CHAPTER 4

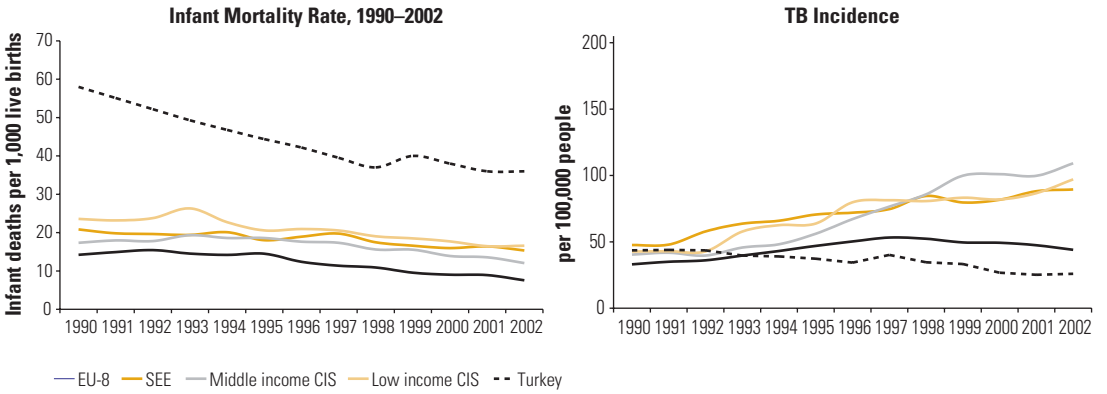
# Affordable Access to Quality Services

The Region is characterized by a legacy of relatively high levels of human development achievement. Millennium Development Goal (MDG) indicator targets such as enrollment rates, infant or maternal mortality, and access to piped water show that most countries of the Region are generally better-off than other countries at equivalent levels of income. Although there was some worsening of trends in the early years of the transition, infant mortality rates (shown in figure 4.1), as well as maternal and child mortality, have been declining in recent years.[1]

The early transition years of overall economic decline and reduced fiscal resources were paralleled by an increase in private resources as households began to contribute toward the cost of services, not only in the social sectors but also in basic infrastructure. Because the delivery networks were not adjusted to reflect the different level and composition of demand, public resources were spread across a large number of providers, reducing the effectiveness of services. This mismatch between available resources and the funds needed to maintain the existing networks was reflected in increasing wage arrears for staff in health and education and the inability to repair basic infrastructure such as gas and electricity. These shortages played a significant role in the difficult early years of transition and may have been partially solved as economic recovery provided additional, although limited, funds. Although quantitative evidence is hard to find, it is reasonable

FIGURE 4.1

**MDGs in the Region: Infant Mortality and TB Incidence**




*Sources:* WHO-Health For All database (the Region and Turkey); PAHO (Colombia); and WDI (Vietnam).

*Note:* Infant mortality is defined as yearly rate of deaths in children less than one year old. Missing data points have been interpolated. Country groups for this figure : EU-8: Hungary, Poland, Estonia, and Latvia; SEE: Romania and Bulgaria; Middle income CIS: Belarus, Kazakhstan, Russia, and Ukraine; Low income CIS: Armenia, Georgia, the Kyrgyz Republic, Moldova, and Uzbekistan.

to assume that the inability to maintain and renovate the service delivery networks has affected the quality of services provided.

Other dimensions of well-being, such as life expectancy, quality of education, or the incidence of communicable diseases such as TB or HIV/AIDS, reflect some of the outstanding challenges in service delivery. For example, TB incidence in selected countries has been increasing. In Russia, it increased from 80 cases (per 100,000 population) in the mid-1990s to 113 cases in 2003, much higher than the average for the European Union (about 83). The HIV/AIDS epidemic in the Region shows alarming indicators. In Central Asia, the number of reported cases increased from 500 in 2000 to more than 12,000 in 2004 (Godinho and others 2005). In Ukraine, the country with the fastest-growing HIV epidemic, more than 12,000 *new* HIV-infected individuals were reported in 2004 (including 2,300 children), totaling more than 134,000 HIV-infected individuals (Lekhan, Rudiy, and Nolte 2004).[2] Although other factors such as lifestyle or educational attainment are also important, the emergence of these new risks also reflects the mismatch between the level and quality of services (including information) and the actual needs of the population.

These mixed social and human indicators reflect persistent challenges in the processes underlying the outcomes in health, education, and other living conditions. Good health status, educational achievement, or living conditions jointly reflect the nature of the public interventions in these sectors and the ability of households to invest in

human and physical capital. Household characteristics are at the center of this process, but household inputs need to be combined with an effective network of services to produce desired outcomes. In this context, poverty in social services is understood as the deprivation from such services or, to be more precise, deprivation from affordable access to quality services.

This chapter discusses three closely interrelated dimensions of poverty in service delivery: access and utilization, quality, and affordability. A household may be deemed poor if children do not have access to a school or if—even in the presence of a school—children cannot attend because of reasons beyond the household's control (lack of income to pay for fees, ethnic or language discrimination, and so forth). For some social services in the Region, such as education, these two dimensions (access and utilization) are almost the same because enrollment rates are very high. In other services like health care, access and utilization are different. Although access reflects the existence of a provider within the reach of a household, utilization captures the need to seek care and the ability to pay for those services.

These dimensions of well-being must be read together; for example, the decline in quality or the increased cost of some services are associated with reduced utilization of these services. The main argument in this chapter is that poverty as lack of access to services is perhaps not a major issue because of the inherited legacy of broad network coverage; however, the inability to actually use these services has gained relevance in recent times. In addition, the delivery network has persistent weaknesses that are reflected in the declining quality of services. Finally, the affordability dimension has acquired importance as formerly subsidized public services have come to rely increasingly on households' contributions. These arguments are illustrated by using three sectors: education, health, and utilities.

## Education

This section reviews access to education and its quality. It starts with primary education, but primarily focuses on the secondary level, where problems in the Region are most pressing.

### Coverage of Education

Most countries in the Region inherited a wide network of education services that enabled them to achieve almost universal coverage in compulsory education. Although fiscal resources and enrollments

came under some pressure during the 1990s, particularly in the low income CIS group, enrollments continued to be high relative to levels of income.

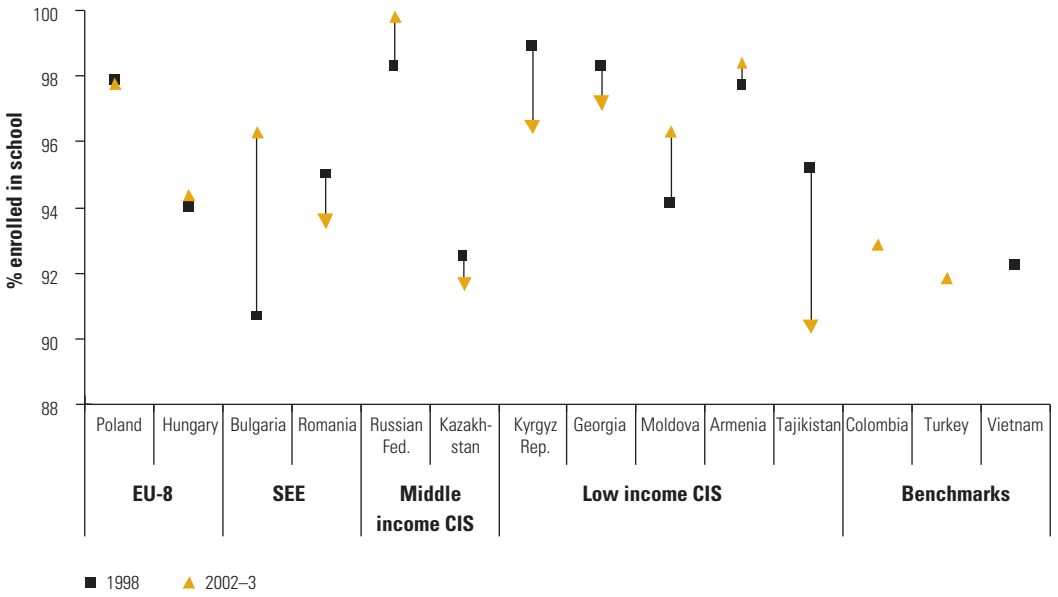
### *Primary Education*

During the period since 1998, most countries of the Region maintained, and some even improved, enrollment in primary school: enrollment at the primary level is more than 90 percent in all the countries (figure 4.2). However, not all low income CIS countries saw improvements—Georgia, the Kyrgyz Republic, and Tajikistan experienced some reductions in the proportion of children ages 7 to 14 years enrolled in school. On the other hand, in Moldova and Uzbekistan, the coverage of primary-school-age children was increased.

Most of the Region's countries are characterized by relatively equal coverage of education across income quintiles, and in many countries differences were further reduced. Figure 4.3 displays the ratio of enrollment rates between the richest and the poorest quintiles (or, the income gradient in primary education coverage). Bars close to the shaded area (= 1) indicate that the top and bottom quintiles have similar levels of coverage. Although children in better-off households

FIGURE 4.2

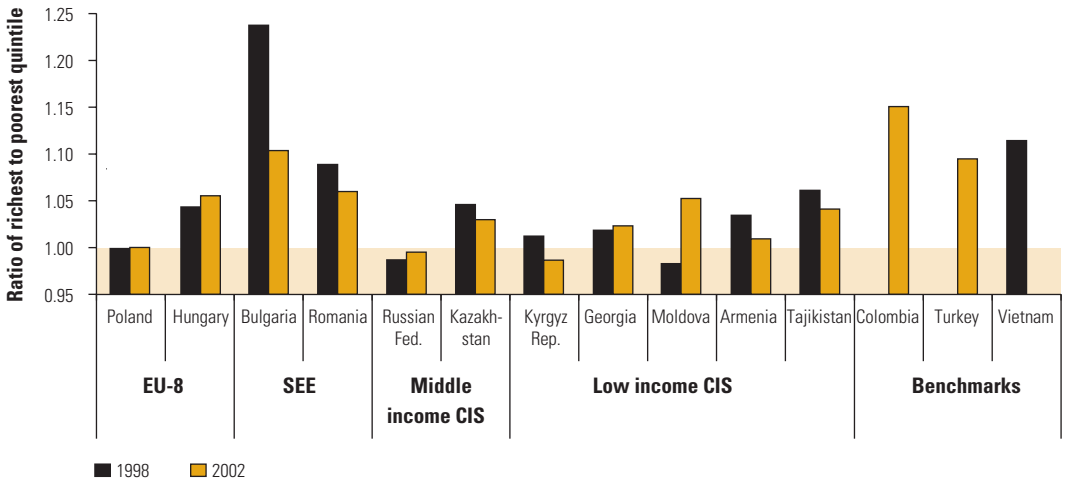
**Regional Coverage of Education, Ages 7–14**




*Source*: World Bank staff estimates using data from ECA Household Surveys Archive.

FIGURE 4.3

**Inequality in Access to Primary Education in the Region, 1998–2002**




*Source*: World Bank staff estimates using data from ECA Household Surveys Archive.

have slightly better coverage than those in the poorest quintile (except in the Kyrgyz Republic and Russia), these differences are generally not greater than 5 percent (Bulgaria stands out as a country with a relatively large gap of about 10 percent in 2002). In fact, countries with the steepest income gradients (enrollment gaps of more then 5 percent) also showed the largest declines in the ratio between top and bottom because of improving coverage for the bottom quintile between 1998 and 2002.

However, there are exceptions to this declining trend. For example, in Moldova, enrollment rates were very similar across the income distribution in 1999, but by 2003, enrollment rates in the richest quintile were more than 5 percent higher than those in the poorest quintile. This is partly because the post-1999 recovery benefited those in urban areas and the better-off, increasing socioeconomic differences in education. Equally, enrollment rates in urban areas fell more significantly during the crisis (in fact, enrollment in rural areas were temporarily higher than in urban areas in 1998/99) because urban areas and the better-off suffered the largest consumption losses (Signoret and Murrugarra 2003). Enrollment in urban areas thus appears particularly vulnerable to crises.

### *Secondary Education*

For children ages 15 to 17 years, the Region experienced a dramatic increase in coverage, reaching more than 85 percent. The improve-

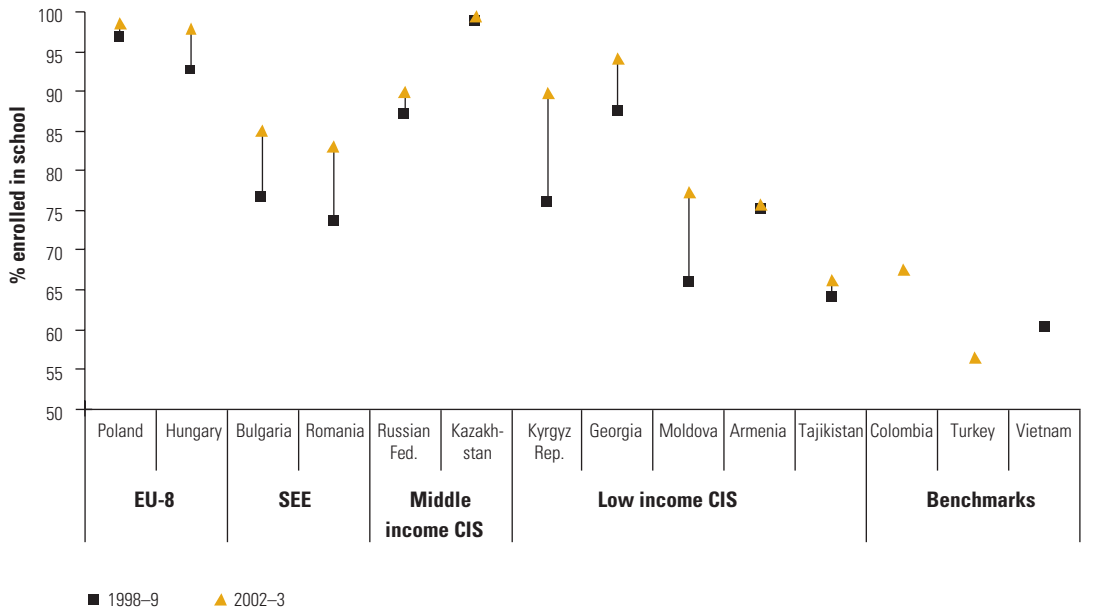
ments were evident for all countries, even for those with relatively low coverage, such as Moldova or Uzbekistan (figure 4.4). The overall improvements in secondary education coverage may reflect the more attractive wages for better-educated individuals in both local and external labor markets (chapter 3).

The overall improvement in coverage was paralleled by a reduction in the large enrollment gaps across income groups (figure 4.5). The ratio of coverage rates for children in the richest and the poorest income quintiles is larger than at the primary level. For SEE countries like Bulgaria and Romania, coverage of the children in the top income quintile is more than 50 percent higher than that of the poorest quintile, compared with only 10 to 20 percent at the primary level. These differences, however, were reduced in most countries outside the low income CIS group, where gradients increased (except for the Kyrgyz Republic).

The reduction of enrollment gaps across income groups is also observed across gender and geographic dimensions. At the secondary education level, there are small gender differences in enrollment, and these appear to be continuing to shrink (figure 4.6). In countries like Armenia and Moldova, where formal labor market opportunities are

FIGURE 4.4

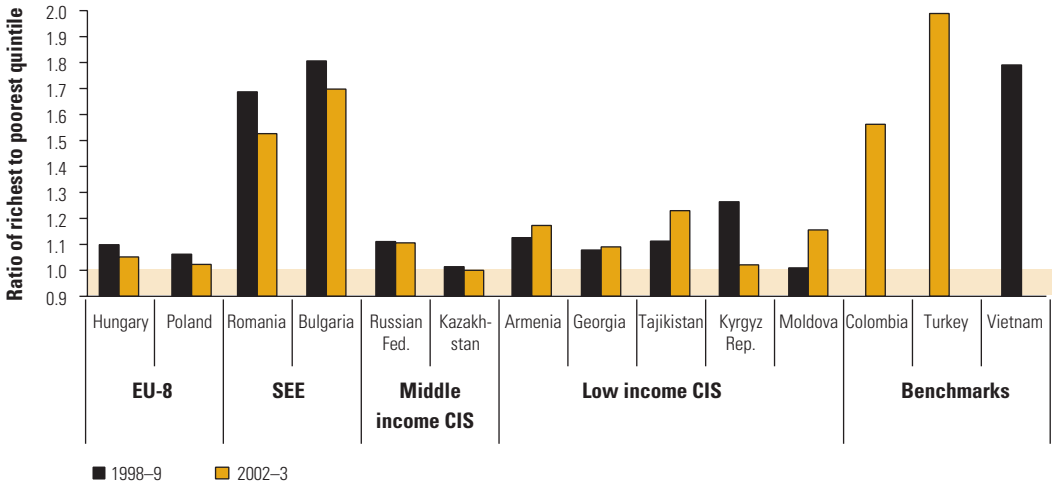
**Regional Coverage of Education, Ages 15–17**




*Source*: World Bank staff estimates using data from ECA Household Surveys Archive.

FIGURE 4.5

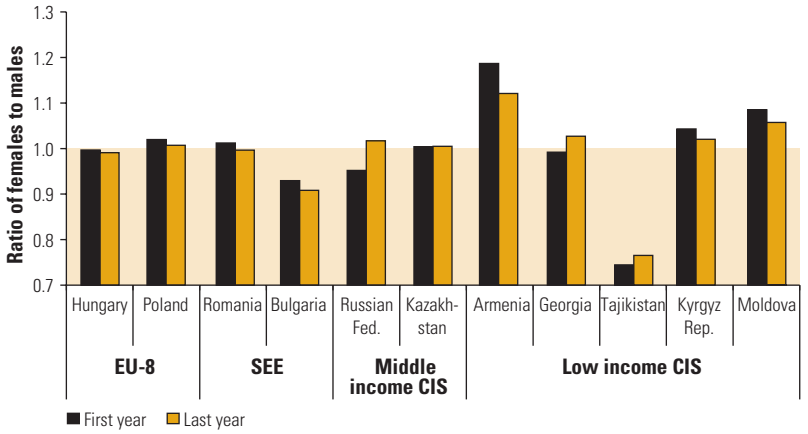
**Inequality in Access to Secondary Education, 1998–2002**




*Source*: World Bank staff estimates using data from ECA Household Surveys Archive.

FIGURE 4.6

**Gender Inequality in Access to Secondary Education, 1998–2002**




*Source*: World Bank staff estimates using data from ECA Household Surveys Archive.

limited and migration is common (especially among young men), young women tend to stay longer in school. These differences, however, were reduced as enrollment rates among young men increased. Tajikistan stands out as the country with the largest gender gap at the secondary level: enrollment for girls is three-quarters that of boys, despite recent improvements. Urban-rural inequalities in access to education have also declined in most countries, including Tajikistan, the only country where coverage is higher in rural areas.

Other sources of deprivation in access to education services include those related to ethnicity and language. Although ethnic dimensions do not represent a major preoccupation in many countries in the Region, the increasing availability and transparency of information has shed light on the deprivation of certain groups. One of them is the Roma population in Central and Eastern Europe. Across countries, 70 to 80 percent of Roma populations have less than primary education, while very few have completed both primary and secondary education. Moreover, most Roma children are enrolled in remedial "special schools," which are physically separate from other schools: between 75 and 85 percent of Roma children in the Czech Republic, Montenegro, and the Slovak Republic and between 60 to 70 percent in FYR Macedonia and Serbia are enrolled in special schools. The combined effect of poverty, isolation, and education in a nonmaternal language only underscores the outstanding challenge of providing quality services to groups that face other sources of exclusion and vulnerability.

In sum, the evidence during the past years shows a varied range of outcomes in poverty of education services. The biggest concern is in the low income CIS countries, where although some countries have made significant progress, others are still lagging behind. Coverage of secondary education, on the other hand, seems to have increased everywhere, even in the poorest countries. Still, public intervention to improve access to education services seems to be facing challenges in reaching certain minority groups.

## Quality of Education

The deterioration of infrastructure during the early transition years had important impacts on the delivery of social services such as health and education.[3] Schools came to be without adequate heating during the winter, and other services like electricity and water were irregular. This section provides some evidence on the evolution of quality of inputs and its impact on education performance. Although education outcomes between 1995 and 2003 (such as achievement tests) are presented, linkages with specific inputs are discussed only for the period between 1995 and 1999. Detailed school surveys that included teachers' and students' characteristics, as well as data on mathematics and science tests, are available only until 1999, precluding analysis for the later period.[4]

### *Test Scores as a (Partial) Reflection of Quality*

Assessing the quality of education requires examining the different elements in the education process, such as schools, teachers, and

(obviously) households. A positive interaction of these different elements could result in students with higher educational achievements in the short run and increased productivity (and employment) in the long run.

Countries of the Region have been characterized by very good performance levels in international tests. The results in mathematics from the Trends in International Mathematics and Science Study (TIMSS) show that the selected countries of the Region were performing at about the same level as some OECD countries like England and the United States (table 4.1). Hungary, Latvia, Lithuania, the Slovak Republic, and Russia have average scores better than England's.

Despite the good performance (with a few exceptions), the Region's countries show worrying trends of declining performance over time. Although some countries performed well and may have even improved over time (such as Hungary or Lithuania), others have shown major losses in average scores (figure 4.7). Russia maintained its performance between 1995 and 1999, but by 2003, significant declines in average scores were observed. EU-8 countries (except for Estonia and Poland, not covered by TIMSS), have maintained a stable performance; but this hides important country heterogeneity. While the Baltic States and Hungary have maintained or slightly improved their performance, the Czech Republic, the Slovak Republic, and Slovenia experienced dramatic declines that are similar to those observed by some SEE countries.

TABLE 4.1

**Mathematics Performance, 1995–2003**

(TIMSS mean scores for eighth grade students, ranked by 2003 score)

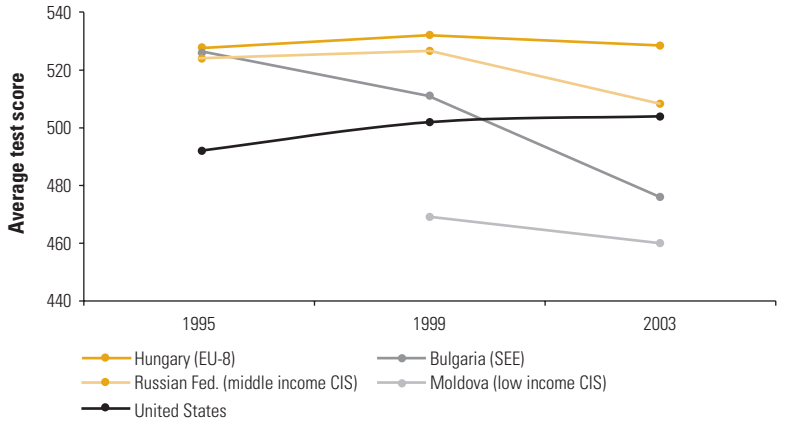
| | 1995 | 1999 | 2003 |
|---|---|---|---|
| Hungary | 527 | 532 | 529 |
| Slovak Rep. | 534 | 534 | 508 |
| Russian Fed. | 524 | 526 | 508 |
| Latvia | 488 | 505 | 505 |
| United States | 492 | 502 | 504 |
| Lithuania | 472 | 482 | 502 |
| United Kingdom | 498 | 496 | 498 |
| Slovenia | 531 | 530 | 493 |
| Armenia | — | — | 478 |
| Czech Rep. | 546 | 520 | — |
| Bulgaria | 527 | 511 | 476 |
| Romania | 474 | 472 | 475 |
| Moldova | — | 469 | 460 |
| Macedonia, FYR | — | 447 | 435 |

*Source:* TIMSS Web site (www.timss.org).

— = did not participate.

FIGURE 4.7

**Recent Declining Trends in Regional Mathematics Performance (TIMSS)**




*Source*: World Bank staff estimates based on TIMSS data.

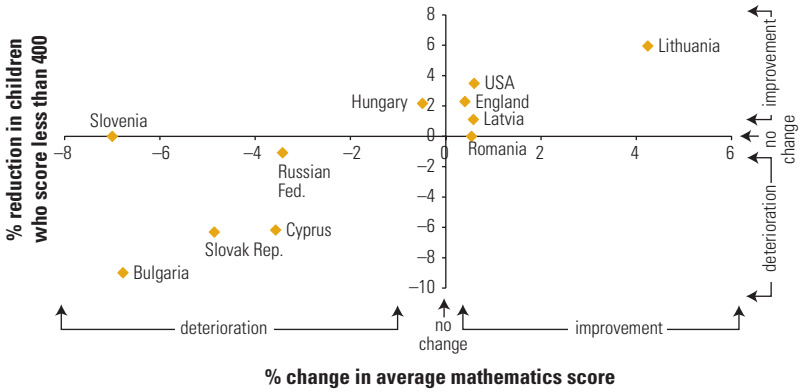
The changes in average scores were uniformly observed across the achievement distribution. A drop in average scores for these high-performing countries may not have represented a major weakness in their education systems if they could have kept most of the students performing above the minimum required standards. The evidence from TIMSS, however, indicates that there are major increases in the fraction of students below minimum educational skills for their age.[5] Between 1995 and 1999 (not shown here), two of the very best performers, the Czech Republic and Slovenia, multiplied their fraction of underperforming students between two and three times to reach between 3 and 4 percent of their student populations. FYR Macedonia, Moldova, and Romania have more than one-fifth of their eighth graders not reaching minimum levels in mathematics by 2003. Between 1999 and 2003, Bulgaria almost doubled its fraction of underperformers, increasing from 10 to 18 percent, and the Slovak Republic increased from 4 to 10 percent. The only exceptions were Latvia and Lithuania, where the fraction of underperformers was cut by 40 to 50 percent, reflecting major gains in their average scores (figure 4.8).

### *What Was the Role of Quality of School Inputs in the Changes in Performance?*

To assess the role of inputs and their quality in performance, four country case studies are used to examine schools, teachers, and household characteristics. These countries are Latvia (with major progress),

FIGURE 4.8

**Mathematics Performance in Selected Countries of the Region, 1999–2003**




*Source*: World Bank staff estimates based on TIMSS data.

the Czech Republic (good performer, but losing significant ground between 1995 and 1999), Romania (stable at a low level), and Russia (good performer and stable). Although that analysis uses data between 1995 and 1999, the evidence described before suggests that the deterioration of quality is an ongoing phenomenon after 1999.

*Functioning of schools: infrastructure and governance*. The limited fiscal resources and the large network of providers crowded out expenditures on maintenance of basic infrastructure. Between 1995 and 1999, the fraction of students in schools facing energy shortages increased. Even in Latvia, a country with major progress in education achievement, this proportion increased from 55 to 65 percent, and in Russia, this fraction jumped from 50 to 63 percent. The deterioration in infrastructure was also observed in other physical inputs: in Romania, the fraction of students in schools lacking some instructional materials increased from 40 to 54 percent between 1995 and 1999.

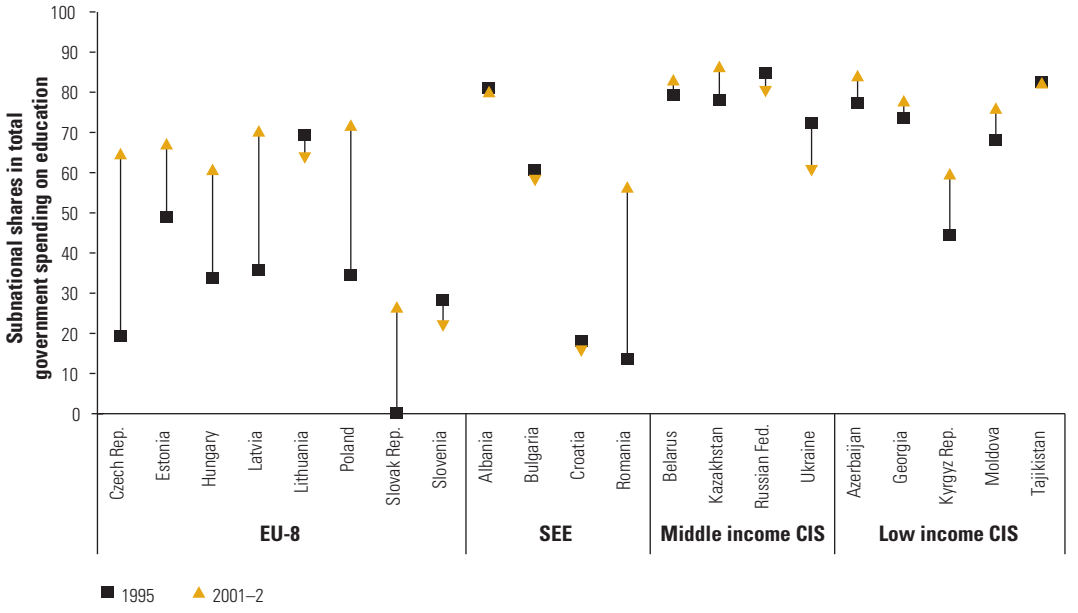
The transition process also brought other changes that affected the delivery of education. One important change was the decentralization process, through which most countries transferred some responsibilities for the provision of education services to lower levels of government.[6] In all countries in figure 4.9, except for Croatia, the Slovak Republic, and Slovenia, subnational governments hold more than 50 percent of all public education sector responsibilities. The highest subnational government involvement in the sector is in Azer-

baijan, Belarus, and Kazakhstan. This process of decentralization in the delivery of education services took many different forms. In Albania, Armenia, the Czech Republic, and Romania, basic education services were provided through deconcentrated regional branches of the central government, with varying (but mostly minor) roles for local governments. A different approach was followed in Hungary, Latvia, and Poland, where subnational governments bear most of the responsibilities for the provision of education services.[7]

The evidence on school autonomy obtained from TIMSS surveys corroborates this finding. The role of parents in setting school policy increased across all countries between 1995 and 1999. In some countries, there is an increase in the role of the school in certain aspects of the service delivery. In the Czech Republic, the fraction of students in schools responsible for teachers' salaries increased from 58 to 80 percent in this period. In Romania, the share of students attending schools fully responsible for teachers' salaries increased from 7 to 16 percent, and those enrolled in schools with key roles in hiring teachers from 17 to 27 percent. Most schools in the Region were responsible for purchasing supplies in 1995, and this role increased even more by 1999.

FIGURE 4.9

**Role of Subnational Governments in Education, 1995–2002**

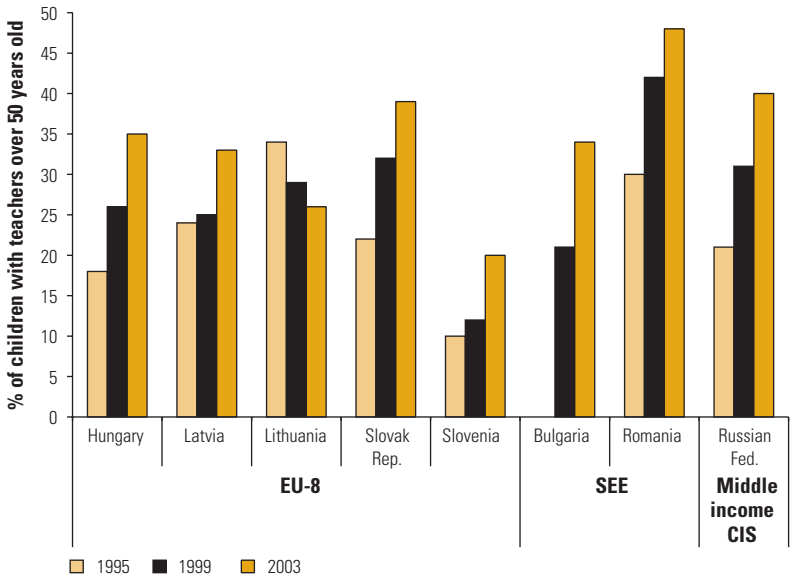



*Source:* Zeikate 2004.

*An aging teaching force.* Lack of incentives (low salaries and the persistent arrears of the 1990s) led to an aging of the teaching force (figure 4.10). The fraction of eighth grade children with teachers more than 50 years of age almost doubled between 1995 and 2003, except for Lithuania. In the Czech Republic and Romania, the fraction of students with teachers more than 50 years of age increased from 30 to 40 percent by 1999, and in Romania it had risen to close to 50 percent by 2003. In Russia, the increase was from 21 to 41 percent between 1995 and 2003. Although the aging of the teaching force does not necessarily indicate a worsening of quality of education, the lack of funding for training (and retraining) in most countries suggests that teachers have not been adequately equipped with new pedagogical tools and, hence, students may not have benefited from new education approaches. Even in Latvia, a country with a strong education reform, this aging indicator, although constant at about 24 percent during 1995–99, increased to 33 percent by 2003. Besides the negative effect of a stagnating teaching force, the lack of incentives for teachers to improve their skills and worsening school conditions may have affected the school environment and teaching practices in the Region.

FIGURE 4.10

**Aging Teaching Force in the Region, 1995–2003**




*Source:* TIMSS 2005.

*Increased household heterogeneity.* Quality can also be measured as the match between attributes of the students and those of the education services, such as language of instruction or examination. The increased presence of minorities and the inability to provide adequate educational programs to such groups may be interpreted as a quality deficit and can be reflected in educational achievement. This feature may have worsened since the Region witnessed a slow (but steady) increase of minorities in several countries. In fact, the fraction of students taking a math test in a language that they "speak only sometimes at home" rose from 2 percent to more than 5 percent in Russia, and in Latvia this rose even faster, from less than 2 to more than 6 percent. Despite the emerging heterogeneity among students, children were less likely to skip classes in 1999 compared with 1995. In Romania, the fraction of students that skipped one class or more decreased from 66 to 50 percent. Similar improvements in attendance were observed in Latvia and Russia.

***Lessons on Performance and Quality***

Using microdata for the four countries' cases, changes in achievement scores between 1995 and 1999 were decomposed into factors related to student, teacher, school, and household background characteristics. The decomposition exercise was applied at different points of the achievement distribution to assess the role of these factors for explaining the relative share of students with lower and higher achievement.[8]

The deterioration of school characteristics played a negative role in education performance, but those effects were offset by household attributes and, in some cases, by specific policies. Russia and Latvia constitute the examples of systems with major worsening of observable measures of school quality (such as school heating), which had a strong negative effect on scores. In these countries, however, the deterioration of school infrastructure was offset by household factors such as parents' education, and these compensating effects were particularly important among those with lower scores. In Russia, teachers played a complementary role in compensating for the deterioration of schools. In Latvia, however, systemic factors such as the education reform and decentralization of services compensated for the negative school conditions. In other countries, the effects of the worsening education infrastructure were accompanied by detrimental effects of household conditions or teaching force. The drop in performance in the Czech Republic was driven by both school and household attributes, and these linkages were stronger among those with low scores. In Romania, teachers' attributes also had negative effects, particularly for the low-scoring stu-

dents. These patterns show an even worse picture if specific population groups are addressed.

Given the financial constraints from central governments, school managements are playing an increasing role in delivering education. Other governance factors have played a significant role in keeping up educational outcomes. Countries increasingly relied on local governments for service delivery. The fraction of students in schools where hiring and firing, school budget, and salary decisions are made at the school level increased during the period. Not only did the role of principals and school governing bodies increase but they also had a positive impact on performance. In Russia, students had higher scores when they attended schools where the principal or the school governing body played an important role in staffing, wage setting, and formulating school budgets. In Latvia, the effects are not that marked; because of its broader education decentralization reform, it showed little variation in school responsibilities, compared with the Russian case.

In sum, between 1995 and 2003, performance outcomes of education have remained relatively high in transition countries. These outcomes, which partly reflect the quality of education services, have been maintained because of the skilled stock of human capital in both households and teaching force and, in some cases, by policy interventions such as an effective decentralization in service delivery. Although the decomposition analysis uses data for 1995 and 1999, the continuous declines in performance across the Region suggest that while the Region may be able to live off its previous investments, these are eroding rapidly. The failure to maintain human and physical capital is resulting in environments that are not appropriate for effective education services and that are reflected in declining performance. This is particularly observable in rural areas and among poor households, which typically face the worst conditions. Policy interventions that improve the quality of education services are essential if the decline is to be brought to an end.

## Access to, and Affordability of, Health Services

The inability to recover from adverse health shocks and maintain one's human capital is an important dimension of poverty (Narayan and others 2000). Utilization of health services is, in this sense, an interesting object because it reflects several linkages with poverty. First, it reflects the effects of poverty on human capital because impoverished households are more likely to face malnutrition, are more exposed to certain contagious diseases, or are less equipped to identify certain chronic diseases. Second, it also reflects the differential ability of

households to seek health care when needed. Even in health systems with entirely subsidized services, households have to incur other costs to receive treatment, such as transportation or the opportunity cost of waiting. Differences across households in financial capacity or the existence of institutional thresholds, such as ethnic barriers, define other forms of poverty in access to services. All of these forms of deprivation are evident in the Region.

Although the Region's countries have a large public network of health providers who distribute generous services, they suffered major fiscal restrictions during the early 1990s. Between 1994 and 1999, the Region spent on average only 4 percent of GDP on health care, ranging from 9 percent in Croatia to close to 1 percent in Georgia. After 1999, some of the poorest countries (like Azerbaijan, Moldova, Turkmenistan, and Uzbekistan) continued to experience reductions in public expenditures on health, so much so that public health spending fell below 3 percent of GDP. Other poor countries like Armenia and Bosnia and Herzegovina have managed to stem the decline, but at very low levels of spending (around 2 percent of GDP). See annex table 1 for country-level data.

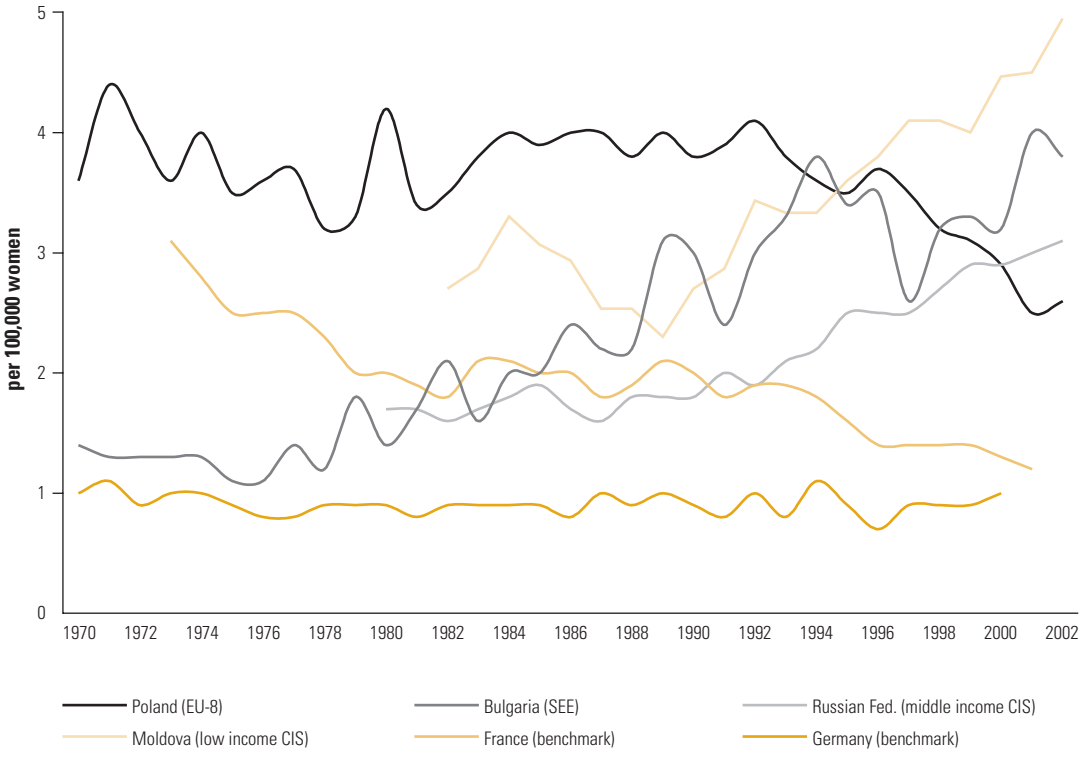
The overall decline in public spending is paralleled by three features that have implications for health and poverty linkages. First, the very large network of providers has not been significantly adjusted for lower fiscal resources. This has resulted in an underfunded and, hence, ineffective network of providers. Second, the lack of resources for public health activities has resulted in repeated episodes of communicable diseases that are easy to prevent. Third, the changing age composition of the population, which is becoming older, has changed the morbidity profile and increased the costs of health provision.

In this overall constrained environment, in which health services have not adjusted to changed circumstances or demand, it should come as no surprise if quality declines, particularly for the poorest groups. However, assessing trends in quality of services is very complex because it requires information about specific failures in the provision of health care. In countries with well-established information systems, quality of care is measured as hospital mortality or infections for specific types of patient and morbidity (Geweke, Gowrisankaran, and Town 2003). Efforts to standardize the collection of information in OECD countries have just begun with the identification of core indicators in different types of treatment (Marshall and others 2004). In the Region's countries, although this information is seldom recorded, anecdotal evidence corroborates the poor quality of health services because of outdated protocols, lack of basic materials and drugs, and the need to retrain personnel (Davidow 1996).

Despite the inability to observe direct measures of quality of service, some morbidities can be partially attributed to the quality of health services. The number of cases and mortality from certain diseases can be associated with deficiencies in service delivery when the prevention, identification, and treatment of those diseases can effectively reduce deaths. One such indicator is the number of cases and deaths due to cervical cancer. Although a number of factors affect cervical cancer, an effective primary health care system should be able to educate populations at risk and identify the morbidities, and hospital services should be able to treat and lessen mortality. Figure 4.11 shows cervical cancer rates for females between 15 and 44 years for selected countries of the Region and for Germany and France for comparison.[9] Although Germany has been able to significantly reduce its morbidity in the past 20 years, most of the Region's countries show an increasing morbidity profile. Only Poland has a declining trend, but it is still at a very high level.

FIGURE 4.11

**Cervical Cancer in the Region and Western Europe, 1970–2002**




*Source:* Parkin, Whelan, Ferlay, and Storm 2005.

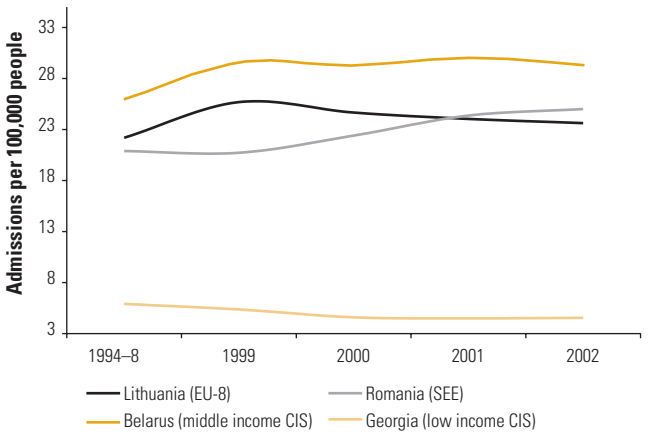
*Note:* Age-standardized rate, females 15–44.

Anecdotal evidence on quality of care suggests that quality of health services deteriorated even faster in rural areas, and that poor households are more prone to communicable diseases such as TB because of poor living environment. It also suggests that the perception and management of chronic diseases is more difficult among the less educated.

### What Happened to Health Care Utilization?

The reduction in public resources in health care in the Region increased the use of fee-for-services in a mostly unregulated setting, reducing the demand for health care. Official statistics show the decline in utilization of health care during the 1990s, but after 1999 these remained stable or even recovered (see annex table 2). Inpatient care in the Caucasus countries (Armenia, Azerbaijan, and Georgia), Moldova, and Tajikistan declined more than 20 percent between the mid-1990s and 2000. This decline stopped after 2001 and in some cases (Armenia) even recovered. Other countries like Belarus, Russia, and Ukraine continue to have very high hospital utilization rates that are higher than the average in the EU (less than 19)—in Russia, they are still increasing. Thus, official utilization data suggest that the low income CIS group has converged to very low levels of utilization, while countries with higher incomes have not adjusted their oversupplied network and still show very high levels of utilization (figure 4.12).

FIGURE 4.12
**Hospital Utilization (Inpatient Care)**




*Source*: World Bank staff estimates based on official health statistics (see annex table 2).

*Evidence from household surveys.* Household survey data provide income-related inequalities in utilization. "Utilization" in the household survey is defined as the fraction of those sick individuals who sought health care, reflecting the notion of need in health care. This is different from official statistics that record the number of inpatient admissions and outpatient contacts at the point of service.[10] Figure 4.13 shows the survey-based utilization rates for selected countries by quintile. Armenia stands out as a country with one of the lowest utilization rates in the Region, which declined further between 1999 and 2003. Figure 4.13 (based on survey data) confirms official statistics reported in annex table 3. Russia comes close to Armenia, and other countries like Bulgaria and Romania (not shown) experienced large increases in utilization.

The changes in utilization rates have been uneven across socioeconomic groups. Figure 4.12 shows that generally there has been an overall recovery in utilization. Figure 4.13 helps one to hypothesize that when such gains have been made, they went hand in hand with maintaining relatively low income-related inequality. In countries such as Bulgaria, not only did utilization increase for all income quintiles but also the increase for the poorest was the greatest.

Armenia is a particularly interesting case because of the large utilization gap between the poorest and richest quintiles. Utilization decreased between 1998 and 2003, despite a recovery in utilization between 2001 and 2003 (in both official and survey data). The reduction in utilization during the 1990s significantly increased the income gradient, but after 2001 a modest decline occurred because of a recovery in utilization among the poor. Improved coverage of the poor in the post-2001 period is explained by a recovery in public expenditures in health and the expansion of health insurance for families in poverty. Still, Armenia has one of the largest gaps across income groups in the Region.

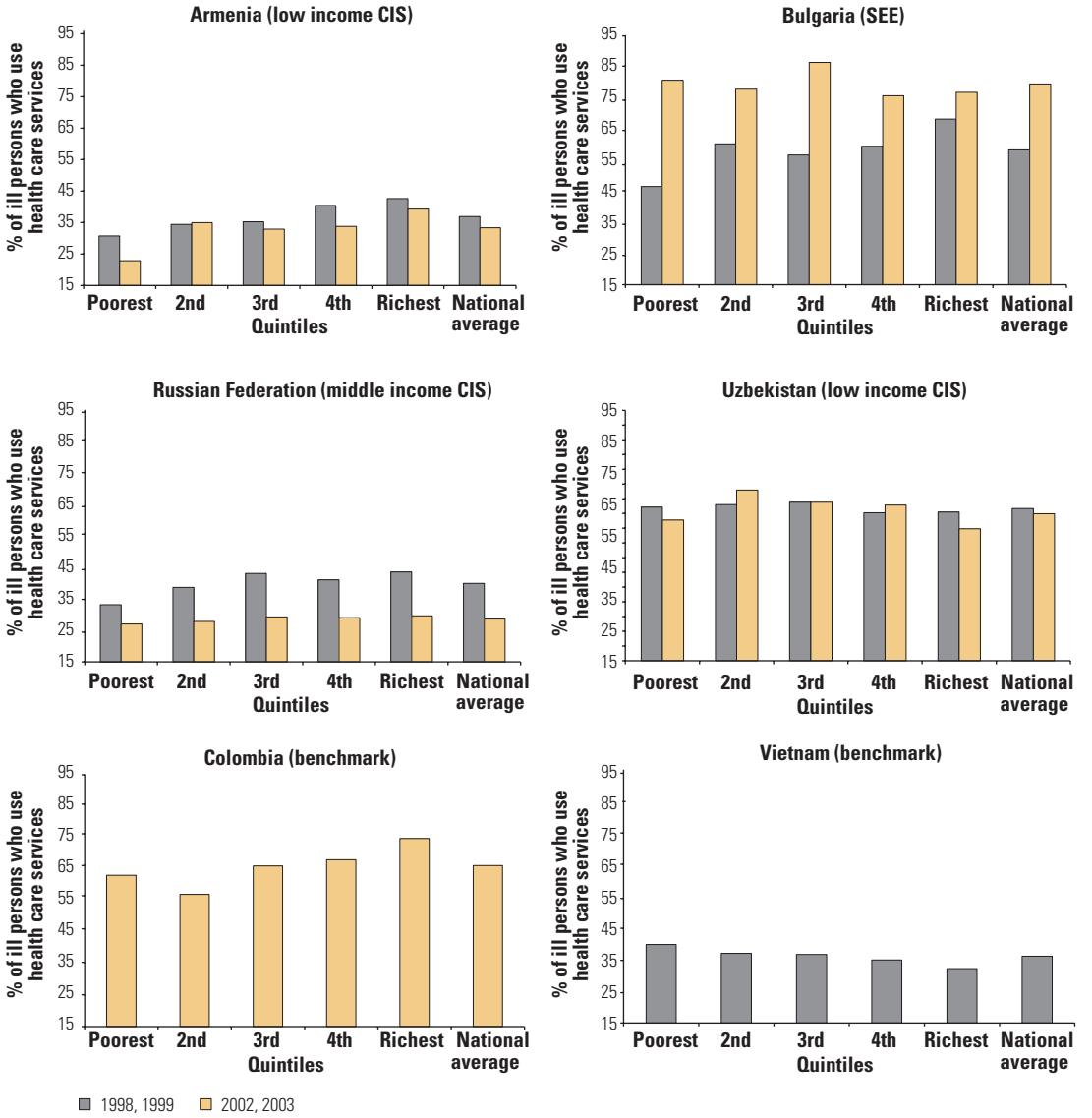
Utilization of health services among the poor suggests that poor countries faced the worst declines in utilization during the 1990s and that the poor fared the worst. This pattern seems to be partially reversed after 1999 through changes that touched two aspects of utilization inequality. First, the improved economic conditions may have enabled households to bear the costs of seeking care. Second, the introduction of policies to provide health insurance for the poor and better funding of such policies may have resulted in better—or more affordable—utilization.

### *How Are Households Paying for Health Care? Out-of-Pocket Payments and Catastrophic Expenditures*

Health status and health care utilization are important manifestations of economic status, but adverse health episodes can also cause house-

FIGURE 4.13

**Utilization Rates of Health Services by Quintiles**



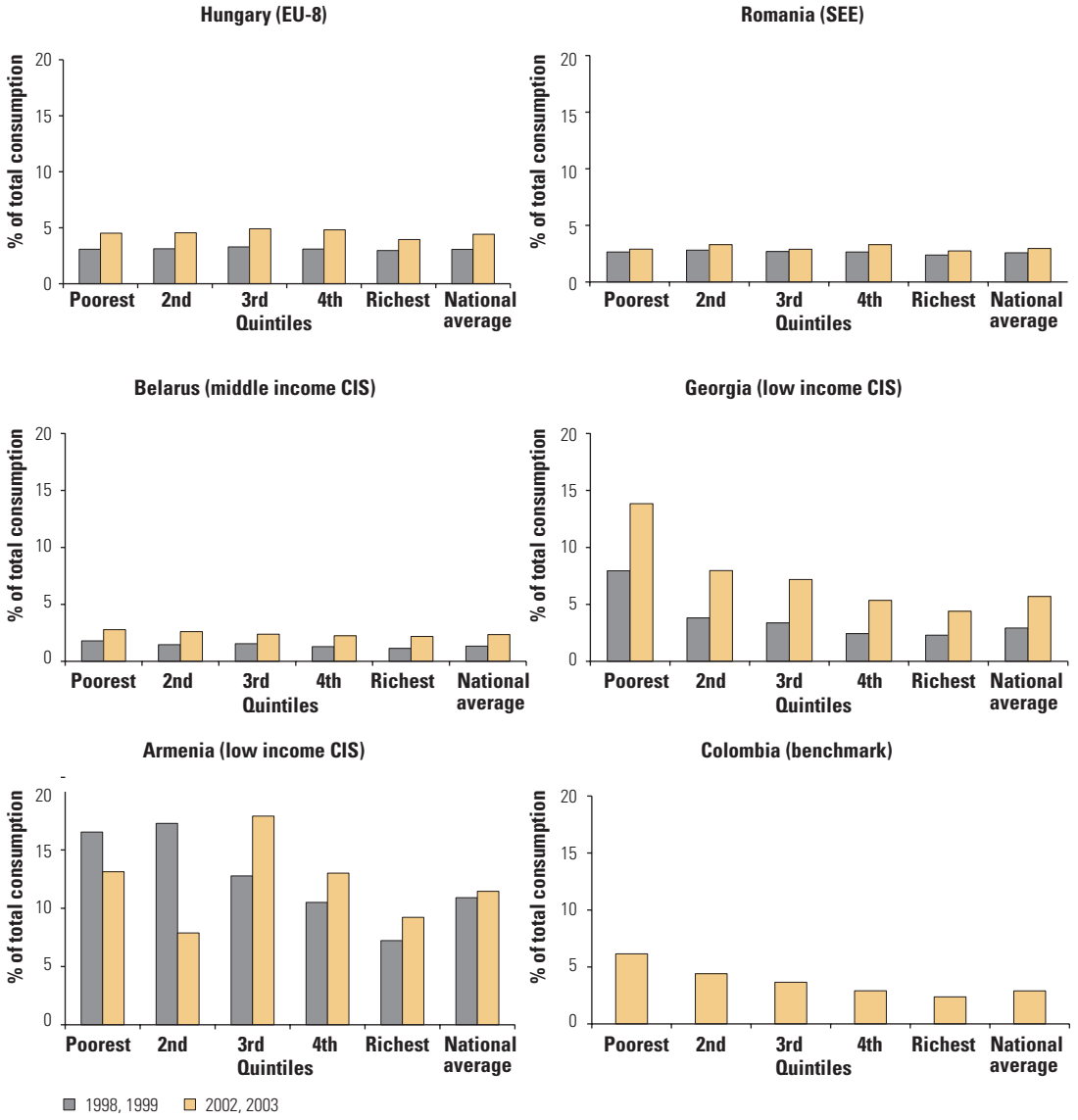

*Sources*: World Bank staff estimates using data from ECA Household Surveys Archive. See also appendix table 7 for country-level data by years.

*Note:* Utilization rate shows percentage of respondents who used health services when sick over the reporting period; quintiles are based on consumption per capita.

holds to fall into poverty because of large expenditures on drugs or treatment, or forgone income that reduces consumption. Because public expenditures were reduced during the 1990s, private expenditures played a more important role in the financing of the sector. This was reflected in an increasing share of health expenditures in household budgets across different households (figure 4.14). In Belarus, a

FIGURE 4.14

**Ratio of Out-of-Pocket Health Spending to Household Total Consumption, 1998–2003**




*Source*: World Bank staff estimates using data from ECA Household Surveys Archive.

country with broad and generous coverage of publicly provided health services, the share of households' budgets devoted to health doubled between 1998 and 2002. In Hungary, the increase was more than 30 percent, reaching almost 5 percent of the household budgets. But nowhere in the Region was the increase so fast and the burden so high as in low income CIS countries Armenia and Georgia.

The increase in households' contributions to health financing had an impact on poorer households. Although health care expenditures reflect the nature of the illness, they also capture some dimension of quality of treatment. This results in better-off households with higher out-of-pocket expenditures compared with those of poorer ones. However, relative to their incomes, the poor spend a larger fraction, and this share of health expenditures on their incomes has been increasing over time.

The increasing costs of health care pose serious affordability concerns in some countries, and they partially explain the decline in utilization in the past decade. Treatment may be postponed, but often only to increase the severity of the illness and the cost of treatment. Then, when treatment (and its expenditures) cannot be avoided, large health expenditures may reduce the resources available for non-health-related spending. This is referred to in the literature as the impoverishing effects of catastrophic health expenditures.

***How Impoverishing Are Catastrophic Health Expenditures?***

*Catastrophic* health expenditures are usually defined as those extreme expenses that affect households' ability to maintain their consumption of basic items (Wagstaff and van Doorslaer 2001). This is different from simply examining the incidence of total health expenditures among the poor and the nonpoor (discussed earlier) because the *impoverishing* concept involves those nonpoor but vulnerable households that may fall below the poverty line because of these unusually large unpredictable expenses. These effects may be underestimated in a country with low utilization of health services because many of those not using the network simply cannot sacrifice any additional consumption and may postpone care. Hence, there are *potential* impoverishing effects that are not observed because households simply decline or postpone care.

Across countries, simulations undertaken for the purposes of this report suggest that catastrophic health expenditures can increase the fraction of poor population by between 3 and 9 percent.[11] Countries with vastly different funding and organization of their health sectors (such as Belarus and Armenia) experience similar impacts (table 4.2).

Belarus, on one hand, has a health system that has changed very little from the previous model under the Former Soviet Union: public expenditures on health represent about 5 percent of GDP and sustain a large network of facilities and personnel (close to 120 beds and 45 doctors per 10,000 people). Although most health status indicators show low infant and maternal mortality, adult life expectancy is

declining because of adult male mortality (life expectancy for males is 62, one of the lowest in the Region). Households spend a small fraction of their budget on health, still reflecting strong public funding. However, the impoverishing effect is high because most households that need health care do seek care, even if they pay a small amount. The poverty impact, then, occurs through the broad number of population affected.

Armenia, on the other hand, represents a different picture. Although spending only 3 percent of GDP, Armenia still has a large network of providers and personnel (more than 43 beds and more than 34 doctors per 10,000 people). The public underfunding of the system has been temporarily covered by active participation of international donors and households in the system (World Bank 2003b). Expenditures on health represent about 5 percent of the average household budget, and about half of those payments are made informally.[12] The levels of utilization, however, are much lower than in Belarus, and those who pay contribute a significant fraction of their incomes. The impoverishing effect of catastrophic expenditure is high in this case because of high expenditures among the households seeking care.

### *Mechanisms to Protect the Poor*

Health systems need to include cost recovery mechanisms not only to generate their own resources but also to introduce some incentives for the rational use of the network among consumers. Fully subsi-

TABLE 4.2

**Impoverishing Effects of Catastrophic Health Expenditures**

Poverty Indicators before and after Catastrophic Health Expenditures

| | Before | After | Impoverishing effect | Impoverishing effect, % impact |
|---|---|---|---|---|
| Bulgaria (SEE) | 4.8 | 6.3 | 1.5 | 31.9% |
| Romania (SEE) | 9.4 | 10.1 | 0.7 | 7.6% |
| Belarus (middle income CIS) | 19.0 | 20.6 | 1.6 | 8.4% |
| Kazakhstan (middle income CIS) | 15.8 | 16.3 | 0.5 | 3.2% |
| Armenia (low income CIS) | 41.2 | 44.6 | 3.4 | 8.4% |
| Georgia (low income CIS) | 40.3 | 43.9 | 3.6 | 9.0% |
| Kyrgyz Rep. (low income CIS) | 61.0 | 62.4 | 1.5 | 2.4% |
| Moldova (low income CIS) | 32.5 | 35.4 | 2.9 | 8.8% |
| Tajikistan (low income CIS) | 64.4 | 67.7 | 3.3 | 5.1% |
| Uzbekistan (low income CIS) | 39.0 | 40.7 | 1.6 | 4.2% |

*Source:* World Bank staff estimates.

*Note:* Data used from most recent available household survey; poverty line used is $2.15 at 2000 PPP.

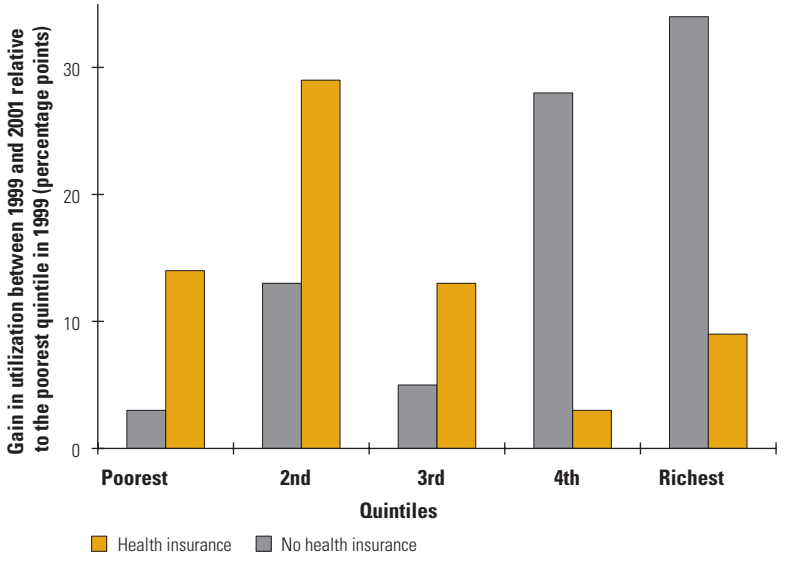
dized systems may generate excessive use of health resources and hence inefficient expenditures on unnecessary activities. Health systems that depend fully on private expenditures are challenged by the households' ability to contribute, particularly when those expenses are large. There are, then, two areas that require public interventions to address market incompleteness or equity concerns. One is the construction of a functioning health insurance system that can provide households with a mechanism to cope with adverse health events. The second and most important issue for the poor is the introduction of health programs that provide financial coverage for those who cannot afford the cost of health services.

One country where consecutive reforms have enhanced the provision of health insurance for the poor is Armenia. First, in 1999, the government reformed the social assistance system, replacing more than 26 categorical benefits by a poverty-targeted benefit, improving the incidence of social assistance among the poor. Then, in 2001, the Ministry of Health made those beneficiaries of social assistance eligible to receive a basic package of services with no charge. Although health insurance is still limited and faced lack of funding in the initial years, the evidence in 2001 and 2003 suggests that utilization has recovered and has improved more for the poorest households. Figure 4.15 shows the increases in utilization in 2001 compared with the poorest quintile in 1999. The figure shows that compared with the rates observed in 1999 for the poorest, most of the population experienced an increase in the utilization of health services by 2001. But the increase was particularly pronounced for the poor who benefited from targeted health insurance. The effects of this expansion of health insurance are also associated with a better funding of the health care network by 2001. The positive effects of the eligibility expansion on utilization, or take-up, are also evident in higher-income countries with programs for the poor, such as Medicaid in the United States (Shore-Sheppard 2005).

During the recent years while public funding for health services has improved, these services have come to rely much more on private expenditures. The negative implications of this financing structure for equity were evident during the 1990s, but better funding and better programs targeted to the poor have made services more affordable. The experience of Armenia suggests that even countries with limited resources and high poverty rates can make improvements in affordability and access among the poor, albeit on a moderate scale; however, very few poor countries in the Region have followed in Armenia's footsteps.

FIGURE 4.15

**Health Insurance and Utilization in Armenia, 2001**




*Source*: World Bank staff estimates based on household surveys.

## Energy and Other Utility Services

The Region's countries entered the 1990s well covered with basic utility services, although rapid economic change meant that this infrastructure was not always the right kind or in the right locations. The economic shocks of the 1990s—which lasted longer in the CIS than elsewhere in the Region—meant that utilities deteriorated across the Region for much of the 1990s. Since then, the decline in utility performance (as measured by access, quality, and affordability) has been reversed or slowed in most countries. Electricity has shown the greatest improvement because providers have maintained near-universal coverage while improving reliability in the low-income countries of the CIS. Other recent gains include the expansion of gas to many households affected by the collapse in district heating, and the improvement of water reliability in some countries. Despite these improvements, many households, including many urban households, continue to use dirty fuels such as coal and wood for heating because they lack access to gas and cannot afford (or are not reliably provided with) electricity. In secondary cities, the increasing reliance of households on dirty fuels in some countries represents an especially worrisome trend.

### The Coverage Rates for Most Utilities Remain High

Access to electricity and piped water remains quite high. Close to 100 percent of all households are connected to the electrical grid, while from 80–100 percent of urban households are connected to piped water. It is difficult to evaluate access to clean water for rural households because of the limitations of the survey data (see box 4.1).

Although electricity and network water access rates remain high, household access to district heating and hot water—provided in parallel by district heating companies—dropped precipitously in most low income CIS countries (see box 4.2). In 1989, 78 percent of urban resi-

BOX 4.1

### Survey Data Provide Limited Information about Access to, and Quality and Affordability of, Utilities

**Most surveys ask the wrong questions to evaluate whether rural households have access to clean water, improved sanitation, and clean heat.** In urban areas, it is reasonable to assume that water, sewerage, and energy for heating should be provided through utility networks; however, this is not the case in rural areas. Even in much wealthier countries, rural households commonly depend on wells for water supply, septic tanks for sanitation, and liquefied petroleum gas (LPG) for heating and cooking. District heating and other network services make economic sense only in densely populated areas such as cities.

**Surveys ask only about connections, not service provisions.** Power, water, gas, and district heating outages are quite common in some countries in the Region, especially the low-income countries. Surveys that ask households whether they are connected do not answer the question whether services are provided.

**Survey data about payments are weak.** It is difficult to interpret payment data in the household surveys for several reasons: (a) Households living in apartment buildings often receive a single bill for maintenance and state rent plus all utilities other than electricity (that is, the so-called communal services). As a result, they often do not know how much they pay for each utility. (b) Households often pay for communal services on a less-than-monthly basis so utility payments may be very uneven. Heating is inherently uneven because it is needed only in the winter. (c) The surveys provide information only about the amount paid, not the amount billed, so the amount of arrears is not known. (d) Some households are not asked to pay for electricity or other utilities at all. (e) Many households choose not to pay for reasons ranging from lack of cash to knowing the utilities cannot enforce payment to not paying because the household did not receive the service (without metering, households are typically billed normative amounts regardless of how much of the service is actually provided and consumed).

*Sources:* World Bank staff; see appendix, A. Data and Methodology, for a detailed discussion.

dents in Armenia, 42 percent in Azerbaijan, 64 percent in Georgia, and 52 percent in Tajikistan were connected to district heating. By 2002, the percentage of urban residents connected to district heating had dropped to 6 percent in Armenia, 24 percent in Azerbaijan, 1 percent in Georgia, and 21 percent in Tajikistan, with an even smaller number of households actually receiving heat through the connections.[13] As district heating networks shrank and electricity costs soared, affected countries increasingly emphasized gas. The result has been an increase in the number of households connected to the gas network in the low income CIS countries. Although this has allowed some households to switch from dirty fuels or costly electricity to a cleaner and less costly source of heating, many households continue to use dirty fuels for heating, cooking, and light, even if only sporadically.

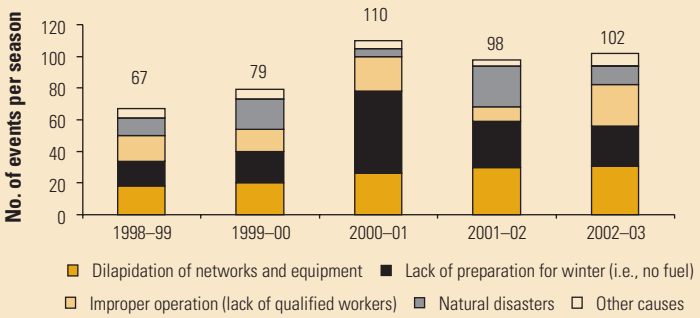
BOX 4.2

### What Has Happened with District Heating?

Apartments built during Soviet times were heated by district heating at little or no cost (the average family in the Soviet Union spent less than 3 percent of income on all utilities, including heating). However, deep financial crises in the early transition years, often coupled with political and social unrest and the loss of deeply subsidized energy sources in Russia, meant that district heating has disappeared in a number of countries.

Even in countries where district heating continues to function, such as Russia, the systems are at increasing risk of breakdown and stoppages (as the chart below shows). Disruptions of heating supply have increased from the 1998–99 heating season. Although the reasons for the breakdowns vary from year to year, those due to dilapidated equipment have increased somewhat steadily. The deficit of heating fuel has also grown. The failure of heating systems in a country as cold as Russia can severely damage health status, even causing death.

**Breakdown and Stoppages in District Heating in Russia**




*Source:* Russian Federation Construction Agency (Rosstroi).

## The Quality of Utility Services Is a Greater Challenge than Access

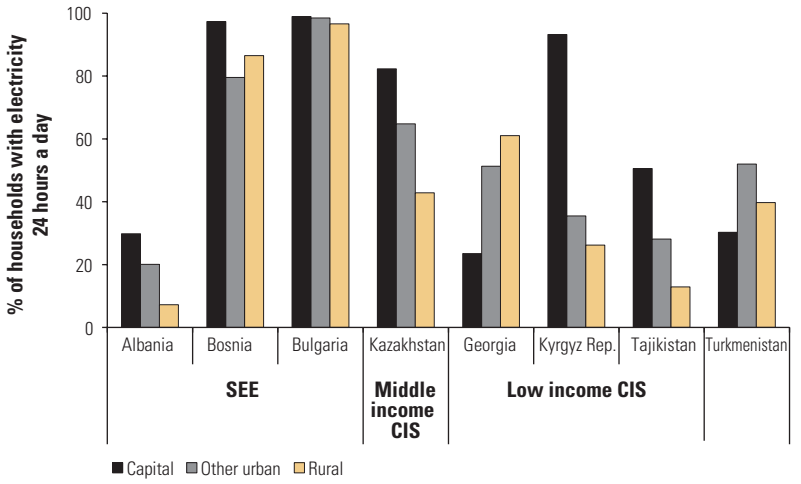
Access measures only the presence of a connection, but it fails to capture the larger challenge in the Region: service reliability or quality. The quality of electricity, water, gas, heat, and other infrastructure and energy services deteriorated during the early transition years, especially in the low income CIS countries. Although anecdotal evidence suggests that service reliability for electricity and water have improved in at least some countries, in others the reliability of services remains a serious challenge.

Even in electricity, where reforms are most advanced and investment has been the greatest, reliability cannot be assumed. As figure 4.16 shows, in countries such as Albania, Georgia, Tajikistan, and Turkmenistan, fewer than half of the households are supplied with electricity around the clock. The lack of reliable service is generally worse in marginal settlements, such as smaller cities and towns and rural areas, where poverty is also more prevalent.

Although time-series data tracking water availability are available for only a few countries, the evidence from two of the poorer countries, Tajikistan and Moldova, shows the influence of years of low maintenance and little investment in water provision. As figure 4.17 shows, households may be connected to water officially, but little water flows through the pipes. On average, Tajik households receive water for less than six hours each day, with the households in smaller

FIGURE 4.16

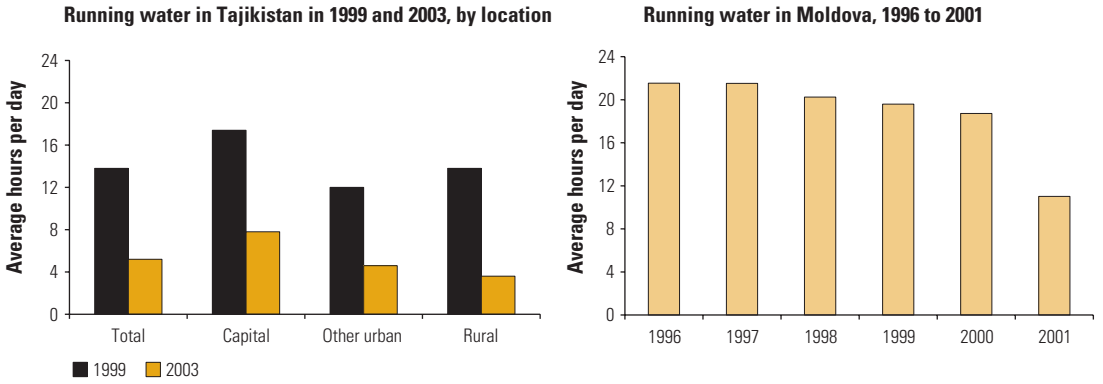
**Reliability of Electricity in the Region in the Early 2000s**




*Source*: Hamilton and others 2004.

FIGURE 4.17

**The Deterioration in Water Provision in Tajikistan and Moldova**




*Sources*: Tajikistan, staff calculations; Moldova, Regional Infrastructure Database.

cities and rural areas having the least water. The dramatic drop from 1999 to 2003 suggests that the water utilities are bordering on complete collapse. In Moldova, utilities provide water for less than half the day, down substantially from about 20 hours per day in 1996–97. The average figure probably hides differences between regions, some of which are better-off and some of which are worse-off.

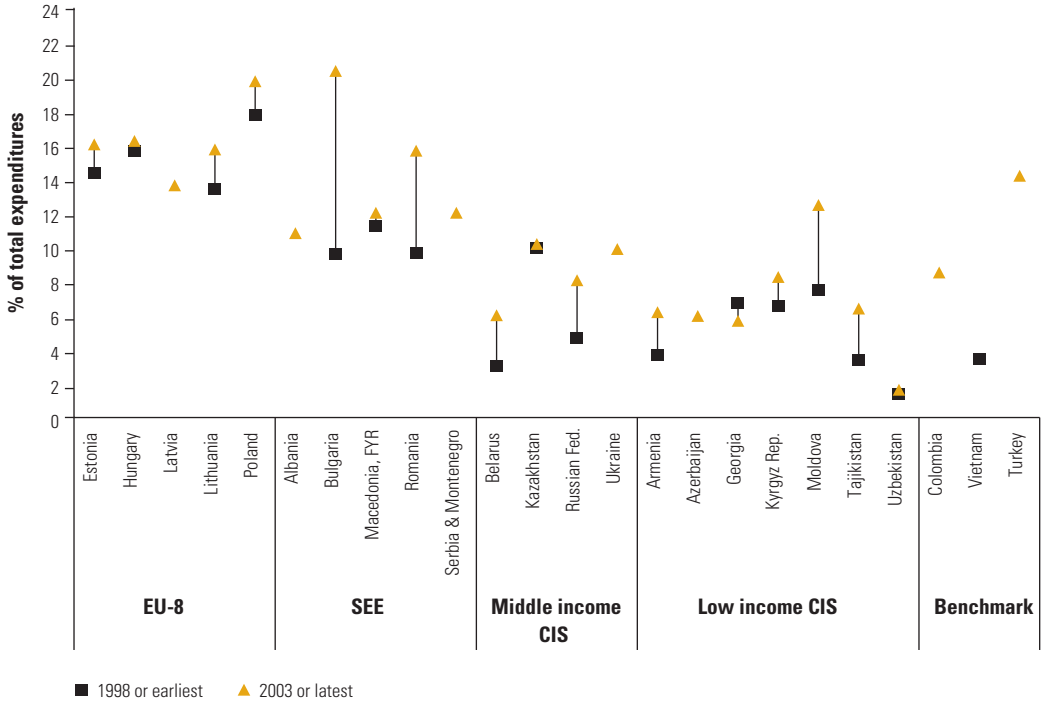
The erosion of access to district heating networks has been reinforced by continuing deterioration in service quality. In Russia, for example, district heating stoppages have increased overall since the late 1990s, as shown in box 4.2. Service failures have potentially disastrous consequences in this country because of its cold climate. Service deterioration and collapse also compel households to switch to other heating sources, including dirty fuels (which will be discussed further below).

## Poor-Quality Services Cost Households More

As household expenditure shares for energy and other utilities continue to increase, affordability may be a growing concern in some countries. As shown in figure 4.18, utility expenditure shares are highest in the EU-8, followed by those in SEE, the middle income CIS group, and the low income CIS group. Bulgaria, Moldova, and Romania have seen especially large jumps in household expenditure shares in recent years. The increases in overall expenditures on utilities have been largely driven by increased payments for electricity as tariffs have gone up, payments have been enforced, and household reliance on electricity for heating has increased (because of loss of other heating sources) in a number of countries.

FIGURE 4.18

**Household Expenditure Shares for Electricity, Heating, Water, and Sewerage Have Increased from 1998 to 2002/2003**




*Source*: World Bank staff estimates, using data from ECA Household Surveys Archive.

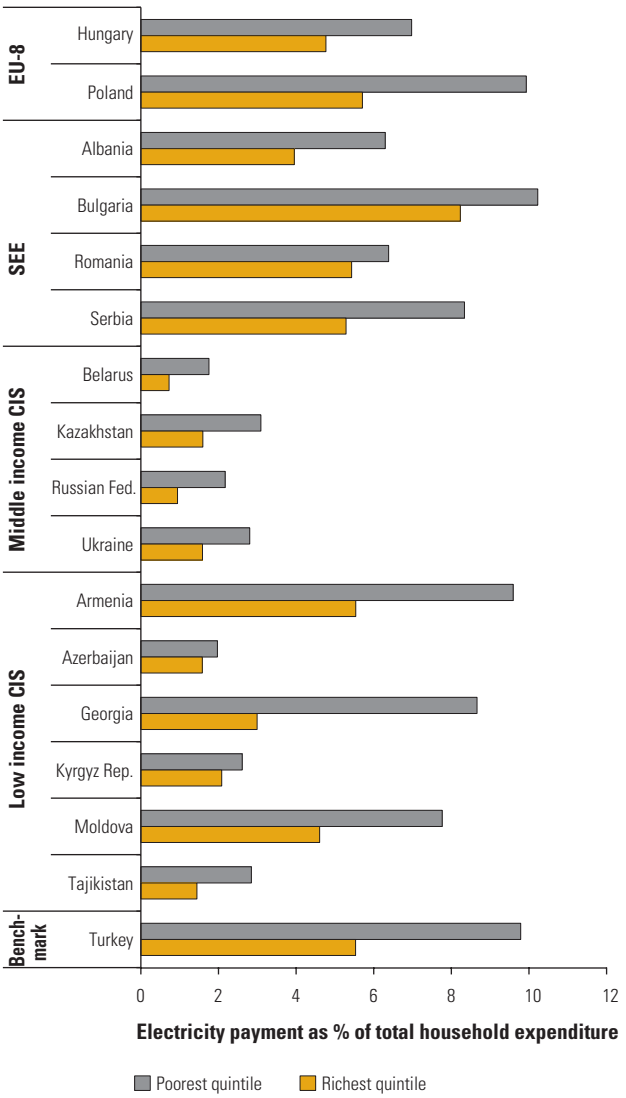
*Note:* Bulgaria—earliest data are from 1995; Tajikistan—earliest data are from 1999; Estonia, the Kyrgyz Republic, and Uzbekistan—earliest data are from 2000; Kazakhstan—earliest data are from 2001; Albania, Ukraine, Azerbaijan, and Turkey—data before 2002 are not available.

Poor households devote a larger share of expenditures to paying for electricity than better-off households. Figure 4.19 compares the share of household expenditures for electricity in poorest income (quintile 1) and richest (quintile 5) households across the Region's countries. In every country for which data are available, electricity is a greater burden on poorer households than on richer ones. At the same time, there are significant regional differences. Households in the middle income CIS countries, for example, spend relatively little on electricity, whereas those in the EU, SEE, and some of the low income CIS countries where substantial tariff reform has occurred (Armenia, Georgia, and Moldova) spend relatively more.

Despite tariff increases, tariffs for utilities remain well below cost recovery levels, assuming that investment needs are taken into account. Box 4.3 summarizes current electricity and water tariffs as compared with projected cost-recovery benchmarks. It is important to note that tariffs for both electricity and water will need to increase

FIGURE 4.19

**Electricity Payments Are a Larger Share of Household Expenditures for Poor Households (Quintile 1) than for Rich Households (Quintile 5)**




*Source:* World Bank staff estimates using data from ECA Household Surveys Archive.

*Note:* Nonpaying households have been excluded from calculations.

substantially in nearly all countries before cost recovery will be achieved.

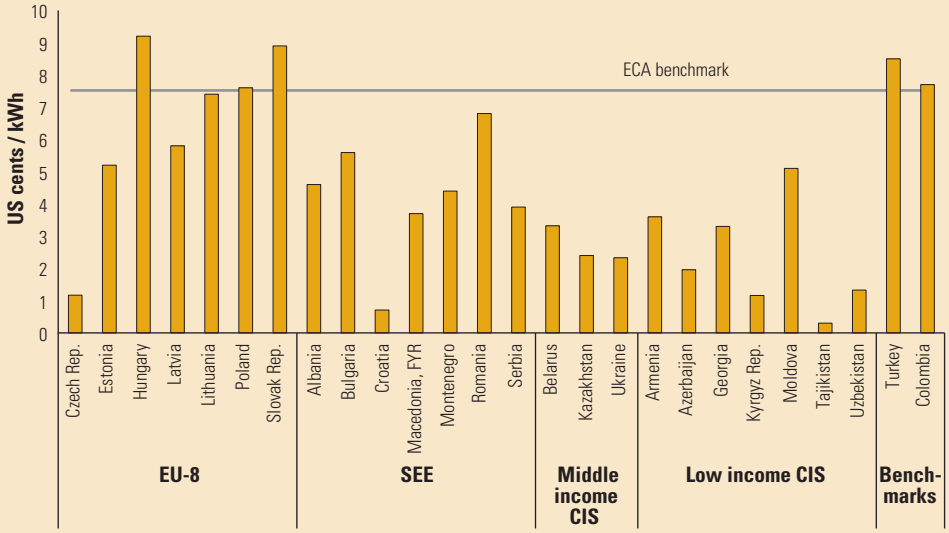
To a large extent, the relatively lower water tariffs reflect less reform in the water sector because governments have prioritized electricity, where the fiscal and quasi-fiscal losses were enormous, the interest of the private sector greater, and the ability to enforce pay-

BOX 4.3

## Electricity and Water Tariffs Remain below Benchmarks for Full-Cost Recovery

Residential electricity tariffs in most of the Region's countries have increased to levels sufficient to cover short-term operating costs (3 cents per kilowatt-hour). In only a few countries, however, have residential tariffs increased to the rough benchmark of 7.5–8.5 cents per kilowatt-hour necessary for full-cost recovery, including coverage of capital investment. The chart below compares current residential tariffs with the lower boundary of an indicative regional benchmark (7.5 cents per kilowatt-hour, shown by a broken line). Residential tariffs in the CIS countries fall the furthest below this level, followed by those in SEE and the EU-8.

### Residential Electricity Tariffs Remain Well below the Benchmark of 7.5–8.5 Cents per Kilowatt-Hour

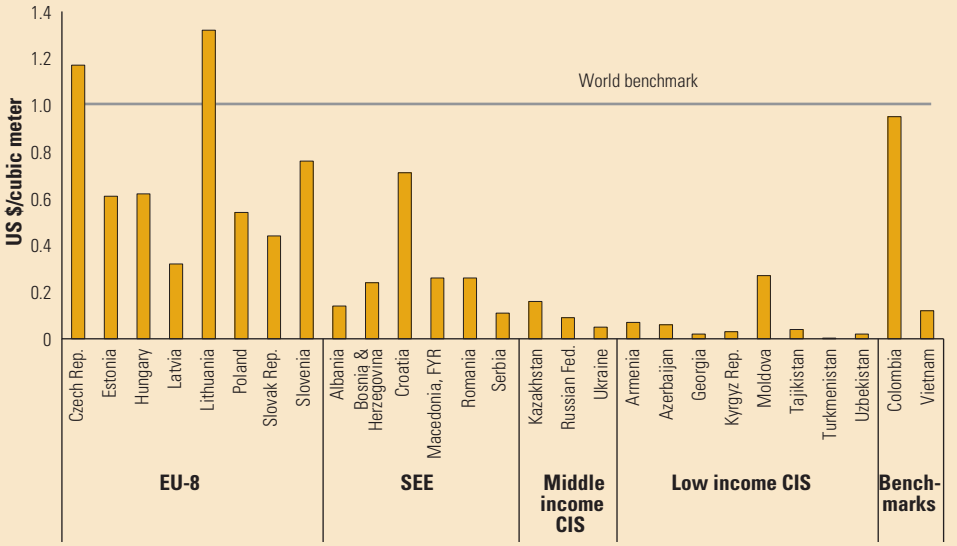



ment much simpler. In contrast to electricity, where metering has always been common and where disconnection is straightforward, water is not usually metered, and disconnecting residential customers in apartment buildings is technically difficult.

The limited evidence available about gas and district heating tariffs suggests that both remain well below cost recovery levels and lag even further behind in overall sectoral reform. This may create additional pressures in the future: late-reforming sectors may not be able to increase tariffs to needed levels because households, especially low-income households, will not be able to absorb additional

Residential water tariffs lag even further behind full cost recovery levels of $1 per cubic meter, as shown in the chart below. Only two countries (the Czech Republic and Lithuania) have reached the benchmark level ($1 per cubic meter, shown by a broken line). The low income CIS countries have the lowest residential tariffs, followed by the middle income CIS group, SEE, and the EU-8.

**Residential Water Tariffs Remain Well below the Benchmark of $1 per Cubic Meter**




*Sources:* World Bank Forthcoming-b. Data on Colombia: Latin American Energy Association (2004); Energy-economic information system. Energy Statistics; http://www.olade.org.ec/php/index.php?arb = ARB0000006; and staff calculations from tariff information provided at http://www.superservicios.gov.co/. Data for Vietnam are from http://www.ib-net.org/.

increases. In some sense, increased electricity expenditures resulting from improved enforcement and increased tariffs may crowd out the ability of many households to absorb additional tariff increases in district heating and gas, where reforms have been implemented more slowly.

## Household Coping Options for Tariff Increases

Households have relatively few options for coping with tariff increases: (a) reducing utility consumption, (b) reducing nonutility

consumption, (c) incurring arrears, (d) relying on the social protection system, and (e) fuel switching. All options present difficulties.

The first option that households have to cope with increasing utility bills is to reduce consumption. Except for electricity, most utilities in most countries are not metered; hence, households are billed based on normative consumption. Without metering, households cannot economize to reduce bills. For electricity, poor households in low income CIS countries such as Armenia, Georgia, and Moldova have already reduced consumption to the absolute minimum.

The second option that households have is to absorb tariff increases by maintaining utility consumption at the expense of other basic consumption items such as education, health, or food. Because households cannot reduce consumption of utilities (which are normatively billed), this scenario may well be commonplace.

The third option is not to pay, or not to pay in full. Review of nonpayment patterns finds that a high proportion of households do not pay for utility services. Low-income households in the low income CIS countries are especially likely not to pay, or not to pay in full. Although weaknesses in the survey data (discussed in box 4.1) preclude development of a comprehensive picture of nonpayments and arrears for the Region, available evidence suggests that these problems are widespread, especially in the poorer countries. In Serbia, for example, 1 in 5 people live in households with overdue electricity bills, and 1 in 10 in households with overdue bills for communal services (World Bank 2005h). In Azerbaijan, about one in five urban households report arrears for electricity, although fewer than 5 percent of households do not pay at all (World Bank 2004a). In the Russian city of Norilsk in 2002, an average household paid only 82 percent of all amounts billed (Bashmakov 2004).

Some evidence suggests that poor households are more likely to not pay or to have arrears. In Armenia, poor households report being disconnected for nonpayment of electricity bills at a much higher rate than better-off families. In 2001, about two-thirds of the lowest-quintile households in the capital city of Yerevan were disconnected for nonpayments, while fewer than one-third of the highest-quintile Yerevan households reported disconnections for nonpayment. The pattern was broadly similar in other urban and rural areas in Armenia, although the disconnection rates were lower (World Bank 2003b).

The fourth option that households have is to rely on the social protection system. The two main mechanisms to protect the poor from tariff increases are lifeline (block) tariffs (where consumption can be metered) or targeted subsidies. Lifeline tariffs provide for consumption of a minimal or basic amount by all consumers at a subsidized price.

Higher rates are charged for amounts consumed above the basic block to provide a source of cross-subsidy. The ability to meter consumption is key to implementation. The second mechanism, targeted subsidies, provides cash transfers, vouchers, or discounts on electricity, water, and other utilities to households who are judged to be poor. Although metering is not essential to targeted subsidies, they are more costly to administer. The programs in existence to compensate households for the rising utility tariffs have low coverage of the poor.

The fifth option, discussed in greater detail in the following section, is to switch fuels. Households heating with electricity may be able to switch to gas in some cases. Alternatively, households may opt to switch to dirty fuels for heating.

## Many Households Rely on Dirty Fuels for Heating

Households continue to rely on dirty fuels for heating, especially in secondary cities and rural areas. The major reasons that households switched from clean to dirty fuels include loss of access to district heating, irregular supply of electricity, high cost of electricity, and lack of access to other clean fuel sources, such as gas. The lack of reliable energy sources and the increased costs of the existing choices (such as electricity) pushed many households into lower-quality choices of energy, such as solid fuels. Household reliance on dirty fuels increased sharply in the early transition years. More recently, the pattern has been mixed. Of the countries shown in table 4.3, dirty fuel use increased on a national basis only in Bulgaria and Romania (SEE), while decreasing significantly in Kazakhstan (a middle income CIS country) and Tajikistan (a low income CIS country), as household access to other clean fuels, most notably natural gas and district heating, increased.

TABLE 4.3

**In Most Countries, Households in Secondary Cities Were More Likely to Heat with Dirty Fuels in 2003 than in 1998 (in percentages)**

| | | Capital | | Other Urban | | Rural | | Total | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1998 | 2003 | 1998 | 2003 | 1998 | 2003 | 1998 | 2003 |
| EU-8 | Hungary[a] | 4 | 5 | 16 | 17 | 37 | 37 | 22 | 22 |
| SEE | Bulgaria[b] | 10 | 5 | 38 | 51 | 91 | 91 | 51 | 57 |
| | Romania | 23 | 18 | 19 | 24 | 91 | 89 | 51 | 53 |
| CIS middle income | Kazakhstan[c] | 2 | 2 | 11 | 7 | 36 | 25 | 22 | 15 |
| CIS low income | Armenia | 42 | 39 | 69 | 78 | 93 | 87 | 72 | 70 |
| | Moldova | — | 0 | — | 30 | — | 93 | — | 64 |
| | Tajikistan[d] | 23 | 12 | 62 | 44 | 96 | 93 | 86 | 76 |

*Sources:* World Bank staff estimates. See appendix table 9 for country-level data and years. .

*Note:* a. 2002 is used instead of 2003; b. 1995 is used instead of 1998; c. 2001 is used instead of 2003; d. 1999 is used instead of 1998; — = not available.

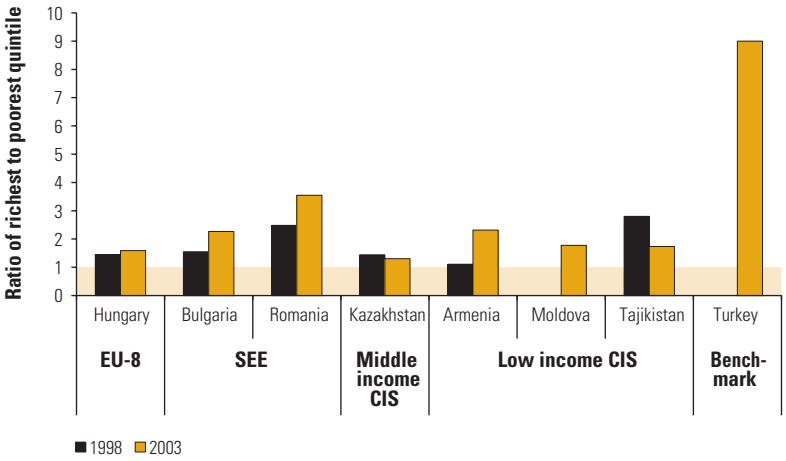
Households in secondary cities were more likely to use dirty fuels in 2003 than they were in 1998. For the six countries for which time-series data are available, the share of households using dirty fuels to heat increased in four countries and decreased in only two: Kazakhstan and Tajikistan. Particularly sharp increases in household reliance on dirty fuels in secondary cities from 1998 to 2003 are seen in Armenia and Bulgaria (9 percent and 13 percent, respectively).

Regardless of location, the poor rely more on solid fuels than the other groups do. As shown in figure 4.20, the ratio of richest households (q5) to poorest households (q1) is greater than 1 for all countries for both years. In Armenia, Bulgaria, and Romania, poor households were noticeably more likely to rely on dirty fuels in 2003 than in 1998. In Hungary and Kazakhstan, inequality in access to clean heat changed little from 1998 to 2003. Only in Tajikistan has inequality decreased, in part because of reviving the district heating network in Dushanbe.

An unexplored dimension of the decaying quality of infrastructure services concerns effects on health and educational outcomes. Anecdotal evidence shows that the deteriorating water systems result in levels of waterborne diseases (for example, hepatitis A) that are significantly higher than in the EU (OECD 2003). In addition, the negative effects of in-house pollution due to the use of solid (and especially dirty) fuels on health status have been well documented in other regions (WHO 2002), and it is expected that similar effects may be emerging in the Region, although studies have not fully explored this issue.

FIGURE 4.20

**Poor Households Are Less Likely than Rich Ones to Use Clean Fuels**




*Sources:* World Bank staff estimates using data from ECA Household Surveys Archive. See appendix table 9 for country-level data and years.

*Note:* Share of households using clean fuels in the upper quintile divided by that share in the lowest quintile.

## Conclusions

The Region has achieved major reductions in income poverty after 1999, and some of these improvements have been reflected in other dimensions of poverty. But improvements in income alone have not sufficed to reduce the deprivation of affordable access to quality services. Reducing poverty in the nonincome dimensions, it appears, is more of a long-term agenda in which the transformation of the public sector will be critical for several reasons.

First, although the Region's countries put increasing resources into social sectors as their economies improved after 1999, spending in many poorer countries is still limited. Spending levels need to be maintained at adequate levels for sustained improvements in service delivery.

Second, all formerly socialist countries face a critical challenge in adjusting their service delivery systems to the new environment. Reduced fertility, aging population, and emerging risks such as HIV/AIDS pose new obstacles to the effectiveness and quality of services. The inherited structure of service delivery in health care and education spreads limited resources too thinly, reducing the quality of service, particularly for the poor. Improving access to, and affordability of, quality services for the poor hinges on realizing crucial efficiency gains within the existing systems.

Third, countries are beginning to develop effective governance mechanisms that enhance consumers' voice and improve quality of services. So, for example, decentralization experiences are varied, and the results still limited, but certain experiences in education underscore the positive linkages between effective decentralization, local autonomy, and quality of social services. These experiences are worthy of dissemination and replication.

Fourth, the vulnerability of human development outcomes may arise from shocks to health or income or from broader phenomena such as the deterioration of water and gas networks. The lack of insurance or coping instruments at the household level represents a major risk. Developing adequate risk management strategies is critical to helping all people, but particularly the poor, cope with risks. A number of promising policy experiments suggest that even countries with limited resources can improve the ability of households, especially poor households, to manage risk. Working along all four dimensions—fiscal commitment, efficiency gains, improved governance, and better risk management for the poor—will be critical if the public sector is to rise to the challenge of providing affordable access to quality services.

ANNEX TABLE 1

## Public Expenditures on Health in the Region

% of GDP

| | 1994–99 | 2000 | 2001 | 2002 |
|---|---|---|---|---|
| Armenia | 2.8 | 3.2 | 3.2 | — |
| Azerbaijan | 1.0 | 0.6 | — | — |
| Belarus | 4.6 | 4.6 | 4.8 | — |
| Bosnia & Herzegovina | 3.2 | 3.1 | 2.8 | — |
| Bulgaria | 4.7 | 4.0 | 3.9 | — |
| Croatia | 9.0 | 7.8 | 7.3 | — |
| Czech Rep. | 6.6 | 6.5 | 6.7 | 6.8 |
| Estonia | 5.2 | 4.5 | 4.3 | 4.2 |
| Georgia | 1.1 | 0.4 | — | — |
| Hungary | 6.0 | 5.0 | 5.1 | 5.5 |
| Kazakhstan | 2.1 | 2.1 | 1.9 | — |
| Kyrgyz Rep. | — | 2.0 | 1.9 | — |
| Latvia | 3.9 | 3.5 | 3.4 | 3.6 |
| Lithuania | 4.5 | 4.4 | 4.2 | 4.1 |
| Macedonia, FYR | 4.6 | 4.2 | — | — |
| Moldova | 4.2 | 2.7 | 2.5 | 3.2 |
| Poland | 4.1 | 4.0 | 4.3 | 4.4 |
| Romania | 3.5 | 4.1 | 4.2 | — |
| Russian Fed. | 3.9 | 3.7 | 3.7 | — |
| Serbia & Montenegro | 7.2 | 5.9 | 6.5 | — |
| Slovak Rep. | 5.2 | 4.9 | 5.0 | 5.1 |
| Slovenia | 6.9 | 6.9 | 7.1 | — |
| Tajikistan | 1.2 | 0.9 | 1.0 | — |
| Turkey | 3.0 | 4.2 | — | — |
| Turkmenistan | 3.5 | 3.0 | 3.0 | — |
| Ukraine | 3.5 | 2.9 | 2.9 | — |
| Uzbekistan | 2.9 | 2.8 | 2.7 | — |

*Sources:* Public expenditure database and IMF fiscal database.

*Note:* — = not available.

ANNEX TABLE 2

## Health Care Utilization

Hospitalization admissions per 100,000

| | 1994–99 | 2000 | 2001 | 2002 |
|---|---|---|---|---|
| Armenia | 6.9 | 5.1 | 4.9 | 6.2 |
| Azerbaijan | 6.2 | 4.8 | 4.9 | 4.9 |
| Belarus | 26.5 | 29.3 | 30.0 | 29.3 |
| Bosnia & Herzegovina | 8.1 | 8.0 | 7.8 | 6.9 |
| Bulgaria | 16.7 | 15.4 | 15.3 | 16.5 |
| Croatia | 14.4 | 15.7 | 15.8 | 15.7 |
| Czech Rep. | 19.9 | 20.0 | 20.3 | 21.1 |
| Estonia | 19.2 | 20.4 | 19.7 | 19.1 |
| Georgia | 5.8 | 4.6 | 4.5 | 4.6 |
| Hungary | 22.3 | 23.6 | 23.9 | 24.6 |
| Kazakhstan | 16.1 | 14.9 | 15.5 | 16.3 |
| Kyrgyz Rep. | 16.8 | 15.9 | 14.5 | 12.7 |
| Latvia | 21.8 | 22.1 | 20.7 | 19.9 |
| Lithuania | 22.8 | 24.7 | 24.0 | 23.6 |
| Macedonia, FYR | 9.9 | 9.7 | 9.0 | — |
| Moldova | 19.0 | 13.7 | 12.5 | 13.8 |
| Poland | 13.7 | 15.5 | 16.4 | — |
| Romania | 20.9 | 22.4 | 24.4 | 25.0 |
| Russian Fed. | 21.0 | 22.0 | 22.5 | 22.8 |
| Serbia & Montenegro | 11.3 | — | — | — |
| Slovak Rep. | 19.5 | 19.9 | 19.7 | 19.0 |
| Slovenia | 16.0 | 16.8 | 16.6 | 16.4 |
| Tajikistan | 11.8 | 9.1 | 9.0 | 9.2 |
| Turkey | 6.9 | 7.8 | 7.8 | 8.0 |
| Turkmenistan | 14.2 | — | — | — |
| Ukraine | 20.4 | 19.4 | 19.8 | 20.0 |
| Uzbekistan | 16.0 | 13.3 | 13.8 | 14.0 |

*Source:* Official (administrative) health data for country agencies.

*Note:* — = not available.

ANNEX TABLE 3

**Doctor-Patient Contact per Person per Year**

| | 1994–99 | 2000 | 2001 | 2002 |
|---|---|---|---|---|
| Armenia | 3.5 | 2.1 | 1.8 | — |
| Azerbaijan | 6.5 | 5.0 | 4.9 | 4.5 |
| Belarus | 11.1 | 11.7 | 11.6 | 11.4 |
| Bosnia & Herzegovina | 2.7 | — | — | 2.6 |
| Bulgaria | 5.6 | — | — | — |
| Croatia | 5.9 | 7.0 | — | — |
| Czech Rep. | 14.8 | 14.8 | 14.8 | 14.8 |
| Estonia | 6.2 | 6.7 | 6.5 | 6.4 |
| Georgia | 2.1 | 1.4 | 1.5 | 1.6 |
| Hungary | 10.7 | 11.1 | 11.3 | 11.9 |
| Kazakhstan | 6.2 | 5.5 | 5.7 | 6.2 |
| Kyrgyz Rep. | 4.6 | 4.1 | 4.0 | 4.5 |
| Latvia | 4.7 | 4.8 | 4.8 | 4.6 |
| Lithuania | 7.3 | 6.3 | 6.5 | 6.4 |
| Macedonia, FYR | 2.9 | 3.2 | 3.0 | — |
| Moldova | 8.1 | 6.5 | 6.2 | 6.7 |
| Poland | 5.3 | 5.4 | 5.5 | — |
| Romania | 7.5 | 5.1 | 5.4 | 5.7 |
| Russian Fed. | 9.2 | 9.4 | 9.5 | 9.6 |
| Serbia & Montenegro | 5.3 | — | — | — |
| Slovak Rep. | 14.7 | 16.3 | 14.6 | 14.5 |
| Slovenia | 7.1 | 6.8 | 6.7 | 6.4 |
| Tajikistan | 3.9 | 3.7 | 4.7 | 4.8 |
| Turkey | 1.9 | 2.4 | 2.6 | — |
| Turkmenistan | 5.9 | 7.0 | 6.8 | — |
| Ukraine | 9.5 | 10.0 | 10.1 | 10.3 |
| Uzbekistan | 7.0 | 8.4 | 8.3 | 8.5 |

*Source:* Official (administrative) health data.

*Note:* — = not available.

## Endnotes

1. The measurement of infant and maternal mortality rates in the Region's countries, particularly in those of the Former Soviet Union, is still affected by the different definition of a "live birth" in the previous system, the number of deaths at home, the lack of access to registration, and negative incentives to register deaths (particularly in rural areas). These explain the existing discrepancies between official statistics and data collected from surveys such as the Demographic and Health Survey (DHS). Notwithstanding these limitations, data suggest that, in some EU-8 countries, maternal mortality rates are comparable to EU-15 levels (about 5–6 maternal deaths per 100,000 live births) (Bos and others 2002; Bonilla-Chacin, Murrugarra, and Temourov 2002; World Bank 2003m).
2. The idea is that while in Central Asia the *total* number is 12,000, in Ukraine 12,000 is the number of *new* cases (incidence vs. prevalence).

3. See Briceño, Estache, and Shafik (2004) for a review of quality of infrastructure services in developing countries.
4. The data used are the TIMSS for 1995 and 1999. The microdata at the student, teacher, and school levels for 2003 were not available when this report was written. This section draws from Murrugarra and Sethi (2005). Results for eighth and fourth grades are similar; this section reports eighth grade because of its broader time coverage.
5. TIMSS defines an internationally comparable minimum score based on the minimum level of skills required in eighth grade.
6. See Fiszbein (2001).
7. See Zeikate (2004) for a detailed discussion of the decentralization processes in health and education in the Region's countries.
8. The decomposition divides the variation of mathematics scores into four blocks (individual, teacher, school, and household background), using mean or conditional quantile regression. Once the variation of scores has been estimated at different points of the distribution, each component is the combination of the characteristics and returns for those students in each part of the score distribution. This mimics the use of quantile regression in the decomposition of factors underlying the wage distribution, as applied in Dolado and Llorens (2004).
9. These are the age-standardized rates (ASRs) for populations between 15 and 44.
10. These estimates may differ from official statistics because people may seek attention from private or even informal providers who may not be included in official records. To the extent that most health care is provided at facilities that are publicly organized, this is not a major issue.
11. See Wagstaff and van Doorslaer (2001) for a methodological discussion about estimating the impoverishing effects of health expenditures.
12. Informal payments in Armenia are those that are not considered as the "stipulated" (official) cost in the household survey (World Bank 2002a).
13. Figures for 1989 are from the 1989 Soviet census. Figures for 2002 are based on staff calculations from the household survey data.