing higher-order skills of synthesis, problem solving, application, and “thinking outside the box.” This will require changes in teaching methods, and more reliance on supplementary sources of information other than the textbook and the teacher’s presentation of the approved curriculum.

Although the Czech Republic and most recently Estonia have performed well, the less impressive PISA assessment results in 2000 and 2003 for Latvia, Poland, and Hungary—three of the more progressive accession countries—indicate a problem in how students learn and what students learn. A fundamental reorientation of education is needed to support global competitiveness in the accession countries. As highlighted in a recent presentation to the OECD Governing Board,⁹ effective education systems will require developing a much more refined ability to deal with new technologies and new knowledge along with the distinct possibility of more frequent individual changes in careers and job activities. This ability to deal with “disequilibria,” cited long ago by Nobel Laureate Theodore Schultz, has become the clear reality of today (Schultz 1975).

Two key features of change that future policies will need to address—in both the accession countries and the OECD countries—are the information explosion and the changing structure of work, and how these changes require changes in teaching and learning approaches so as to remain competitive. The challenge posed by the diversification of sources of information is not so much how to access information, but how to discriminate among sources of information to determine which are most relevant to immediate needs, and how to judge the quality and significance of information from various sources. Providing skills of selectivity and judgment in use of information in an environment of overabundant information of varying quality is one of the key educational challenges faced by all advanced countries. A second key challenge of education systems is how best to provide the skills for effective teamwork in the workplace—increasingly a feature of high-productivity employment. Effective educational approaches to provide teamwork skills for the workplace may also promote the goal of social cohesiveness in the expanded European Union.

Reforms In finance and management

A number of reforms in financing and management of education are needed in the accession countries, both to complete the reform measures already launched and to make education programs more efficient and responsive to the evolving skill needs of the global economy. These include resolving inconsistent roles in delivery of education, improving the financing formula for primary and secondary education, and diversifying the financing of higher education.

Resolving inconsistent roles

In all of the accession countries, local governments are meant to be accountable to the local community for managing basic education effectively and efficiently. They lack the authority to do so, however, because the bulk of

financing for teachers' salaries and benefits remains centrally financed and controlled, and because Ministries of Education retain control over key decisions affecting education delivery. Ministries of Education in the accession countries are responsible for curricula; recruitment, evaluation, training, and promotion of school principals and teachers; and for establishment of norms governing minimum and maximum class size and teaching hours. These constraints make it impossible for local governments to carry out actions to improve efficiency, such as school consolidation, unless the Ministry of Education agrees. In most of the accession countries, the Ministry of Education must approve any proposals for teacher dismissals, school closure, or school consolidation.

In designing decentralization measures, the legislatures in the accession countries have retained these functions for Ministries of Education as an instrument of education quality assurance; but the experience of the past decade shows that these input controls are not effective instruments for quality assurance. Quality differences among schools appear to have grown as a result of decentralized financing of education and as a result of differences in the capacities of communities and households. The decentralization models in the accession countries need to be refined to better align responsibilities and accountabilities for managing primary and secondary education. In general, this means empowering local authorities to carry out actions such as staff reduction and school consolidation that are necessary for improved efficiency. Quality assurance should be carried out through assessment of teaching practices and classroom results, rather than through imposing central norms on class size and teaching loads.

Improving the financing formula

Because teacher salaries account for by far the largest component in per-student costs of primary and secondary education, improved efficiency of teacher use is the most important action for improving the efficiency of public expenditures in primary and secondary education. The current financing formula for primary and secondary education in most of the accession countries finances educational inputs—teachers, and sometimes textbooks, other educational materials, and in-service teacher training. It ensures financing for all current schools and teachers, as long as the class size and minimum teaching hour standards established by the Ministry of Education are met. These statutory minimum class sizes and minimum teaching hours are well below OECD norms (see table 7.5 for average class sizes). Moreover, Ministry of Education inspectors can, and often do, provide exceptions that do not meet even these low standards. Additionally, Ministries of Education must approve any proposals to consolidate or close schools, raising a serious third-party payer problem: staffing and school consolidation decisions are made by Ministry of

Education authorities with the involvement of local government authorities, but the central budget pays.

This model provides no incentive either for local governments or for Ministry of Education authorities to pursue more efficient ways of providing education. Not surprisingly, little school optimization or system rationalization to promote efficiency has been carried out in the accession countries under this model. What little system rationalization has occurred, as in the Czech Republic,¹⁰ has tended to occur only within schools, not across schools. Organized opposition can easily thwart local governments' attempts to consolidate schools and to use resources better, as it did in the Czech Republic. To proceed, school rationalization needs to have the right financing incentives, needs to reflect unavoidable differences in costs of providing education (due, for example, to dispersion of population in rural areas), needs to be carried out at a level of aggregation large enough to capture the potential efficiency gains, and needs solid and visible backing of central government authorities to help overcome the resistance of teacher trade unions and other opposition groups. A perception persists in the accession countries that central budget financing of salary costs of basic education is a temporary expedient that will eventually be replaced by local governments assuming full responsibility for at least the recurrent costs of primary and secondary education. The major risk is that such a move to complete reliance on local financing for basic education would lead to negative consequences for poorer communities—including closure of schools, and emergence of unacceptable quality differences in education. It may be preferable that teacher salaries and benefits and other essential recurrent costs of primary and secondary education remain centrally financed, at least until it is established that all communities can afford to assume these costs. Even then, decentralization of these expenditures could entail risks of underfunding in poorer communities and may not be the optimal policy. An inevitable trade-off will have to be faced between the potential efficiency gains from greater local decision making and the possible adverse distributional impacts that this implies. This trade off suggests, among other things, that funding schools entirely from central or local sources is unlikely to be the best approach.

The need for efficiency improvements in financing primary and secondary education will become more acute in the coming years, especially if the projections of a continued shrinking of the school-age population in the accession countries (table 7.8) prove true. By the beginning of the transition, most of the current accession countries had attained less-than-replacement fertility. Throughout the decade, fertility continued to fall and the size of the school-age cohort contracted at rates formerly seen only in cases of war, famine, or pestilence. The rate of contraction in most of the accession countries will taper off and the size and structure

TABLE 7.8 Shrinkage of the school-age population, 1990–2000, and projected change, 2000–2015

	Size of 0–14-year-old cohort (thousands)			Annual change (%)	
	1990	2000	2015 (projected)	1990–2000	2000–2015
Bulgaria	1,781	1,279	916	-3.3	-2.2
Czech Republic	2,223	1,695	1,273	-2.7	-1.9
Estonia	349	254	184	-3.2	-2.1
Hungary	2,098	1,705	1,303	-2.1	-1.8
Latvia	573	418	280	-3.2	-2.7
Lithuania	841	723	546	-1.5	-1.9
Poland	9,574	7,462	6,185	-2.5	-1.3
Romania	5,468	4,112	3,154	-2.9	-1.8
Slovak Republic	1,351	1,070	824	-2.3	-1.7
Slovenia	381	318	243	-1.8	-1.8

Source: World Bank WDI and demographic databases.

of the population will eventually stabilize, but the size of the school-age cohort will continue to shrink significantly for at least another decade. By 2015, the school-age cohort in the accession countries will be from one-third to one-half less than it was in 1990, and about 25 percent less than it was in 2000. These population dynamics imply a further need for downsizing staff and facilities in many primary and secondary schools throughout the accession countries.

The continued use of input-based financing formulas for primary and secondary education is the main reason there has not been more progress in improving efficiency of teacher use in the accession countries. A preferred method for financing education is capitation-based financing, which determines the amount of a local government's educational subsidy based on the number of students it is educating at each level—differentiated to reflect different costs of different programs of education, and possibly other sources of cost variation. This approach, used in the Czech Republic and Lithuania, is preferred for two reasons: first, because the basis of financing—enrolled students—is much closer to the educational objective than are school inputs such as numbers of classrooms and teachers; and second, because it provides an incentive for providers to rearrange inputs to provide education more efficiently. This approach assumes, however, that central authorities no longer constrain local governments' decisions on teacher recruitment and teacher assignment through imposition of class size and teaching load norms and through direct involvement in hiring, firing, and assignment of teachers.

The capitation approach is not perfect. It does not, by itself, provide safeguards to ensure education quality or teaching effectiveness. It also does not necessarily reflect cost differences among different programs, place-specific cost factors, or cost differences arising from special learning needs of students. Finally, it does not provide for improvements in curriculum, teaching materials, and teaching practices—all of which are needed in the accession countries. Nonetheless, such cost differences can be built into a modified, or cost-based, capitation system without compromising the positive efficiency incentives that such systems provide.

Table 7.9 shows how a composite financing formula can provide for these needs. The most advanced applications of this approach are in the primarily

TABLE 7.9 A composite formula for education finance

<i>Component</i>	<i>Dimensions</i>	<i>Indicators</i>
Basic per-student allocation	Total enrollment, differentiated by grade and program	Full-time equivalent (FTE) enrollments by grade and type of program
School site needs	School size	Primary < 200 FTE Secondary < 600 FTE
	School remoteness	Kilometers to town of 50,000 or more persons
	Operations and maintenance costs	Interior area of school in square meters
Student supplementary educational needs	Socioeconomic hardship	Percentage of students from households receiving social assistance
	Low educational achievement	Number of students below 20th percentile assessment results
	Nonfluency in national language	Percentage of students below cutoff score in national language test
	Disabilities and special learning needs	Number of students formally assessed with special learning needs
Educational quality improvement	Specialized curriculum	FTE enrolled in specialized program
	Specialized school	Total FTE (if special curriculum school)

Source: Adapted from Levačić and Ross 1999.

English-speaking countries: the United States, Canada, the United Kingdom, Wales, Australia, and New Zealand (Ross and Levačić 2000). Among the accession countries, the Czech Republic, the Slovak Republic, and Lithuania are the most advanced. They finance primary and secondary education through capitation formulas with some of the elements recommended in table 7.9 to reflect cost variations. The Czech Republic also uses a capitation formula to finance lifelong learning courses offered by universities. Romania and Bulgaria calculate per-student costs, but do so after the fact; the actual financing formula remains input-based. In the accession countries that have not yet adopted capitation-based financing, financing formulas for education at all levels should be based on the number of students rather than inputs. Per-student allocations should be differentiated to reflect intrinsic differences in the costs of education delivery, such as the higher cost of technical specializations and greater population dispersion in rural areas.

The details of how the formula reflects cost differences do matter. If financing formulas simply mirror the current unit costs of different localities, the resulting schedule of coefficients will legitimate an inefficient delivery model. The same considerations apply to differentiation of costs for different programs of studies. In the Slovak Republic, for example, per-student recurrent costs are 100 percent higher for upper secondary vocational education and sports education schools than for *gymnasias* (upper-secondary academic schools). Per-student costs in professional art schools are almost four times as high as in *gymnasias*. These unit costs differ largely as a function of class size and teaching loads, not factors that should necessarily be encouraged to continue. Secondary art schools in the Slovak Republic typify the problem of unsustainably high costs that result from too-small class sizes. The recurrent-cost financing formula for upper secondary and higher education should encourage these institutions to rationalize course offerings, perhaps by moving toward more affordable class sizes, or reconfiguring course offerings—for example, by providing art education as one of several options in comprehensive secondary schools rather than in free-standing art schools.¹¹

The basic concern throughout is providing support for cost differences without introducing perverse incentives that lead schools to act inappropriately. For example, while extra programs are generally needed to help students who come to school with learning deficiencies, language problems, or other special needs, the finance system should encourage working to eliminate these problems rather than retaining them because of the promise of added funding. Along these lines would be a formula financing educational results rather than enrollments.¹² Some of the charter school contracts in the United States, for example, condition the payment to private education providers on the achievement of

agreed on educational targets for learning achievement. Similarly, some state accountability systems reward schools for large gains in student achievement. The Czech model for subsidizing private education embodies the same approach. It finances a higher proportion of recurrent costs for schools that meet higher quality standards. This approach is likely to grow in use as the tools for assessing school performance improve and quality can be directly measured by student outcomes.

Financing higher education

Several EU member states have moved to mixed public-private financing of higher education, but there is considerable diversity in the form and extent of public financing. The introduction of student fees has been a highly political issue in some of the EU states, in some cases causing the government to revoke student fees or abandon proposals for student fees. The more common model in the accession countries is the introduction of fee-paid, “contract education” within public universities, which accounts for as much as two-thirds of higher education enrollments.

Because budget-subsidized places in public universities are awarded competitively and because faculty salaries are supplemented by income from contract students, the practice of selective cost recovery through contract places in public universities has led to the ironic and inefficient result that the most capable faculty are often diverted to teaching the least capable students. It has also exacerbated educational inequities, because poorer students are less likely to win budget-financed places because their primary and secondary schools are more likely to be of inferior quality and because they have less access to paid tutorial instruction to prepare them for the university entrance exam. They are thus more likely to have to pay for their higher education than are more affluent students.

A preferable model is the mixed financing formula—the UK model, for example—in which all universities can receive public financing on a per-student basis, subject to meeting explicit performance standards. This model has important advantages of flexibility (combining cost recovery with public subsidization) and focusing on educational outcomes (in terms of students, graduation rates, and academic achievement). It can also easily accommodate the EU’s inclusiveness goal by incorporating affirmative action indicators among the eligibility or performance criteria for financing. Equity concerns can be addressed with student loan schemes. Another approach is the new student fee policy approved by the cabinet of the Slovak Republic in February, 2005, and planned to take effect in September 2005. Under this policy, each university will be free to set fees within a specified range,¹³ and income-contingent loans will be available to students to help cover tuition costs.

Private universities have also developed rapidly in most of the accession countries during the transition. For the most part, however, governments have not developed regulatory mechanisms to ensure that private higher education is of acceptable quality. Instead, they have relied on market mechanisms—student demand—to determine the appropriateness of these new schools. However, the absence of reliable information about the quality of private programs makes this an ineffective mechanism of quality assurance. Improved information about program quality would improve the process.

The same argument that justifies public instead of private financing of education (box 7.3) applies to the level of government that finances education. If most of the external benefits of education accrue to the immediate community, it is appropriate for local governments to finance education. This rationale applies to local government financing of skill training in, for example, US community colleges and UK municipal training centers. To the extent that education provides external benefits that accrue to society more broadly, central government financing, at least proportional to the nonlocal benefits, may

BOX 7.3 Financing of Education and Training: Public or Private?

Although there are many reasons for governments to finance education and training, there are just three *economic* reasons for them to do so. The first is an efficiency rationale, which rests on the principle that education provides externalities, that is, benefits to society beyond the benefits that it provides to individuals. In this situation, reliance on private financing of education would lead to a level of provision lower than is efficient for society as a whole. Public financing of education is generally seen as most appropriate for initial education, because it conveys skills (such as literacy) and values (such as good citizenship) that are crucial to the proper functioning of a democratic society. This is also the reason that initial education is compulsory and free in most countries of the world. The second reason rests on technological, cost grounds. If there is a minimum scale for efficient operation of a school, as may exist in low density rural areas, competition may not be appropriate. In this case the government would want to fund a monopoly school so as to capture the economies of scale. The third reason is an equity rationale that acknowledges that public financing of education is necessary to reduce the inequities that would result if education were fully financed by individuals.

Source: See Friedman 1962; Barr 2004a.

be appropriate. Central government financing of basic science education and scientific research is often justified on this basis.

The typical pattern of public financing in the accession countries makes local governments responsible for financing initial education and central governments responsible for financing higher education—the opposite of the financing pattern that the economic argument in box 7.3 implies. It would be more efficient and more equitable for central governments to finance initial education, and for higher education to be financed by a combination of private financing, local public financing, and central public financing.

Similar concerns apply to adult training. In a liberal economy, firm-specific productivity gains should motivate employers to finance training; more broadly applicable earnings gains should motivate individuals to acquire and finance training. An approach that is well-established in some EU member states is central government incentives for employers to provide training for their employees—for example, in the form of vocational training levies. Vocational training levies are equivalent to a payroll tax combined with a tax credit for firms that provide approved training. Such levies are costly instruments for promoting training. As described in chapter 3, such initiatives to protect the rights of workers add significantly to the cost of employment and thereby discourage job creation and worker mobility. Training credits are also a blunt instrument for motivating employers to provide training that is relevant to their employees' long-term training needs. Instead, training credits provide an incentive for employers to provide job-specific training that reduces rather than enhances their workers' mobility. Finally, it is questionable whether they lead to workers receiving more training. In the presence of minimal public incentives for training,¹⁴ employers in the United States provide far more training to their employees than employers in countries with vocational training levies.

Improving the inclusiveness of education programs

Education was accorded a high priority in the accession countries during the communist period as was evident both in the resources devoted to education and in the impressive gains achieved in education coverage and quality prior to the transition. The attention given to education was consistent with an egalitarian socialist ideology. Despite this orientation, education policy retained important elitist aspects. Examples include the highly restricted access to higher education (not always based purely on merit), and the practice of streaming the bulk of students into terminal, occupation-specific courses relatively early in their studies. Another was the tendency to judge the quality of the entire edu-

cation system by the performance of the best students in the system. In education, as in athletics, the former system gave disproportionate attention to developing its highest performers. Extraordinary efforts and resources were devoted to ensuring impressive performance by the most gifted students, who were selected to compete in the equivalent of the academic Olympics and groomed for optimal performance. Ironically, this approach stands in stark contrast with the more common approach in capitalist countries, in which the quality of education systems is usually judged by the average performance of all students, and particular effort and resources are often concentrated on raising the performance of the least-able students.

Even today, a tendency prevails in the accession countries to judge the quality of education systems by the performance of the best students in the system. This Olympic mentality is not suited to the needs of the global economy. Evidence derived from comparing growth of different countries indicates that all segments of the population need high-quality and relevant education if the economy is to prosper and grow (see Hanushek and Kimko 2000). Educational policies that leave some groups of students behind would further lead to social fragmentation and would risk social cleavages that could undermine the core principles of the expanded EU.

Concerns over the possibility that education could lead to greater social fragmentation are not limited to the accession countries. Table 7.10 shows PISA 2000 mean mathematical literacy scores and the differences in mean scores that are attributable to difference in socioeconomic status for the OECD countries and three accession countries, starting with the highest level of mathematics proficiency. Some education systems achieve quality and equity together; others achieve quality at the expense of equity; some achieve neither quality nor equity. Japan, the Republic of Korea, and Finland are representative of the first group, with high average performance and relatively small differences in performance by socioeconomic status (SES). Switzerland, the United Kingdom, Belgium, and France achieve relatively high performance, but at the cost of significant inequity. Germany, Hungary, the United States, and Luxembourg are in the unenviable situation of below-average performance and high inequality, with a particularly strong quality-equity trade-off in Germany. This situation—in which education systems are achieving neither quality nor equity—is a cause for serious concern and immediate corrective action. Poland, Italy, and Mexico are examples of systems with low (but relatively equitable) performance in the 2000 survey. The findings of the 2003 PISA survey are broadly consistent with this finding, except that Poland improved its average mathematics literacy score by 20 points (to 490), and very significantly reduced the SES gradient associated with its mathematics literacy

TABLE 7.10 PISA 2000 results: Mean mathematical literacy scores, and score gradient attributable to difference in socioeconomic status

	<i>Mean score in mathematical literacy</i>	<i>Score gradient^a</i>
Japan	557	24
Korea, Republic of	547	23
New Zealand	537	45
Finland	536	30
Australia	533	46
Canada	533	37
Switzerland	529	49
United Kingdom	529	49
Belgium	520	48
France	517	48
Austria	515	41
Denmark	514	42
Iceland	514	24
Sweden	510	36
Ireland	503	38
OECD Average	500	41
Norway	499	42
Czech Republic	498	49
United States	493	48
Germany	490	60
Hungary	488	54
Spain	476	32
Poland	470	38
Italy	457	32
Portugal	454	41
Greece	447	38
Luxembourg	446	46
Mexico	387	35

Source: OECD 2004b.

Note: ^a Score difference associated with a one unit increase in socioeconomic status (on a six-point scale).

scores. This outcome may reflect recent policy reforms in Poland that result in a more integrated education program and delay differentiation of content until after the age of 15 (OECD 2004a).

One of the implications of the strong quality-equity trade-off in Germany is that education tends to perpetuate and reinforce socioeconomic differences rather than mitigate them. In part, this outcome may reflect the early streaming of students into academic and vocational programs under Germany's dual system of vocational and technical education. This system is already under threat from the growing unwillingness of German employers to provide train-

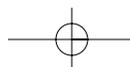
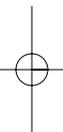
ing for apprentices. German policy makers have responded to this development by exhorting employers to accept more apprentices. These findings on the equity outcomes of education suggest, however, that this approach may be misguided. In fact, Hanushek and Wößmann. (2005) suggest, based on international evidence, that early tracking in schools not only generally leads to wider variation in student outcomes but also does not offer clear gains in terms of the overall level of achievement. The above recommendations to improve the relevance of education to the learning needs of the global economy also suggest that the appropriate response may be to move away from the dual system and its dichotomous distinction between academic and vocational education, and to move instead toward a more integrated approach to secondary education.

Two basic approaches may be used to address problems of inequality arising from the different financial capacities of households and localities and place-specific differences in unit costs. The first approach involves identifying a minimum set of essential educational inputs, and financing them uniformly for all schools from central government resources. While varying in detail, this essential approach is being applied in all of the accession countries. Specialized secondary education, higher education (apart from the retained income from student fees and other sources), and education for children with special needs are financed centrally in most of the accession countries, as are capital investments for schools. In general, the formula provides for central budget financing of more educational inputs in the more prosperous accession countries than in the less prosperous accession countries. In the Czech Republic, the Slovak Republic, and Lithuania, for example, the central government budget finances not only teachers' salaries, but also school utilities, textbooks, in-service training for teachers, and teacher salaries and benefits for private schools that meet stipulated quality standards. This broader central financing helps reduce, but does not eliminate, spending inequality in education.¹⁵ On the other hand, in Bulgaria, for example, the poorest of the accession countries, parents are required to purchase textbooks. Limited central funding can clearly maintain resource inequities across poorer and wealthier areas.

The second approach to the regional inequality problem is to rely upon more local resources to finance essential educational inputs, and to provide compensatory support through targeted central subsidies to localities. This targeting approach is used, for example, in the United States, where the federal government provides limited support for schooling—largely for disadvantaged or special-need students.¹⁶ Categorical funding goes even further to ensure that localities have funding for and provide minimal resources for essential education programs, although as discussed above it is important to get the incentives for good performance right.

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It is clear not only in the accession countries but across the OECD countries that it is easier to equalize education resources and expenditures than it is to equalize educational outcomes. Central government financing, particularly for specific inputs, is generally accompanied by central government regulation over such things as teacher hiring and retention, teacher-to-pupil ratios, and the provision of textbooks and educational supplies. These regulations ensure minimum provision but it is less clear how they relate to efficiency of the system or to student outcomes. These matters cannot be assumed and must be considered in the design of the financing system.



Annex 7A. Financing Higher Education

Nicholas Barr

With the fall of the communist regime, universities in István's country started to enjoy the fruits of academic freedom. They revised courses, adopted western textbooks, translated books, and energetically set about writing new ones. As this chapter makes clear, these changes took time, and the journey—as in the older member states—is a continuing one. Nevertheless, changes in content were fairly rapid.

In contrast, the finance and organization of universities continued largely unchanged. In the latter days of communism, and even more during the fiscal crisis of the early transition, universities became increasingly underfunded; they also exhibited the familiar inefficiencies of more conventional state-owned enterprises: buildings were underused, and in some subjects student-to-teacher ratios were extremely low. These problems created worries about the quality of university education. Separately, there was little financial support for students, creating worries about access to higher education for those from poorer backgrounds.

Under communist ideology, basic commodities were subsidized, and goods such as health care and education were free—at least in principle. Thus it was natural to provide schooling largely free and hence, by analogy, to provide higher education for free. István, it was argued, could go to university even though his parents were poor, because he would not have to pay fees.

As the 1990s unfolded, the government became increasingly worried about the quality issue: EU accession, and hence a single European market, was a real prospect; wider global competitive pressures intensified; and human capital grew in importance as a determinant of national economic performance. Both the need to expand higher education and the need to improve its quality became increasingly salient.

Here, however, the government was caught between conflicting imperatives: the constraints of the Stability and Growth Pact, and the demands of other parts of the public sector—unemployment benefits, active labor market policies, poverty relief, and policies to address social exclusion, pensions, health care, and school education. The resources to finance mass, high-quality higher education from taxation were simply not there. The government therefore proposed a policy with two elements: the introduction of tuition fees; and the parallel introduction of student loans to pay those fees and contribute to living costs.

Specifically, the government proposed to allow universities to set their own fees, up to a ceiling, simultaneously increasing their resources and introducing some competition. First, loans were to have income-contingent repayments: that

is, repayments were not a certain amount per month, but a certain percentage of the borrower's subsequent earnings, collected as a payroll deduction along with income taxes until the loan had been repaid. Second, loans were to be large enough to cover tuition fees, plus contribute toward realistic living costs.¹⁷

The reaction was instant. How could a socially progressive government introduce such a right-wing policy? Fees and loans would make it impossible for István to go to university, but would not harm Anna, whose family had been substantial property owners until the communist takeover, and had remained well-connected. Such a policy, therefore, was regressive, socially divisive, and incompatible with the tradition of free higher education. People, increasingly well-informed through the internet, knew about the demonstrations against the introduction of loans in Australia and the United Kingdom in the late 1980s (although by the later 1990s both countries had income-contingent loans). So lurid newspaper headlines talked about huge student debts, typically based on data from US medical schools.

Students in Central and Eastern Europe, however, had a different starting point from those in OECD countries, who typically had had access to a range of tax-funded student support; in the OECD countries loans took away the grants and scholarships students had previously enjoyed. Students in the former communist countries had nothing. Thus, loans covering at least part of their living costs improved their position during their student days. In addition, students were very aware that the quality of their degrees would be instrumental in shaping their life chances. This is true everywhere, but with particular weight in post-communist countries where incomes increasingly came to reflect a person's education and training (Rutkowski 1996). In sharp contrast with western countries, therefore, students, being supreme realists, made common cause with government.

Were the students right? They were right to recognize that the reforms would benefit them. What they, like most politicians and political commentators, failed to realize was the extent to which the proposals were not regrettable necessity but deeply progressive social policy, a view shared by many western experts but not yet absorbed by many politicians or the wider public. They failed to recognize that "free" higher education had remained a largely middle-class activity: what stopped István's parents from going to university was not tuition fees but the fact that in those days there were few university places, and they had never even thought of going to university.

Different elements of the package are in place in the accession countries. Poland has tuition fees for some students, and a system of student loans.¹⁸ Hungary has introduced income-contingent loans,¹⁹ and the Slovak Republic is actively considering such arrangements. Why is the package the right one?

The first element, tuition fees, although controversial in Europe, is taken for granted in countries like the United States. Fees give universities more resources to improve quality; and variable fees (where each university sets its own fees), through competition, improve the efficiency with which those resources are used. That is not an argument for law-of-the-jungle competition, but for regulated markets.²⁰ Variable fees not only increase efficiency; they are also fairer. Because the majority of students are from better-off backgrounds, undue reliance on taxation means that the taxes of the truck driver pay for the degrees of people from better-off backgrounds, degrees that will further increase their economic advantage. It is supporters of the old system who are protecting middle-class privilege, not the advocates of the new one.

Thinking on fees can be muddled. People may agree that higher education is a right, but it does not follow that it must be free. Food is a right, yet nobody demonstrates outside markets or restaurants. Another confusion is between social elitism, which is abhorrent, and intellectual elitism, which is both necessary and desirable. There is nothing inequitable about intellectually elite institutions. The access imperative is a system in which the brightest students can study at the most intellectually demanding institutions, irrespective of their backgrounds.

The obvious argument against fees is that they deter students from poor backgrounds. That is true if the student has to write a check at the start of each semester, but not if students go to university free and make a contribution to fees only after they have graduated. This brings us to the second element in the package: well-designed student loans.

The two features of the loan—income-contingent repayments, and loans large enough to cover fees and at least part of living costs—have profound implications. They eliminate upfront fees (the student loans administration makes the fee payment directly to the university). Thus higher education is free at the point of use; and student poverty is reduced, because students have at least some support for their living costs.

If loans are large enough to cover fees and all realistic living costs, the package is equivalent to free higher education. Students pay nothing at the time they go to university. Income-contingent repayments differ from tax in only two ways: they are paid only by people who have been to university and benefited financially from a degree; and they do not go on forever. Higher education is largely free for *students*—it is *graduates* who make repayments, and then only if their earnings warrant. Put another way, student support is targeted not on the basis of parents' income (that is, where a person starts), but on each person's own income after graduation—where he or she ends up. István repays his loan if he becomes an international financier; Anna does so only partly if she becomes a social worker.

BOX 7A.1 The Design of Student Loans

The theoretical case for organizing student loans around income-contingent repayments rather than as conventional loans is that borrower and lender both face significant uncertainties about the financial benefits from an academic degree, because future earnings are uncertain, and (unlike home loans) there is no security. Once the decision to adopt income-contingent repayments has been made, however, important design elements remain: What interest rate should borrowers pay? How should nonrepayment be financed? Should loans have a fixed duration of repayments or a variable one?

What interest rate? It is widely supposed that a subsidized interest rate helps poorer students. That argument is false: a more appropriate interest rate is broadly equal to the government's cost of borrowing, and a more appropriate strategy has targeted subsidies rather than a blanket subsidy. Interest subsidies, like many price distortions, cause inefficiency and inequity: they are costly (in the United Kingdom, where borrowers pay a zero real interest rate, about one-third of all lending to students is not repaid because of the subsidy); they impede quality because student support, being politically salient, crowds out the funding of universities; and they impede access because loans are expensive, therefore rationed and therefore too small. Finally, interest subsidies are deeply regressive: the main beneficiaries are successful professionals whose loan repayments cease after, say, 10 years with a subsidized interest rate rather than, say, 12 years with a market rate. It is more progressive to charge an interest rate broadly equal to the government's cost of borrowing (the risk-free rate), combined with targeted interest subsidies of the sort described below.

How are losses financed? Suppose that loans charge the government's cost of borrowing. If all students repaid in full, the scheme would stand on its own. In practice, however, there will be losses because of low lifetime earnings, early death, and so forth, such nonrepayment being well-targeted social spending and a deliberate design feature of income-contingent loans. These losses could be covered from general taxation, as in Australia and the United Kingdom. Alternatively, the cohort of borrowers could cover at least some of the loss through what is, in effect, a form of social insurance.^a There is also a case for interest subsidies targeted at low earners.

How long should repayments continue? With a conventional loan, monthly repayments and the duration of the loan are both fixed, the variable being the fraction of a person's income absorbed by repayments. With income-contingent repayments, in contrast, the fraction of a person's income absorbed by repayments is fixed and the duration of the loan variable. In a pure scheme, if a person dies before repaying,

BOX 7A.1 *Continued.*

outstanding debt (like any other debt) is a claim on their estate. In practice, the duration of the loan is always capped: in some countries repayments cease at retirement; in others, any loan that has not been repaid within a specified period (25 years, for example) is forgiven. Establishing a maximum duration, albeit a deviation from a pure loan, does not raise major problems. In contrast, having a fixed duration of repayments for everyone is difficult. It means that low earners do not repay in full even though, with a longer repayment duration they might; analogously, high earners repay more than they have borrowed. Each of these features can be regarded as inequitable. A fixed repayment duration also causes inefficiency. It creates incentives to adverse selection (people who are “good” risks, expecting high earnings, but realizing that they will have to repay more than they have borrowed, will opt out). It also creates a situation in which loan repayments are identical to a tax, with the potential for adverse incentives; with a loan, in contrast, an increase in earnings increases loan repayments but also hastens the day when the loan is paid off and income-contingent repayments cease—with very different incentive effects than a tax.

^a In New Zealand in the 1990s, the interest rate on student loans was set about 1 percent above the government’s cost of borrowing, thus, according to official estimates, covering about half the loss on the portfolio; the taxpayer covered the remaining loss.

The introduction of a third element into the package—active measures to promote access—makes it even more socially progressive. There are two causes of exclusion: financial poverty and information poverty. Any strategy for access needs to address both.

Problems of access cannot be solved entirely within the higher education sector. More resources are needed earlier in the system: growing evidence indicates that the roots of exclusion lie in early childhood. Measures to address financial poverty should reach back to schools, for example through targeted financial assistance to encourage young people to complete school. There should also be a system of scholarships for students from poor backgrounds once they reach university. Both policies could be supported by financial incentives to universities to widen participation, and by extra resources to provide additional intellectual support at university for students from disadvantaged backgrounds.

A second set of measures supports access by offering assistance for people with low incomes after graduation. People with low lifetime earnings could be

protected by writing off any loan not repaid after, for instance, 25 years. The loans of workers in the public sector could be progressively written off (in the United Kingdom, 10 percent of the loan of new teachers in shortage subjects is written off for each year in the state system). People caring for young children or elderly dependents could be granted loan remission.

Information poverty, the second strategic impediment to access, is inadequately emphasized. Action to inform school children and raise their aspirations is critical. The saddest impediment to access is someone who has never even thought of going to university.

The three elements—variable fees, income-contingent loans, and active measures to promote access—are a genuine strategy in which each reinforces the others. The resulting strategy simultaneously enhances quality and increases fairness.

NOTES

1. This chapter draws upon one of the author's work on education policy issues in the context of World Bank collaboration in several of the accession countries (the Slovak Republic, Bulgaria, Romania, and Hungary), as well as a number of published sources. In addition to sources cited in the text, the following works were particularly valuable: Godfrey 2002; OECD 2001; World Bank 1999; World Bank, 2003; and the various OECD annual economic reviews for the accession countries.
2. The countries of the former Soviet Union excluding Estonia, Latvia, and Lithuania.
3. TIMSS was renamed in 2003. Previously it stood for the "Third International Mathematics and Science Study."
4. Although not completely comparable, the Czech Republic did participate in the 2003 PISA tests and scored significantly above the OECD average in mathematics (OECD 2003). On those mathematics examinations, the Slovak Republic was approximately at the OECD average, while Poland, Latvia, and Serbia were below the average.
5. The Gini coefficient measures how much the income distribution diverges from full equality of incomes. Larger values indicate more unequal distributions.
6. Note that PISA was repeated in 2003 with a change in focus to performance in mathematics (OECD 2004). The Czech Republic, Latvia, Poland, Serbia, and the Slovak Republic participated.
7. Note that gross enrollment rates compare school enrollment with population numbers for the age groups that should be attending school. Because of grade repetition, late entry to school, and other factors, these enrollment rates can exceed 100 percent.
8. Data provided by Romanian Ministry of National Education
9. Presentation by Professor David Hargreaves, Cambridge University, to the OECD CERI Governing Board, March 24, 2000.
10. The Czech school rationalization program successfully consolidated 159 schools and reduced 4,000 jobs, but was suspended due to opposition of teachers and local communities.
11. In the Czech Republic, per-student allocations in upper secondary schooling range from about CZK 24,000 (slightly over US\$1000) for *gymnasia* and business academies, to

about CZK 29,000 (US\$1,250) for technical schools. This relatively narrow spread encourages more efficient delivery of technical education. Because any additional costs would need to be financed from local sources, it also encourages local authorities to consider carefully whether technical education programs that cost more than this amount are providing good value to the local community.

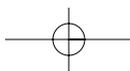
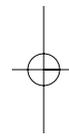
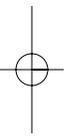
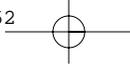
12. Note that treatment of low achievement presents special problems. Some low achievers enter schools less well prepared and in need of extra help to obtain high levels of achievement. Other low achievers are in that position because the schools themselves are ineffective. It is important to deal with problems of need without rewarding schools for failing to educate children. Thus, for example, the incentives are clearer when funding goes with observable, prior conditions (economic disadvantage of families, language handicaps, and so forth) as opposed to simple low achievement.
13. The initial proposed range is Sk 3,500 (US\$120) to Sk 21,000 (US\$700) per year, representing from 5 percent to 30 percent of total average costs per student.
14. Employers in the United States can deduct training costs as a business cost—a far weaker incentive than a tax credit for training.
15. Lithuania provides a textbook allocation of LTL 20 (US\$7.50) per student, but the actual cost of secondary textbooks is about LTL 150 (US\$57.50) per year (OECD 2002).
16. The United States is actually a hybrid system because it operates at three levels: local, state, and national. The state governments, which have the primary responsibility for organizing schools, typically delegate considerable authority to local governments and require local governments to share the financing role. Although it differs somewhat across states, the state governments typically compensate local governments for low ability to raise educational funds in setting the general funding for core operations of schools.
17. For fuller discussion, see Barr (2004b) and Hanushek, Leung, and Yilmaz (Forthcoming).
18. The constitution does not allow tuition fees for “regular” students, but they are permissible for “evening” students, the definition of which is flexible. Poland’s loans do not have income-contingent repayments.
19. Although a huge advance, work remains both to ensure that the scheme qualifies as private finance and to organize the collection of repayments through the tax authorities.
20. Although the issue of fees is generally treated as ideological, the core of the argument is technical. Fees (that is, prices) contribute to the efficient use of resources in well-understood circumstances including—centrally—well-informed consumers. Thus it is consistent to argue against fees for school education but to support them for higher education on the grounds that university students are better-informed than school children. The two cases are contrasted in Barr (2004a, chapters 13 and 14).

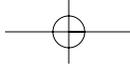
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Chapter 07—Author Queries

1. AU: Serbia and Montenegro? (first mention in this book).

