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Republic of Yemen Education Status Report *Challenges and Opportunities*

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Republic of Yemen



THE WORLD BANK

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Photographer: Tony Doggett, USAID Basic Education Project 2004–0808.

Right: Student of Technical Education and Vocational Training Institute, Sana'a, Yemen.

Source: Ministry of Technical Education and Vocational Training.

Bottom center: Doctor in the laboratory of the University of Science and Technology Hospital, Sana'a, Yemen.

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Abbreviations and Acronyms

AES	Annual Educational Survey
BCG	Bacillus Calmette-Guérin (antituberculosis vaccine)
BEC	Basic Education Certificate
BEDP	Basic Education Development Project
BRIDGE	Broadening Regional Initiative for Developing Girls' Education (JICA)
CAS	Country Assistance Strategy
CCT	Conditional cash transfer
CPI	Consumer price index
CSO	Central Statistical Organization; civil society organization
DDP	Development data platform
DEC	Development Economics Vice Presidency (World Bank Group)
DEO	District Education Office
DfID	Department for International Development (UK)
DPPR	Development Plan for Poverty Reduction
DPT	Diphtheria, pertussis, and tetanus
ECD	Early childhood development
ECE	Early childhood education
EFA	Education For All
EIR	Economic Incentive and Institutional Regime
EMIS	Education management information system
ETA	European Training Foundation
FMC	Fathers' and Mothers' Councils
FTI	Fast Track Initiative (EFA)
FOE	Faculty of Education
GCC	Gulf Cooperation Council
GDP	Gross domestic product
GEO	Governorate Education Office
GER	Gross enrollment ratio
GIR	Gross intake ratio
GNI	Gross national income

GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit (German Technical Cooperation)
HBS	Household Budget Survey
HE	Higher education
ICT	Information and communication technology
IDA	International Development Association
IEA	International Association for the Evaluation of Educational Achievement
IFAC	International Federation of Accountants
IIA	Institute of Internal Auditors
ILO	International Labour Organization
JICA	Japan International Cooperation Agency
KfW	Kreditanstalt für Wiederaufbau (German-government-owned development bank)
LAEO	Literacy and Adult Education Organization
LAL	Local Authority Law
M&E	Monitoring and evaluation
MDG	Millennium Development Goal
MENA	Middle East and North Africa
MICS	Multiple Indicator Cluster Survey
MIS	Management information system
MLA	Monitoring Learning Achievement
MNSHD	Middle East and North Africa Region Human Development Group
MOCSI	Ministry of Civil Service and Insurance
MOE	Ministry of Education
MOF	Ministry of Finance
MOHESR	Ministry of Higher Education and Scientific Research
MOLA	Ministry of Local Administration
MOPIC	Ministry of Planning and International Cooperation
MOT EVT	Ministry of Technical Education and Vocational Training
MTEF	Medium-Term Expenditure Framework
MTRF	Medium-Term Results Framework
NBEDS	National Basic Education Development Strategy
NBER	National Bureau of Economic Research
NCYS	National Children and Youth Strategy
NDC	NGO Development Center
NER	Net enrollment ratio
NGSES	National General Secondary Education Strategy
NIR	Net intake rate
NQF	National Qualifications Framework
NSDHEY	National Strategy for the Development of Higher Education in Yemen

NSDVTE	National Strategy for the Development of Vocational and Technical Education
Nuffic	Netherlands Organization for International Cooperation in Higher Education
ODA	Official development assistance
OECD	Organisation for Economic Co-operation and Development
PCR	Primary completion rate
PRSP	Poverty Reduction Strategy Paper
PPP	Public-private partnership
PWP	Public Works Project
QA	Quality assurance
SCEP	Supreme Council for Education Planning
SDF	Skills Development Fund
SEC	Secondary Education Certificate
SEDGAP	Secondary Education Development and Girls Access Project
SFD	Social Fund for Development
SSR	Student-staff ratio
SSRN	Social Science Research Network
STR	Student-teacher ratio
SUC	Staff unit cost
TEVT	Technical education and vocational training
TIMSS	Trends in International Mathematics and Science Study
TTI	Teacher Training Institute
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
UNPD	United Nations Population Division
USAID	United States Agency for International Development
VT	Vocational training
WBI	World Bank Institute
WSI	Whole-School Improvement
YHEMIS	Yemen Higher Education Management Information System
YRls	Yemeni rials

Overview

This report is motivated by two main considerations. First, after three decades of Yemen's impressive continuous expansion of education, the time is ripe to assess the outcomes of its education system and document its strengths and challenges. Second, in the long run, Yemen is poised to be more integrated in the regional and global economy. At this juncture, it is only wise to reflect on whether the recipes that have enabled past successes will be sufficient and relevant to sustain these successes and to build on them to take up looming new challenges.

The Government of Yemen requested the World Bank to assist its efforts to forge a holistic approach to developing the education sector. These efforts would include strengthening linkages among the different levels of education, comprehensively addressing systemic issues, and enhancing the efficiency and effectiveness of the system as a whole.

Moving to this approach is a two-stage process. The first phase consists of analytical work to provide a solid diagnosis and an analytical platform to uncover the most critical and sensitive areas for intensive dialogue leading to the second phase. The second phase would be to develop an Integrated Vision for the Education Sector. The vision must begin with a broadly shared understanding of the goals of the education sector as a whole, the key issues and constraints within it, and the tradeoffs required to overcome them. This report addresses the first phase of the work. It provides a diagnostic summary of the education system and offers a menu of options to address the issues identified and to advance the system. The government and World Bank teams were formed, and this report was developed with close collaboration in the areas of data collection, fact-finding and verification, and analysis of the available information. This process engendered a significant level of capacity building, particularly in data analysis.

Key Findings

In the last 30 years, Yemen has impressively expanded education, halving the illiteracy rate from 90 percent to 45 percent. Between 1977, when the earliest complete data are available, and 2000, enrollments in basic education increased by 6 times—from approximately half a million to over 3 million. From 2000–01, growth in basic education enrollments continued at a rate of 22 percent to over 4 million in 2007–08. Also between 2000–01 and 2007–08, enrollments in technical education and vocational training (TEVT) increased by 15 times, from under 8,000 to approximately 23,000. Meanwhile, higher education grew by 35 times between 1977 and 2000—from nearly 5,000 to 175,000. Higher education continued to increase by 34 percent to over 230,000 in 2007–08. Given Yemen’s demographic, geographic, and economic challenges, this expansion is truly remarkable.

However, it would be wrong to see this increase in education provision purely in abstract quantitative terms. Beyond the numbers lie questions about whether Yemen could have achieved greater increases using the same resources over the same time period, whether the balance of expansion among the different levels of education has been the most appropriate, and whether more qualitative improvements could have been achieved using the same resources.

This report suggests two broad directions for addressing these questions:

1. *More public investment* is needed in basic education. As the bedrock of development, basic education cannot make a breakthrough unless it is heavily and effectively supported by the government. This fact is especially true in a country such as Yemen, which is populous and geographically diverse, and has a low gross national product and a small private sector. This report finds that the government’s effective support to basic education is constrained by inadequate financing, ineffective management (especially teacher deployment), and lack of governance. The report suggests that it would be useful to explore ways to allocate more public funds to basic education by (a) relying more on the contributions of private firms to fund TEVT, and (b) adopting a more balanced public/private approach to finance and provide higher education.
2. More public resources also are needed for *quality improvement and less for quantitative expansion at the post-basic education levels*. Public universities need to greatly improve their graduates’ skills and their programs’ relevance to the labor market, advance

the teaching force, modernize the curriculum, establish a sound quality assurance (QA) system, and upgrade teaching and learning facilities. Nevertheless, the pressure to expand higher education is immense and expected to increase as more students complete basic education. This report argues that it would be useful for higher education to expand by (a) removing undesirable controls that apply to both the demand for higher education (specifically, the one-year waiting rule and age limits on enrollment) and the private supply of universities (that are restricted from providing certain fields of study), and (b) regulating the “fee-for-services” parallel programs to ensure quality in public universities.

There is no doubt that Yemen’s developmental stage and the status of its education system require that more of everything should be done. However, doing more of everything is not an option. Thus, the government should prioritize what is desirable in the long run, what is feasible in the short run, and how best to align all national resources (public and private) to achieve the chosen objectives.

The analysis and diagnostics of this report provide some informed bases for setting priorities and policies. These should be assessed further by the government and stakeholders. Moreover, assessment should become a continuous exercise over time whose findings can be used to review and, if needed, amend earlier decisions and actions on an ongoing basis.

The choices can be made only by Yemen itself. The findings of this report provide the foundation for relative confidence in making the recommendations summarized below for each level of education, as well as the underlying rationale for these recommendations.

At the basic education level, government’s role in expanding access is critical. Broadening access does not mean simply to increase the supply of basic education (for example, more schools in remote areas). It also means to encourage and promote the demand for education by the households that privately value education less than is deemed socially desirable (the poor, those in rural areas, the marginalized, parents of girls). Priority actions outlined in the report include:

- Aggressively pursue the achievement of the National Basic Education Development Strategy (NBEDS) goals, giving special attention to expanding enrollment in grades 1–6. Measures to achieve fiscally sustainable universal education include: rationalization of school sizes, that is, providing smaller schools close to communities for grades 1–6 with multigrade teachers; and providing larger, well resourced schools (in terms of laboratories

and domain and subject specialist teachers) for grades 7–12 at areas.

- Prioritize the fundamentals of a good quality early education. The early years are the most crucial for setting the solid foundations for a good education for life. Therefore, it is important that the focus of education in these years be to ensure that children acquire the basics of a good education (such as reading with comprehension and writing without making mistakes), rather than cover wide content. This priority also calls into question the current automatic promotion policy for the first three grades, which is likely to erode the quality of early education.
- Ensure the timely distribution of textbooks to schools. This is an easily achievable target identified in this report and is bound to increase the learning outcomes of students, which is an objective on its own. On-time arrival of textbooks and teacher guides also can help households that may see schooling as a wasteful, time-consuming activity for their children to value education more, thus increasing these children’s participation in the locally available education services.¹
- Explore solutions for the professionalization and deployment of teachers on the basis of different needs in rural and urban areas and align remunerations to support these needs. Nationwide, there are as many as 100,000 candidate teachers who apply for only 10,000 positions. Nevertheless, while there appear to be enough teachers who can teach, rural areas experience serious teacher shortages. A solution must exist. One solution could be to suitably change current rules that govern employment in the public sector and decentralization and to offer teachers financial incentives to deploy to underserved areas.

At the technical education and vocational levels, policies should balance the high costs of provision and the likely synergies between the public and private sectors against the labor market outcomes and the trainees and graduates. Even ignoring the high unit costs of providing TEVT, the overall impact of expanding TEVT would be negligible if the current enrollment of 23,000 trainees in TEVT centers only doubled or tripled compared to the annual inflow of more than 200,000 job seekers or to the skills needs of many among the 4 million existing workers. In other words, even if TEVT (in its current

1. This report finds that demand-side constraints are not insignificant, that is, there are families (especially the marginalized) who would not send their children to school (especially girls) even if schooling were available. This means that “demand-side” incentives (such as conditional cash transfers) for poor families to enroll and keep their children in basic education should be considered along with the expansion of education supply.

form) were expanded, its impact would be limited because it is not addressing the real needs of the country, specifically the labor market. In this context:

- Policies should focus less on the expansion of the public training centers and more on systemic aspects that affect the whole labor market. One such policy is to make TEVT more privately funded, demand driven, and institutionally managed by the employers.²
- Instead of an expensive activity that helps its few graduates to find jobs, TEVT should become a seamless component of Yemen's overall human development effort. To accomplish this goal (a) age restrictions for attending TEVT should be removed; and (b) the sector should use competency-based training open to job seekers, existing or retrenched workers, and anyone at any age who aspires to acquire skills and increase his/her productivity and wages.

In the long run, Yemen is bound to start moving toward the knowledge economy and compete in international markets. Consequently, its higher education policy direction can be no other than to both expand enrollments and increase the quality and relevance of offerings. However, current policies deviate from this direction and, in fact, appear self contradictory. For example, enrollments in public universities are both restricted (by enforced delay of entry by one year after graduation from secondary education) and encouraged to expand (via parallel education). Enrollments in private universities are both expanding (by allowing private universities to operate) but also restricted (in what courses they can offer).³ Under these conditions, it would be useful to:

- Abolish the “one-year waiting rule” for admission to university after the completion of secondary education.
- Not constrain the expansion, or limit the course offerings, of private universities, although the courses should be subject to sound certification, licensing, and accreditation procedures.
- Evaluate the usefulness of offering parallel courses in public universities. The parallel course approach may lead to an oversupply of the limited courses that public universities can and want to offer, while causing a national undersupply of higher education

2. Such a policy is already proposed for the operations of the Skills Development Fund.

3. The restriction on what courses private universities can offer is not necessarily based on quality considerations but on whether “there already are too many graduates from such courses.” Although this justification is valid in ill-focused quantitative terms, it disrespects the choices of households and deprives the country of the expansion of its most productive sector: education.

services by crowding out the private sector. Parallel education also can lead to perverse incentives (for example, nontransparent licensing of private universities) as well as wasted resources (from a social point of view).

High quality education services cannot be expected in Yemen without strong coordination across the Ministries of Education (MOE), Finance (MOF), Civil Service and Insurance (MOCSI), Local Administration (MOLA), Higher Education and Scientific Research (MOHESR), and Technical Education and Vocational Training (MOT EVT). Coordination can support the achievement of sectoral objectives by ensuring that all stakeholders play their parts in changing the rules of the game and aligning the financing and the incentives structures to get results, as opposed to controlling or inhibiting one another. Improved coordination among these bodies could result in five benefits that could directly address education quality challenges:

1. Enhance the quality of current and future teachers
2. Align incentives for civil service employment
3. Provide concerted efforts to increase and sustain the provision of teachers to rural areas
4. Reduce the incentives for teachers to migrate from rural to urban areas
5. Better match the pre-service training of teachers in universities to what is required in schools.

Overall, this report does not negate the positive and, in many respects, impressive outcomes of past education policies. On the contrary, it persuasively documents these achievements. Given what has been learned through years of experience in education reform, this report indicates that the Government of Yemen can make adjustments in setting educational priorities and in making decisions to achieve these objectives. Combined with the right managerial, institutional, and financial arrangements, these objectives could increase the impact of education in the economy, labor market, and society overall.

Demographic, Economic, and Social Context

Located in the South of the Arabian Peninsula, Yemen has a unique and diverse topography. The geographic area of Yemen is approximately 527,970 square kilometers (sq km) with a highly varied terrain. The highlands average approximately 1,830 meters (m) above sea level and rise at Jabal an Nabī Shu‘ayb Alaihe Salam to 3,760 meters, the highest peak on the Arabian Peninsula. To the west and south, the highlands drop abruptly to a low, flat coastal desert plain called the Tihāmah. The Tihāmah is hot and arid and has little vegetation. To the east and north, the highlands descend gradually to the interior plateau that holds the vast Arabian desert known as the Rub‘al Khali (Empty Quarter). The central regions are mountainous and encompass the majority of the arable land. The eastern part of Yemen is practically uninhabitable except for the region of Hadhramaut.

One of the earliest centers of civilization in the region, modern day Yemen remains steeped in embedded traditions and culture. Known as “Arabia Felix,” Yemen has a long history. The country is considered the fountainhead of Arab civilization, a reputation that has been supported partially through its strategic location for trade. After nearly 400 years of intermittent occupation by the British and the Turks and recurrent conflict, in 1990 the Republic of Yemen emerged from the unification of the traditionalist North Yemen and Marxist South Yemen. The political system in the unified republic is democratic.¹ Nevertheless, this young republic remains staunchly tribal. Traditional values and customs easily supersede public administration laws, particularly vis-a-vis institutions that are yet to become strong.

1. Ali Abdullah Saleh, ruler of North Yemen since 1978, became the first president of the new republic and remains the leader. Since unification, the country has held 3 terms of parliamentary elections and 2 terms of presidential and local authorities' elections.

A varied terrain, highly scattered population, and poor infrastructure availability pose a particularly challenging environment for governmental outreach efforts and the delivery of public services.

Yemen is divided into 21 governorates, which are subdivided into 333 districts. The majority of Yemenis (71 percent in 2004) live in rural areas.² There are few large cities. The capital, Sana'a, contains one-third of the country's urban population. Rural-urban migration is on the rise. Nevertheless, the vast majority of the population resides in 160,000 communities scattered across different topographical zones, making service delivery extremely difficult.³ Infrastructure provision is relatively new and inadequate—where it exists. Only 14 percent of the country's 81,600-km-long road coverage is asphalted. There are only 4.6 telephone lines for every 100 persons, far lower than the Middle East and North Africa (MENA) Region's average of 16.9.⁴ The public water network covers 60 percent of the urban population, but only 7 percent of the rural population.

1.1 Population

The population of Yemen is growing rapidly. In 2007 the population of Yemen was estimated to be 22.3 million.⁵ During the last decade, the fertility rate and population growth rate declined. Total fertility declined from 8.7 children per woman in the early 1980s to 5.9 in the early 2000s. Population growth rates decreased from 4.8 percent per annum in the early 1990s to 3.0 percent in the early 2000s. Nevertheless, Yemen still has one of the highest fertility rates and one of the highest population growth rates in the world (figure 1.1). If the current pattern of growth continues, the country's population is expected to more than double to 47 million by 2040—a daunting prospect in an environment of both limited and depleting natural resources and low economic growth.⁶

The proportion of children and youth in the population is large and poses a continued challenge for education expansion over the next few decades. In 2007 nearly 70 percent (or 15 million) of the

2. Central Statistical Organisation 2004.

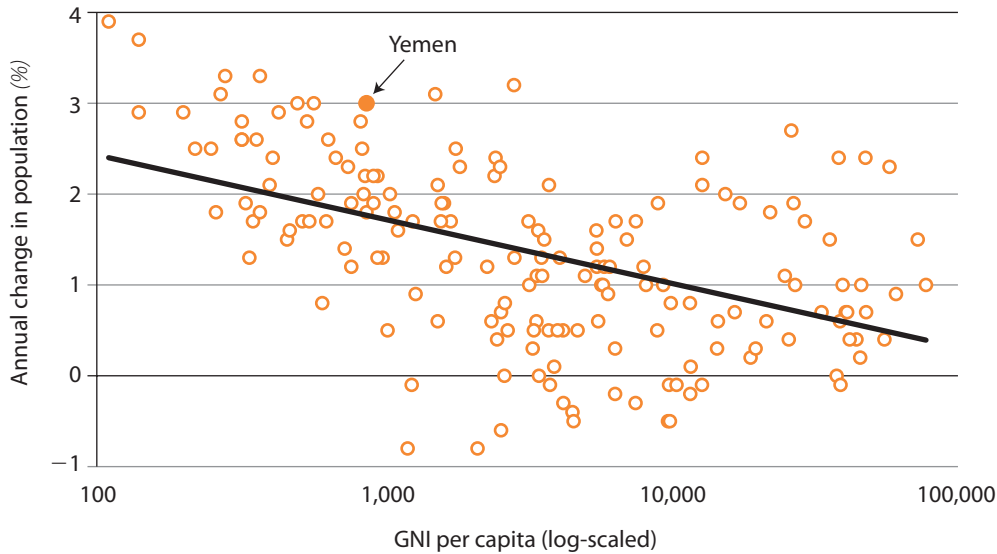
3. The difficulties that these realities pose for service delivery can be seen through a comparison. The population of Egypt (76.8 million) is more than 3 times the population of Yemen (22.3 million). However, the number of communities across which Yemen's population is spread is 40 times more than in Egypt. The population of Yemen is spread across 160,000 communities, whereas the population of Egypt is spread across 4,046 villages (World Bank 2007a).

4. World Bank 2006b.

5. World Bank 2009g.

6. UNPD 2008b.

Figure 1.1 Relationship between Population Growth Rate and GNI per Capita in Various Countries, 2007 (%)



Sources: World Bank 2009g and 2009h.

Note: GNI per capita Atlas method.

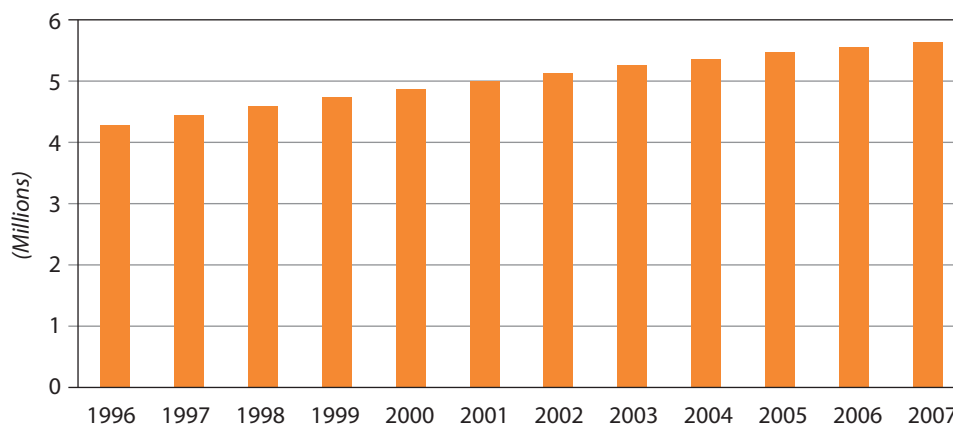
22 million people were less than 25 years old.⁷ Over one-third of these (approximately 5.6 million) were 6–14 years of age, corresponding to the age cohort for basic education (grades 1–9). By 2015, the target year of the Millennium Development Goals (MDGs), the number of young people (under 25 years) is estimated to reach to 18 million, approximately 6 million of whom will be 6–14 years of age.⁸ Figure 1.2 shows the substantial increase in the population of 6–14 year olds between 1996 and 2007, indicating the significant challenge that the education system has faced in expanding provision to universalize basic education coverage.

Population growth rates are particularly high in a few large cities due to rural-to-urban migration in these areas. Between 1994 and 2004, the population grew an average of 5.5 percent per annum in the capital city of Sana'a, 3.8 percent in the city of Aden, and 3.0 percent nationally (table A1). In Sana'a city, 53 percent of households report they have immigrated from elsewhere (city of Aden, 42 percent), while the share of immigrants nationally averages 15 percent (table A1).⁹ These numbers indicate that rural-to-urban migration is a key

7. World Bank 2009d.

8. UNPD 2008b, World Bank 2009d.

9. This proportion is estimated from the Household Budget Survey of 2005 (appendix A). It represents the percentage of individuals who said that their current place of residence is not the place in which they were born.

Figure 1.2 School-Aged Population (6–14-Year-Olds), 1996–2007

Source: UNESCO 2009.

contributor to the higher population growth rates in these cities. Anecdotally, it is said that, in recent years, the capital city of Sana'a has had one of the largest population growth rates in the world (close to 10 percent per annum). At the same time, there is evidence of increasing numbers of marginalized and street children in the capital city, many of whom have migrated from rural areas and from foreign countries.¹⁰ The concern is that the recent population of basic-school-aged children encompasses a greater proportion who are difficult to reach, posing a further challenge to universalizing education in Yemen.

1.2 Labor Market and Employment

Primarily agricultural, the labor market is largely informal. Formal businesses traditionally are dominated by a few family-owned enterprises. The majority of workers are found in agriculture and in rural areas, and engage mostly in subsistence activities, among which the production of qat is quite dominant.¹¹ Of the entire working population of 4.5 million, approximately 90 percent are working in the informal sector¹²; approximately 41 percent in

10. Abdulmalik 2009.

11. Qat is a plant that acts as a stimulant when the leaves are chewed.

12. Informal sector workers are defined as those who (1) work part-time (fewer than 30 hours per week); (2) work irregularly (fewer than 11 months per year); (3) do not receive benefits from their employer, including pension, insurance, and annual leave; and (4) work as nonwage earners (that is, are self-employed) in enterprises that employ fewer than 5 people. Agricultural workers are included in the informal sector unless they are in regular and stable agricultural businesses.

the agriculture sector; and 44 percent in the services sector, which is dominated by agriculture-related activities (table A2). Informality and irregularity of work are prevalent, and more than 90 percent of firms are small, employing fewer than 5 workers.

Yemen is a labor-surplus country with sluggish employment creation partly due to the smallness of the private sector and the difficult environment for private investment. The labor force grows annually at approximately 3.5 percent, or 200,000 new job seekers. Although the Yemeni economy is dominated by the oil sector, in 2004 this sector employed barely 18,000 workers.¹² The rate at which new private establishments are created across the economy in a single year is only 4 percent. Furthermore, job creation in these new establishments also is low (2.5 new jobs per 100 establishments, excluding the owner). Moreover, the environment for greater private investment remains weak.¹³ Jobs in the public sector also are not keeping pace with the expanding labor supply. Between 2003 and 2007, the number of registered applicants for posts in the civil service and public sector soared by almost 300 percent from 54,000 to 155,000, whereas the number of employment places increased by only 4 percent.¹⁴ Even if the historic economic growth rates of 4 percent are maintained amid the current financial downturn, it is highly unlikely that job creation in the oil and gas sectors and in the public sector could absorb the labor force. Therefore, the government will need to do much more to support private investment and to expand the private sector.

Although the participation of women in Yemen's labor force has increased in the last decade, their participation in nonagricultural work remains among the lowest in the Middle East. Female labor participation increased from 17 percent in 1994 to 30 percent in 2005 as a result of decreasing fertility rates and increasing educational levels of women.¹⁵ However, lack of sufficient labor demand has created a large number of unemployed females, especially among highly educated urban women. Unlike in most other MENA countries, in

12. Central Statistical Organisation-Yemen 2006.

13. In 2009 Yemen was ranked 98 of the 181 countries for which the overall ease of doing business is assessed. Yemen's ranking on the ease of starting a business improved significantly from 151st place in 2004 to 50th place in 2008 primarily because Yemen had eliminated the minimum capital requirement. In 2004 its minimum capital requirement for a business start-up was 15 times the national per capita income. In 2008 the requirement decreased to 0. On the other hand, Yemen's ranking on other core indicators such as obtaining credit remains very low at 172 (World Bank 2009b).

14. SCEP 2003 and SCEP 2007.

15. World Bank 2007d. Anecdotal evidence suggests that urban educated women recently have become more interested in employment than in the past.

which female labor participation increased through the expansion of white collar jobs, the majority of women in Yemen are still engaged in agricultural work.

Youth unemployment, particularly graduate unemployment, is high and rising. The youth unemployment rate increased from approximately 25 percent in 1999 to approximately 30 percent in 2005. The increase resulted from a lack of sufficient labor demand and a growing labor supply. Within Yemen's very limited formal labor market, the relevance of education to labor market needs is a growing concern, as the majority of employers do not feel that the education system equips graduates with basic skills.¹⁶

1.3 Poverty and Human Development

With a GNI per capita of US\$870 in 2007, Yemen is among the poorest countries in the world and is the poorest country in the Middle East. In 2007 Yemen ranked 153 among 177 developing countries on the 2007 Human Poverty Index. The great majority of the poor are concentrated in rural areas. Another 2007 poverty assessment indicated that, between 1998 and 2006, poverty declined from 40 percent to 35 percent nationally, and from 42 percent to 40 percent in rural areas.¹⁷ Nevertheless, there is growing concern that the food and fuel crises of 2008, followed by the recent global economic slowdown, have exacerbated poverty in the country.

Despite recent achievements, Yemen is unlikely to reach key MDGs. Yemen ranked 138 of 179 countries on the 2007 Human Development Index. At 32 percent, the proportion of undernourished in the country was one of the highest in the region (figure 1.3). At 73 per 1,000 children, Yemen had very high rates of mortality for under-five-year-olds among comparable countries (figure 1.4). Factors included (1) 20 percent of girls had their firstborn before they were 18 years old, ranking Yemen as the country with the highest prevalence of early child-bearing in the MENA Region; and (2) more than 70 percent of Yemeni women gave birth with no medical assistance. Although enrollments in primary education increased from 2.2 million in 1997 to 3.3 million in 2007, in 2007 the primary completion rate remained low at 60 percent.

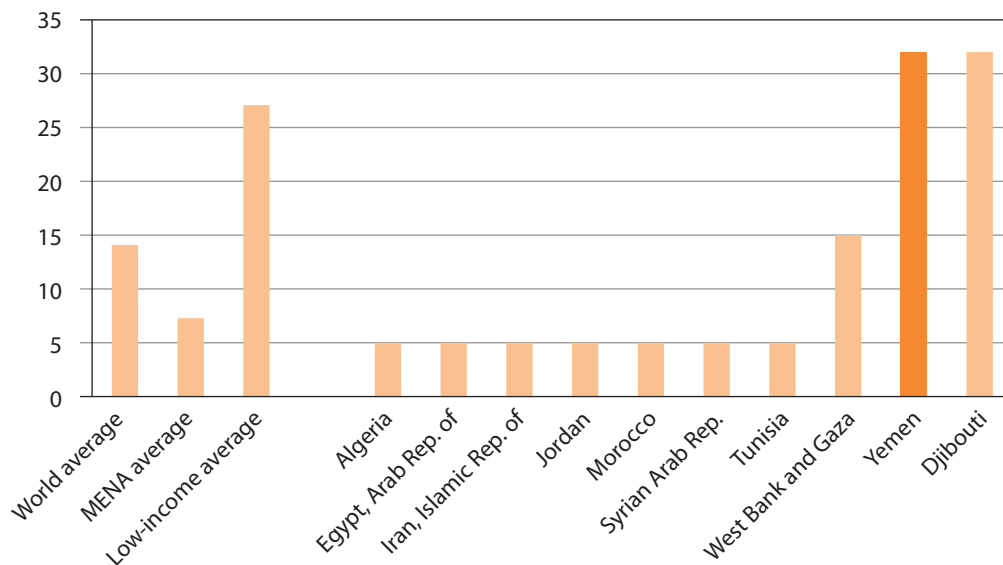
16. Ministry of Social Affairs and Labor 2003.

17. Government of the Republic of Yemen 2007.

Malnutrition and lack of proper immunization are major problems for Yemeni children, especially the poor, and affect their educational enrollment. Severe stunting affects 27 percent of 2- to 5-year-olds in Yemen and 32 percent of poor children. Immunization programs have had varied success nationwide, especially in targeting vulnerable populations.¹⁸ Proper immunization improves not only the overall health of children but also their school enrollment and retention. Yemen has the lowest pre-primary gross enrollment ratio (GER) among all low-income countries and the MENA region as a whole. The region's average pre-primary GER stands at 20 percent. In contrast, Yemen's pre-primary GER is below 1 percent. Its enrollment drops sharply after primary education is completed. Gender disparities continue across levels of education and are especially pronounced in the post-basic levels.

Women in Yemen have limited rights and few opportunities, leading to their social and economic disadvantage. While the law may be impartial, Yemeni traditional rules and values greatly disadvantage women. A recent ranking of countries on gender issues placed

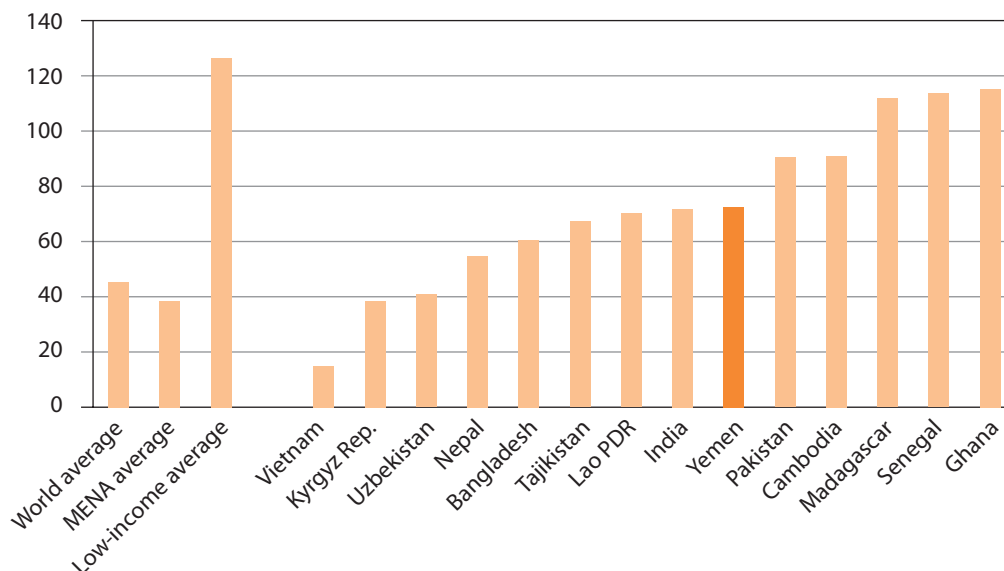
Figure 1.3 International Comparison of Undernourished Populations in MENA, 2005 (%)



Source: World Bank 2009b.

18. Immunization coverage for polio is 90%, resulting in great success in eradicating polio in 2008. However, immunization remains at 64% for BCG (tuberculosis) (World Bank 2009a).

Figure 1.4 International Comparison of Under-Five Mortality Rate per 1,000 Children, 2007



Source: World Bank 2009b.

Note: For countries with GNI per capita less than \$1,000.

Yemen as the lowest of 130 countries.¹⁹ Fifty-two percent of females are married before the age of 15, leading to early dropout from school. Girls are under-represented at all levels of education. In 2004 female literacy was low at 38 percent (only 22 percent in rural areas), as opposed to 70 percent for males.²⁰

Yemen's water supplies are rapidly depleting, causing a major threat to the country.²¹ Aridity is increasing due to the effects of climate change on rainfall. Limited water supplies face pressure from increased and more intense agriculture, and the rapid growth of urban areas. Running water in some cities (such as Taiz) is available for only a few hours every other week. The water supply in the capital, Sana'a, may be fully depleted within 20 years.²²

The production and widespread use of qat, a plant that acts as a stimulant when the leaves are chewed, poses serious issues for Yemen on many levels. Three-quarters of men and one-third of women regularly or frequently chew qat (72 percent and 33 percent,

19. World Economic Forum 2008.

20. Central Statistical Organisation 2004.

21. Jagannathan and others 2009.

22. World Bank 2009a.

respectively), a social tradition deeply embedded in Yemen. For individuals, qat use leads to poor health outcomes and low productivity. For households, it diverts much-needed resources to unproductive uses; on average, 10 percent of household income is spent on qat. For the country as a whole, qat cultivation is exacerbating the water shortage problems: one-third of extracted groundwater is used for qat. The plant also is taking over much of the land used for other agricultural products: between 1970 and 2005, land used for qat increased 11 times. However, 14 percent of the population relies on qat as its main source of income, and qat accounts for one-third of the agricultural GDP.²³

1.4 Macroeconomy and Public Finance

Yemen's economy is heavily based on oil and gas revenue, limited domestic production, and significant reliance on imports. These three factors combined make Yemen vulnerable to external price shocks. Until the early 1990s, the Yemeni economy was heavily supported by remittances from Yemeni emigrants. After the first Gulf War, approximately 2 million Yemenis returned, mostly from Saudi Arabia and Kuwait. Their return changed the composition of revenues. Between 2000 and 2008, oil and gas comprised 28 percent–34 percent of GDP, 65 percent–75 percent of government revenues, and approximately 90 percent of exports.²⁴ Because the oil resources are expected to be depleted in the next 10–12 years, the economy remains in critical need of diversification and non-oil growth. With very limited agricultural production (149,000 tons of wheat and 577,000 tons of other cereals in 2006), Yemen relies on the international market for almost all staples. For example, in 1996, 926,400 tons of wheat, which comprised 86 percent of all available wheat in Yemen, was imported. The sharp increase in international food prices explains in part the substantial inflation in Yemen from 1997–2007, as defined by the consumer price index (CPI) (table 1.1).

Public spending levels are high in Yemen; and, over the last decade, the increase in public spending has exceeded the population growth rate. Between 1997 and 2007, the average GDP growth rate has been 4 percent per year.²⁵ During this period, total public spending as a percentage of GDP varied from 30 percent to 40 percent,

23. World Bank 2009a.

24. Central Bank of Yemen 2007.

25. This figure has been adjusted for the domestic CPI using 2007 as the base year.

Table 1.1 Selected Economic Indicators, 1997–2007

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Gross domestic product (GDP)											
GDP (current YrIs, bil)	879	844	1,173	1,539	1,628	1,811	2,067	2,385	3,207	3,755	4,309
GDP (constant 2007 YrIs, bil)	2,844	3,039	3,201	3,339	3,536	3,751	3,802	3,592	4,038	4,172	4,309
Real GDP growth rate (%)	—	6.9	5.3	4.3	5.9	6.1	1.3	-5.5	12.4	3.3	3.3
GDP per capita (constant 2007 YrIs, 000s)	170	177	181	183	188	194	191	175	191	192	193
GDP deflator (2007=100)	31	28	37	46	46	48	54	66	79	90	100
Consumer price index (2007=100)	41	44	48	52	63	66	72	78	82	90	100
Annual average exchange rate (YrIs per \$)	129	136	156	162	169	178	183	185	192	197	199
Government expenditure (constant 2007 YrIs, bil)											
Total	743	687	719	975	829	903	1076	1144	1455	1306	1755
Recurrent	590	528	559	741	625	671	728	803	1,050	964	1,353
Government expenditure (% of GDP)											
Total	35	36	29	33	32	33	38	37	37	31	41
Recurrent	28	27	23	25	24	24	25	26	27	23	31
Government expenditure per capita (constant 2007 YrIs, 000s)											
Total	44.5	39.9	40.6	53.4	44.1	46.7	54.0	55.8	69.0	60.2	78.6
Recurrent	35.3	30.7	31.6	40.6	33.3	34.7	36.6	39.2	49.8	44.4	60.6

Source: Authors' calculations using MOF final account data and UNPD population figures (2008 revision).

Note: Government expenditure figures in constant 2007 YrIs are adjusted using the CPI.

which was high compared to countries at similar levels of economic development. Over this period, total government expenditure more than doubled in real terms from YrIs 743 billion in 1997 to YrIs 1,755 billion in 2007 (table 1.1). This increase greatly exceeded the population growth of the country. Expenditure per capita increased in real terms by 77 percent, from YrIs 44,500 in 1997 to YrIs 78,600 in 2007.

While total government expenditure increased in real terms over the last decade for all sectors, the relative priority of human development decreased. Table 1.2 shows the share of total public expenditure by sector. Table 1.2 indicates that, from 1997 to 2007, economic affairs and general public service took increasing shares of public expenditure. In contrast, the human development sectors, particularly education, received decreasing shares. In this decade, the share for education decreased by more than 6 percentage points, from 21 percent to 14 percent of the total budget.

Table 1.2 Total Public Expenditure by Sector, 2002–07 (%)

	Share of total						Change point
	2002 (%)	2003 (%)	2004 (%)	2005 (%)	2006 (%)	2007 (%)	2002–2007 (%)
Environment protection	0	2	2	2	1	2	2
Economic affairs	16	19	22	30	26	25	9
General public service	21	25	21	20	24	29	8
Entertainment, culture, and religion	2	2	2	1	1	2	0
Health	4	4	5	4	3	4	0
Regulation and public security	7	7	8	6	7	6	–1
Housing affairs and public facilities	6	6	8	8	7	5	–1
Education	21	17	16	14	14	14	–6
Social protection	0	0	0	0	0	0	0
Defense	22	18	16	13	15	12	–10
Total public expenditure	100	100	100	100	100	100	—

Source: MOF.

Notes: Total public expenditure does not include debt repayment. Totals may not add to 100% due to rounding.

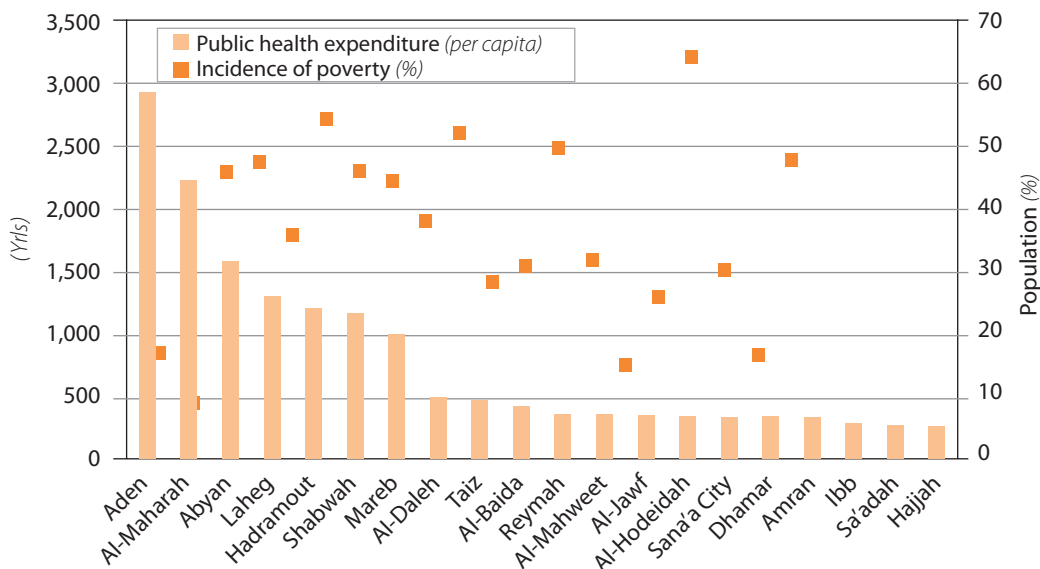
Public expenditures on health are not pro-poor. Spending on health appears to be lower in poorer areas. Figure 1.5 shows that expenditures are highest in the least poverty-prone regions. In contrast, the poorest governorates, such as Amran and Al-Baida, suffer from serious underfunding. Across Yemen, the unavailability of medical services and difficulty in accessing facilities have been cited as the two most common reasons, after economic challenges, for not seeking medical care.²⁶

1.5 Government's Vision and Medium-Term Priorities

Through its “Strategic Vision 2025,” the government has defined its development ambitions and goals for the next 15 years. The process for developing the vision was transparent and consultative, with contributions from Parliament, local communities, and development partners. The vision aims to achieve economic development through diversification of the economic base to non-oil sectors. This vision focuses on boosting economic growth (including reduction of unemployment and poverty) through rejuvenating coastal regions; accelerating industry, particularly mining; balancing the development of agriculture and fisheries; investing in tourism

26. Government of the Republic of Yemen, UNDP, and World Bank 2007.

Figure 1.5 Health Expenditure per Capita (2003) and Poverty Incidence (2005), by Governorate



Source: Ministry of Finance 2004; authors' estimates of poverty incidence from the Household Budget Survey 2005.

Notes: Public health expenditure per capita estimates are a 2000–03 annual average of the Ministry of Public Health and Population allocations to governorates. In other words, this average does not include central spending.

and environment; and developing the export sector through the creation of free trade zones.²⁷ This vision also sets the stage for creating a “new economy,” implying the establishment of a knowledge economy. The latter will require a great deal of effort on several fronts as Yemen ranks below the low-income-country average on the global Knowledge Economy Index (KEI) (box 1.1).

The Third Socio-Economic Development Plan for Poverty Reduction (DPPR) 2006–2010 provides a prioritized framework for action based on the 8 pillars of Vision 2025. The DPPR is being implemented. It merges national plans, strategies, and programs into one document, which integrates the Poverty Reduction Strategy Paper (PRSP) and Yemen’s plans to achieve the MDGs. The eight pillars are (1) macroeconomic policies and targets; (2) good governance;

27. Given Yemen’s strategic geographic location, free trade zones represent a promising area of economic growth in the country. Plans include reviving the Port of Aden; strengthening ties with other free zones in the region; and establishing other free zones (in Socotra, Al-Hodeidah, and Al-Mukalla) to create international centers for trade, industry, investment, transit, storage, and shipping activities.

Box 1.1 Knowledge Economy Index Rankings, 2008

The Knowledge Economy Index (KEI) is an aggregate index that measures a country's overall preparedness toward becoming a knowledge economy. The KEI is constructed as the average of 4 pillars: (1) Economic Incentive and Institutional Regime (EIR), (2) Innovation and Technological Adoption, (3) Education and Training, and (4) Information and Communications Technologies (ICT) Infrastructure. The index is scaled from 0 (lowest) to 10 (highest). In 2008, 140 countries were ranked.

Between 1995 and 2008, Yemen's aggregate KEI score remained 1.8. Specifically, Yemen's ranking on Education and Training improved from 1.5 to 1.8, whereas the Innovation ranking and the Economic Incentive and Institutional Regime ranking declined. The country remained the same in ICT. Yemen's KEI score of 1.8 is lower than the MENA average (5.4) and than the low-income-country average (2.1).

	2008 KEI rank	KEI		Pillar 1 EIR		Pillar 2 Innovation		Pillar 3 Education		Pillar 4 ICT	
		1995	2008	1995	2008	1995	2008	1995	2008	1995	2008
Region/income group											
World	—	6.3	5.9	4.9	5.2	8.2	8.0	4.8	4.2	7.4	6.3
High income	—	8.6	8.3	8.7	8.0	9.2	9.1	7.8	7.6	8.7	8.6
MENA	—	5.5	5.4	4.4	4.6	7.4	7.2	4.0	3.7	6.1	6.0
Lower middle income	—	4.2	4.1	3.3	3.4	5.1	5.0	4.0	3.6	4.4	4.4
Low income	—	2.3	2.1	2.0	1.9	2.9	2.6	1.9	1.7	2.5	2.1
Selected MENA countries											
Jordan	56	5.1	5.5	5.5	5.8	6.1	5.7	4.5	5.5	4.3	5.2
Tunisia	71	4.1	4.7	4.4	5.3	4.2	4.6	3.5	4.1	4.3	5.0
Egypt	84	4.2	4.0	3.7	3.6	5.0	4.6	4.3	4.4	3.8	3.7
Morocco	92	3.7	3.5	4.5	3.8	4.8	3.7	2.4	2.0	3.0	4.3
Yemen	119	1.8	1.8	1.8	1.7	2.0	1.7	1.5	1.8	2.0	2.0

Source: World Bank Knowledge Assessment Management URL, www.worldbank.org/kam

(3) development of productive and promising sectors; (4) water, environment, and basic infrastructure; (5) human development; (6) government services; (7) social safety net, social protection, and social security; and (8) women's empowerment. The January 2009 review of the DPPR identified areas that need increased efforts. They included stimulation of economic growth through improving the business environment and fiscal sustainability. The fourth DPPR is planned for 2010.²⁸

28. World Bank 2009a.

The National Reform Agenda and the Public Investment Program support and complement the DPPR. The goals of the National Reform Agenda are to accelerate economic growth, improve economic governance, broaden opportunities, and strengthen relationships with development partners. Consequently, the agenda focuses on (1) judicial reform; (2) administrative reforms and civil service modernization; (3) investment and business climate; (4) anticorruption, transparency, and accountability; and (5) political reforms. The four-year Public Investment Program (PIP), revised annually, establishes priority investments to support the DPPR.

While Vision 2025 and related plans provide a sound reference for overall development priorities, they are nevertheless subject to external shocks. In particular, the plans were prepared before the 2008 food and fuel crises and the general global economic downturn. The plans therefore will need to be adjusted accordingly.

Education System, Access, and Student Flow

Since it put in place the formal public education system in the early 1960s, the Government of Yemen has prioritized the expansion of educational opportunities. Given its significant demographic and geographic challenges and limited capacity, Yemen has performed remarkably well in expanding coverage of formal education opportunities to all. This prioritization has resulted in significant growth in enrollments at all levels, particularly over the last 30 years. Illiteracy was halved from 90 percent in 1973 to 45 percent in 2004.

Rapid population growth poses difficulties for the system, but there have been gains in coverage at all levels, especially, in recent years, for girls. However, many challenges remain, and achieving the education goals of the country is a daunting task. There are still 1.8 million children out of school, many of whom live in rural areas and are part of marginalized communities. Girls remain under-represented; and boys' enrollments appear to be stagnating. Retention throughout the grades is a serious problem. Many factors pose understandable difficulties. Some of them, such as poverty and rural access, are pervasive. Others, such as administrative delays and complicated criteria determining student flow through the system, may be easier to address. This chapter provides the background of Yemen's education system, describes the recent trends in enrollments and student flow through the system, and highlights the key demand and supply-side constraints to enrollment and retention.

2.1 Education Strategies and Policies

Development of education and skills has been, and continues to be, a key development priority in Yemen. The country set out its first five-year development plan in 1996. In every development plan of

the country from 1996 on, the Government of Yemen has emphasized that education and training are crucial to grow all economic sectors and to improve the conditions of the people. The government sets out human development and, within this pillar, educational development of the labor force, as a priority for the country.

The foundations of the current education system were laid in the 1960s with the promulgation of Decree No. 16, which established the Ministry of Education (MOE) in 1963. The 1964 Education Act regulates the levels of education. The 1965 Education Act organizes fellowships and scholarships. Technical education and vocational training (TEVT) and university education started in the 1970s under the purview of the MOE. In 1990, oversight of TEVT was transferred to the General Authority of Technical Education and Vocational Training under the management of the Ministry of Social Affairs and Labor. In 2001 the Ministry of Technical Education and Vocational Training (MOT EVT) was established. The Ministry of Higher Education and Scientific Research (MOHESR) was established in 1990, abolished in 1994, and re-established in 2001. Both the MOE and the MOHESR are being restructured and modernized.

Education is managed by three ministries. Pre-basic, basic, and general secondary education is managed by the MOE. Post-basic TEVT and post-secondary TEVT are managed by the MOT EVT. University education is under the mandate of the MOHESR. Since 2004, community colleges have been managed by the MOT EVT. Literacy is the mandate of the Literacy and Adult Education Organization (LAEO), as supervised by the Minister of Education.

At least 5 strategies guide the 3 ministries providing and regulating education and skills development in Yemen. Since 2002, the government has endorsed five major strategies to address education issues at the various levels of education (table 2.1). In addition, the 1998 National Strategy for Literacy and Adult Education aims to eradicate illiteracy in the population aged 10–40.

1. *National Basic Education Development Strategy (NBEDS).* Approved by the Cabinet of Ministers in 2003, the NBEDS aims to increase enrollments in basic education, particularly for girls and in rural areas, to reach 95 percent of the 6–14 year olds in Yemen by 2015.²⁹ Based on the NBEDS principles, and recognizing the

29. In 2006 MOE developed a Medium-Term Results Framework (MTRF) to translate this overall objective of the NBEDS into operational medium-term objectives. These objectives include access, quality, and institutional capacity building, which are supported by eight core activities.

Table 2.1 Current National Education Strategies and Years of Coverage, 2003–15

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
National Basic Education Development Strategy (NBEDS)	[Redacted]												
National General Secondary Education Strategy (NGSES)	[Redacted]												
National Strategy for the Development of Vocational and Technical Education (NSDVTE)	[Redacted]												
National Strategy for the Development of Higher Education in Yemen (NSDHEY)	[Redacted]												
National Children and Youth Strategy (NCYS)	[Redacted]												

Source: Authors.

financing gap facing the achievement of universal primary completion by 2015, the government prepared a “credible” plan in 2002 to achieve Education For All (EFA) by 2015. Its plan was approved, and Yemen was selected to be in the first group of 10 countries to receive financing from the EFA Fast Track Initiative (FTI) Catalytic Fund.³⁰

Since the articulation of the NBEDS, the government has made significant progress in strengthening the policy environment. Key achievements include the development of a Medium-Term Results Framework (MTRF) in 2006 and a Medium-Term Expenditure Framework (MTEF) in 2007³¹; participation in the Trends in International Mathematics and Science Study (TIMSS) in 2003 and 2007; since 2003, to reduce inefficiencies, using a school-mapping database and technical criteria as bases for school establishment and personnel deployment decisions; in 2007 to enable sustainable provision of teachers, particularly females in rural areas, linking the teacher posts to the school rather than to the individual; since early 2006, understanding and tackling teacher absenteeism; and beginning in September 2007, abolishing school fees for girls in grades 1–6 and for boys in grades 1–3.³² The government is experimenting with four

30. Approval of the FTI Catalytic Fund requires local donors to endorse the education sector plan and the Catalytic Fund Strategy Committee (composed of representatives of donors to the fund and chaired by the World Bank) to select countries based on its assessment of countries' needs and for what the resources will best be used.

31. MOE has pioneered the articulation of a MTRF and a MTEF in Yemen.

32. The MOE is planning to abolish school fees for girls from grades 1–9 and for boys from grades 1–6.

additional schemes: contracting female teachers in rural areas, providing conditional cash transfers to retain girls in basic education schools, establishing school-based grants, and encouraging community participation.

2. *National General Secondary Education Strategy* (NGSES). The NGSES aims to provide high-quality, equitable, and cost-effective secondary education for transition to tertiary education and the labor market. In addition, the strategy prioritizes addressing the following challenges up to 2015:
 - a. Gender and rural access inequity
 - b. Inefficiency resulting from high repetition and dropout
 - c. Ineffective teacher deployment, poor-quality teaching, and low teaching loads
 - d. Lack of availability of well-trained teachers, particularly females in rural areas
 - e. Weak capacity of principals and supervisors to support teaching and learning
 - f. Nonavailability of modern teaching and learning technologies, and processes to benefit learning
 - g. Low levels of subject competence leading to poor preparation for higher education
 - h. Unreliable and weak assessment of teaching and learning processes
 - i. Lack of private financing to support secondary education delivery.

To translate policy reforms into reality, the MOE has entered into a protocol of participation with the Ministries of Planning and International Cooperation (MOPIC), Finance (MOF), and Civil Service and Insurance (MOCSI); and each of the governorates that would be targeted through the first major externally financed secondary education project, the Secondary Education Development and Girls Access Program (SEDGAP). This protocol of participation declares the commitment of the signatory parties to comply with the following reform policies in the targeted districts: to ensure a minimum of 15 percent female representation in new teaching posts for basic and secondary education; to involve MOE representatives in the governorate and district teacher recruitment processes; to plan and implement teacher deployment; to ensure compliance of the MOE decision to link the post of the teacher to the school; and to eradicate teacher absenteeism.

3. *National Strategy for the Development of Vocational and Technical Education* (NSDVTE). The 2004 NSDVTE aims to achieve an “adequate” balance between general education and TEVT. The

target of this strategy is to attract 15 percent of basic and secondary education graduates to post-basic and post-secondary TEVT, respectively, by 2014. Five strategic issues are addressed by the TEVT strategy:

- a. Increasing responsiveness to skill development needs and encouraging equitable access by different social groups
- b. Improving labor market linkages and enterprise participation
- c. Developing the institutional capacity of the MOTTEVT
- d. Building capacity of training centers
- e. Facilitating sustainable and diversified financing.

To improve responsiveness to employers' skills needs, the law for the Skill Development Fund (SDF) was passed in 1995, amended by the Cabinet in 2007, and further amended in August 2009 to grant the SDF greater autonomy to deal directly with employers.

4. *National Strategy for the Development of Higher Education in Yemen* (NSDHEY). The 2006 strategy aims to:

“. . . create a higher education system characterized by quality, broad participation, multiple and open routes vertically and horizontally, that is effective and efficient and delivers quality programs, shows excellence in teaching, learning, research and service to society, and enhances Yemen's quality of life.”

The strategy focuses on four areas of reform: governance, finance, quality, and diversification. Regarding enrollment growth, the strategy aims to expand access to universities and other higher education institutions (including TEVT), particularly for the 19–23-year-old age group, from 13 percent to 16 percent by 2010, and to 35 percent by 2025. A recent key policy reform includes Cabinet Decree No. 74 for the year 2009, which established the Quality Assurance and Accreditation Council.

5. *National Children and Youth Strategy* (NCYS). Ten of the 12 Millennium Development Goals (MDGs) relate to the development of children and youth. Yemen has implemented numerous interventions and strategies to address human development. Nevertheless, critical gaps and challenges remain in understanding and addressing the intertwined risks that its children and youth face over their lifecycles. To respond, in 2006 the government prepared the NCYS. It used an integrated, cross-sectoral framework to identify the issues, critical gaps, and areas of greatest need across the human development sectors that are most likely to impact the achievement of the MDGs. The strategy recommendations were elaborated as action plans that set out specific activities and targets relevant to the MDGs. These action

plans were to be integrated and implemented by concerned line ministries as part of their respective sector programs.

Despite the many strategies, one coordinated vision for education is missing and needed. Each subsectoral strategy is intended to increase access and equity, and improve quality and efficiency of education delivery quite independently of what is happening in other education subsectors. As a result, there are major disconnects among the strategies and investments of the various subsectors. Two examples are the (1) diverse expansion programs of all sectoral strategies despite declining resources for the sector as a whole and (2) mismatch between teacher demand for basic and secondary education and teacher supply and qualification by the pre- and in-service teacher training programs. While all three of the education ministry strategies state the intention to establish coordination mechanisms among themselves, all efforts to set up such a council have been unsuccessful. A national vision that articulates the education and skills needs of the economy and the society, and the choices that must be made to provide these skills, is greatly needed. It is precisely this gap in vision that this report addresses. This report aims to provide the diagnostic work to develop the salient features of the national education vision.

The basic education sector in Yemen is characterized by a high degree of donor harmonization. Even though Yemen is a low Official Development Assistance (ODA) per capita recipient (\$13 in 2006), education receives a large share of this external finance. Development partners supporting basic education have signed a Partnership Declaration to ensure greater harmonization and alignment of sector support on the basis of the MOE's sector strategy. In 2004, 12 partners—the governments of Yemen (represented by MOPIC and MOE), France, Germany, Kingdom of the Netherlands, and United Kingdom; as well as the International Development Association (IDA), International Labour Organisation (ILO), Public Works Project, Social Fund for Development (SFD), United Nations Children's Fund (UNICEF), and World Food Programme (WFP)—signed the Partnership Declaration. All of these partners (except France and the ILO) signed the 2007 update to this declaration. The United States Agency for International Development (USAID) joined as the 13th partner. Since 2005, four agencies—United Kingdom's Department for International Development (DfID); IDA; KfW (Kreditanstalt für Wiederaufbau), the German development bank; and the Royal Netherlands Embassy—have cofinanced the Basic Education Development Project (BEDP). In 2008 five agencies—DfID, the German development cooperation agency (GTZ),

IDA, KfW, and the Royal Netherlands Embassy—came together to develop the first major externally financed secondary education program in the country. It was launched in 2009. Procedures and requirements were harmonized among four of these agencies (some GTZ procedures differ from the others).³³ Harmonization at the post-basic levels remains at nascent stages.

2.2 Structure of the Education System

The structure of Yemen's current education system was established following the unification of North and South Yemen in 1990. Public schooling is subsidized at all levels. Early childhood education (ECE) is voluntary, rare, and mostly private. The formal public education system (figure 2.1) comprises 9 years of compulsory basic education followed by 3 years of general secondary education.³⁴ In grades 11 and 12, enrollment is diversified into the science track and humanities track, although in practice many rural schools are not able to provide both options. Students can enter secondary school if they have a Basic Education Certificate (BEC), which requires passing the 9th grade examination.³⁵ Vocational schools and community colleges offer 2- and 3-year post-basic and post-secondary programs.³⁶ After a one-year waiting period, secondary school graduates can enter universities.³⁷ Some faculties in public universities recently have adopted more stringent entrance requirements.³⁸

33. GTZ aligned some of its procedures with the other four agencies, including using the same results indicators to measure project progress and the same work plans. However, GTZ finances the program directly, not through the Government's budget.

34. Prior to unification, north Yemen had a system of 6 years of "primary," 3 years of "preparatory," and 3 years of "secondary" education. South Yemen used a system of 8 years of "unified" level and 4 years of "secondary" level.

35. The grade 9 examination is standardized at the governorate level. However, the application of entrance criteria at secondary schools varies greatly, particularly in rural areas (Abdulmalik 2009).

36. In addition to the MOTEVT institutions and private TEVT providers, at least 50 training institutions that belong to other ministries and public organizations offer TEVT in Yemen. These institutions have been set up by these ministries and organizations to meet the needs for specialists in various functions and tasks and to train their employees ongoing to keep pace with the skills needs of their jobs.

37. This one-year wait rule appears to be a legacy of the past when students were obliged to join the army after completing secondary education. The fact that the SEC is not available in time to apply to university in the same academic year has continued this obsolete historical practice.

38. Entry to university requires an applicant to have a Secondary Education Certificate (SEC) issued more than 1 year, but less than 4 years, earlier and to achieve a set pass rate in the secondary education examination. (The pass rate depends on the course but may not be lower than 70%.) Since their beginning, the engineering and medical faculties have required admissions tests and interviews prior to accepting students. In 2007 several humanities faculties started to require these.

Faced with a growing demand for higher education, since 2004–05, public universities have launched parallel programs. These programs were established as private expense programs to accommodate primarily foreign students in the science faculties. However, the programs have expanded to the humanities faculties. The programs are run on a fee-paying basis, mostly in the afternoons, to accommodate Yemeni students who do not qualify to enter regular programs at public universities (admission criteria for regular and parallel programs are detailed in appendix B).³⁹ Recently, enrollment in the parallel programs has increased substantially. Following the decision of the Supreme Council of Universities, in 2004–05 public universities set the limit on the proportion of students in parallel programs at 5 percent.⁴⁰ Nevertheless, in some faculties at Sana'a University, 58 percent of the students are in parallel programs.⁴¹ Nationally, the number of students in parallel programs increased rapidly to 14 percent of enrollments in 2007–08 due to high social demand for higher education and limited seats in regular programs in public universities. Public universities also have looked favorably at parallel programs to support resource mobilization.

Regulations governing student flow through the system, particularly at the post-basic levels, are not conducive to lifelong learning opportunities, so, de facto, facilitate dropping out. Children or young adults who have missed basic education can enter Alphabetical Programs provided by Literacy and Adult Education centers.⁴² However, after basic education, the system does not facilitate students either to change tracks or to re-enter the system if they drop out. Once a student has been selected to join the TEVT track, s/he cannot go to university, even if s/he has completed a course at a community college.⁴³ Admission requirements at TEVT institutes are competitive and take substantial time to fulfill. As a result, by the time a student has found out that s/he was not admitted to a TEVT institute, s/he has already missed the window to apply to a

39. Parallel programs are offered in the humanities faculties, and private expense programs are offered in the fields of medicine and engineering.

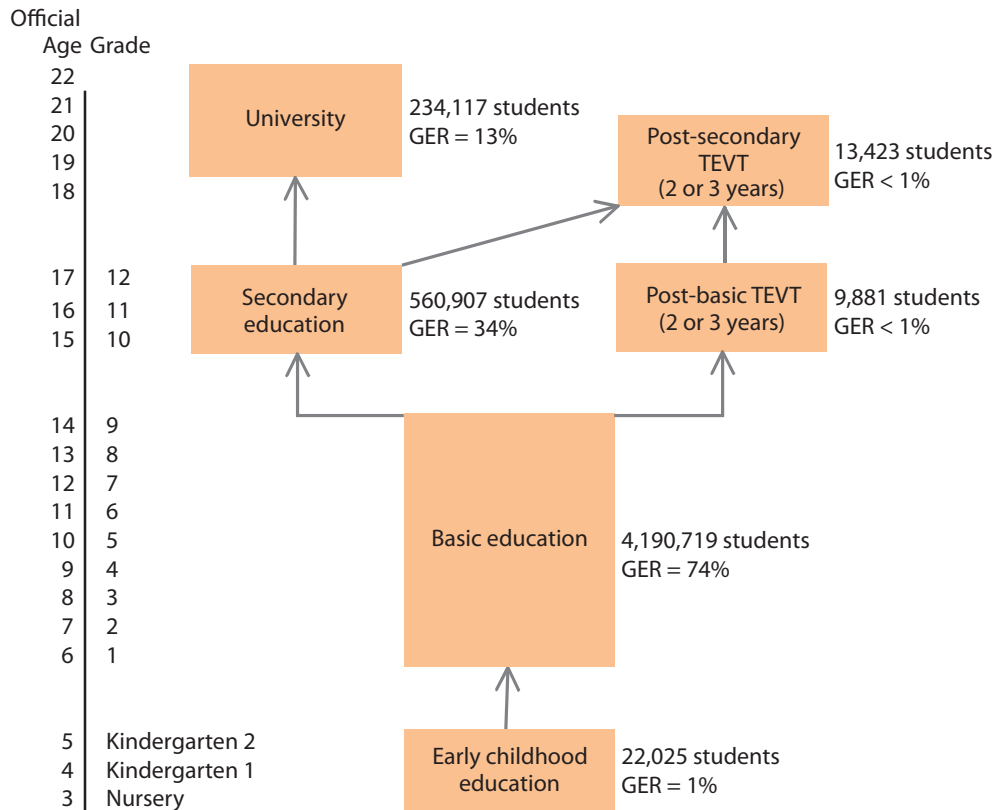
40. SCEP 2006–07.

41. This statistic was reported for the Department of Education in Sana'a University in 2007–08.

42. Literacy and Adult Education centers offer Alphabetical Programs, which include a 2-year course using a special curriculum and textbooks, to enable students to join grade 4 of basic education, and a third year to enable students to join grade 6.

43. Graduates of community colleges are able to join universities on an exceptional basis. For example, in Sana'a University, only the top 3 graduates of community colleges in Sana'a governorate can enter the university on an exceptional basis.

Figure 2.1 Structure of the Yemen Education System, Numbers of Students, and Gross Enrollment Ratios (GERs), 2007–08 (%)



Sources: Authors' calculations using 2007–08 data from the MOE, MOT EVT, and MOHESR; and UN population data.

Note: Includes students in public and private education.

secondary school during the same academic year. This forced delay creates a disincentive to enroll in academic secondary education one year later.

The age limits and health tests set by the TEVT institutes restrict students who may be above 25 years old, second-chance students (such as those who joined Alphabetical Programs, in which the average age of the enrollees is 15–30 years), disabled students, or mid-career professionals from benefiting from skills enhancement. A person must be no more than 20 years old to join a post-basic TEVT institute and no more than 25 years old to join a

post-secondary TEVT institute.⁴⁴ As shown later in this chapter, (1) Yemeni children enter grade 1 at the comparatively late age of 8 years on average, and (2) given the high rates of repetition (table 2.8) throughout the grades, the average Yemeni child may need a few extra years beyond the 9 years of the basic education cycle to complete it.⁴⁵ These two realities mean that the average Yemeni child just out of basic education is already too old to join a post-basic TEVT institute.

Similarly, entrance to universities is highly restrictive. Even if a person chose the academic secondary track, the Secondary Education Certificate (SEC) should have been obtained more than 1 year earlier but less than 4 years before applying to university. These requirements also limit the chances of professionals who are seeking higher education to obtain certification or additional skills, or even to change careers in response to market needs. Therefore, de facto, at the post-basic levels, regulations governing student flow limit the number of students entering the system rather than support a healthy culture of lifelong learning.

Given the restrictive nature of student flow regulations, information to help students make the most informed decision about which educational track to pursue is critical, yet lacking, in Yemen. Although the grade 12 national examination results are published in the newspaper, no publicly available information exists for parents and students about the performance of schools. This information can guide students to choose a good school—a decision that will affect the rest of his/her academic and working life.⁴⁶ Furthermore, most students, parents, and school personnel are not aware of the repercussions of the choices that students make, so no one is able to guide a student to make the most appropriate choice.

Information to guide students about schooling options appears to be scattered and not easily available for decisionmaking. In a survey conducted for this study, most MOE personnel said that they had read the regulations governing student flow. However, most could

44. Entrance to TEVT also requires admission tests, an interview, and a BEC (for post-basic TEVT) or SEC (for post-secondary TEVT) issued in the previous three years. Entrance to academic secondary schools requires only a BEC, and in most cases a copy of the basic education examination result is sufficient (Abdulmalik 2009).

45. As shown later in this chapter, the average years for which resources are invested per grade 9 completer (including repetition and dropout) is 15.9 years (14.7 years for boys and 18.0 years for girls).

46. Usually rural students have only one secondary school nearby, but urban students have choices. Where choices exist, students rely on informal information-sharing from relatives and friends to make school decisions.

not locate the regulations in their offices. Similarly, most headmasters and school teachers said they had heard about these guidelines but had never seen or read them. Two-thirds of the male 9th-grade students interviewed said that neither the school nor their parents were aware of, or had guided them about, schooling options beyond basic education. This lack of information often unexpectedly limits students' career development options because of the restrictive and disconnected nature of regulations across the system.⁴⁷

Another mismatch exists between the choices students make in secondary education and the subjects taught in higher education.

In 1997–98, 42 percent of grades 11 and 12 students were enrolled in the science track. By 2007–08, this figure had increased rapidly to beyond 80 percent.⁴⁸ However, currently, only 33 percent of university students are enrolled in science, engineering, or technology programs. The majority of students are enrolled in social science programs.⁴⁹ The main reason is that science graduates are allowed to apply to more faculties (science, humanities, and TEVT) than are graduates of the humanities track, who can apply only to humanities faculties (appendix B). Contradictorily, universities offer more seats in humanities, for which the schools incur lower investment and operational costs. This forced migration of students to the humanities at the university level decreases the scientific and technological skills available to the labor market (chapter 3).

The private sector enrolls a small proportion of students in all sectors, although higher education is growing the most rapidly.

In 2006–07, 3 percent of basic and secondary students were in the private sector (concentrated in urban areas), compared to 1 percent a decade ago. Compared to this small share at the general education level, between 2003 and 2007, the private sector share increased from 39 percent to 54 percent at the ECE level, and from 5 percent to 19 percent for university enrollments (table 2.2). By 2006, some 15 active private TEVT institutions (3 community colleges and 12 health institutes) were enrolling a total of approximately 4,300 trainees annually.⁵⁰ Most of these private institutions

47. Abdulmalik 2009.

48. This phenomenon creates a problem in matching teachers' specialization at secondary schools (chapter 3).

49. According to the MOHESR, this is a result of the expansionist programs pursued by the ministry in the 1990s when it attempted to supply university places quickly to match the growing demand for higher education. Humanities programs were easier to provide since they required little investment costs, and the faculty members for such programs were easier to find. After the NSDHEY was put in place in 2006, there has been growing recognition by, and aspiration of, the MOHESR to approach public higher education provision through the lens of the skills needs of the economy.

50. SCEP 2006–07.

Table 2.2 Enrollment Growth in Post-Secondary Education by Private and Public Provision, 2002/03–2006/07 (%)

	2002–03		2006–07		2002/03–2006/07	
	No. enrolled	(%)	No. enrolled	(%)	Increase	Contribution to increase (%)
University	190,201	100	239,984	100	49,783	100
Studying abroad	4,806	3	5,867	2	1,061	2
Public	176,303	93	188,557	79	12,254	25
of which regular program	176,303	93	161,576	67	-14,727	
of which parallel program	0	0	26,981	11	26,981	
Private	9,092	5	45,560	19	36,468	73
Post-secondary TEVT	4,350	100	16,739	100	12,389	100
Public	3,227	74	12,351	74	9,124	74
Private	1,123	26	4,388	26	3,265	26

Source: SCEP 2006–07.

Note: Due to rounding, totals may not add to 100%.

provide a limited number of specializations, including computer and language training.

Private university education also is growing rapidly. From 2002/03–2006/07, university enrollment grew by 49,783: from 190,201 to 239,984 (table 2.2). Of this increase, 25 percent was attributed to growth in public enrollments (primarily in the parallel programs). The majority share (73 percent) was accounted for by the growth of enrollments in private higher education institutions.

Other types of education

Other educational opportunities are available through Holy Quranic schools and Literacy, and Adult Education. Scientific institutes (religious schools) once were a central source of education. In 2002, to unify the country's official education system, these schools were merged with secular basic and secondary schools. Today, Holy Quranic schools exist as providers of informal educational opportunity for anyone who wants to learn the Holy Quran. Literacy and Adult Education centers offer Alphabetical Programs to enable students to join the 4th or the 6th grade of basic education. Adult Education Programs teach basic educational skills including reading, writing, and arithmetic, as well as vocational skills to help students secure income-generating work. The number of students in literacy classes remains small. In 2007–08, approximately 167,000 students were enrolled in these programs.⁵¹

51. Literacy and Adult Education Organization (LAEO).

Although recent, “inclusive” education is beginning to integrate special needs students into the mainstream educational system.

The Inclusive Education Directorate was established within the MOE in 1997. The work of the directorate is supported by two laws:

- a. The Child Law (No. 45 for 2002, Article 115) guarantees government support to the mentally and physically handicapped. Article 118 of the same law stipulates that the MOE shall establish additional classes in regular schools to teach special needs students.
- b. The Welfare Act and the Rehabilitation of the Disabled regulates the admission, curriculum, and examinations accorded to these students.

To date, the Inclusive Education Directorate is working with 12,000 special needs students in 110 schools across 15 governorates of Yemen. These programs include children who are under the following special needs categories: physical and mental disabilities, learning difficulties, chronic health problems, marginalized communities (*Akhdams*), working children, and street children. The directorate facilitates suitable schooling environments in terms of buildings, trained teachers and social workers, teaching methods and teaching aids, resource rooms, libraries, and furniture.⁵² Where appropriate to ensure integration and equal opportunities, the MOE establishes additional classes in regular schools to teach special needs students.⁵³ The directorate attempts to involve community members and groups and nongovernmental organizations whose work addresses special needs students.

2.3 Student Enrollments and Coverage

The education system has grown significantly in size, particularly over the last 30 years. The earliest complete education data available are for 1977–78. From 1977–78 to 2000–01, enrollment in basic education grew 6-fold; secondary enrollments grew 22-fold; and university enrollment grew 35-fold (table 2.3). Between 2000–01 and 2007–08, enrollments continued to grow. Basic enrollment grew 22 percent; secondary enrollment grew 14 percent; and university enrollment grew 34 percent. Since 2000, TEVT increased the fastest. Due to the opening of community colleges, enrollment in post-secondary TEVT increased 15-fold.⁵⁴ In contrast, the growth

52. Al-Saigi 2007.

53. Al-Hidabi 2008.

54. Approximately 70 more public TEVT institutes are expected to become operational in 2010 (MOTEV 2009).

Table 2.3 Growth of the Education System in Yemen, 1977–78 to 2007–08

	1977–78	2000–01	2007–08
No. of students			
Early childhood education ^a	4,743	13,613	22,025 ^b
Basic + secondary education	558,105	3,938,211	4,751,626
Basic education ^c	536,231	3,446,847	4,190,719
Secondary education	21,874	491,364	560,907
Post-basic + post-secondary TEVT	538	7,601	23,304
Post-basic TEVT	538	6,689	9,881
Post-secondary TEVT ^d	0	912	13,423
University ^e	4,944	175,367	234,117
No. of teachers			
Early childhood education	162	561	1,457
Basic + secondary education	16,363	174,304	199,101
Basic education ^c	15,057	.	.
Secondary education	1,306	.	.
Post-basic + post-secondary TEVT	53	1,816	2,625
Post-basic TEVT	53	904	.
Post-secondary TEVT ^d	0	912	.
University ^e	.	4,504	7,356
No. of institutions			
Early childhood education	18	42	408
Basic + secondary education ^f	3,070	13,390	15,290
Basic education ^c	3,011	.	.
Secondary education	59	.	.
Post-basic + post-secondary TEVT	5	47	60
Post-basic TEVT	5	41	24
Post-secondary TEVT ^d	0	6	36
University ^e	2	12	21

Source: SCEP 2008, CSO Statistical Yearbook, MOE 1995, and MOE AES 2007–08.

Notes:

a Data for early childhood education is for public schools only.

b Data are for 2006–07 for early childhood education, TEVT, and universities.

c In 1977–78, both North and South Yemen had grades 1–9 for basic education. This is the first year for which data for both North and South are available.

d Community colleges are included from 1996–97, when they were first established. TEVT institutions administered by ministries other than the MOTTEVT are excluded.

e Data reported for 1977–78 are actually from 1980–81, the first year that data was available for the South.

f To determine the number of general schools, the authors used the MOE definition. When the MOE categorizes a school with 2 shifts (double-shift school) as 1 school (that is, 1 management), then it is 1 school. However, if they are labeled as 2 separate schools—for morning and afternoon (that is, with different headmasters)—they are considered 2 different schools.

of ECE was slow. Between 1977–78 and 2000–01, ECE grew only 3-fold. Moreover, although it grew at a faster rate than other sectors from 2000–01 to 2007–08, ECE grew from a very small base, so it still accounts for very few children of ECE age.

Yemen has made impressive gains in gross enrollment ratios (GERs) for all levels of education, especially for girls.⁵⁵ Boys' secondary school enrollment has declined somewhat. Despite Yemen's 3 percent annual population growth during the last decade, the country made an impressive gain in GER, especially for girls in primary education. The latter improved from 49 percent in 1998–99 to 76 percent in 2007–08 (table 2.4). Girls' enrollment also increased from 42 percent to 64 percent in basic education and from 16 percent to 23 percent in secondary education. In contrast, while boys' primary GERs increased from 86 percent to 94 percent during the same period, boys' secondary GERs declined. At the university level, the GERs for both males and females increased significantly as the system expanded rapidly.

When compared internationally to GERs of the low-income and the Fast Track Initiative group of countries, Yemen is below average at the primary level and approximately the same for post-basic education.⁵⁶ At 83 percent in 2005–06, Yemen's primary GER is low compared to the average for low-income countries (94 percent) and FTI countries (98 percent) (table 2.5). On the positive side, Yemen's lower (or upper basic in Yemen) and upper secondary (or secondary in Yemen) GERs are better than the average for low-income countries and close to the FTI countries' average.

Table 2.4 Gross Enrollment Ratios (GERs), 1998–99 and 2007–08 (%)

	Males		Females		Total	
	1998–99	2007–08	1998–99	2007–08	1998–99	2007–08
Early childhood education	0.8	1.2	0.7	1.0	0.7	1.1
Primary education (grades 1–6)	85.6	94.5	48.9	76.0	67.7	85.4
Basic education (grades 1–9)	80.4	84.5	42.2	63.7	61.8	74.3
Secondary education (grades 10–12)	45.7	43.3	16.2	22.9	31.4	33.8
University	14.6	18.0	3.8	7.5	9.4	13.2

Source: MOE data; UN population data, May 2009.

Note: Data for universities is for 2006–07.

55. Due to the low prevalence of birth registration, age data in administrative records or household surveys usually are not accurate. Therefore, in Yemen, the gross enrollment ratio (GER), as opposed to the net enrollment ratio (NER), is commonly used.

56. Although 2007–08 data are available for Yemen, to compare Yemen's data internationally, the information in this paragraph and in table 2.5 refer to data from 2005–06.

Table 2.5 International Comparison of Gross Enrollment Ratios (GERs) by Level, 2005–06 (%)

	Primary	Lower secondary	Upper secondary	Tertiary
All students				
World average	105	78	53	25
MENA average	105	79	65	25
Low-income average	94	48	27	6
FTI average	98	55	34	15
Yemen	83	50	34	12
Females				
World average	102	76	51	26
MENA average	103	79	70	30
Low-income average	89	44	25	5
FTI average	95	53	32	15
Yemen	72	34	23	6

Source: EdStats April 2009; authors' calculations for Yemen using MOE AES 2005–06.

Note: Of the 35 FTI countries identified by the FTI Secretariat, 24–30 are used in the calculation of averages for each level.

Despite improvement over the last decade, Yemen is faring poorly with girls' education. The primary driver of the overall low level of primary enrollment in Yemen is low enrollment of girls. Whereas the primary education GER for boys in 2007–08 was 94 percent, it was 76 percent for girls (table 2.4). In 2005–06 (the most recent international data available), girls' enrollment rate in primary education in Yemen (72 percent) was much lower than the averages for low-income countries (89 percent) and FTI countries (95 percent). This pattern also exists in lower secondary and upper secondary, although the gap between the average for low-income countries and Yemen is narrower. In higher education, Yemen's girls' enrollment is at the same level as the average for low-income countries.

Boys' enrollment may be stagnating. Although data accuracy and consistency are problematic,⁵⁷ evidence from several sources points to the fact that boys' enrollment in recent years has not been growing. The number of boys enrolled in basic education in 2007–08 was at the same level as it had been 5 years earlier. The 2007–08 enrollment rates of 6–14-year-old boys in both urban and rural areas showed no improvement compared to 1998 and 2005 (HBS data). Evidence from administrative data (MOE annual surveys) indicates that, given that the access rate for grade 1 had remained the same, this stagnation was caused by lower retention rates. Furthermore, due to deteriorating retention rates, the number

57. The MOE used 3 different methods of annual data collection between 2004–05 and 2006–07. As a result, data consistency was lost for these years, and the credibility of these data is unknown.

of boys enrolling in secondary schools in 2007–08 was actually lower than 5 years earlier (367,000 in 2007–08 compared to 386,000 in 2002–03).

Enrollment rates vary significantly across governorates, especially among girls. While boys' enrollment rates are relatively similar across Yemen's governorates, the difference in girls' enrollment rates between the governorates with the highest and lowest enrollments is 52 percentage points. The range is from Sana'a City with 84 percent of girls enrolled to Saadah with 32 percent. The national average is 56 percent (table C1). Among many factors, poverty may play an important role in schooling. More empirical evidence will need to be collected to determine the related factors. It is known from administrative data that gaps in enrollment rate within some governorates are also quite large. For example, within the governorate of Hodeidah, Hodeidah city and surrounding urban districts have basic education GERs above 100 percent for boys and girls. In contrast, the GERs for several southern districts (such as Bait Al-Fakikh) are less than 30 percent.

There is a growing community of marginalized children who tend to be at a higher risk of exclusion from the traditional education system. The African-descended Akhdams traditionally have been referred to as a "marginalized" community in Yemen. However, the landscape of marginalized communities is changing rapidly due to high rural-urban migration and the recent economic downturn in the country and the region. The non-Akhdam marginalized communities include rural migrants and Arab-descended Yemenis who had immigrated to other countries but returned to Yemen after the Gulf War. Due to the combination of a lack of adequate schooling services and economic hardships of the households, enrollment and retention rates of marginalized children (both old and new groups) are significantly lower than the national average. In a 2008 survey conducted for this study, the enrollment rate of 6–14-year-old marginalized boys was 57 percent (compared to the national average of 66 percent), and 37 percent for girls (compared to the national average of 56 percent).⁵⁸

Despite its potential for equalizing the benefits of education to children from diverse backgrounds, enrollment in ECE remains very low and does not benefit the poorest or the most disadvantaged.

58. Data for the marginalized communities were obtained from SOUL for the Development of Women and Children (2008). The national enrollment rate for aged 6–14 year olds came from HBS 2005.

ECE is highly beneficial for human capital development and, consequently, for economic growth. In addition, a good deal of research from around the world indicates that good-quality ECE programs are perhaps an education system's most effective tool to equalize the benefits of education to students from rich and poor, and privileged and disadvantaged, backgrounds. These benefits have been evidenced in enrollment, cognitive development, school performance, and performance in the labor market (box 2.1). Nevertheless, coverage of ECE programs remains limited in Yemen. It is available primarily to the urban and better-off families who can afford to pay the fees at the private centers. In any case, high-quality ECE is expensive. Therefore, the case for its use in Yemen needs to be studied carefully prior to widespread propagation, especially if public provision could be neither of high quality nor targeted to the poorest.

Box 2.1 Evidence for High-Quality Early Childhood Education

Based on a large amount of research, it is widely agreed that programs that promote the growth and development of young children are the most important investment for human capital development and economic growth in any country. The broad-ranging benefits include:

- ***Higher enrollment rates in later schooling, less repetition, and fewer dropouts***

The Colombia Promesa program found that children who participated in an early childhood education (ECE) program repeated fewer grades and progressed twice as far through school as nonparticipants in similar circumstances (60% reached fourth grade compared to only 30% of children in the comparison group). Children in this program and in programs in Argentina and Brazil averaged lower rates of repetition.¹

- ***Improved cognitive development and school achievement***

Several studies found higher results, on average, on intellectual aptitude tests for participants compared to nonparticipants in ECE initiatives. These studies include the Colombian Cali project (home-based community day care for 2–7 year olds) and Peru's Programa No Formal de Educación Inicial (Pronoei).²

- ***Improved nutrition and health***

ECE programs can promote good health, help ensure that children receive health care, and monitor growth and well-being. For example, children participating in the Colombia Community

Box 2.1 (continued)

Child Care and Nutrition Project were required to complete their immunizations within six months of entering the program.³ India's Integrated Child Development Services program monitored growth and provided food supplements and micro-nutrients.⁴

- **Reduced social inequality**

There is evidence that ECE interventions are particularly beneficial to disadvantaged groups. India's Haryana project found that dropout rates improved immensely for the poorest groups.⁵ A Guatemalan program found a significant drop in the age of enrollment for girls (a traditionally disadvantaged group).⁶

- **Long-term economic and social gains**

The High/Scope Perry Preschool Project in Michigan, USA measured the long-term benefits of participation at ages 3 or 4 in a high-quality active learning preschool program. At age 27, participants had the following favorable outcomes compared to a control group:

- Higher monthly earnings (29% earning \$2,000 or more per month, compared to 7%⁷)
- Higher home ownership (36% compared to 13%)
- More years of education (71% completing 12th grade or higher, compared to 54%)
- Less receipt of social services in the previous 10 years (59% compared to 80%)
- Fewer arrests (7% having 5 or more arrests, compared to 35%).

Based on these long-term results, it is estimated that the High/Scope Perry Preschool Project saved over \$7 for every \$1 invested due to lower education and welfare expenditures and greater productivity gains over time. Similarly, a long-term study of a Chicago ECE intervention found returns of over \$7 per \$1 invested.⁸

Notes:

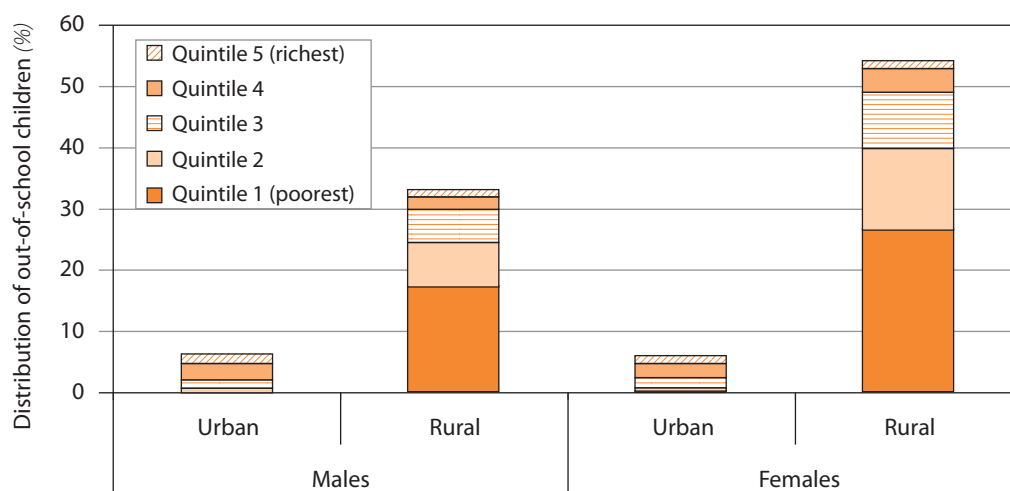
- <http://www.worldbank.org/children/ecd/book/6>
- <http://www.worldbank.org/children/ecd/book/6>
- Young 1996.
- <http://wed.nic.in/icds.htm>
- Chaturvedi and others 1987.
- Myers 1995.
- Schweinhart and others 1993.
- Reynolds and others 2002.

2.4 Out-of-School Children

Despite the government's compulsory basic education policy, in 2005, 1.8 million children of basic education age were still out of school. The number of children who had been out of school in 1999 was 2.2 million.⁵⁹ While the out-of-school population aged 6–14 dropped significantly from 1999 to 2005, their characteristics did not change significantly during that period. More out-of-school children are found among girls, rural, and poor families in both years. Supply-side factors (provision of schools) and rural girls' access did improve. However, the enrollment rate among the poor quintile did not improve during this period.

Out-of-school children are concentrated in rural areas of populous governorates, and are more likely to be girls from poor households. While approximately 71 percent of the total population of Yemen lives in rural areas, a disproportionate 87 percent of out-of-school children live in rural areas. Almost half of them are found in the populous governorates of Al-Hodeidah, Hajjah, Dhamar, and Ibb. Overall, of the out-of-school children, girls constitute approximately 60 percent; and the poor,⁶⁰ 66 percent (figure 2.2).

Figure 2.2 Distribution of Out-of-School Children Aged 8-12 by Gender, Location, and Income Quintile, 2006 (%)



Source: Authors' calculations using the 2006 Multiple Indicator Cluster Survey (MICS).

59. National Poverty Survey 1999.

60. The poor are classified as families whose per capita consumption is below the food poverty line. In 2005 they equaled 35% of Yemen's population.

While demand-side factors account for a large proportion of reasons for nonenrollment in urban areas, supply-side factors are more important for rural children. Table 2.6 presents the reasons for nonenrollment and dropout by gender and urban-rural status.⁶¹ Supply-side factors for nonenrollment are very rare in urban areas. However, in rural areas, they are still major obstacles, as reported by 37 percent of boys and 49 percent of girls. In rural areas, children have to walk long distances to reach their schools, quite often in extreme hot or cold temperatures, often barefoot, without any meal at home, and without any guarantee of security on the way. Reasons for dropout are predominantly demand driven in both urban and rural cases, except for rural girls, who tend to drop out owing to a lack of female teachers.

Demand-side factors

A demand-side factor analysis of enrollment shows that decisions about enrollment are closely linked to the household's need for labor. Based on HBS 2005 data, it was found that school enrollment is highly correlated with age, household characteristics, and parental education (appendix C). The probability of attending school is lower for boys and girls who are disabled, if their family uses wood and other primitive fuels for cooking, or if the household owns animals that need to be tended. The probability of enrollment increases for children who come from families in which the parents (one or both) have acquired education, or older siblings act as role models; or if the household has access to the public water network, which particularly affects the enrollment of girls.

Table 2.6 Reasons for Nonenrollment and Dropout, by Urban-Rural and Gender, 2005 (%)

	Reasons for nonenrollment				Reasons for dropout			
	Urban		Rural		Urban		Rural	
	Male	Female	Male	Female	Male	Female	Male	Female
Supply-side issues	4	9	37	49	2	6	13	32
Demand-side issues	57	69	50	44	89	82	80	62
Economic	2	1	3	3	16	4	27	10
Attitude	45	61	35	38	72	76	52	52
Personal	10	7	12	2	0	2	1	0
Others	39	22	13	7	9	13	7	6
Total	100	100	100	100	100	100	100	100

Source: Authors' estimates based on HBS 2005.

61. Issues of dropout and repetition are discussed in the following section on student flow.

Economic constraints often lead a family not to send children to school, especially in rural areas. On average, households spend Yrls 2,600 (\$13) per year for a basic education student.⁶² Although community participation fees of Yrls 150 (\$0.75) per year were abolished in 2006,⁶³ there is still a considerable direct cost of education, especially for the poor. Opportunity costs also contribute to dropping out of school, as 25 percent of children aged 6–14 are working either domestically or in income-generating activities.⁶⁴

Despite many public awareness campaigns encouraging families to send their children to school, large proportions of Yemeni families do not consider education at upper grades to be essential. When asked, most families are eager to send their children to school. This is evident in the high intake rates to grade 1. However, families are less likely to let their children go all the way through basic schooling. More than 70 percent of the dropouts among urban children and 50 percent of dropouts among rural children cited attitudinal reasons (of the family) as the main reasons for dropping out.⁶⁵ Two examples are that parents had no interest in schooling for their child or believed that education up to a few grades is sufficient. While the attitudinal factor may coincide with household labor needs, early marriage is still a big reason for dropping out among girls. Many children drop out at grade 6 because their parents feel that 6 grades are enough education for their children.

The age of a child plays an important role in attendance and dropout patterns. According to the policy of the MOE, entry to grade 1 is at the age of 6. However, only 20 percent of children begin school at this age. This low figure quite possibly is linked to children's poor nutritional status such that, especially in rural areas, they are considered too young to attend school even at ages 7 and 8. On the other

62. The cost items include school uniforms, school supplies and books, room and board, transportation, and other school-related costs.

63. Community participation fees were abolished in 2006 for grades 1–3 for boys and grades 1–6 for girls. Although abolishing the fees encouraged some additional new intake, there is no evidence that the enrollment behavior of the poor changed. One of the anecdotal findings was that the amount (Yrls 150) was neither sufficient to cover the other direct costs associated with schooling nor their opportunity costs.

64. HBS 2005. This includes children who are working only (13%) and working and studying (12%). The proportion of children who are studying only is 54%; the remaining 21% are neither studying nor working (idle).

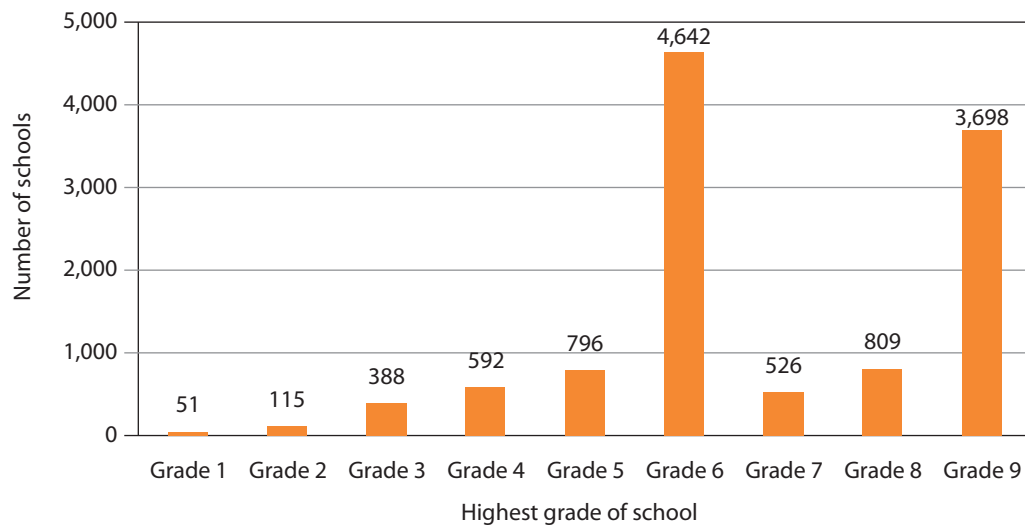
65. Another anecdotal attitudinal reason is the negative impact that moving to a 9-year basic education cycle has made on rural families. When the first 6 grades were compulsory and a 6th grade certificate was awarded to students, rural families were eager to support the education of their children to be able to get the first-ever such certificate. It also was a closer target to reach. With the focus on 9 years of basic education, the years to complete this education seem too far out, perhaps out of reach, and unnecessary.

hand, parents of older girls are particularly worried about their security so withdraw them from school. The combination of these two factors limits the number of years that children can attend school. Children entering school late tend to drop out in early grades due to their greater age.

Supply-side factors

In rural areas, supply-side issues are still major reasons for non-enrollment and dropout. In rural areas, 28 percent of out-of-school children reported that they were not enrolled in school because there was no school close by or because travel to the local school was too difficult. In many rural areas, the highest grade offered at the local school sets the limit for the maximum number of grades in which a student can enroll. Many basic schools offer only up to 6th grade. In 2007–08, 57 percent of basic schools had students enrolled up to the 6th grade only (figure 2.3). This was particularly the case in rural areas in which the 6th grade was the highest grade with enrollments for 60 percent of basic schools, compared to 29 percent in urban areas. The former indicated a significant need for additional classrooms in rural areas. Students in schools that offered up to grade 9 had higher retention rates than students in schools in which grade 6 was the highest offered (appendix D).⁶⁶

Figure 2.3 Numbers of Basic Schools by Highest Grade of Enrolled Students, 2007–08



Source: AES 2007–08.

66. Authors' estimates based on MOE AES 2006–07.

There are difficulties in deploying teachers, especially female teachers, to rural areas. The dearth of female teachers negatively affects girls' enrollment. In rural areas, only 8 percent of teachers are female, compared to 46 percent in urban areas. In a traditional society such as Yemen, parents are not comfortable sending girls to school if they are surrounded by only male teachers. In 2005, 17 percent of girls were not enrolled in school because of the lack of female teachers. While there is an obvious preference for girls to attend girls-only schools, a simulation based on regression analysis showed that this is not an absolute requirement. The grade 6 retention rate is 37 percent if girls attend mixed schools with no female teachers. However, retention nearly doubles to 70 percent if half of the teachers are female. The latter is almost the same rate as the grade 6 retention rate in female-only schools (73 percent) (table 2.7; detailed analysis in appendix D).

Negative teacher behavior encourages repetition and dropout of students. An independent study has shown that negative teaching practices can very adversely affect students. Some students reported that teachers are very authoritarian so that students are too afraid to ask questions; that teachers frequently are absent or come late to class; and that teachers use sticks to beat students. There is also the systemic problem arising from the low qualifications of lower-grade teachers. Some students reported that they did not understand the subject matter well at lower grades, therefore could not follow the classes at upper levels so decided to drop out.⁶⁷

Table 2.7 Retention Rates to Grade 6 by Gender, Gender of School, and Urban-Rural, 2006–07 (%)

	All		Urban		Rural	
	Females	Males	Females	Males	Females	Males
Gender-separated schools	73	76	86	89	68	71
Mixed schools	42	66	55	69	41	66
Simulation						
Mixed basic schools with no female teachers	37	–	–	–	–	–
Mixed basic schools with 50% female teachers	70	–	–	–	–	–

Source: Authors' calculations based on AES 2006–07.

⁶⁷. Abdulmalik 2009.

2.5 Student Flow

Access to grade 1 has improved significantly over the last decade, but at least 25 percent of girls in Yemen never have attended school. It is estimated that 94 percent of boys and 76 percent of girls (85 percent for all) eventually join school (2005 HBS data).⁶⁸ However, as is pointed out in the out-of-school children section, some children have never attended school, especially if they are girls in rural areas and from poor households.

Repetition rates are high in Yemen, particularly for boys. Repetition rates of boys in all grades are consistently above 5 percent (table 2.8). The rate peaks at 9 percent for boys in the 12th grade. Although repetition rates are lower for girls, they are still quite high at 4 percent or above. Similar to boys, girls' repetition rates increase to 7 percent in grade 12. Some independent studies have shown that the actual repetition rates are even higher in reality than in the official administrative record.⁶⁹

Dropout rates similarly are high, especially for girls. The government has an automatic promotion policy in the first three grades. Nevertheless, the 1st grade dropout rates for both boys and girls (19 percent and 16 percent, respectively) are the highest of all 12 grades of general education.⁷⁰ The 1st-grade dropout rate is followed by 9th grade (18 percent for males and 16 percent for females). The high dropout in grade 1 means that the government's automatic promotion

68. Gross intake ratios calculated by using the number of nonrepeaters in the administrative data have been over 100% for the last several years, whereas the HBS shows that there is still a population who never comes to school. For purposes of this study, the access rate is presented using the HBS data to highlight the fact that there are children who never have access to school (see out-of-school children section). One of the possible reasons for this discrepancy is that the administrative data are inflated with multiple entries for the same student. Due to a weak recording system, a student is recorded as a new entrant even if s/he dropped out of school years before (as seen in high dropout between grades 1 and 2). Yemen has built a large number of schools during the past decade. It is possible that students who could not continue schooling because of distance now can come back to school because new schools have been built in the nearby community. These students were supposed to be registered as repeaters because they were enrolled earlier, but they most likely were recorded as new intake, resulting in a multiple entry for the same student.

69. Abdulmalik 2009.

70. Data consistency between 2006–07 and 2007–08 is an issue. Between 2000 and 2004, 1st grade dropout had been 10%–15%. It is plausible that one of the factors contributing to this high dropout rate in the 1st grade in 2006–07 was the exceptional increase of 1st grade intake that school year. This increase may have resulted from the introduction of the school fee abolition policy in the September 2006 academic year. Although the school fee abolition may have resulted in a quick rise in grade 1 intake in 2006–07, it had no impact on retention to the next grade. As a result, a slightly larger dropout was experienced between 2006–07 and 2007–08.

Table 2.8 Promotion to Next Grade, Repetition, and Dropout Rates in Public Schools by Grade and Gender, 2006–07 (%)

	Promotion rate			Repetition rate			Dropout rate		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Grades 1–6	82.3	83.1	81.2	5.8	6.4	5.2	11.8	10.5	13.6
Grades 7–9	82.4	82.0	83.1	6.0	6.9	4.3	11.7	11.2	12.5
Grades 10–12	88.2	87.4	89.6	6.6	7.1	5.5	5.3	5.5	4.9
Grade 1	76.3	75.9	76.7	5.0	5.0	4.9	18.7	19.1	18.3
Grade 6	82.5	84.1	80.0	5.5	6.5	4.0	12.0	9.5	16.0
Grade 9	76.4	75.0	79.1	6.2	7.0	4.8	17.4	18.1	16.1

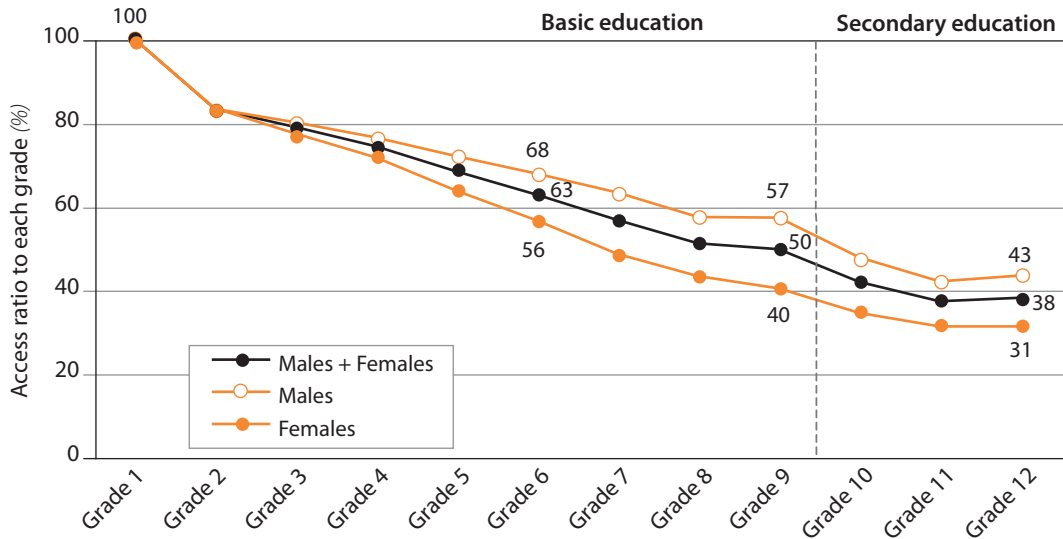
Source: Author's calculation using AES 2006–07 and 2007–08.

Notes: Due to unavailability of private school data in 2006–07, only public schools are included in this analysis. Assumes no dropout at grade 12 (students either graduate or repeat) due to absence of data.

policy for grades 1–3 is not encouraging students to stay in school. In general, rural dropout rates are much higher than in urban areas. Girls' overall dropout rates are consistently above 10 percent between grades 3 and 7, lower in grade 8, and over 10 percent in grades 9 and 10. Dropout rates for both boys and girls tend to be negligible once students enter grade 11.

The rate of promotion in the primary grades is slightly higher for boys than for girls, but this changes in the secondary grades. Due to the high dropout of girls, the promotion rate to the next grade in primary education (6-year average) is 81 percent for girls and 83 percent for boys. At the upper basic level, the higher dropout of girls is balanced by their lower repetition rates, resulting in little difference in promotion rates between boys and girls. At the secondary level, promotion rates are higher for girls due mostly to lower repetition rates than boys.

Survival rates are low. Only 50 percent of those who enter grade 1 reach the last grade of basic education, and an even lower 38 percent reach the last grade of secondary education. The survival pattern by gender shows that 68 percent of boys and 56 percent of girls who entered grade 1 reach grade 6 (63 percent for total). By grade 9, the survival rates are 57 percent for males and 40 percent for females (50 percent for total) (figure 2.4). While the dropout rate of girls is higher than that of boys until grade 9, boys' dropout rate is higher at the upper secondary level. Between grades 9 and 12, boys' survival rates drop 14 percentage points, from 57 percent to 43 percent. In the same grades, girls' survival rates drop 9 percentage points, from 40 percent to 31 percent.

Figure 2.4 Estimated Student Flow Profile by Gender, 2007–08 (%)

Source: Authors' calculations using AES 2006–07 and 2007–08.

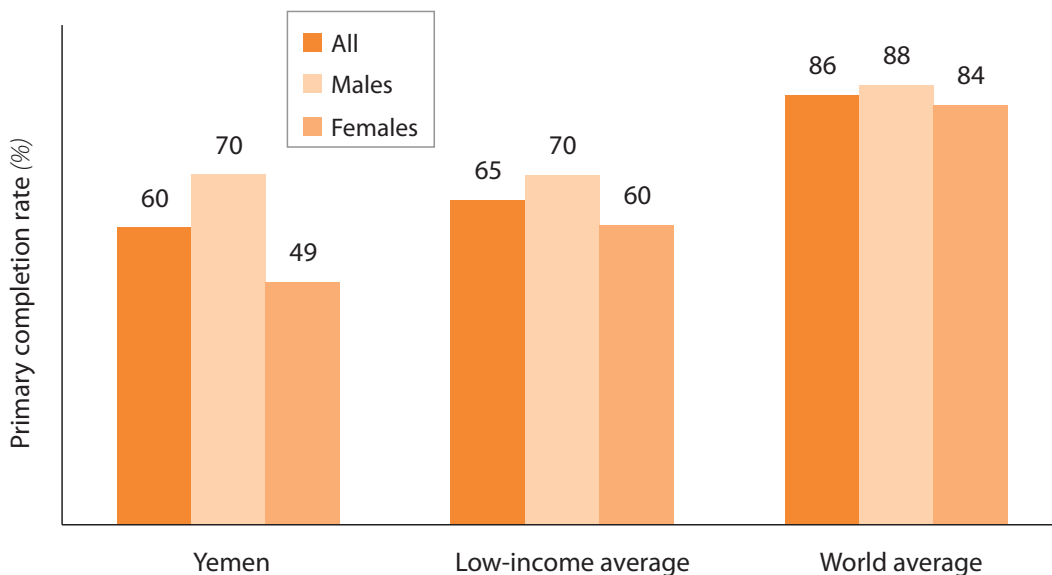
As evidenced by high repetition and dropout rates, internal efficiency within Yemen's general education system is low. It takes students an average of 8.8 years (8.1 years for boys and 9.9 years for girls) to complete the 6-year basic education cycle. It requires 15.9 years (14.7 years for boys and 18.0 years for girls) for them to complete their 9 years of compulsory schooling. These numbers reveal that the government would be able to produce approximately 30 percent more 6th-grade completers and 45 percent more 9th-grade completers using the same resources if there were no repetition or dropout.⁷¹

If the current trend of development continues, achieving the MDG target of 100 percent primary completion and NBEDS target of 95 percent enrollment by 2015 is unlikely. In 2006–07, the primary completion rate (PCR)⁷² was 60 percent overall, 70 percent for boys, and 49 percent for girls.⁷³ Yemen's PCR is similar to the average for low-income countries (figure 2.5). However, if the current trend of

71. The coefficient of efficiency was calculated by dividing the number of nominal schooling years by the number of actual years invested per graduate. This coefficient was used to estimate the gains in graduates that the system can produce in the absence of repetition and dropout. However, this calculation does not make the case for automatic promotion in the early grades since moving from one grade to the next without acquiring the necessary skills is a reflection of a poor education.

72. The primary completion rate is calculated as the number of nonrepeaters in grade 6 divided by the population aged 11 years (that is, the gross intake ratio to grade 6).

73. Using administrative data and UN population estimates.

Figure 2.5 International Comparisons of Primary Completion Rate (PCR) by Gender, 2006–07 (%)

Source: 2007–08 Yemen data from AES and UN population estimates; 2006 averages from EdStats, April 2009.

growth continues,⁷⁴ it is unlikely that Yemen will achieve the MDG target of 100 percent PCR by 2015. To achieve the MDGs, improvement in both access to grade 1 and retention to grade 6 is necessary. Due to rapid population growth, Yemen may have to accommodate an additional 2.5 million students by 2015 to achieve the NBEDS target. This target is particularly challenging as the remaining population to be reached lives in more isolated areas or may have reasons (other than lack of schools) for not being enrolled in education.

Internal efficiency is even lower in universities, especially among males and students of humanities subjects. While there is variation by university, students in Yemen’s public and private universities have high levels of repetition. The highest rate (37 percent) is among male students in the humanities faculties at Sana’a University (table 2.9). Due to lack of information, the reasons for high repetition among male students and among humanities students are still unknown. One possible explanation for the unusually high number is the inclusion in the statistics of correspondence students, who may stay on the university registers for decades with no formal follow-up.

74. Girls’ PCR grew an annual 1.5 percentage points from 38% in 2000 to 49% in 2007). Boys’ PCR grew an annual -1.2 percentage points (from 78% in 2000 to 70% in 2007).

Table 2.9 Repeaters at Public and Private Universities, 2006–07 (%)

	Humanities			Applied sciences		
	Males	Females	Total	Males	Females	Total
Public universities	30	15	26	18	12	16
Sana'a	37	19	33	26	14	22
Aden	6	4	5	7	4	6
Taiz	27	14	21	20	15	18
Al-Hodeidah	34	23	30	22	16	20
Ibb	24	12	21	18	12	16
Thamar	34	18	30	17	9	15
Hadramout	7	6	7	7	3	6
Private universities	14	7	12	18	9	161

Source: SCEP 2006–07.

2.6 Summary of Key Findings

Established in the 1960s, Yemen's formal education system has undergone significant strategic and policy development. However, what is still missing and is critical is one unified vision for education, training, and skills development.

Given its significant demographic and geographic challenges and limited capacity, Yemen has performed remarkably well in expanding coverage of formal education opportunities to all. Nevertheless, large pockets of the population remain uncovered, including girls, the poor, and the disadvantaged. The growing communities of marginalized children tend to be at higher risk of exclusion from the traditional education system.

The current structure of the system and the regulatory framework are restrictive, not conducive to lifelong learning opportunities, and may, in fact, encourage students to drop out.

The number of children out of school decreased from 2.2 million in 1999 to 1.8 million in 2005. Out-of-school children are concentrated in rural areas of populous governorates and are more likely to be girls from poor households. Demand-side factors—family income, family education, location, and awareness—account for a large proportion of reasons for nonenrollment in urban areas. Nonetheless, supply-side factors—lack of classrooms, lack of appropriate facilities including toilets and boundary walls, and lack of female teachers—are still major obstacles for rural children.

Access to grade 1 in Yemen has improved significantly over the last decade, but at least 25 percent of girls never attend school. Repetition rates are high, particularly for boys (above 5 percent in all grades, with a peak in grade 12, as for girls). Dropout rates are similarly high, especially for girls (above 9 percent in all grades in basic education, peaking in grades 3–6 and in grade 9). Only

50 percent of all those who enter grade 1 complete basic education, and only 38 percent complete secondary education. Due to high repetition and dropout rates, internal efficiency within the general education system is low. The average number of years invested per grade 6 completer is 8.8 (8.1 years for boys and 9.9 years for girls). The average number of years per grade 9 completer is 15.9 (14.7 years for boys and 18.0 years for girls), which is twice the average number of years of schooling for girls. Internal efficiency is even lower at universities, especially among male and humanities students. While there is variation by university, students in Yemen's public and private universities have high levels of repetition. Yemen's PCR is similar to the average for low-income countries. However, if the current growth trend continues, it is unlikely that Yemen will achieve the 2015 MDG target of 100 percent PCR.

Quality of Education

The preceding chapter analyzes how effectively the education system provides opportunities for Yemeni children to access schooling and how efficiently students go through the various education levels. Enabling access to education is vital, but equally important is that the education to which students get access is of good quality. This chapter examines two dimensions of educational quality: (1) outcomes, as measured by student learning achievements; and (2) inputs, including curriculum, learning materials and facilities, and the quality and availability of teachers.

3.1 Student Learning Outcomes

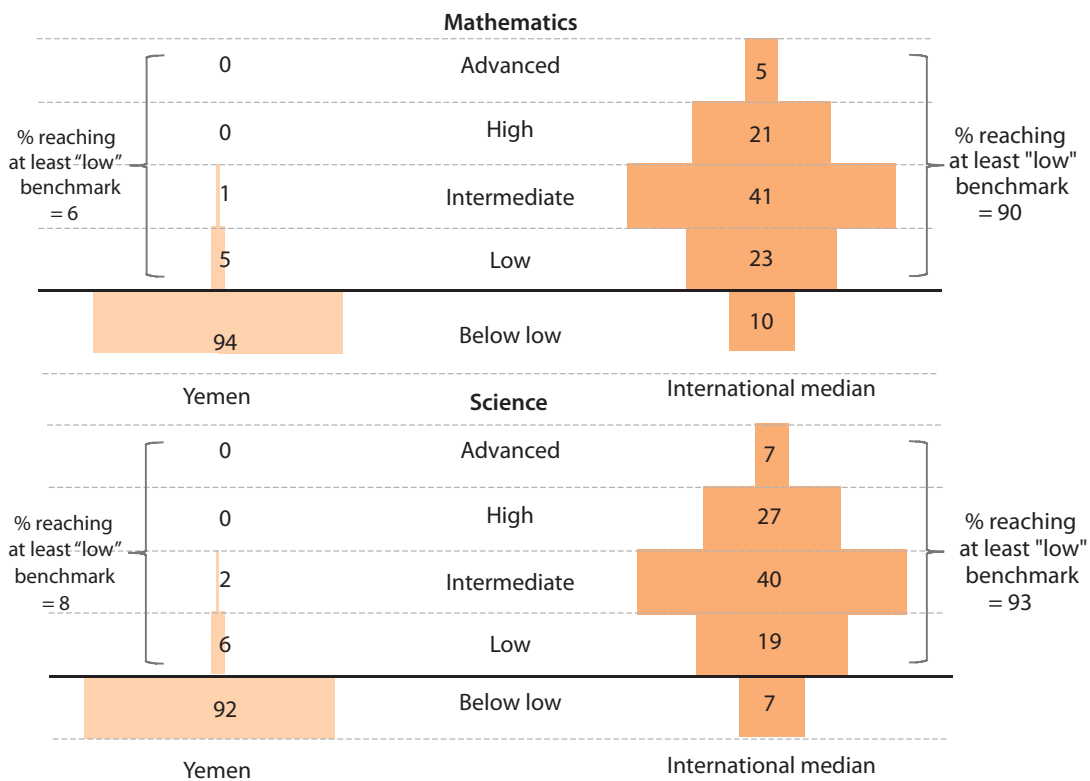
*Limited information exists on student learning outcomes in Yemen, but a recent international assessment suggests that the levels of learning achievement are low.*⁷⁵ Student learning outcomes are important measures to determine the quality of education and the factors that influence good performance. Outcomes are captured by national and international assessments, public examinations at the main exit points from the school system, and other forms of classroom examinations. Although discussions to establish a national assessment system are ongoing, Yemen does not yet have one. In its place, the national examinations for grade 12 general education and the TEVT examinations were used to supplement the analysis in this report.⁷⁶ At the university level, there are no cross-university assessments to enable an evaluation of student learning outcomes. Regarding international assessments, Yemen participated in the 2007 Trends in International Mathematics and

75. IEA 2008a and 2008b.

76. Some evidence of cheating and score-changing calls into question the reliability of the national examination data (Abdulmalik 2009). In addition, the publicly available information is in the form of pass rates above the cut-off score. The cut-off score is determined by the admission capacity in higher education so it does not fully reflect the learning achievement levels of students.

Science Study (TIMSS), which measured the achievements of grade 4 students in mathematics and science.⁷⁷ Yemen ranked the lowest in both the mathematics and science tests among all 36 countries that participated. Ninety-four percent of Yemeni students did not reach the internationally set “low” performance benchmark for mathematics, and 92 percent did not reach the internationally set “low” benchmark for science (figure 3.1).⁷⁸ However, Yemen was

Figure 3.1 Yemeni Students Reaching the Grade 4 TIMSS 2007 Internationally Set Benchmarks for Mathematics and Science Achievement (%)

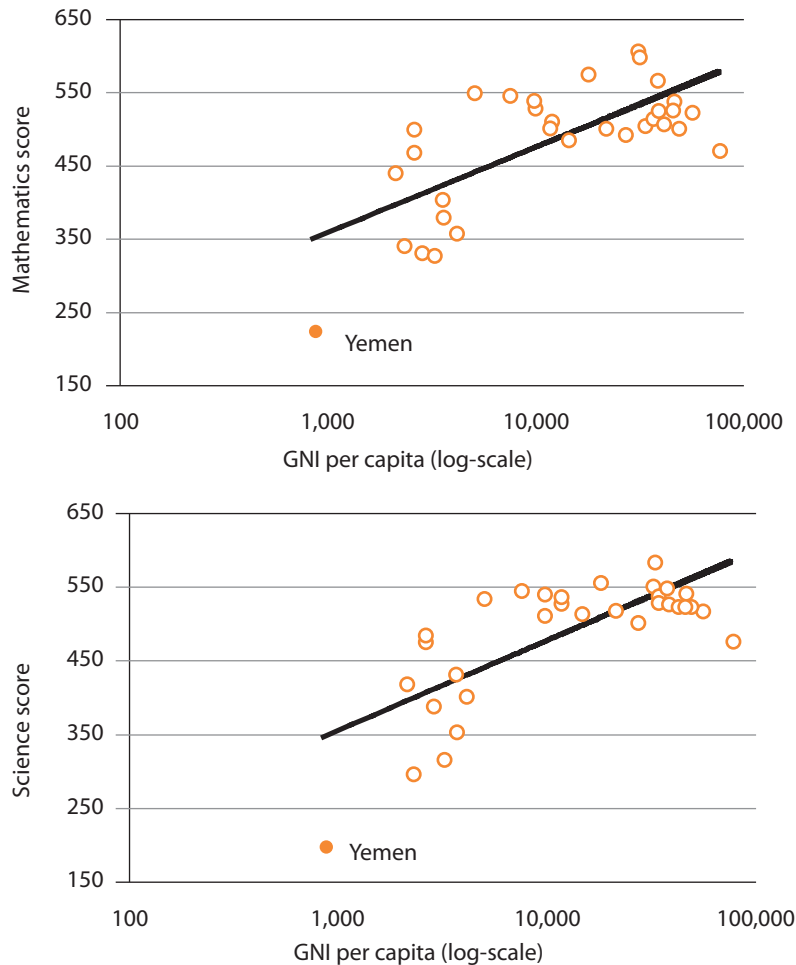


Source: IEA 2008a, 2008b.

77. TIMSS is an international study conducted by the International Association for the Evaluation of Educational Achievement (IEA), which tests mathematics and science achievements of grades 4 and 8 students. The mathematics test measures a broad range of content in number, algebra, and geometry. The science test measures life, physical, and earth sciences. Both tests also measure a range of cognitive processes within the knowing, applying, and reasoning domains. In 2007, 36 countries participated in the grade 4 tests, and 48 countries participated in the grade 8 tests. In Yemen, 5,811 students from 144 schools across the country participated in the grade 4 mathematics and science tests. Grade 8 enrollment rates in Yemen were too low so did not meet the IEA’s eligibility requirement for testing. Yemen also participated in TIMSS 2003, but, due to errors in the sampling methodology, the results are not available for analysis or for international comparison.

78. To compare across the participating countries, TIMSS uses four benchmarks to describe the achievement of students along a single scale: advanced, high, intermediate, and low.

Figure 3.2 International Comparison of TIMSS Results by GNI per Capita, 2007 (current US\$)



Source: IEA 2008a and 2008b; World Bank Development Data Platform (DDP) database, April 2009.

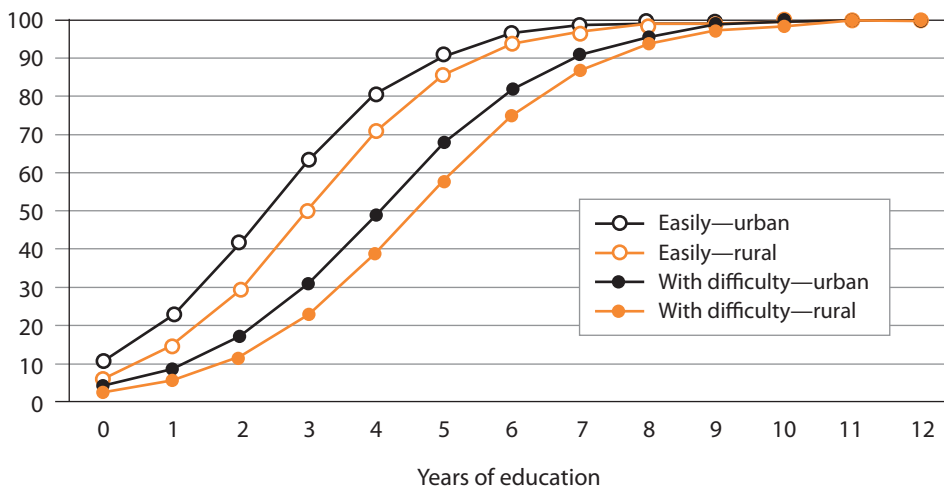
the only low-income country to participate in grade 4 TIMSS in 2007. For this reason, a direct comparison with other participating countries, which are significantly more economically advanced than Yemen, is not appropriate. Nevertheless, when the scores of all countries are ranked in relation to their wealth (GNI per capita), Yemen's results are lower than might have been expected, especially in science (figure 3.2). The poor performance of Yemeni students in the TIMSS is partially attributed to their inability to read the test questions. Yemeni students did better in the questions that were either numerical or based on figures rather than text.⁷⁹

79. Al-Mekhlafy 2009.

Low levels of reading literacy in lower grades continue to affect reading literacy through life. The Reading Literacy test of the 2006 Multiple Indicator Cluster Survey (MICS) covered 7,427 females aged 15–49 years. The analysis indicates that Yemen’s low level of reading literacy is especially low in rural areas, even among females who have completed grade 5 (figure 3.3). The MICS 2006 participants were asked to read a simple sentence. Their reading ability was rated as “reading easily,” “reading with difficulty,” or “unable to read.”⁸⁰ Only 62 percent of the 5th-grade completers (68 percent in urban areas and 58 percent in rural areas) were able to read the sentence easily. More than 20 percent of females with 6 years of education were unable to easily read a simple sentence. For the same number of years of education, urban females are more likely to be able to read a simple sentence. Given that learning achievements are higher for girls than for boys (as discussed later in this chapter), it is likely that the reading literacy levels of Yemeni males are poorer than those cited here for Yemeni females.

The facts that reading literacy among the educated is low and that this problem starts very early in the education cycle calls for urgently prioritizing the fundamentals of a good education in the early years. Given that the 4th graders in Yemen have much difficulty reading, their ability to acquire higher education will be quite

Figure 3.3 15–49-Year-Old Females Able to Read a Simple Sentence Easily or with Difficulty, by Years of Education and Urban/Rural, 2006 (%)



Source: Authors’ calculations using 2006 MICS data.

80. Examples of the simple sentences used for the assessment are: “The child is reading a book” and “The rains came late this year” (MICS 2006).

constrained, especially because teaching styles generally emphasize the delivery of a large amount of content in a short time.⁸¹ The early grades are the most crucial years for setting the solid foundations of a good education for life. Therefore, the focus of education in these years should be on ensuring that children acquire the fundamentals of good education (reading, comprehension, writing, and numeracy) rather than on covering a great amount of content. The evidence of low reading ability in grade 4 also calls into question the automatic promotion policy pursued in the first three grades. This policy could impede students from obtaining a solid educational foundation in the most important years of the education cycle.

Although low, learning achievements appear to be improving in primary education, but the extent of this improvement is difficult to confirm. The Monitoring Learning Achievement (MLA) survey conducted in Yemen in 2002 and again in 2005 included students in grades 4 and 6 and covered topics in mathematics, science, life skills, and Arabic.⁸² Between 2002 and 2005, the average scores on the MLA tests improved by approximately 10 percentage points in grade 4 and by approximately 5 percentage points in grade 6 (table 3.1). These improvements occurred for boys and girls, and for students in urban and rural areas. The results seem to provide evidence that student learning outcomes in primary education improved over these three years. Nevertheless, the large increases may be too profound for such a short period, thus suggesting unreliable data, especially since international experience suggests that improvement in learning achievement is a very slow process.⁸³

In primary education, learning achievements of girls are higher than those of boys. Girls outperformed boys in both the 2002 and the 2005 MLA surveys. Similarly, Yemeni girls outperformed Yemeni boys in both mathematics and science tests in TIMSS 2007. In fact, the difference between the scores of Yemeni boys and girls in TIMSS (22 points for mathematics and 21 points for science) was one of the largest seen among all countries that participated in the 4th-grade tests. Large gender differences also were observed in 4 of

81. The time required to deliver the curriculum often is constrained because there are few school days (190) in the year, high levels of teacher absenteeism, and limited hours of operation of schools (legally, 36 sessions per week, each 45 minutes), particularly in rural areas.

82. In the 2002 MLA, 3,324 grade 4 students and 2,817 grade 6 students were tested. These students were selected from 134 schools in 10 governorates selected randomly across the country. In the 2005 MLA, 3,313 students from grade 4 and 2,842 students from grade 6 were tested in the 2002 survey schools.

83. The dramatic increase could be a result of weak assessment methodology, which appears to be a common criticism of MLA tests conducted across the world.

Table 3.1 Yemen Monitoring Learning Achievement (MLA) Survey Results, 2002 and 2005

	2002		2005	
	No. of students	Average score (%)	No. of students	Average score (%)
Grade 4	3,324	38	3,313	49
Males	1,792	37	1,740	47
Females	1,532	39	1,571	50
Urban	1,055	40	1,158	48
Rural	2,269	37	2,155	49
Grade 6	2,817	25	2,842	31
Males	1,685	24	1,633	29
Females	1,132	26	1,209	33
Urban	890	27	929	33
Rural	1,927	24	1,913	29

Source: Authors' calculations using the MLA database.

the 6 other Arab countries that participated in TIMSS 2007.⁸⁴ Most developed countries did not show such large gender differences in TIMSS 2007.

Low pass rates in the MOTEVT-administered TEVT examinations point to low learning achievement of TEVT students. The average pass rate for the various TEVT programs in 2008 was 74 percent and varied from 63 percent for the 3-year post-basic education program to 82 percent for the post-secondary education program (table 3.2). Given that the standards of these tests—consistency in the level of difficulty and content coverage across time, alignment to curriculum, type of questions asked—are not known, these results give only a suggestion of the levels of learning achievement.

Enterprises remain dissatisfied with the skills of TEVT graduates. The best indicators to measure the quality of TEVT outcomes are: (1) how quickly graduates find jobs, and (2) how satisfied their employers are with their performance. Unfortunately, such data are not yet available for Yemen. However, the MOTEVT's Technical Education and Vocational Training Strategic Development Plan (2004) stated that "the predominant characteristic of the Yemen TEVT sector...is its strongly supply-driven approach. Despite some attempts at reform, linkages [among] the TEVT system, labor market requirements, and private sector enterprises continue to be weak." Employers considered most TEVT provision to be inadequate and irrelevant to the skills needs of their enterprises.

84. Gender differences were observed in Kuwait, Qatar, and Tunisia for mathematics and science; and in Algeria for science. No statistically significant gender differences were observed in Iran or Morocco.

Table 3.2 Pass Rates of TEVT Graduates, 2006–08

	2006		2007		2008	
	No. of applicants	Pass rate (%)	No. of applicants	Pass rate (%)	No. of applicants	Pass rate (%)
Post-basic education						
Diploma from vocational institutes (2 years)	2,600	65	2,269	70	2,300	69
Vocational secondary (3 years)	1,552	64	1,716	69	1,440	63
Post-secondary education						
Diploma from technical institutes	2,314	81	2,931	82	3,641	82
Total	6,466	70	6,916	75	7,381	74

Source: MOTEVT Examination Final Report 2008 (Arabic).

Dropout rates in all TEVT programs are high, particularly among female students. Dropout rates normally are used to measure internal efficiency. However, they also can be a measure of the quality of a program if it is assumed that dropout rates will be low for programs that are attractive to students and that produce graduates who easily obtain jobs. In 2006–07, of the students who had entered 2-year post-secondary TEVT institutes 2 years earlier, only 57 per cent graduated.⁸⁵

No cross-university assessments exist to enable an evaluation of the quality of student learning outcomes in higher education. Repetition and dropout rates can serve as proxy measures of the quality of learning outcomes for university students. Those who repeat a grade or dropout from a program do so primarily due to their poor academic performance. Yemen's estimated repetition rates for undergraduate students are high (table 2.9). While the repetition pattern varies among universities, it keeps two common features: (1) higher repetition among male students and (2) higher repetition among students in humanities. No data are available on university dropouts.

High levels of unemployment among college graduates combined with unfilled vacancies in the formal sector could be attributed to the low quality of higher education graduates. Unemployment rates in Yemen are higher for those with higher levels of education and are particularly high for females; 44 percent of females with intermediate education⁸⁶ and 54 percent of university graduates are unemployed.⁸⁷ While the economy does not create many jobs (chapter 5),

85. SCEP 2006–07.

86. Intermediate education refers to higher than basic education but lower than university education.

87. HBS 2005–06.

anecdotal evidence indicates that, given the quality of the pool of applicants, it is difficult to fill even the limited vacancies. In the formal labor market, non-Yemeni workers often are selected over Yemeni workers. The vast majority of skilled emigrants from Yemen find jobs in low-wage economies rather than in OECD countries. This finding indicates that Yemeni higher education graduates are less competitive in the regional and global markets compared to graduates from many other countries (chapter 5) and raises concern over the quality of Yemen's higher education graduates.

3.2 Curriculum and Assessment

The general education curriculum has been changed twice since unification in 1990. An interim curriculum was first put in place following the unification of Yemen in 1990. The interim curriculum combined elements of the former North Yemen and South Yemen curricula. This temporary curriculum remained in place until 2000. A new curriculum was designed and implemented for grades 1–6 in 2000, for grades 7–9 in 2001, for grades 10–11 in 2002, and for grade 12 in 2003.⁸⁸

The current general education curriculum presents a solid basis for effective teaching and learning. The MOE's curriculum for grades 1–12 consists of a detailed set of documents that includes general curriculum principles and a syllabus for each subject. These documents provide good examples of curriculum planning. They start with the overall objectives of learning for each subject, and then break them down into detailed and clearly sequenced content, skills, and objectives for each grade. These documents present a solid basis for developing teaching and learning materials and for evaluating the curriculum objectives in the field.⁸⁹

Although the current curriculum is student centered and “discovery” based, there is no system in place to support its implementation. (1) Teachers are not trained in the student-centered methodology. (2) Even though textbooks and teachers' guides have been prepared to reflect the curriculum approach, they often are not available in schools, especially rural schools, until late in the school year. (3) Even if the textbooks and teachers' guides are available on time, they are known to contain a large number of factual errors, grammatical mistakes, and inaccurate and inappropriate practical

88. Smart 2005.

89. Smart 2005.

exercises. In addition, the textbooks, teachers' guides, and student workbooks often are mismatched. (4) Most students do not have access to teaching and learning materials, libraries, or reference materials (at home or outside), particularly in rural areas. This reality renders the element of discovery impossible for most students.

The secondary school curriculum is viewed as theoretical and geared almost exclusively toward preparation for higher education. This view continues even though higher education institutions absorb only approximately one-third of the graduates of secondary education. The secondary school curriculum is lacking in life- or employment-related skills, IT skills, and problem-solving skills with which to prepare graduates for successfully entering the labor market. Employers do not regard Yemeni secondary education graduates to be adequately prepared for the work force.⁹⁰ It also is worth noting that, although the curriculum has been changed, the curriculum framework has not changed since unification in 1990 (figure 3.4). There may be scope to accommodate the skills needs of

Figure 3.4 Curriculum Framework for Government Schools in Yemen

	Grade											
	1	2	3	4	5	6	7	8	9	10	11	12
Quran												
Islamic education												
Arabic												
Social studies												
History												
Geography												
Yemeni society												
Sociology												
Economics												
Psychology												
Philosophy												
Mathematics												
Statistics												
Science												
Biology												
Chemistry												
Physics												
English												
Physical education												
Art												
Vocational studies												

Source: MOE Decree No. 32 of 2002.

Notes: Shaded cells indicate courses offered in each grade. Students choose a humanities or science stream in grade 11. Therefore, some of the specialist subjects in these grades are taken by only one stream. In the humanities stream, students take courses that include history (11 and 12), geography (11 and 12), statistics (11 and 12), sociology (11), and economics (11). Students in the science stream take courses that include mathematics, biology, physics, and chemistry (grades 11 and 12).

90. World Bank 2008a.

the formal labor market by reviewing the curriculum framework for secondary education.

End-of-semester examinations have little value for the intended purposes. Monitoring and evaluating student learning in relation to objectives is an important measure of the quality of education, but also is an important step for students in the learning process. School-based examinations in particular provide feedback to students. It is therefore important that tests are reliable and used effectively. In Yemen, teachers give examinations during the semester and at the end of each semester, but most of the tests have little value for the intended purposes. There are several reasons for these poor school-based examinations. (1) Clear standards or benchmarks that specify student-learning outcomes for each subject at each level are lacking. (2) Many teachers lack the skills to design reliable and effective tests. (3) Most tests do not promote problem-solving and critical thinking skills, but focus on memorization of the textbooks. (4) Teachers rarely provide useful analyses of test results as feedback to students. Although an independent Center for Measurement and Evaluation is in early stages of development, participating in TIMSS enabled Yemen to gain experience in conducting learning assessments using modern scientific methodologies. A well-designed national assessment based on the Yemeni curriculum would be a more useful way to assess the degree to which the intended learning goals have been achieved.

The TEVT curricula appear to be disconnected from the skills demanded by the private sector. The current MOTEVT policy adopts the competency-based approach for curriculum and program development. This approach is designed to ensure a level of flexibility and adaptability of training outputs to match changing labor market requirements. This approach has proven relevant to Yemen's vocational training context. Regional offices are able to readjust and develop curricula according to the specific needs of their catchment areas, with an upper limit on allowable changes equal to 20 percent of the content. However, effective implementation of the curricula and the ability to make revisions to suit market needs would require more staff development and institutional capacity building.⁹¹ In reality, most training courses, particularly degree-granting courses, are loaded with theoretical materials and bear little resemblance to conditions in the workplace. The level of employer participation in curricular design, development, and implementation is low.⁹² Moreover, opportunities to get on-the-job

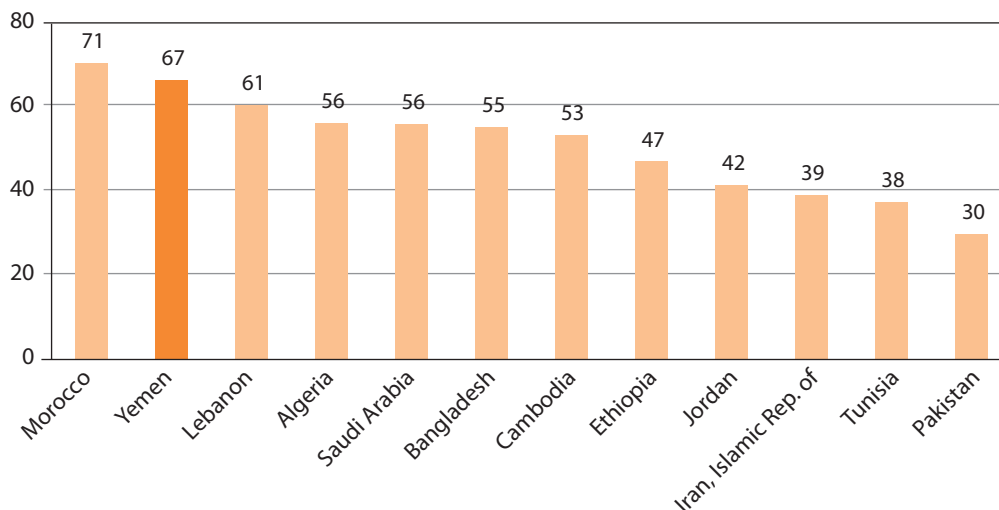
91. World Bank 2007e.

92. European Training Foundation (ETF) and World Bank 2004.

training through internships are rarely pursued, either by the institutes or by the students. In fact, as suggested in chapter 5, it is likely that many graduates of TEVT institutes have been employed in TEVT institutes as instructors due to the significant expansion of the sector, further limiting practical experience in the classroom.

Limited program offerings in public universities are creating an imbalance between the number of students studying natural sciences and those studying social sciences. Both social (arts, social sciences, and humanities) and natural sciences (science, engineering, and mathematics) are important for a country's societal, cultural, and economic development. The key is to find a balance so that the higher education system produces an appropriate proportion of graduates who meet the human resource needs of the economy and the society. The proportion of Yemeni students in social sciences increased from 30 percent in 2003–04 to 67 percent in 2006–07. This proportion is much higher than that found in most MENA countries (figure 3.5).⁹³ This phenomenon has caused not just a high unemployment rate among college graduates who majored in social science, but also a serious shortage of informed human capital in the sciences.

Figure 3.5 International Comparison of University Students in the Social Sciences, 2006 (%)



Source: Authors' calculation based on data from World Bank EdStats database, April 2009 and SCEP 2006–07.

Note: Yemen data are for 2006–07.

93. The primary reason is that universities find it difficult to accommodate more natural science students due to lack of physical and human resource capacity and the higher cost of provision.

No university discipline in Yemen has made a systematic review and development of its curricula for many years. The curriculum content of Yemen's higher education is theory based. Opportunities for practical application and field training are rarely available. Their absence has a tremendous impact on the quality of the graduates. For example, the average graduate of a Faculty of Education (FOE) is not prepared to teach in basic or secondary schools for at least three reasons. (1) The FOEs teach the history and philosophy of teaching rather than the skills that are required in most schools, such as multigrade teaching and science specializations. (2) Opportunities for real classroom experiences are not integrated in teacher preparation. (3) Many students do not have a good command of necessary skills in such fundamental subject areas as Arabic, English, ICT, and mathematics.⁹⁴ The government has emphasized the importance of ICT for the country. There is a need to set targets for the use of computers by students. All university graduates should leave with a level of computer literacy to meet or exceed the requirements of the formal labor market. Over time, computer availability in universities and student ownership in Yemen will increase. The learning and teaching methods of the country's higher education institutions must address this inevitable technological progress.

There is a dearth of scientific research in Yemeni universities. Universities should have a mandate to develop scientific research capacity to contribute to innovation and development in the society. However, little funding and human capacity exists in Yemen for universities to carry out research. Approximately 30 refereed journals are published by all public universities and some research institutes (such as the Education Research Development Center). The themes of the journals are diverse, with different faculties of the University of Sana'a and University of Aden publishing their own journals. Most of the research is undertaken by self-motivated individuals, resulting in the research projects not being aligned with the nation's social and economic development plan.⁹⁵ Strategic planning and evaluation at the national level are required to align research with the nation's needs.

Quality assurance

Quality assurance and enhancement processes remain at an early stage. Individual universities may have some internal processes of

94. MOHESR 2005.

95. SCEP 2008.

assuring quality, but Yemen has no national systematic quality assurance (QA) system for higher education. The recent Cabinet decision establishing the quality assurance and accreditation body is a step in the right direction. However, international evidence shows that establishing a well-functioning quality assurance and accreditation system is a long-term process.

Qualifications framework

The lack of common measures to assess knowledge and skills across the various parts of the education system constrains the mobility of students within the system. Once students have chosen a specific track of study, it is difficult for them to change options, particularly between institutions governed by the MOT EVT and the MOHESR (chapter 2). The current policies governing student flow and their implementation appear to be founded neither on a premise that attempts to promote subsector linkages nor on a common measure for assessing knowledge and skills across the subsectors. Some countries have attempted to address this issue by setting up a National Qualifications Framework (NQF) (box 3.1).

Even in the absence of setting up a National Qualifications Framework (NQF), marginal attempts to promote learning and improvement of skills can render great benefits to Yemen. When students know that there are clear learning pathways providing access to—and mobility and progression within—education, training, and career paths, they often will be more inclined to improve their skills and knowledge since such improvements will increase their employment opportunities. The increased skills base of the workforce enhances the functional and intellectual capability of the nation. This increased capacity, in turn, increases a country's chances for success in the global community. Globally, thinking has shifted from education for employment—developing the ability to do a specific job—to education for employability—developing the ability to adapt acquired skills to new working environments. The contemporary education and training system therefore must be able to support the notion of an adaptable workforce. Yemen's education system is lacking in this regard. Therefore, recognizing that setting up a NQF is not a short-term or simple task, the country can benefit greatly from marginal improvements in this direction. Of course, the eventual NQF must be a Yemeni version that suits the local conditions and realities.

Box 3.1 Objectives and Benefits of a National Qualifications Framework

A National Qualifications Framework (NQF) is a set of principles and guidelines through which records of learners' achievement are registered to enable national recognition of acquired skills and knowledge, thereby ensuring an integrated system that encourages life-long learning.

Broad objectives of a NQF:

- Integrate TEVT, secondary, and higher education qualifications into a single comprehensive system of levels, titles, and standards
- Have the framework recognized as the single accepted entity through which all learning achievements may be measured and related to all others in a coherent way, and which defines all education and training awards
- Improve the balance of perceived value between academic and vocational qualifications
- Harmonize and enhance quality standards across the system
- Support institutional and program diversity, and facilitate mobility of learners among the institutions in the system
- Encourage cross-sectoral cooperation and increase the participation of partners.

Beneficiaries of the NQF:

- *Learners* benefit from quality education and the provision of accredited qualifications that enjoy national recognition and, where appropriate, international comparability.
- *Workers* benefit from the establishment of clear learning paths in the qualification structure that facilitate and support life-long learning and career advancement.
- *Employers* benefit from a competent work force possessing the skills and attitudes required in the competitive global economy.
- *Society* benefits from being part of a proud, learning nation that has the intellectual capacity to adapt swiftly to change, especially technological change.
- The *national economy* benefits from an integrated education and training system that acknowledges the achievements of all learners equally and supports the ideal of a learning nation.

Source: Mikhail 2008.

3.3 Teaching and Learning Materials and Educational Facilities

In principle, Yemen's basic and secondary education textbooks and teacher guides are developed according to the curriculum.

The current textbooks reflect the curriculum approach, which is interactive and student-led. They are organized in units, which are subdivided into lessons. Teachers' guides accompany all textbooks, with (in most cases) detailed lesson plans, useful background information, statements of learning objectives, lists of materials required, evaluation activities, and additional remedial and extension activities. The key principles of the textbook policy⁹⁶ are that (1) all textbooks are written and published by the MOE; (2) all textbooks are provided to students free of charge; (3) textbooks are designed as disposable (owned by students)⁹⁷ for grades 1–3 and re-usable (owned by schools) for grades 4–12⁹⁸; and (4) the General Corporation for School Books Printing Press, the Governorate Education Offices, and the District Education Offices all share the cost of distributing the books from the printing presses to the districts. The schools then have to pay the cost of distribution from district to school. Students' families make some contribution to the costs of textbook distribution.⁹⁹

Reasonable quantities of textbooks are available to all schools, but efficient and timely delivery of textbooks to schools, particularly in rural areas, remains a major issue. The government has gone to considerable effort to provide students with sufficient textbooks. However, while enough textbooks are printed every year, textbooks often are delivered late to basic schools or arrive in lower quantities than requested.¹⁰⁰ In addition, the delivery mechanism is not cost effective.¹⁰¹ For instance, there are cases of school principals using their school fees to rent trucks to drive to the district warehouse to collect their books.¹⁰² Similar problems occur for

96. The textbook implementation mechanism prepared by the Committee for Textbook Distribution in 2001 (Smart 2005).

97. "Disposable" means that the children own the books and can write in them, that is, they are, in effect, workbooks.

98. Some governorates implement a local variation of the policy in which they supply books for the upper grades on a disposable basis.

99. According to the HBS 2005, median spending for textbooks and school supplies for a basic student was Yrls 800 (\$4) per year.

100. Smart 2005.

101. GTZ did a study on textbook distribution and recommended that regional presses print all textbooks for their schools (Schabmair and others 2007).

102. Since school fees were abolished in September 2006, many small schools that have only lower grades and are located in remote areas have lost the means to pay for textbooks (Al Mansoob 2007).

secondary school textbook delivery: approximately only 60 percent of a sample of grade 12 graduates reported that their textbooks had arrived on time.¹⁰³

The policy of reusing textbooks contradicts the curriculum policy that requires students to write answers in their textbooks. Being issued used textbooks also leaves a negative impact on students, who are not excited about the textbooks. In some cases, these textbooks are too worn to be reused. Given the current financial constraints and the high textbook distribution cost, the policy of reusing textbooks may have to continue, but modifications need to be made to address the issues identified.

The availability of other teaching and learning materials and facilities is seriously lacking, and there is great variation across schools. The lack of books available in public schools (and at home) and the limited use of books in libraries contribute to the poor levels of reading in Yemeni schools. In Yemen, it is not common to have books at home for students to read or use for research. If students are not used to reading from an early age, it is hard to maintain their literacy throughout their lives.¹⁰⁴ Given that the curriculum encourages self-study and “discovery” methods, which require access to adequate learning materials, school libraries are an essential facility for students to obtain reading resources. In 2007–08, only 7 percent of basic schools, 21 percent of basic-secondary combined schools, and 38 percent of secondary schools overall had libraries (table 3.3). The situation is much worse in rural than in urban areas. In the former, only 3 percent of basic schools, 22 percent of secondary schools, and 10 percent of combined schools had libraries. There also are huge differences among governorates. Unavailability of laboratories, including for science and computers, is equally an issue, especially in rural schools. It is commonly known that the quality of teaching and

Table 3.3 Schools with Libraries, by Urban-Rural, 2007–08 (%)

	Type of school			
	Basic	Secondary	Basic-secondary combined	Total
All schools	7	38	21	10
Urban schools	37	53	66	48
Rural schools	3	22	10	5

Source: MOE AES 2007–08.

103. Amer and others 2009.

104. Abadzi and others 2005.

learning materials and educational facilities are much better in Yemen's private schools (box 3.2).

TEVT facilities are outdated and poorly equipped. Comprehensive information about the conditions of equipment, such as machines and tools, at TEVT institutions is not available. However, anecdotally, it is known that the equipment no longer serves the current education and training requirements of the TEVT sector, and does not keep up with the changes and developments of the labor market.

In public universities, resources have been more readily available for new buildings than for staff, equipment, or library books. A recent study of library resources found astonishingly inadequate materials and usage, with an average of only two books per student.¹⁰⁵ The condition is uneven across universities and programs. For example, the evaluation of English departments came to a positive conclusion on their library facilities, audiovisual learning resources and ICT provision.¹⁰⁶ The enrollment in science and engineering programs is constrained by the shortage of laboratories, equipment, and teaching staff.

Box 3.2 Quality of Education at Private Schools in Yemen

Information on the quality and cost of private education, as well as outcomes of students enrolled in private schools, is not available. However, anecdotally, private schools have a mixed reputation: a higher standard of facilities and equipment than public schools but a higher turnover of less experienced (although qualified) teachers. Classes are approximately half the size of those in public schools, and repetition rates are negligible. Private schools also have the attraction of extracurricular activities. It is estimated that approximately half of private schools use the MOE curriculum, while the other half use either an original or blended curriculum. Some of the private secondary schools teach in English. Private enrollments are somewhat higher in basic than in secondary school. This choice is attributed to the desire of parents to protect smaller children in secure facilities and to the higher costs of private secondary education. The dropout rate from private secondary schools is estimated at above 10 percent due to the transfer of students to public schools at this more expensive stage.

Source: World Bank 2006d.

105. MOHESR 2005.

106. UNDP 2006.

The lack of electronic infrastructure for academic staff and for students limits students' access to global resources, especially since knowledge creation within the country is limited. Most higher education institutions in Yemen do not provide adequate computer facilities or readily available internet access. The national ratio of student to computer in higher education is 400:1.¹⁰⁷ Computer literacy among staff members is low, in part due to the lack of computers. For example, in the Education Faculty at Sana'a University, only the head of the department is provided with a computer.¹⁰⁸ In recognition of the importance of ICT for education, the MOHESR has developed a national ICT policy. National and institution-specific master plans have been developed toward achieving a student-to-computer ratio of 40 to 1¹⁰⁹; full computer literacy among all staff; and access to a wide range of international research databases, e-journal collections, and academic repositories of electronic teaching materials at university libraries. The creation of a national scheme under which staff and students can access e-materials of all kinds must run in parallel with appropriate levels of investment in hard copies of books and journals. The reason is that it will be some time before the academic community will be willing to give up paper copies and staff and students will have their own computers.

Teaching and learning materials are even less accessible to students in parallel programs offered at public universities.¹¹⁰ The quality of teaching and learning in parallel programs often is less than that offered in the regular programs. Parallel and private expense program students attend classes with regular students if the class size is fewer than 50 students. However, most classes in humanities are above this size. Therefore, parallel programs courses often are offered in the afternoon. In the afternoons, most facilities in the university, particularly libraries and laboratories, are closed, and, anecdotally, it is claimed that the learning environment is more "relaxed," raising serious doubts about the quality of these programs.

To ensure quality in higher education, the issues of parallel programs must be addressed with policies appropriate to the conditions. International evidence shows that a rapid expansion of parallel programs severely deteriorates the quality of higher education

107. In Amran University, the ratio is 2000:1 (conversations with MOHESR staff).

108. McCaul 2007.

109. In Ethiopia, it is 10:1; in Guinea, it is 100:1 (Farrell and others 2007).

110. In response to rising demand, universities began to introduce parallel fee-paying programs for students who did not qualify for entry into courses based on their school exit examinations.

(box 3.3). Under a new policy that began in the school year 2008–09, FOEs are not allowed to take students in parallel programs; other faculties are allowed to take only a limited number (such as 15 percent); and students from parallel programs must study with students in the regular program. However, given the current expansion of parallel programs and the limited capacity of the higher education system, successful implementation of this policy seems unlikely. Since the capacity of public universities has reached its limit, promoting private universities is one way to meet the demand for higher education in Yemen.

Box 3.3 Effect of Parallel Programs on Education Quality in Jordan

In the late 1990s, Jordan's higher education system faced declining government funding and a cap on student fees. At the same time, the demand for higher education continued to increase, and student enrollments rose dramatically. In response, universities began to introduce parallel fee-paying programs for students who did not qualify for entry into courses based on their school exit examinations. Student fees became a rapidly larger proportion of higher education funding: from 64 percent of university operating costs in 2001 to 78 percent just 4 years later.

There is a widespread perception that the quality of higher education in Jordan has deteriorated due to the introduction of parallel programs. The number of students rose sharply: the gross enrollment ratio for higher education was 24 percent in 1990 and 40 percent in 2006. As a result, student-faculty ratios increased substantially in public universities, from 23 in 2000 to 30 in 2007. The quality of students is lower on average because the intake includes less-qualified students than in previous years. A large number of graduates and students who had dropped out of university flooded the labor force, leading to low-paying jobs for graduates and high unemployment (17 percent in 2006). Public universities did not reduce their numbers of nonacademic staff (which were already very high) in response to the reduction in government funding, so the additional funding from parallel programs did not ease the shortage of funds. The result was poorer quality education due to a lack of funds to update facilities and develop curricula. Finally, the sheer number of students enrolled in higher education courses since the parallel programs began have created pressures on information systems, financial management, and accountability that the universities are not able to manage, leading to poor decisionmaking.

Source: World Bank 2009c.

3.4 Quality and Availability of Teachers

International analyses of the determinants of learning point to the teacher as a significant contributing factor to student learning and achievement.¹¹¹ As a result, a central element of change in any education system is the teacher because the teacher plays a key role in what, how, how much, and how well students learn. As Yemen faces the same issue of poor quality in educational outcomes as do many countries in the world, assessing the quality of teachers and enhancing their quality becomes more urgent than ever.

In the absence of assessments of teacher performance, the availability and qualification levels of teachers are analyzed. Teacher quality is difficult to define as it depends not only on apparent indicators but also on behaviors and the relationships that teachers maintain with their students and parents. Teacher qualification, which is conceptually and practically more measurable than teacher quality, offers some indications of teacher quality. Therefore, this section focuses on the key elements of teacher qualification. Indicators commonly used in other countries for measuring teacher qualification include (1) academic qualification, (2) pedagogical training, (3) years of experience in teaching, (4) ability or aptitude, and (5) content knowledge.¹¹² The last two can be measured through individual assessments of teachers, a practice that has been taking place in several other countries in the world. Yemen does not have such assessments. However, information is available on other teacher-related issues that are of serious concern to Yemen, such as teacher preparation, deployment, and absenteeism.

Yemen's teacher force in general education is large, predominantly male, and mostly unqualified. In 2007–08, there were approximately 199,000 teachers in government basic and secondary schools, of whom 77 percent were male and 66 percent were in rural areas.¹¹³ The minimum educational qualification to become a teacher in Yemen is a post-secondary teaching diploma from a Teacher Training Institute.¹¹⁴ According to Decree No. 37 of 1998, almost 40 percent of the current pool of teachers are unqualified. Most of these unqualified teachers are found in rural schools (76 percent)

111. Rivkin and others 1998; Sanders and Rivers 1996; Wright and others 1997.

112. UNESCO 2005.

113. The proportion of student enrollments are 32% urban and 68% rural.

114. According to the MOE Decree No. 37 of 1998, the eligibility criteria for a teacher are to (1) be more than 18 years old; (2) have an educational qualification not less than a post-secondary diploma from a Teacher Training Institute (TTI), and (3) pass the entrance examination for the required job through competition. Only when no qualified

and teaching in basic education (91 percent). In urban areas, 53 percent of teachers were female, compared to only 9 percent in rural areas. The gender disparity is more pronounced at the secondary level: 28 percent of urban secondary school teachers were female (8 percent in rural secondary schools).

Only 35 percent of the grade 1–6 teachers meet the minimum qualification requirements of the MOE. The minimum education qualification set up in Decree No. 37 of 1998 requires recruits to possess at least a post-secondary diploma. In practice, this decree is applied primarily to the recruitment of grade 1–6 teachers. University graduates are the preferred candidates for grade 7–12 teaching posts. Even so, only 35 percent of teachers who teach grades 1–6 hold post-secondary diplomas or higher qualifications (table 3.4). Furthermore, even though the decree allows exceptions to enable female teachers with fewer than the minimum qualifications to teach in rural areas, the proportion of “unqualified” (teachers who do not meet the minimum qualification criteria according to the MOE decree) is higher for male teachers than for female teachers. Thirty-three

Table 3.4 Teachers’ Academic Qualification in Basic and Secondary Education Schools, 2005–06

	Below secondary	Secondary	Post- secondary diploma	University and above	Total	Qualified teachers	Total no. of teachers
No. of grade 1–6 teachers	45,850	18,094	21,018	13,803			98,765
% of grade 1–6 teachers	46	18	21	14	100	35	98,765
Male teachers	52	14	22	11	100	33	73,632
Female teachers	29	30	19	23	100	41	25,133
Rural teachers	52	17	21	9	100	31	70,048
Urban teachers	33	21	22	25	100	47	28,717
No. of grade 7–12 teachers	9,140	3,894	17,194	55,153			85,381
% of grade 7–12 teachers	11	5	20	65	100	65	85,381
Male teachers	12	4	22	62	100	62	68,246
Female teachers	6	7	13	74	100	74	17,135
Rural teachers	13	5	23	59	100	59	55,341
Urban teachers	6	4	14	75	100	75	30,040

Source: MOE AES 2005–06.

candidates are available can candidates with lower qualifications (graduates of general secondary schools) be recruited, especially in rural areas. Preference is given to those who have training in the field of education. In practice, and due to the high number of graduates being produced by the FOEs with Bachelors’ Degrees (which prepare teachers for secondary education), the minimum educational qualification is applied primarily to the teachers expected to teach grades 1–6. A first degree from a university, preferably a FOE, is preferred for teaching grades 7–12.

percent of the male teachers have the minimum qualification or more to teach, as opposed to 41 percent of the female teachers.

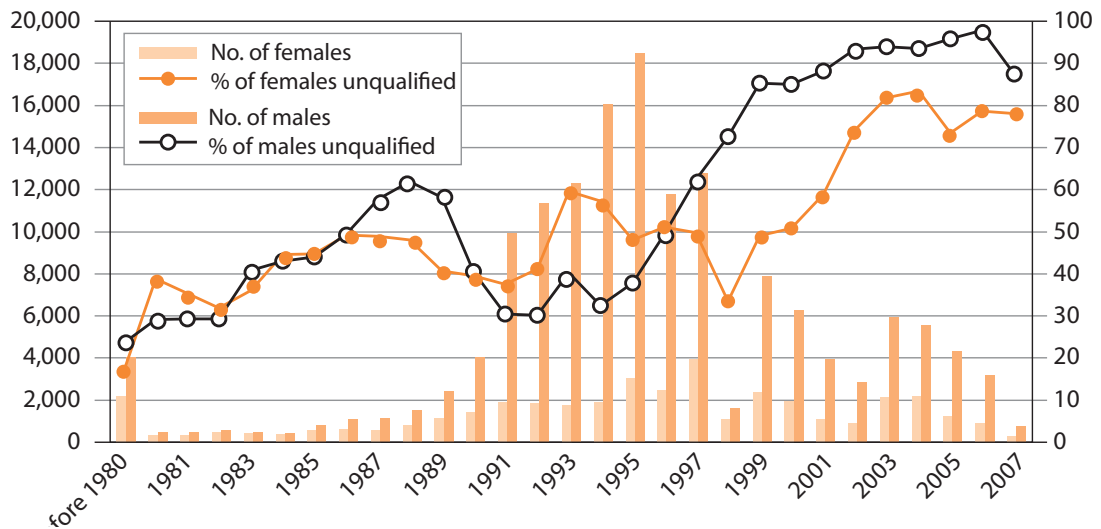
The current pool of teachers in Yemen is a result of a complex interplay of a nationalization policy in the context of a massive expansion of the system, differing needs in rural and urban areas, mismatch between recruitment policies and needs on the ground, availability of large numbers of graduates from FOEs, and weak sector governance. The MOE recruited the majority of the current teaching force during the 1990s, when the education system had expanded considerably. Because of the policy of nationalization of the civil service and the unavailability of adequate numbers of qualified Yemeni teachers, most of the 1990s MOE recruits were graduates of either Teacher Training Institutes (TTIs), that is, “qualified”; or secondary education, that is, “unqualified.” During these years, the proportion of qualified teachers in the new recruitment was 30 percent–40 percent (figure 3.6).⁴¹ These teachers are still in the system and by 2007 had accumulated 10–15 years of teaching experience.

Due to the increasing number of female students in rural areas, the demand for female teachers continues to rise, but this demand is largely unmet in the civil service recruitment. According to the 1998 MOE Decree No. 37, unqualified teachers (have less than secondary diploma) can be hired only on an exceptional basis, as in schools located in remote areas. The National Basic Education Development Strategy (NBEDS) regards employment of more female teachers as a critical intervention to encourage girls’ enrollment. However, statistics indicate that, between 2000 and 2007, the MOCSI recruited 3,000 unqualified female teachers and 2,900 unqualified male teachers. Given that these numbers represent 28 percent of the female teachers and 9 percent of the male teachers hired during that period, it seems that female teachers are still under-recruited.

A divergence in objectives, perpetuated by the lack of coordination among key stakeholders (MOE, MOCSI, the office of the Governor), in the context of less-than-perfect distribution of responsibilities among the stakeholders is contributing to less-than-optimal recruitment of teachers, particularly in rural areas. As demonstrated in the previous chapter, despite the need and the waivers granted in the regulatory system for the recruitment of female teachers, the needs for female teachers in rural areas are largely unmet.

41. The recent drop in the proportion of unqualified male teachers is related to the incomplete data for that year.

Figure 3.6 Number of Newly Hired Teachers and Percentage of Qualified Teachers by Gender, 1979–2007



Source: MOE.

The reason is partially that not enough rural girls complete secondary education and obtain higher degrees for teaching. In addition, for a variety of reasons, most female graduates of FOEs seek careers in urban schools. Past attempts to provide wage premiums to encourage female teachers to reside in rural schools have been unsuccessful. Furthermore, it is well known that even though most vacancies for rural positions are opened annually, a large majority of the recruits to these positions opt out and request transfers to urban schools within a few months of being recruited. To tackle this problem and to encourage stable, adequate staffing, particularly in rural schools, in 2007 the MOE initiated (and the Cabinet of Ministers ratified) a decree to link the post of a teacher to a school rather than to an individual. The significance is that if a person gets recruited into a position at a particular school, she does not retain that civil service position if she leaves that school position. However, implementing this decree has met with limited success. Reasons have included the historic distribution of responsibilities and lack of complementary objectives and coordination among the MOE, the MOCSI, and the office of the Governor. Even if the MOE mandates a position in a school, the Governor's office can influence teacher postings quite independently. The MOE has a limited role in ensuring that an appropriate number of teachers are available in a governorate because of poor coordination among the MOE, which sets policy; and MOCSI and MOF, which allocate budgets and recruit teachers.⁴²

42. World Bank 2006e.

There also is a high degree of corruption in teacher recruitment and promotion practices.¹¹⁵

A substantial proportion of new teachers, including males, do not have the minimum qualifications for civil service employment. Moreover, significant problems of deployment and inefficient use of teachers abound in the system, and the needs of rural and urban schools remain largely unmet. Thus, to meet the current needs for teachers, there may be a benefit in revisiting the policy on the minimum qualifications of teachers and teacher remuneration.¹¹⁶

A good education system relies heavily on its teachers to promote learning. Therefore, despite the supply constraints that the MOE faces, professionalizing the teaching force must be given the highest priority in the system. Professionalization includes articulating and instituting solid competencies for teacher qualification, including raising the standard for entry to preservice teacher preparation programs and adequate compensation for teachers. To meet the supply needs of the system in the medium term, the government could look into the feasibility of two options:

1. New MOE recruits in rural areas, who, in practice, have lower qualification requirements, could be offered the opportunity to obtain their qualifications through summer courses in degree-granting programs (at TTIs, as shall be discussed later). The government may want to withhold civil service status (and civil-service-level wages) from these teachers until they have received their degrees. The government also may want to specify the duration of this “confirmation” period, such as 10 years of service to get the bachelor’s degree, after which, if the degree has not been earned, the teacher is let go.
2. The system’s needs could be fulfilled by teachers who are permanently outside the civil service. The teachers in this stream would have their own salary scale and could be recruited on a temporary contractual basis. These teachers would not be expected to eventually get a bachelor’s degree. However, as was the case for the first cohort, these teachers would be included in the in-service training program. If these teachers wished to join the civil service, they would be expected to apply and compete. Hiring rural teachers under this separate program would lessen the need to compel urban trainees to move to rural areas, which traditionally has been very difficult. Under this separate stream,

115. Anecdotal evidence points to teacher posts being provided on the basis of personal or political connections and even bought.

116. Revisiting qualifications also will reduce the corruption in the recruitment and promotion of teachers in Yemen.

the number of female teachers in the system also might increase (see chapter 4 on remuneration).

There is a serious mismatch between the number of teachers required and the number qualified each year through the pre-service programs at FOEs. This discrepancy adds to the pool of educated unemployed in the country.¹¹⁷ The MOCSI opens some 5,000 additional teaching posts each year in public schools, of which approximately 1,500 are for TTI graduates and approximately 3,500 are for FOE graduates.¹¹⁸ More than 10,000 students who have graduated from TTIs since the late 1990s are on the waiting list for civil service teaching positions. Furthermore, the public universities in Yemen produce 26,000 graduates annually, of whom the FOEs graduate 14,500. It is no surprise, therefore, that for the 5,000 teaching positions available in 2007, 44,000 graduates of FOEs and 49,000 post-secondary diploma-holders applied.¹¹⁹ Most of these jobs opened for rural schools, but the majority of candidates prefer urban schools. The result is that rural schools do not have enough teachers while urban teacher candidates cannot find jobs. Finally, although 25 percent of the positions were opened for females,¹²⁰ most female university graduates did not go to rural areas. Consequently, rural schools have a severe shortage of female teachers.

Pre-service programs at FOEs are overproducing humanities graduates, and many basic and secondary teachers teach subjects in which they are not specialized. In 2004–05, more than 60 percent of FOE graduates specialized in the humanities subjects, and less than 30 percent graduated with a specialty in the science subjects. In contrast, approximately 64 percent of secondary schools offer only science tracks (23 percent offer both streams; 13 percent offer humanities only). According to an analysis, only 49 percent of teachers are teaching the subjects in which they specialized in university.¹²¹ This phenomenon is growing because increasing proportions of secondary students are choosing the scientific stream, and schools are expected to open science streams despite an inadequate number of science teachers.

117. In 2007 the MOE and MOHE agreed to alleviate the problems of various mismatches (described in this and following paragraphs) in three ways: by limiting the number of FOE students, supervising students' quality by MOE representatives, and creating a new curriculum for lower-grade teachers. As of 2009, some of these agreements had been enforced, such as limiting the number of entrants to FOEs in some universities.

118. Estimated from the fact that 70% of the positions were opened for university graduates in the Taiz, Hajja, and Abyan governorates in 2004–05 (World Bank 2006e).

119. Of which the number of applicants from TTIs is unknown.

120. Assumed from the fact that 25% of the positions offered in Taiz, Hajja, and Abyan governorates in 2004–05 were for females (World Bank 2006e).

121. De Feiter and Anaam 2007.

Despite significant needs for multigrade teachers, universities do not offer any courses for multigrade teaching. Thus, multigrade teachers are chronically lacking in the teaching force. Due to the geography and population distribution in the country, multigrade teaching is a necessity in schools in rural areas. Thirty percent of all basic school teachers are in schools in which grade 6 is the highest grade offered. In more than two-thirds (68 percent) of the primary schools in the country (basic schools offering up to grade 6), there are 2.8 teachers on average, necessitating multigrade teaching.¹²² Multigrade teaching also is an important solution for overcoming inefficiency of teacher deployment in rural small schools (see chapter 4). Although teachers in rural small schools learn to manage multigrade classes through experience, there is an urgent need to equip teachers with multigrade teaching skills.¹²³ If a teacher is assigned to a school with many multigrade classrooms in a rural area, that teacher should receive appropriate in-service training, possibly augmented through a mentoring program with a more experienced teacher.

Although there will be an increased need for grade 1–6 teachers to achieve the MDGs, pre-service programs at FOEs are not preparing teachers to teach these grades. Formerly, universities prepared subject specialist teachers for grades 7–12, and TTIs prepared teachers for grades 1–6. Due to the rapid expansion of higher education enrollment, the government closed TTIs in 2000, intending that all future teachers would be trained at FOEs.¹²⁴ However universities were not and still are not ready to respond to the implied policy change. While universities produce only subject specialists, just 15 percent of new teaching posts are for subject specialists. Forty percent of the posts are for class teachers, 40 percent for domain teachers (that is, those who can teach a group of subjects), and 5 percent for multiple subject specialists.

Skills acquired at the FOEs do not necessarily match the needs of schools because FOEs do not use materials that teachers use in basic and secondary schools. Courses offered at FOEs focus on the

122. De Feiter and Anaam 2007.

123. From financing that it acquired through the EFA FTI in 2006, the MOE trained 130 rural teachers to manage multigrade classes.

124. Until 2000, TTIs accepted students after they had finished their general secondary education to prepare them either as class teachers for the early grades of basic education or as subject teachers for the middle grades (7–9). Successful students were awarded a two-year diploma. The TTIs were intended to maintain a close link with rural areas and were situated in all governorates. Once the universities started producing FOE graduates, the teaching market was flooded with increasing numbers of degree-level teachers available to accept teaching positions. Consequently, MOE decided to stop the role of TTIs in all preservice teacher education (Feiter and Anaam 2007). The TTIs now have a role only in in-service programs for already-serving teachers.

history and philosophy of teaching. They do not include practical elements and do not require students to teach in schools as a part of their pre-service training. In fact, linkages with schools that may encourage internships in real classrooms are not explored because they are not deemed necessary. Furthermore, FOEs do not use either the curriculum of the MOE or the textbooks, other learning materials, and teachers' guides that are used in basic and secondary schools to familiarize graduates with the needs of their job. It should be noted that graduates from private higher education institutions are not eligible to apply for teaching positions, so this issue of the quality of pre-service training applies to public universities only.

TTIs can provide practical training experiences to new teachers as well as life-long learning opportunities for existing teachers.

One of the key elements of the teacher training that the OECD promotes is to treat teacher education as a career-long process.¹²⁵ Within a framework of continuous education, the pre-service teacher training is only the first step in a series of important steps to enable teachers to grow and develop professionally over time. In this area, TTIs have advantages because they have a great deal of experience in pre-service and in-service training closely linked to schools' needs. Schemes such as pre-service internship through the TTIs after graduation from FOEs will make the teachers pedagogically and practically more competent in teaching at basic and secondary schools. While the TTIs can be a more integral part of the government's teacher-hiring strategy, experience indicates that their quality can deteriorate quite quickly if no standards and accreditation system are established. Hence, reviving these institutes should be accompanied by a quality assurance system. Locating TTIs in rural areas is important to enable them to redress the rural teacher supply deficit.

In-service teacher training in Yemen has great value added. Since approximately 2003, the MOE has provided, through externally financed projects, a high level of in-service training to raise the country's teaching skills. At this stage of development of Yemen's education system, most teachers are teaching in remote areas in which they lack linkages with other teachers, and many have not been trained for their current work. In this situation, in-service training seems to have an impact on classroom interactions as well as on student learning (box 3.4). Whether these programs will continue to have such impacts as the base of teachers going through these programs increases is not certain.

125. OECD 2005.

Box 3.4 Impact of In-Service Teacher Training in Yemen

The MOE has made a great effort to improve teachers' skills through in-service training. Annually, 50,000–100,000 teachers receive training through different sets of modules depending on the grades they teach. A robust impact assessment of MOE's in-service teacher training is lacking. However, in 2007–08 GTZ did an impact assessment of its in-service teacher training in its project schools through a quasi-experimental study. In 4 of its project governorates (Ibb, Hajjah, Abyan, and Mareb), 162 schools participated in the study. Of them, approximately 1,450 grade 3 students took the Arabic and mathematics examinations. Approximately 38 percent of the grades 1–3 teachers had been trained within 3 years prior to the study.

The evidence proves that in-service teacher training improves students' achievement. In the Arabic test, grade 3 students who had learned from trained teachers scored 62 percent, whereas the students in untrained teachers' class scored 54 percent. For mathematics, grade 3 classes taught by trained teachers scored 57 percent compared to 44 percent for classes with untrained teachers. These differences in students' scores were achieved due to improved teaching skills. The qualitative assessment by inspectors confirmed that teachers had improved their performance in classroom management, teaching, monitoring, and planning (see following box table).

Impact of GTZ In-Service Teacher Training, 2007–08

	Participated in INSET	
	No	Yes
Students' learning achievement (grade 3)		
Arabic core test score	54	62
Mathematics core test score	44	57
Teaching practices (inspector's assessment)		
Classroom management ¹		
Discipline in the classroom	-	+
Cleanliness and order	-	+
Teaching activity		
Creation of curiosity and interest	-	+
Showing, explaining, blackboard use	-	+
Teacher's monitoring		
Evaluates children's learning in general	-	+
Checks homework	-	+
Teacher's planning skill		
Teachers having good annual plans (%)	33	56
Teachers following the annual plans (%)	29	50

Source: Bergmann 2008.

Note:

¹ Original report shows result of factor analysis.

The national average class size hides significant rural and urban differences. In reality, class sizes in rural areas are inefficiently low, while urban classes are seriously overcrowded. While the impact of class size on learning outcomes remains a topic of debate, a very large class clearly impedes active learning. The MOE sets policy on class size for basic and secondary education according to the grade and urban-rural status, ranging from 30 students (in rural areas/lower grades) to 50 students (in urban areas/upper grades). In general, the class size in Yemen is relatively small (table 3.5). At rural basic schools, the class size is 23 on average. However, while 23 percent of urban basic schools have class sizes exceeding 50 students, close to 45 percent of urban students are studying in these overcrowded classes, which can severely affect the quality of education that they acquire. At secondary and basic-secondary combined schools, 44 percent and 53 percent of urban students, respectively, attend classes with more than 50 students. The FTI Indicative Framework urges Yemen to increase the average class size to improve efficiency in resource use. This is an important system-wide reform, and it is particularly relevant for rural basic schools (in which 34 percent of the classes have fewer than 25 students). Nevertheless, it is equally important to reduce the average class size in the severely overcrowded urban schools.

Average student-teacher ratios (STR) in basic and secondary schools in Yemen are lower than the average in low-income countries. In 2006–07 the average STR in Yemen was 25 for basic education and 20 for secondary education.¹²⁶ These averages are much lower than the international average of 41 for low-income countries (figure 3.7). To ensure both efficiency of resource use and students' access to teachers, the FTI Indicative Framework (appendix E) recommends that the STR be approximately 35. However, both low enrollments in rural areas and the small sizes of the communities in Yemen resulting in small classes, especially in rural areas (table 3.5), contribute to this low STR average. The pursuit of purely enhancing efficiency through increasing STRs is not meaningful in Yemen. A balance will need to be struck between (1) building smaller schools that are close to population clusters so that young children do not have to travel far and (2) increasing class sizes a bit so that they are somewhat more sustainable. In these regards, two policy options could be considered: (1) providing smaller schools for the primary levels (grades 1–6) close to communities and (2) investing in

126. These figures were calculated based on the assumption that 27% of teachers in basic-secondary combined schools were secondary teachers, since 27% of classes in basic-secondary combined schools were at the secondary level. In fact, many teachers at basic-secondary combined schools teach both upper basic and secondary levels.

Table 3.5 Average Number of Students per Class and Percentage of Schools and Students by Average Class Size, 2007–08

	Basic			Secondary			Basic– secondary combined		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Average no. of students per class									
Basic	38	23	30	–	–	–	40	35	36
Secondary	–	–	–	41	35	38	36	28	29
Schools by average class size (%)									
Below 25	29	61	58	12	19	15	30	26	27
25–50	48	36	37	65	73	69	42	65	60
50+	23	3	5	23	8	15	28	9	13
Students by average class size (%)									
Below 25	9	34	27	3	8	5	12	12	12
25–50	46	57	54	53	78	60	35	71	59
50+	45	9	19	44	14	35	53	18	29

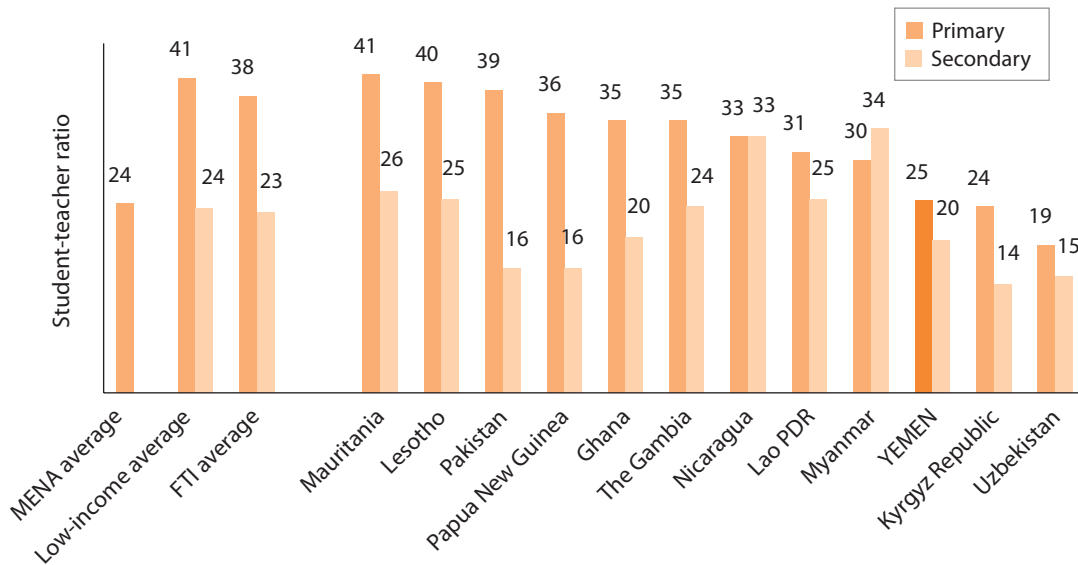
Source: Author's calculation using MOE AES 2007–08.

merging schools that offer grades 7–12, but building schools that are not always in, but are close to, communities and that are accessible through school transportation. Multigrade teaching will become even more critical for the small community-specific schools.

Teacher allocation patterns vary considerably across governorates and are not linked to the degree of geographic dispersion of the population. Some governorates have abundant teaching resources (large number of teachers for the same number of students), and some have scarce resources. The national average number of teachers in a typical basic school is 16 (table 3.6, last column). However, in the same-sized schools, 41, 28, and 23 teachers are found in Aden, Abyan, and Al-Mahara governorates, respectively. Thus, these three governorates appear to be better endowed with teachers. In contrast, 10, 13, and 13 teachers are found in the same-sized schools in Sana'a, Ryma, and Al-Baida governorates, respectively. The variance in allocation of teachers across governorates cannot be attributed to the degree of geographic dispersion of the population.¹²⁷ For example, in the governorates of Sana'a, Ryma, and Mareb, which have quite possibly the highest level of small communities scattered across the governorates, the consistency of

127. In this case, geographic dispersion of the population refers to the degree of dispersion found in the population of various communities in a governorate. If a governorate has many small communities that are scattered across a small geographic area, it would mean that many small schools are required to be constructed to provide access to schooling for the children of these communities. This kind of dispersion is commonly found to be a problem in the highlands of Yemen. In governorates whose population is scattered in bigger population sizes and communities, many small schools may not be necessary.

Figure 3.7 International Comparison of Student-Teacher Ratios in Primary and Secondary Education



Source: World Bank 2009d; Yemen data, MOE 2006–07.

Note: For Yemen, basic education STR is shown for primary education. The MENA average is taken from 8 countries.

teacher allocation is not very different from that of the governorates of Aden, Sana'a city, and Hadramout, whose population dispersions are likely to be far less (table 3.6, consistency of resource allocation column).

The distribution of teachers across schools is equally varied within governorates, with a greater element of unevenness in schools that have only early grades. An analysis of the close to 14,000 public schools registered in 2006–07 indicates that the allocation of teachers to each school correlates weakly with the number of students in the school (figure 3.8).¹²⁸ As a result, some schools have too many or too few teachers for their size. For instance, schools with 10 teachers may have 100–700 students. Similarly, schools enrolling 500 students may have 4–27 teachers. Randomness is particularly high among small schools that offer fewer than the first 6 grades. For these schools, the number of students explains only 42 percent of the variation in the number of teachers deployed to a school.

128. The number of students in each school explains 69% of the variation in the number of teachers deployed to the schools. Thus, the remaining 31% of variation is determined by other factors.

Table 3.6 Estimated Number of Teachers for an Average-Sized Basic School

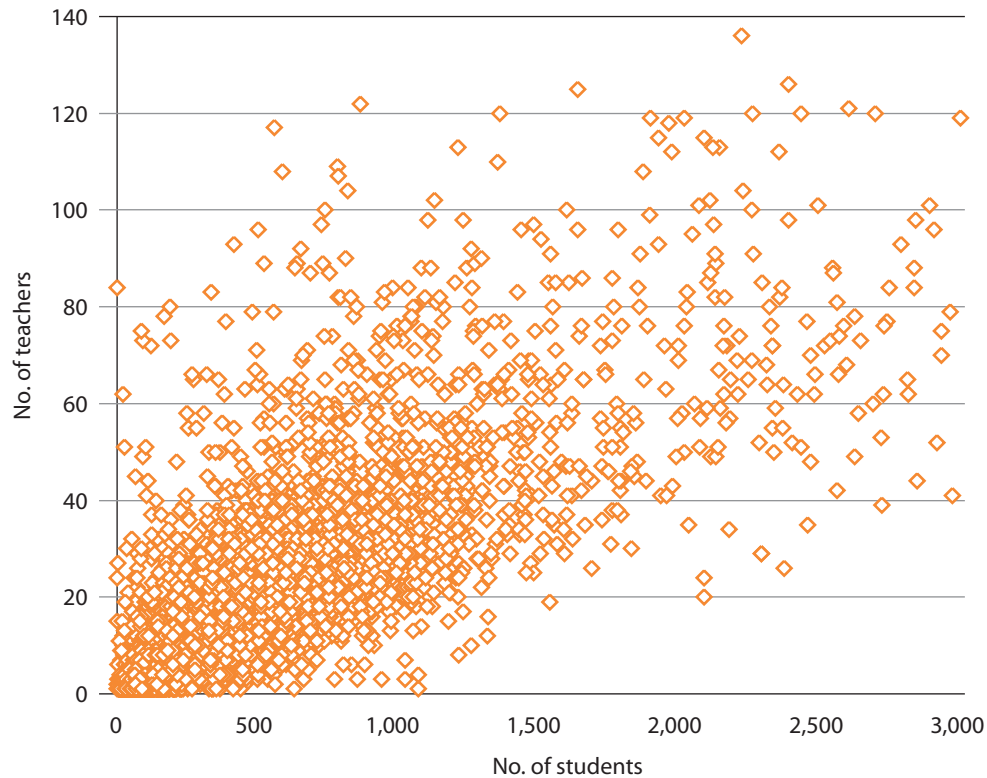
	No. of basic schools with up to 9th grade	Consistency of resource allocation (%)	Average no. of teachers
Aden	69	38	40.9
Abyan	212	64	28.0
Al-Mahrah	27	48	22.8
Laheg	255	58	21.8
Al-Jawf	61	32	20.3
Hadramout	184	83	19.4
Al-Hodeidah	356	70	18.2
Al-Mahweet	122	75	17.0
Hajjah	323	69	17.0
Mareb	73	74	16.6
National	4,423	66	16.0
Taiz	514	71	15.5
Dhamar	363	82	15.3
Al-Daleh	157	72	15.3
Shabwah	203	70	15.1
Ibb	441	74	13.5
Saadah	172	68	13.3
Sana'a City	121	69	13.0
Amran	267	60	13.0
Al-Baida	134	81	12.9
Ryma	107	31	12.9
Sana'a	262	53	10.1

Source: Authors' calculations based on MOE 2006–07.

Note: The average enrollments used for this analysis were 160 for grades 1–3, 124 for grades 4–6, and 88 for grades 7–9 (these are the actual numbers for 2006–07). Schools with fewer than 6 grades were excluded.

Some governorates are able to manage their teachers well, even though these schools may be under-endowed in terms of teacher numbers. Figure 3.9 plots the efficiency of teacher allocation as measured by the randomness of teacher distribution, and the abundance of resources as measured by the number of teachers in the national average size of the schools (appendix F). Governorates in the right-bottom zone are managing fewer resources than the national average, but they deploy teachers more efficiently. On the other hand, governorates on the top left zone enjoy higher levels of resource abundance, but they do not allocate these resources efficiently.

However, different levels of resource availability do not seem to make a difference in student learning. From teacher distribution patterns, it is evident that different schools receive different levels of resources for the same school size. The next question is whether different levels of resource availability at schools affect students' learning. An analysis of the distribution of average 12th grade examination scores across schools with different levels of resources

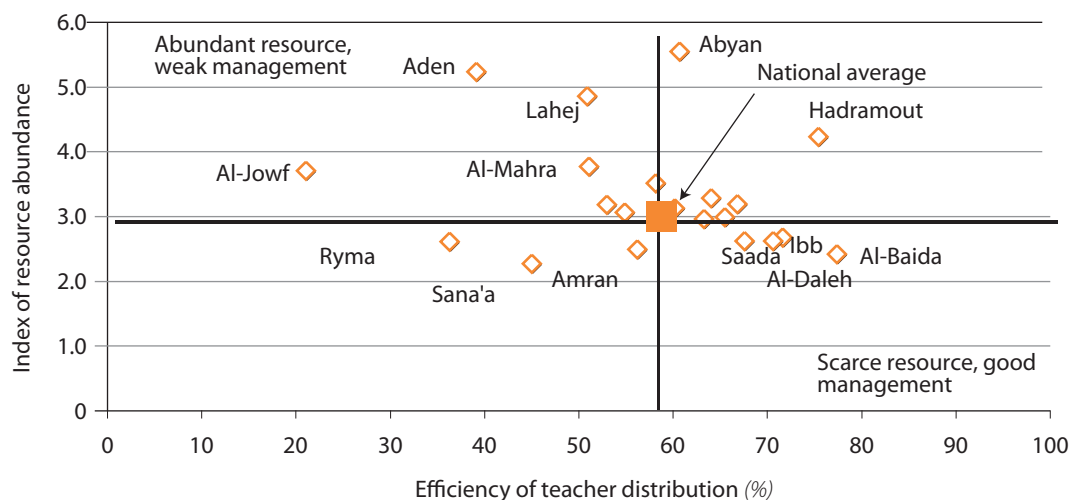
Figure 3.8 Teacher Distribution Patterns by Size of Enrollment, 2005–06

Source: Authors' calculations using MOE AES 2005–06.

demonstrates that the correlation between the level of resource inputs at a school and students' learning is weak (figure 3.10). Per-student resource availability, as measured by staff unit cost (SUC), includes the total teacher salary cost and the total nonteacher salary cost.¹²⁹ While the average SUC is Yrls 2,000–5,000 (approximately US\$10–25) per student, many schools (15 percent) have SUCs that exceed Yrls 5,000 per student. Furthermore, for schools that have SUCs of Yrls 2,500, the average examination score varies from 55 to 85 in both the science and humanities streams.

The prevalence of teacher absenteeism may contribute to the limited impact of teacher resources on student performance. As have many other countries, Yemen has a persistent problem of teacher absenteeism, which reduces the quality of education and wastes scarce resources. A 2006 sample survey of basic education schools

129. This analysis is limited because it does not account for distribution of costs for goods and services.

Figure 3.9 Efficiency of Teacher Allocation and Resource Abundance by Governorate

Source: Authors' calculations using MOE 2006–07.

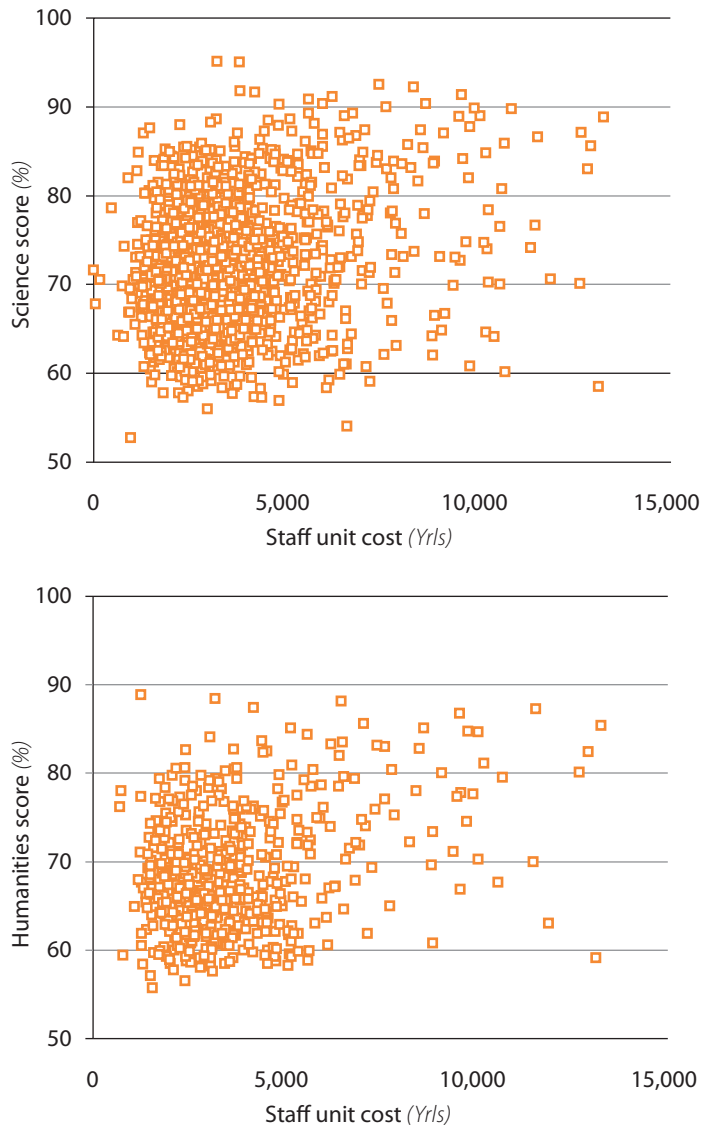
found that 19 percent of the teachers were absent on 1 day in April 2006. Three-quarters of the absences were without prior approval of leave. The absenteeism rate on Thursdays (the last day of school before the weekend) is higher than on any other weekday.¹³⁰ Early departure and late arrival of teachers, leaving between classes, and coming only at the time of classes are almost every-day phenomena in both urban and rural schools.¹³¹ In 2007 the MOE took steps to curb teacher absenteeism. The campaign included widespread public information dissemination about this problem. In addition, the local councils deduct from teachers' salaries amounts equivalent to the periods of inexcusable absence. It is likely that absenteeism has been reduced as a result.

One of the possible causes of low achievement among Yemeni students is low actual time on task due to teacher and student absenteeism. If the teacher absenteeism rate is 19 percent on average, students' learning time is only 81 percent of what is officially assumed. It also is believed that the number of actual teaching days in the school calendar is quite limited, given frequent holidays and time spent on monthly examinations. Although the authors do not have accurate information about student absenteeism, if students tend to be absent regularly, the actual time on task would be much less than 81 percent.

130. World Bank 2006e.

131. Abdulmalik 2009.

Figure 3.10 Distribution of Average School Score and Staff Unit Cost per Student (Science and Humanities Streams)



Source: Authors' estimates. See appendix G for details of the analysis.

Teachers' motivation and attitude affect their students' learning.

Ultimately, teaching-learning activities take place between teachers and students, so poor attitudes of teachers negatively affect students' learning. An independent study revealed many cases in which students think the teachers' attitudes are quite negative.¹³² According to the study, some teachers are so authoritarian that

132. Abdulmalik 2009.

students cannot ask questions for clarification, and some teachers even request bribes for giving high marks in examinations. Students lose interest in study because of these factors and actually drop out of school (chapter 2).

As in general education, Yemen faces a great challenge in staffing the TEVT sector with qualified teachers/trainers. This difficulty is greatly exacerbated by the rapid growth of the sector. The ideal TEVT teaching staff profile is defined according to the knowledge, know-how, and behavioral skills desired for students. These skills fall within three categories: content-related, technological and vocational, and didactic and institutional.¹³³ Available trainers are too poorly qualified and lack experience to transfer the knowledge and skills that are required by employers. Many trainers are similarly weak in their pedagogical skills.¹³⁴ Although half of the 2,600 teaching staff had bachelor degrees or higher (table 3.7), the quality and relevance of these degrees are questionable due to the poor quality of higher education and lack of experience in real work. As mentioned earlier, many teachers are likely to be recent graduates of TEVT institutes. Factors that contribute to the low staff profile include (1) the absence of clearly established standards for staff recruitment, resulting in some cases in trainers being made responsible to instruct in a field other than their specialization¹³⁵ and (2) low wages in comparison to the private sector.

Staffing challenges in the TEVT institutions are related primarily to quality as opposed to quantity. The average STR is only approximately 9, although there is great variation across institutions and programs. The highest STR is 18 for the community colleges, still not particularly high. The lowest STR is approximately 2 for agriculture, hotel/tourism, and marine studies (table 3.8). The STRs

Table 3.7 Number of TEVT Teaching Staff by Academic Qualification, 2003–07

	2003	2004	2005	2006	2007	2007 (%)
Master's or higher	50	111	103	109	116	4
Bachelor's	828	1,234	1,129	1,240	1,314	50
Technical diploma	398	554	567	607	726	28
Vocational certificate/diploma	339	357	335	338	361	14
Higher school or lower	97	125	73	44	87	3
Total	1,712	2,381	2,207	2,338	2,604	100

Source: SCEP 2002/03–2006/07.

133. Mazeran and Experton 2007.

134. World Bank 2007e.

135. MOTTEVT 2005.

Table 3.8 Number of TEVT Institutes, Students, and Teaching Staff by Program, 2006–07

Type of institute	No. of			Student-teacher ratio
	Institutes	Students	Teaching staff	
Agricultural				
Agricultural	4	203	106	1.9
Veterinary, Agricultural	2	471	80	5.9
Agricultural constructional, Industrial	1	398	42	9.5
Commercial				
Commercial	12	3,319	273	12.2
Commercial, Industrial	2	452	41	11.0
Construction, Industrial				
Construction, Industrial	29	13,170	1,481	8.9
Artisan	1	83	15	5.5
Others				
Hotel and Tourism	1	41	17	2.4
Marine	1	172	71	2.4
Community Colleges	4	3,923	220	17.8
Total	57	22,232	2,346	9.5

Source: Authors' estimation from SCEP 2006–07.

in most of the programs are lower than 10. Such low ratios raise the issue of efficiency (chapter 4). However, the low STR in fact affects quality indirectly by using more financial resources for staff costs and consequently less for improving quality-related inputs such as higher salaries for individual trainers and more teaching and learning materials.

There is a wide variation in qualifications of academic staff in Yemeni universities. In many countries, it is believed that a doctorate is the best form of training for academic staff. Malaysia, for instance, has set a medium-term target that 75 percent of university lecturers will have a Ph.D. The proportion of Ph.D.'s varies substantially across countries, and also across universities within a country. In Yemen, approximately 58 percent of the academic staff members hold Ph.D. degrees. The highest proportion is 74 percent at Hadramout University; the lowest registers 38 percent at Dhamar University (table 3.9).

As is the case in TEVT, academic staff in universities have limited experience. The experience of academic staff as measured by seniority can be an indicator of quality in higher education. The proportion of professors or associate professors in public universities is quite low: approximately 13 percent on average in Yemen. Table 3.10 gives the current profile of academic staff in public universities in Yemen. Seniority is based largely on educational background

Table 3.9 Qualifications of Teaching Staff in Public Universities, 2006–07

	No. of teaching staff	Distribution by qualification (%)		
		Ph.D.	Master's degree	Bachelor's degree
Sana'a	1,913	68	10	22
Aden	1,347	61	16	23
Taiz	619	42	19	39
Hodidah	498	38	13	49
Ibb	211	69	14	17
Dhamar	552	38	21	42
Hadramout	447	74	10	16
Total	5,587	58	14	28

Source: Authors' calculation based on SCEP 2006–07.

(academic degrees) and years of experience. Bachelor's and master's degree holders are classified as assistant teachers. Ph.D. holders become assistant professors immediately after joining a university faculty. They are promoted to associate professorship after 5 years of service with 3 publications, and to a full professorship after 5 more years of serving and publishing 5 papers.

Teaching methods in Yemeni universities are lecture focused.

Academic staff play a central role in students' successful learning through the way they interact with and assist students to learn subject knowledge; critical and analytical thinking; and general skills such as communication, team work, adaptability, and the habit of working hard. The teaching methods in Yemeni universities are dominated by the traditional method: lecturers give lectures, and students take notes. The test items for students continue to require predominantly memorization skills but few analytical and problem-solving skills.

The student-academic staff ratio (SSR) has decreased in the past few years, although these rates are still high in the humanities faculties. SSRs vary greatly across universities, ranging from 75 students per academic staff in the humanities faculties in Sana'a University to 16 students per academic staff in the natural sciences in Hadramout University (figure 3.11).

Non-Yemenis make up 13 percent of employees in public universities, are over-represented in science and technical subjects, and generally are paid more than their Yemeni counterparts. These facts indicate a shortage of qualified academic Yemeni staff in public universities, and perhaps difficulty in attracting qualified candidates to these subjects. The work conditions in most universities

Table 3.10 Levels of Teaching Staff in Public Universities, 2006–07

	No. of teaching staff	Distribution by level of teaching staff (%)				
		Professor	Associate professor	Assistant professor	Lecturer	Assistant teacher
Sana'a	1,913	9	14	45	10	22
Aden	1,347	3	12	46	16	23
Taiz	619	6	6	30	19	39
Hodidah	498	3	6	29	13	49
Ibb	211	7	19	44	14	17
Dhamar	552	3	10	24	21	42
Hadramout	447	7	15	53	10	16
Total	5,587	6	12	41	14	28

Source: Authors' calculations based on SCEP 2006–07.

Note: Calculated using actual number of teaching staff (excluding staff who are not currently teaching).

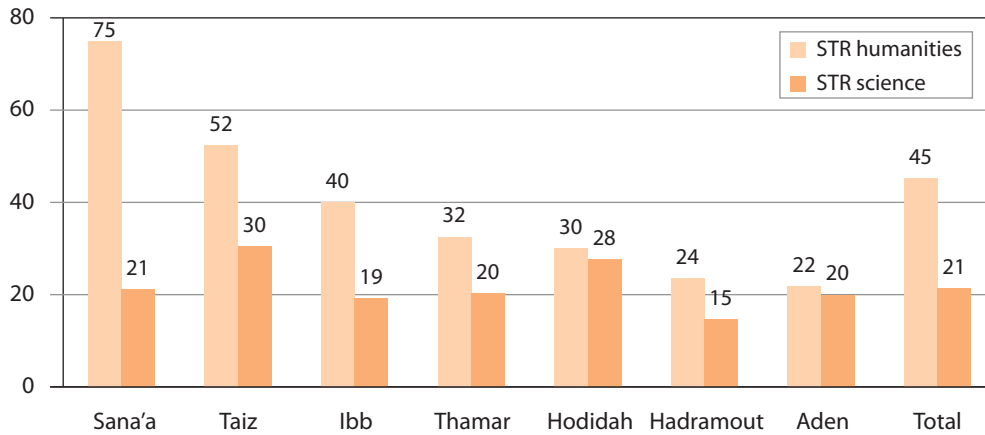
are not satisfactory: few faculty members have their own offices, and many have to share offices. Faculties also do not have adequate teaching, research, and communication facilities. In addition, due to having to also teach in parallel programs, teaching staff do not have time to do other important activities such as research, curriculum development, and in-service training.

Although highly attractive, a university career is not always merit based. Attracting qualified personnel to the system and ensuring that they stay in the system are important to the quality of the higher education sector. It is apparent that, despite the inadequate work conditions, a university career remains an attractive and prestigious profession. Highly qualified people usually are appointed. There is, however, a widespread view that the hiring system is not always merit based. In some cases, the best candidates are overlooked, and less qualified candidates who had better social networks are recruited.¹³⁶ The current staff promotion system depends heavily on years of service, although, for promotion to associate professorship and full professorship, the system does take into account the number of publications.¹³⁷

Professional development opportunities remain limited. Providing staff with professional development often is an effective way to attract and keep academic staff in service and to enhance their skills to suit the changing needs of the education system. Most universities in Yemen already provide some training, but it is inclined to be

136. MOHESR 2005.

137. As noted earlier, the requirements are 3 papers to become associate professor and 5 papers to become full professor (Presidential Decree No. 18 of 1995).

Figure 3.11 Student-Academic Staff Ratio in Public Universities, 2006–07

Source: Authors' calculations based on SCEP 2006–07.

Note: Includes both Yemeni and non-Yemeni staff, but does not consider dispatched teaching staff.

ad hoc. A staff development framework will need to be established to outline the training modality and to identify the skills and preparation most urgently required to improve the teaching skills of staff. Globalization requires that Yemen produce graduates who do not simply suit the Yemeni labor market but also are adaptable to the regional and international labor markets. This required adaptability necessitates that academic staff constantly upgrade their skills and competencies to be able to support their students.

3.5 Summary of Key Findings

Evidence from basic education, secondary education, TEVT, and higher education all point to a low level of student learning achievements and weak links between education and the formal labor market. Improving the pervasive poor quality of education must be prioritized. TEVT students have high dropout rates, and enterprises hiring the graduates are dissatisfied. Widespread expansion of parallel programs in public universities has further deteriorated higher education.

Results from studies suggest that learning achievements of girls are higher than those of boys in basic education, and urban populations do better than rural populations for the same level of education.

While Yemen's curricula in basic and secondary education and TEVT seem to have some good elements, the means to implement them are severely lacking. Current resources are lacking in (1)

teachers who are trained to implement the curriculum methodologies, (2) appropriate teaching and learning materials, practical exercises, and exposure to real labor market situations (for TEVT and higher education), and (3) appropriate assessment mechanisms. Students in higher education are not learning from up-to-date materials, and too many of them are in the social sciences.

Teacher quality plays a key role in delivering quality education outcomes. However, to advance the quality agenda, many teacher-related issues must be addressed. They include:

1. *Basic and secondary education.* A large proportion of teachers are unqualified. This reality is compounded by a high rate of teacher absenteeism and low time-on-task. There is a severe lack of qualified teachers, particularly female teachers in rural schools. Pre-service training programs at FOEs are not preparing teachers with the required skills mix. In-service training has shown effectiveness, but opportunities to attend such training are limited, and there is little follow-up or mentoring to ensure that the full benefits of in-service training are achieved and maintained.
2. *TEVT.* Available trainers are poorly qualified, lack industry experience, and are not experienced in transferring the knowledge and skills required by employers.
3. *Higher education.* Academic staff have limited experience, as indicated by a low proportion of professors and associate professors. The shortage of Yemeni faculty members to teach science and technical subjects is significant. Professional development remains limited, and promotion is not always merit based.

Teaching and learning materials and educational facilities have improved but are not adequate. The ineffective textbook distribution system hampers the provision of teaching and learning materials in basic and secondary schools. Libraries and computers are seriously lacking in higher education. TEVT institutes are poorly equipped.

The skill linkage among general education, TEVT, and higher education is weak in Yemen: the current system does not offer flexible pathways among these subsectors. Clear, defined links and pathways are urgently needed to guide the improvement of students' skills and knowledge and to increase their employment opportunities.

The development of a quality assessment system and quality assurance system in Yemen is at the early stages. Although discussion is ongoing, no national student assessments at the basic and secondary levels are yet in place. To solve the significant issues facing public examinations (technical, integrity of examiners), the

public examination system needs to be fully revamped. TEVT and higher education have few standards for assessing student learning. The attempt to establish a quality assurance system for higher education institutions has been launched but is at its starting point.

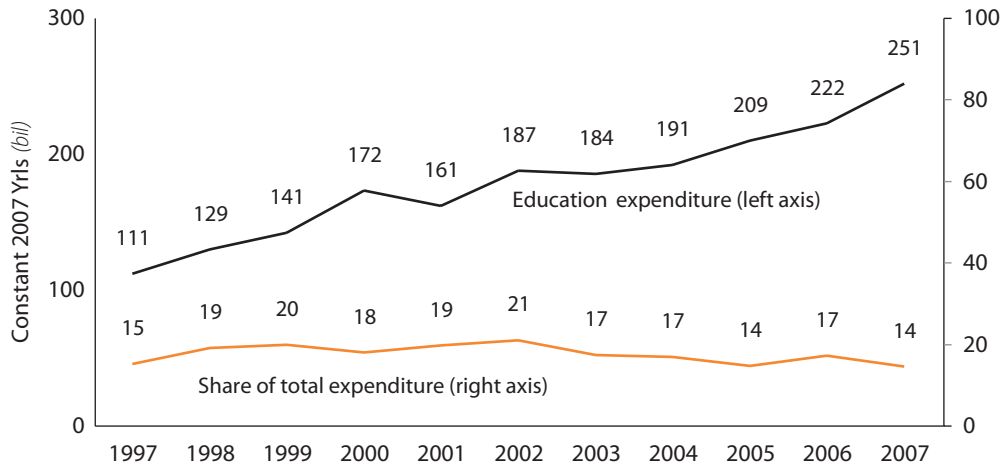
Financing Education

Expanding access to education and improving quality require increased financial resources. In a world of limited resources, effective mobilization and management of resources are crucial to achieve the goals and targets of any education system. Tradeoffs need to be made when allocating resources, and decisionmakers face difficult choices. Appropriate decisions need to be made about how to allocate public expenditure across different sectors, such as health, defense, infrastructure, and education to reflect a nation's priorities. Within education, decisions need to be made about how to distribute available public resources across the different levels and types of education and training to achieve balanced development from early childhood education to higher education. A suitable balance between providing quality inputs to students and maximizing coverage (number of enrollments) needs to be struck. Furthermore, careful consideration of the most effective educational inputs within the constraints of available resources is needed. Increasing funding in education improves student learning only if educational institutions can effectively transform resources into educational outcomes. All of these aspects are analyzed in this chapter.

4.1 Public Expenditure on Education

In line with the growth in government expenditure (chapter 1), Yemen has substantially increased its public education expenditure. In real terms, between 1997 and 2007, expenditure on education increased 125 percent from Yrls 111 billion to Yrls 251 billion (figure 4.1).¹³⁸ Recurrent expenditure on education increased almost 140 percent over the same period, and capital expenditure increased 75 percent (table 4.1). The significant increase between 2006 and

138. Real expenditure figures are in constant 2007 Yrls, adjusted using the Consumer Price Index (CPI).

Figure 4.1 Government Expenditure on Education, 1997–2007

Source: Authors' calculations using MOF final account data.

2007 likely was due to the increase in government revenue from high international oil prices that year. Approximately 4 percent of Yemen's education expenditure comes from external financing.¹³⁹

However, it appears that education is losing some of its support and that additional funding for education may not be likely in the near future. While the share of government recurrent expenditure on education was above 19 percent between 1998 and 2004, it dropped to 16 percent in 2007 (figure 4.2). The percentage of recurrent government expenditure that goes to education varies widely across countries (10 percent–30 percent). Nevertheless, Yemen's percentage is below both the 20 percent reference point set in the EFA FTI Indicative Framework (appendix E) and the international average of approximately 20 percent. Similarly, Yemen's total education expenditure in relation to GDP dropped from 6.8 percent in 2002 to 5.3 percent in 2006, before a slight increase to 5.8 percent in 2007 (table 4.1). This drop in education expenditure in relation to total government expenditure and GDP indicates that the government's spending priority shifted from education to other sectors.¹⁴⁰ Despite this downward trend, public

139. MOF final account 2007.

140. The government spent a higher amount on oil subsidies within the country to compensate for the increased oil price, especially in 2007 and 2008. Therefore, while government revenue increased due to higher oil prices in 2007 and 2008, the amount of expenditures incurred from the oil subsidy also increased, offsetting some of the increase in government revenue.

Table 4.1 Government Expenditure on Education, 1997–2007

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Education expenditure in current YrIs (bil)											
Total	46	57	67	89	102	123	133	149	172	200	251
Recurrent	37	45	59	81	91	113	116	127	149	170	212
Capital	9	12	8	8	10	10	17	22	23	30	39
Education expenditure in constant 2007 YrIs (bil)											
Total	111	129	141	172	161	187	184	191	209	222	251
Recurrent	89	101	124	156	145	171	161	163	181	189	212
Capital	22	28	18	16	16	16	24	28	28	33	39
Education expenditure as a % of GDP											
Total	5.2	6.7	5.7	5.8	6.2	6.8	6.4	6.2	5.4	5.3	5.8
Recurrent	4.2	5.3	5.0	5.2	5.6	6.2	5.6	5.3	4.6	4.5	4.9
Capital	1.0	1.4	0.7	0.5	0.6	0.6	0.8	0.9	0.7	0.8	0.9
Education as a % of government expenditure											
Total	15	19	20	18	19	21	17	17	14	17	14
Recurrent	15	19	22	21	23	25	22	20	17	20	16
Capital	16	19	12	7	9	8	7	9	9	10	13

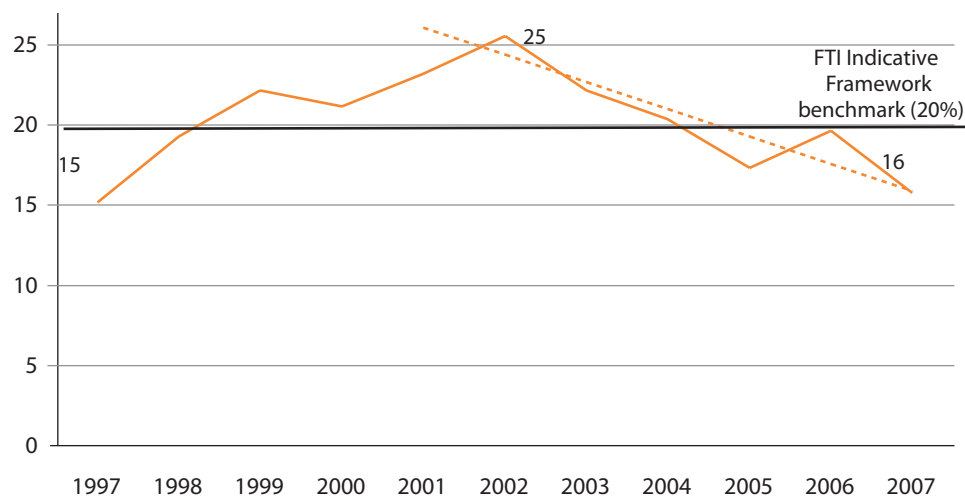
Source: Authors' calculations using MOF final account data.

expenditure on education in relation to GDP remains relatively high compared with Egypt, Oman, or Pakistan (3.8 percent, 4.0 percent, and 2.0 percent, respectively). As does Yemen, these countries have highly publicly subsidized education sectors.¹⁴¹ Yemen's relatively high level of public spending on education is due to its almost exclusive reliance on public resources to fund education. On the other hand, Indonesia, Korea, and the Philippines have managed a balanced expansion of their education sectors by mobilizing private resources. As a result, these countries record lower public expenditure on education as a percentage of GDP (3.5 percent, 4.4 percent, and 2.5 percent, respectively), even though the overall national effort they have devoted to education reaches much higher levels.¹⁴²

141. Public expenditure on education as a % of GDP figures is for 2007 for Egypt and Pakistan, and 2006 for Oman (EdStats August 2009).

142. Public expenditure on education as a % of GDP figures is for 2005 for Korea and the Philippines, and for 2007 for Indonesia (EdStats August 2009).

Figure 4.2 Education as a Percentage of Government Recurrent Expenditure, 1997–2007



Source: Authors' calculations using MOF final account data.

4.2 Allocation of Government Expenditure on Education

Distribution of total government expenditure on education

Basic and secondary education account for the largest proportions of public education spending, but their shares declined between 2000 and 2007, while the share for TEVT and higher education increased. Table 4.2 shows that basic and secondary education received 78 percent of public education expenditure in 2007, down from a high of 85 percent in 2000. The share to higher education increased between 2001 and 2003 but has remained relatively stable at approximately 17 percent since.¹⁴³ The largest relative increase in Yemen has been for TEVT: from 1 percent to 6 percent of public education expenditure between 1997 and 2007. Most of this increase was due to increases in capital spending. The government of Yemen has set achieving MDGs as an important commitment. Nevertheless, based on spending priorities within education, the relative importance of basic education is lower now than it was a decade ago.

143. Countries vary widely in the proportion of education spending directed to each level. For example, some countries' proportions of spending on higher education are similar to Yemen's (17%): Morocco (17%), India (20%), and Iran (20%). Other countries spend substantially more, such as Lebanon (25%), Hong Kong (31%), and Ethiopia (39%). Still others spend considerably less, including Oman (8%), Cambodia (3%), and Bangladesh (13%) (World Bank EdStats data for 2005 and 2006).

Table 4.2 Distribution of Government Expenditure on Education by Level, 1997–2007 (%)

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total education expenditure											
Basic and secondary	85	82	84	85	84	82	80	80	80	79	78
TEVT	1	2	2	2	4	2	3	3	3	5	6
Higher education and research	14	16	14	12	13	16	17	17	16	16	17
Total	100	100	100	100	100	100	100	100	100	100	100
Recurrent education expenditure											
Basic and secondary	89	88	88	89	88	85	83	82	83	82	81
Basic				66	65	62	61	61	61	60	60
Secondary				24	23	22	22	22	22	22	22
TEVT	1	1	1	1	1	1	2	2	2	2	2
Higher education and research	10	11	11	10	10	14	15	16	15	16	17
Total	100	100	100	100	100	100	100	100	100	100	100

Source: Authors' calculations using MOF Final Account data from 1997–2007.

Notes: "TEVT" includes MOTEVT and community colleges. "Higher education and research" includes MOHE, universities, and other higher education institutes (such as the Higher Institute for Guidance) and research institutes (such as the Education Research and Development Center).

Distribution of government capital expenditures on education

On average over the last decade, approximately 15 percent of public education spending has been devoted to capital expenditures, with wide variations across subsectors and significant fluctuations. Between 1997 and 2007, capital spending accounted for approximately 12 percent of total spending in basic and secondary education, 16 percent in higher education, and 70 percent in TEVT (table 4.3). Investments in higher education peaked in the late 1990s and have declined since. As this is a relatively new subsector, for over a decade, investments in TEVT have been quite heavy to provide new facilities.¹⁴⁴ Due to the current massive expansion policy with new investment in TEVT, Yemen should expect a much larger demand for TEVT recurrent (operating) costs in the near future.

Distribution of recurrent government expenditure on education

Between 1997 and 2007, recurrent expenditure in the upper segments of the education system (TEVT and higher education) grew almost twice as fast as the lower segments (basic and secondary education). In real terms, recurrent public spending doubled for basic and secondary education, but approximately quadrupled for TEVT and higher education (table 4.4).

144. In fact, budgetary allocations for capital spending are quite high (almost double in 2007) compared to actual expenditures.

Table 4.3 Capital Expenditure as a Percentage of Total Public Expenditure on Education, 1997–2007

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Basic and secondary	17	16	9	5	5	6	10	12	10	12	12
TEVT	33	57	52	60	69	52	54	48	44	64	70
Higher education and research	40	46	32	29	26	17	19	20	22	15	16
Total	20	21	12	9	10	8	13	15	13	15	15

Source: Authors' calculations using MOF Final Account data from 1997–2007.

Notes: "TEVT" includes MOTEVT and community colleges. "Higher education and research" includes MOHE, universities, and other higher education institutes (for example, the Higher Institute of Guidance) and research institutes (for example, the Education Research and Development Center).

4.3 Unit Cost Analysis

Despite increases in recurrent spending on education between 2001 and 2007, per-student spending decreased in real terms for all levels of education except higher education (table 4.5). The actual number of students increased for all levels during this period (chapter 2), and the recurrent expenditure grew at a slightly lower rate than that of enrollment growth at basic and secondary levels. Therefore, the per-student recurrent spending decreased slightly for basic and secondary levels.

The cost of education per student is greater for the higher levels of education. Over the last decade, TEVT consistently has had the highest cost per student. The recurrent cost per student (unit cost) is lowest for basic education (Yrls 36,195), followed by secondary education (Yrls 49,286), higher education (Yrls 121,297), and TEVT (Yrls 195,941).¹⁴⁵ While the basic and secondary education unit costs decreased slightly, the unit cost for higher education experienced a substantial increase, and the unit cost for TEVT experienced a substantial decrease. One of the reasons that per-student expenditure for TEVT dropped was the rapid enrollment growth rate (the number of students almost tripled between 2001 and 2007), combined with a relatively small recurrent expenditure share in the overall TEVT budget.

The unit-cost increase in higher education implies efficiency losses. However, it is unclear whether the reduction in per-student recurrent spending for basic, secondary, and TEVT corresponds

145. For higher education, the analysis covers the unit cost of regular students in public universities, excluding scholarship and parallel program students.

Table 4.4 Recurrent Government Expenditure on Education by Level, 1997–2007*(constant 2007 Yrls mil)*

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Basic and secondary	79,101	89,182	108,822	139,410	127,795	144,505	133,256	134,421	150,900	154,218	172,816
Basic	67,221	75,788	92,479	118,474	108,603	122,803	113,243	114,234	128,238	131,057	146,863
Secondary	11,879	13,393	16,343	20,937	19,192	21,702	20,012	20,188	22,662	23,161	25,954
TEVT	927	987	1,126	1,521	1,770	2,189	2,934	2,673	3,575	3,963	4,135
Higher education and research	9,153	11,340	13,528	15,309	15,151	24,305	24,648	25,845	27,129	30,337	35,291
Total	89,181	101,509	123,476	156,240	144,716	170,998	160,837	162,939	181,604	188,517	212,243

Source: Authors' calculations using MOF Final Account data from 1997–2007.

Notes: "TEVT" includes MOTEVT and community colleges. "Higher education and research" includes MOHE, universities, and other higher education institutes (for example, the Higher Institute of Guidance) and research institutes (for example, the Education Research and Development Center).

to an efficiency gain or a loss in the quality of the educational services delivered. Considering the steady level of enrollment in public universities, the substantial increase in the unit cost of higher education, coupled with increasing repetition rates, implies a deterioration of internal efficiency.¹⁴⁶ While concrete evidence is not available, from 2000–07, there was a mixture of positive and negative changes in recurrent spending in basic education, secondary education, and TEVT that seem to have affected per-student spending. Some evidence indicates that there was no substantial improvement in internal efficiency. In particular, there was a decline in internal efficiency for boys (chapter 2). On the positive side, in terms of efficiency, the student-teacher ratio in basic education increased from 23 students per teacher in 2000 to 25 in 2006. Overall, however, the factors that reduced the unit cost cannot be determined with available evidence.

Per-student spending for grades 7–9 exceeds that for grades 1–6 and for secondary education. A detailed decomposition of per-student spending enables separate estimates of unit costs for primary education (grades 1–6) and upper basic education (grades 7–9).¹⁴⁷ The estimates reveal that, due to low economies of scale in upper basic education, Yemen's per-student spending is on average 63 percent higher than that of primary education and 8 percent higher than secondary education: Yrls 51,458 per student compared to Yrls 31,643 (primary) and Yrls 47,714 (secondary) (table 4.6).

146. It is to be observed, however, that the unit costs of higher education started at an extremely low level. In 2002 they were just twice as high as the unit costs of basic education, a particularly low coefficient.

147. Appendix H.

Table 4.5 Per-Student Recurrent Expenditure by Level of Education, 2001–07
(constant 2007 YrIs)

	2001	2002	2003	2004	2005	2006	2007
Basic and secondary	40,406	37,185	33,056	31,684	33,800	33,808	37,699
Basic	38,950	36,103	32,189	30,853	33,005	32,943	36,195
Secondary	51,250	44,786	39,006	37,389	39,134	39,710	49,286
TEVT	236,945	287,962	306,688	195,134	258,821	228,814	195,941
Higher	n/a	80,712	79,024	95,020	92,575	114,684	121,297

Source: Authors' calculations using MOF Final Account data from 1997–2007 and MOE AES enrollment.

Notes: The unit cost calculations are based on 2006–07 public school enrollment and 2007 expenditure data. Unit costs for basic and secondary education in table 4.5 do not match the unit costs in table 4.6 because they are calculated differently. In table 4.5, unit costs are calculated by dividing total expenditure by the number of students. The unit costs for higher education exclude scholarship and parallel programs.

In secondary education, although the student-teacher ratio is low, the average class size is much larger than in basic schools (table 3.5). Therefore, on average, secondary schools benefit from economies of scale and thus have a lower unit cost than does upper-basic education.

Salaries and allowances for teachers, administrators, and support staff represent the bulk of per-student spending. This emphasis is particularly problematic given the requirements of the current “discovery-based” curriculum for teaching and learning materials. Salary costs make up 94 percent of per-student spending in basic and secondary education (table 4.6). Teachers' remuneration accounts for 69 percent, 67 percent, and 65 percent of total recurrent spending in primary, upper basic, and secondary education, respectively. Nonteacher administrative costs account for 25 percent, 27 percent, and 30 percent of total recurrent spending at these levels, respectively. Expenditure on “nonteacher salary” items is approximately 30 percent of recurrent education spending, not far from the EFA FTI Indicative Framework benchmark of 33 percent by 2015. The breakdown of nonteacher salary items in Yemen overly comprises salaries of administrative staff, leaving very little for goods and services (table 4.6). MOE expenditure data show that only 6 percent of recurrent expenditures are allocated to nonsalary items¹⁴⁸—a comparatively low proportion internationally.¹⁴⁹ The

148. Due to lack of information, share of nonsalary expenditure by primary, upper-basic, and secondary levels cannot be calculated.

149. There is great variation across countries in the proportion of recurrent education spending allocated to nonsalary items. Some are similar to Yemen (6%), such as Jordan and Morocco (both 6%). A very few, including Oman (1%), are lower than Yemen. Many are substantially higher, including Japan and Syria (both 12%), United Arab Emirates (16%), Malaysia (27%), and Finland (34%). Authors' calculations were based on UNESCO Institute for Statistics data for 2002–06 (June 2009).

Table 4.6 Recurrent Expenditure on Teachers, Support Staff, and Nonsalary Items by Education Level, 2007

	Basic		Secondary	MOE	TEVT	Higher
	Grades 1–6	Grades 7–9				
	<i>(constant 2007 YrIs)</i>					
Per-student spending (YrIs)	31,643	51,458	47,714	–	195,941	121,297
Salary cost	29,901	48,625	45,087	–	132,818	95,060
Teacher cost	21,987	34,699	30,846	–	–	–
Support staff cost	7,914	13,926	14,241	–	–	–
Nonsalary items	1,743	2,834	2,627	–	54,694	26,237
Per-student spending (%)	100	100	100	100	100	100
Salary cost	94	94	94	94	68	78
Teacher cost	69	67	65	68	–	–
Support staff cost	25	27	30	26	–	–
School level	10	12	15	11	–	–
Service level	15	15	15	15	–	–
Nonsalary items	6	6	6	6	32	22

Source: Author's calculation using MOE payroll and AES; TEVT and higher education expenditure from MOF.

Notes: Unit costs for basic and secondary education in table 4.6 are lower than those reported in table 4.5 because they are calculated differently (by multiplying the average salary by the number of teachers on the payroll). This method results in unknown costs that cannot be attributed to either basic or secondary education levels.

supply of teaching and learning materials such as textbooks (including publishing and on-time delivery to schools) and laboratories as well as the maintenance of school facilities suffer from this low allocation of nonsalary expenditure (chapter 3). The result is likely to be lowered education quality.

The high wage bill for teachers contributes neither to high levels of efficiency nor to good student learning outcomes. This lack of intended effects points to the need to redesign the teacher remuneration system. A high proportion of expenditures on teachers may be justified if the system's needs are met and if efficiency gains have been utilized. However, Yemen's experience is otherwise (chapter 3):

1. Teacher absenteeism is high.
2. Teacher time on task is low.
3. Most teacher deployment is random.
4. The majority of urban students are studying in classes that teachers cannot manage.
5. Rural students are studying with teachers who are struggling to teach more than one grade simultaneously.

6. Female teachers are distinctly absent from rural schools, limiting girls' retention and school completion.
7. Finally, although evidence is not available, anecdotally it is believed that the system contains many "ghost" workers who may be on the payroll but may not be in schools.

Given these conditions, reducing the pay of the teachers¹⁵⁰ or reducing the number of teachers in the system may not introduce any improvements in the system.¹⁵¹ Efficiency gains could be made by reducing teacher absenteeism; increasing time on task; reducing teaching loads in urban areas; and deploying teachers on the bases of student enrollment numbers, gender, and education levels. These reforms could imply that some teachers who are already on the payroll may be given higher salaries and bonuses for extra hours worked or for qualifications gained. Such reforms also could mean that teachers in urban schools are paired with teaching assistants (who could be hired on contract and operate permanently outside the civil service and paid lower wages) to lessen workloads.

A combination of poor compliance with the MOE teacher deployment policy in very small schools and a generous MOE policy in small schools overall contributes to efficiency losses in the system. Yemen has internationally low student-teacher ratios (STRs) in basic and secondary schools; yet, teacher needs are not met at most schools (chapter 3). An increase in the national STR in basic and secondary education is needed to increase the relative share of nonsalary spending in recurrent expenditure. However, the geography and scattered population of rural Yemen continue to require very small schools whose STRs may continue to be low. In this regard, in 2004 the MOE issued a ministerial decree¹⁵² that established the criteria for allocating teachers to small schools (table 4.7).¹⁵³ In reality, the very small schools are not complying with this MOE policy. Schools that have 10–20 students are eligible to receive 1 teacher and no administrative staff. In fact, the average

150. Teachers earn on average less than their counterparts in other jobs with the same education level (appendix I).

151. Because the Yemeni civil service rewards higher education very well (chapter 5), there is evidence that teachers are paid reasonably well in Yemen, as are other civil servants (given salary and allowances). See appendix I.

152. Decree No. 88 of 2004, "Identification of Educational Principles and Criteria for the School Map."

153. According to the decree, complete schools (basic with grades 1–9 and secondary with grades 10–12) should have 1 teacher for each class in grades 1–3, 1.5 teachers for each class in grades 4–9, and 2 teachers for each class in grades 10–12. A headmaster is provided only for complete schools with more than 250 students. However, the presence of headmasters (administrative staff) and the number of teachers do not necessarily follow this rule.

Table 4.7 Number of Teachers Assigned to Small Schools According to MOE Policy and Actual, 2007

No. of students	MOE policy				Actual		
	Classrooms	Teachers	Admin. staff	Student-teacher ratio	Teachers	Admin. staff	Student-teacher ratio
40–60	3	4	0	10–15	3.3	0.4	18
30–40	2	3	0	10–13	2.8	0.3	14
20–30	1	2	0	10–15	2.5	0.2	12
10–20	1	1	0	10–20	2.2	0.1	9

Source: MOE policy numbers prepared by authors from Ministerial Decree No. 88 of 2004; actual was calculated by authors using MOE AES 2006–07.

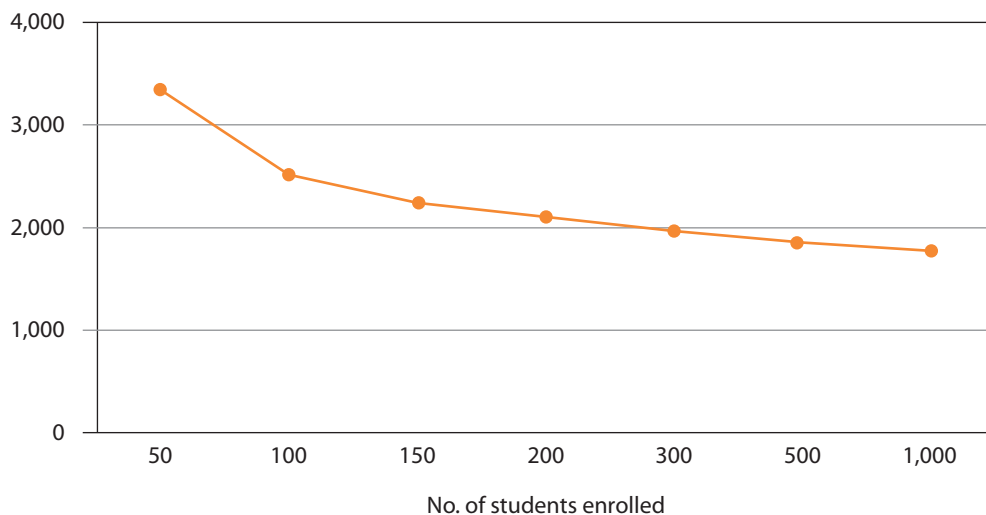
school of this size has two teachers (table 4.7). Interestingly, the MOE school policy for small schools that have 30–60 students seems overly generous, so schools of this size have managed better STRs than the policy specifies (table 4.7).

When schools have fewer than 100 students, the unit cost is very high. Approximately 74 percent of primary schools have fewer than 150 students; 52 percent of all primary schools have fewer than 100 students. An analysis of unit costs for grades 1–6 indicates that larger schools are more cost effective to manage than smaller schools and that efficiency gains through increased school size could be particularly large for schools currently enrolling fewer than 120 students (figure 4.3).¹⁵⁴ For example, in schools enrolling 70 students (over 2,000 schools enroll fewer than 70), average per-student monthly spending is estimated at Yrls 2,860. For schools enrolling 200 students (a difference of approximately 40 percent), it is an estimated Yrls 2,090.

The key to achieve fiscally sound universal education necessitates rationalizing school sizes. It is suggested to provide smaller schools close to communities for grades 1–6 with multigrade teachers, and larger, better resourced schools for grades 7–12 at reasonable distances from communities to cover bigger catchment areas. From international experience, a school enrolling 100 students can “normatively” operate with 3 teachers, each teaching 2 grades. In Yemen, a school enrolling 100 students uses on average 4.2 teachers (table 4.8). As a consequence, while the cost of teacher salary per student could “normatively” be Yrls 22,320, the actual (estimated) figure is 40 percent higher (table 4.8).

154. This is limited to salary unit cost, representing more than 90% of total spending at the school level.

Figure 4.3 Per-Student Expenditure by Numbers Enrolled at Primary Schools, 2007
(Yrls)



Source: Authors' calculations based on MOE AES 2006–07 and payroll data.

To move closer to the normative estimates, the MOE will need to mobilize a large number of teachers in rural areas and train them to teach multiple grades. In addition, the MOE could establish more small schools that offer only grades 1–6 and locate them close to communities. However, both efficiency gains and educational quality can be improved if separate, middle-sized, well-resourced schools are established for grades 7–12 and located possibly a little farther from individual communities. The teaching and learning resource needs are similar for grades 7–12, including libraries, laboratories, and teachers who are familiar with specific subject matter as opposed to only general education. One analysis indicated that a secondary school needs to have at least 180 students to viably offer the 2 mandatory academic streams.¹⁵⁵ The analysis also found that efficient workloads of 22 teaching periods per week would allow only 10 teachers per school, whereas the number of subjects in the school timetable is considerably larger than that (approximately 17), thus highlighting the need for more teachers. However, at present, only 21 percent of Yemen's secondary schools have more than 180 students (13 percent of rural and 47 percent of urban schools).¹⁵⁶ Therefore, promoting medium to large schools that offer grades 7–12 may be one way to address the high unit cost and low provision of adequate facilities and teaching and learning resources that plague many schools in Yemen.

155. World Bank 2008a.

156. World Bank 2008a.

Table 4.8 Actual and Alternative Arrangements and Costs in Small Schools, 2007

No. of students in school	60	100	120	150	200
No. of teachers					
“Normative”	2.0	3.0	4.0	5.0	6.0
“Actual”	3.2	4.2	4.7	5.5	6.8
Per pupil spending on teacher salary (Yrls)					
“Normative”	24,800	22,320	24,800	24,800	22,320
“Actual”	39,294	31,328	29,336	27,344	25,353
Saving in per pupil spending on teacher salary					
Yrls	14,494	9,008	4,536	2,544	3,033
%	37	29	15	9	12

Source: Authors' calculations using MOE AES.

4.4 Equity of Government Expenditure on Education

As in many countries, a relatively small number of individuals appropriate a relatively large proportion of the public education resources. Because variations in schooling careers result in variations in the amount of public resources appropriated, it is found that those who stay longer in the education system claim more public resources. Of the total public resources spent on education for a generation, approximately 20 percent has been obtained by approximately half (49 percent) of the group (those whose terminal education level is at most grade 6). In contrast, the most educated 10 percent in their generation are estimated to have appropriated approximately 30 percent of total spending (table 4.9). In general, this pattern is common to other countries. However, it is important to determine whether this pattern is stronger or weaker in Yemen than in comparable countries.

Yemen's distribution of education resources in relation to the distribution of enrollments is not particularly equal in comparison with its international peers. The Gini coefficient for public spending on education in Yemen is 0.51.¹⁵⁷ It is estimated that the average Gini coefficient stands at approximately 0.30 in both MENA and Asian countries. This finding suggests that the structural distribution of public spending on education is not extremely unequal in Yemen. However, from a comparative perspective, neither is it particularly equitable due to disparities in enrollment, especially at the higher education levels, whose unit costs are higher.

157. The Gini coefficient is a measure of inequality with values between 0 and 1. With perfect equity equal to 0 and perfect inequality equal to 1, the lower the Gini coefficient, the more equal the distribution. The Gini coefficient is calculated using the Lorenz curve (later definition) as the area between perfect equality (the 45-degree line) and the Lorenz curve.

Table 4.9 Profile of Government Expenditure on Education by Level of Schooling, 2005–06

Grade/level	Enrollment (%)	% highest level	Cumulative expenditure/ individual (Yrls)	Total expenditure (Yrls)	Total expenditure (%)	Cumulative % Individuals	Cumulative % Resources
No schooling	17	17	0	0	0	17	0
Grade 1	83	10	31,643	3,068	1	27	1
Grade 2	73	4	63,286	2,725	1	31	2
Grade 3	69	4	94,929	3,797	1	35	3
Grade 4	65	4	126,572	5,063	2	39	5
Grade 5	61	3	158,215	5,352	2	42	6
Grade 6	58	4	189,858	8,319	3	47	9
Grade 7	53	2	241,316	5,439	2	49	10
Grade 8	51	2	292,774	6,599	2	51	13
Grade 9	49	8	344,232	27,131	8	59	21
Grade 10	41	3	391,946	11,918	4	62	25
Grade 11	38	3	439,660	13,369	4	65	29
Grade 12	35	21	487,374	102,368	32	86	60
Higher education	14	14	934,842	128,640	40	100	100

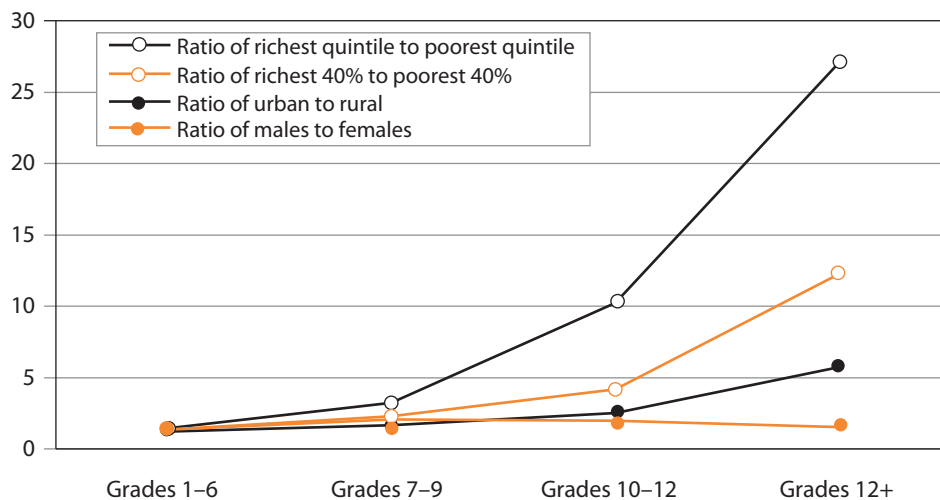
Source: Authors' calculations using MOE AES and HBS 2005–06.

Note: Enrollment % is a reconstructed enrollment rate using enrollment rates from Household Budget Survey (HBS) and student flow information from MOE AES.

Disparities in enrollments increase with the education level, are more pronounced between rural and urban areas than between males and females, and remain the most intense between the rich and the poor. The distribution of the population aged 5 to 25 by education status (level of schooling) according to gender, location, and income group indicates considerable differences in enrollment patterns among different social groups. These different patterns lead to a significant disparity in public resource allocation (figure 4.4). For example, in secondary education, the relative chances of having been enrolled are 1.9 times larger for males than for females, 2.4 times larger for urban than for rural dwellers, and 4.0 times larger for people from the richest 40 percent of the population than people from the poorest 40 percent. Comparing the richest 20 percent and the poorest 20 percent, the richest have 10 times more likelihood than the poorest to have been enrolled at the secondary level of schooling.

The distribution of public resources is most equitable at the primary education level, with inequality increasing by education level. Since access to schooling implies access to the public resources mobilized to finance the services, social disparities in enrollments turn into social disparities in the appropriation of public resources. This inequity can be assessed either by focusing the analysis separately at

Figure 4.4 Ratio of Receiving Benefits from Public Spending of “Advantaged” to “Disadvantaged” Group by Education Level, 2006



Source: Authors' calculations using MICS 2006.

each education level or by taking a consolidated systemic perspective. Figure 4.5 presents the Lorenz curve of the distribution of public spending on education by level of schooling and for the system as a whole.¹⁵⁸ As expected, the distribution departs from the equity line as the higher levels of education are considered. The Gini coefficient ranges from 0.06 in primary education to 0.52 at the highest levels. Overall, the distribution across the whole system is relatively close to the equity line (0.18).¹⁵⁹

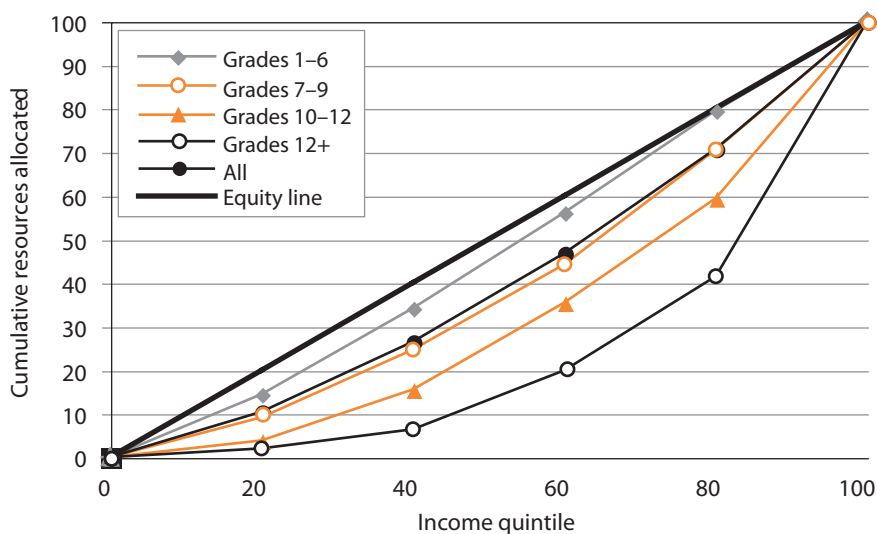
4.5 Summary of Key Findings

Total government expenditure increased substantially between 1997 and 2007. However, given the instability of oil prices and the depletion of Yemen's oil reserves, recent increases due to high oil prices may not be sustainable. The proportion of spending that was allocated to education was at an appropriate level during most of this period (close to the FTI Indicative Framework benchmark of

158. A Lorenz curve plots the cumulative percentage of resources allocated against the cumulative percentage of recipients, starting with the poorest individual.

159. Note that the Gini coefficients presented in this paragraph differ from the ones presented earlier in this section because of different methodologies. The first Gini coefficient (0.51 for Yemen) represents inequalities in the distribution of education resources in relation to the distribution of enrollments. The Gini coefficients in this paragraph represent inequalities in the distribution of education resources in relation to income quintile.

Figure 4.5 Lorenz Curve of Government Expenditure on Education by Income Quintile



Source: Authors' calculations using MICS 2006.

20 percent) but decreased to 16 percent in 2007. Between 1997 and 2007, there was an overall increase of 125 percent in education expenditure in real terms. However, due to the rapid increase in population and enrollments, spending per student actually decreased for all levels of education except higher education.

Yemen has experienced some changes in the distribution of education expenditure across the levels of education. Basic and secondary education still receives the greatest share—78 percent in 2007—down from a high of 85 percent in 2000. The share to TEVT increased from 1 percent to 6 percent between 1997 and 2007, and higher education has received approximately 17 percent over the last few years. Due to the early stage of development of the subsector, capital spending has been a large part of TEVT expenditure.

Recurrent spending per student was highest for TEVT during the last decade despite some efficiency gains due to a rapid increase of students. Recurrent spending per university student is rapidly increasing, and high repetition rates indicate low internal efficiencies in this subsector. Recurrent spending doubled for basic and secondary education between 1997 and 2007 in real terms, and almost quadrupled for TEVT and higher education. Upper basic education has higher per-student costs due to low economies of scale.

Spending on inputs other than teachers' and administrators' remuneration is comparatively low in Yemen (at 6 percent of recurrent

education expenditure). Given that the curriculum is based on a methodology that has substantial requirements for teaching and learning resources, the relatively high proportion of recurrent education expenditure on teacher and administration pay is a serious systemic issue.

Efficiency gains could be made by improving teacher deployment and rationalizing school sizes. Service delivery to a scattered population is required due to Yemen's geography. Furthermore, it is necessary to provide education to young children in schools that are close to their communities. For these reasons, Yemen will need to re-examine its school establishment and teacher deployment policy. Smaller schools offering grades 1–6 near communities and equipped with teachers who can teach multiple grades could be a solution. Furthermore, given similar resource needs (skills of teachers, teaching and learning materials, and infrastructure) in grades 7–12, it is necessary to explore economies of scale that can be generated from having larger schools offering grades 7–12 that are better resourced but perhaps farther from individual communities to maximize coverage within larger catchment areas.

There is evidence of inequalities in the way that education resources are distributed. In particular, inequalities exist at the higher levels of education. These inequalities exist by gender (males benefit more from education resources than do females), by locality (people from urban areas benefit more than do those from rural areas), and by level of poverty (the richest benefit more than do the poorest). Overcoming these inequalities will be vital to achieve Yemen's education goals.

Contribution of Education to Social and Economic Development

Education is inextricably intertwined with poverty, social development, and the labor market; and has the potential for widespread benefits to society. While previous chapters concentrate on the supply of education, chapter 5 focuses on the determinants of Yemeni households' demand for education, particularly in relation to the labor market. Critical in comprehending this link are an understanding of the demand for labor, the job creation process, and unemployment.

5.1 Social Benefits of Education

Education renders significant benefits to an economy and to society. It is now widely accepted and empirically demonstrated that education confers significant benefits across a population and economy. Recent evidence from surveys of Yemeni households shows that education reduces population growth, improves health, and alleviates poverty (appendix J).

Impact of education on population growth

Girls' enrollment in school can delay the age of marriage, especially when education extends to post-basic levels. Rapid population growth is one of the important national development agenda items addressed in the Development Plan for Poverty Reduction (DPPR).¹⁶⁰ The government identifies delaying the age of first marriage as an important measure to reduce the fertility rate. An analysis of MICS 2006 found that post-basic education significantly

¹⁶⁰ The DPPR aims to reduce the population growth rate from 3.0% in 2004 to 2.75% by 2010.

contributes to postpone the age of first marriage (appendix J). Secondary education graduates in rural areas were married on average 1.3 years later than basic education graduates. Secondary graduates in urban areas were married 1.8 years later than basic education graduates. Female university graduates in rural areas were married on average 2.3 years later than female secondary graduates; and those in urban areas, 3.4 year later.

Education, combined with the impact of the delay in the age of first marriage, can reduce the fertility rate. Among uneducated mothers, the average number of children per mother ever born is 5.5 in both urban and rural areas. For mothers who have completed grade 6, it is lower: 4.6 children in urban areas and 4.9 children in rural areas. The number is lower still for mothers who have completed basic education: 4.1 in urban areas and 4.6 in rural areas. The combined impact of education and delayed age of first marriage reduces the number of children to 2.5 children for women in urban areas and 3.7 children for women with university degrees in rural areas. These numbers are a significant reduction since the total fertility rate per woman in Yemen in 2003 was 6.2.¹⁶¹

Intergenerational educational impact of parental education

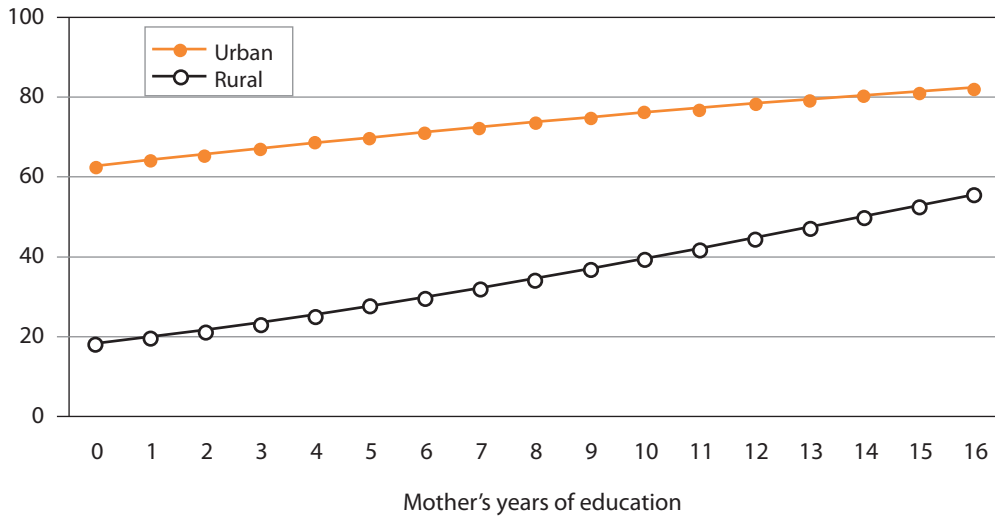
Rural girls' access to grade 1 and retention to grade 6 is highly correlated with their mothers' educational attainment. While the access rate to grade 1 among urban children is relatively the same regardless of their mothers' education, it is highly correlated with the mother's education among rural children, especially rural girls. The average access rate of rural girls to grade 1 is only 75 percent if their mothers did not attend school at all, but it is significantly higher at 96 percent if mothers completed grade 6. In fact, this is almost the same average rate as for urban girls.

Impact of mother's education on maternal health

Despite the general lack of health services in rural areas, the use of such services is significantly greater for women with more education (figure 5.1). Data from MICS 2006 found that approximately one-third of births in Yemen were delivered by skilled health personnel (doctor, nurse, or midwife), fewer (26 percent) in rural areas. A regression analysis showed that only 18 percent of rural uneducated mothers received professional support during delivery, whereas 62 percent of urban uneducated mothers received these

161. MOPIC 2006.

Figure 5.1 Probability of Accessing Professional Delivery Assistance by Mother's Years of Education, 2006 (%)



Source: Authors' calculations using MICS 2006.

services.¹⁶² Despite this supply-side constraint, access to these services in rural areas is substantially greater for more educated women. The probability of benefiting from professional assistance increased from 18 percent to 39 percent if basic education had been completed, and to 44 percent for secondary school graduates.

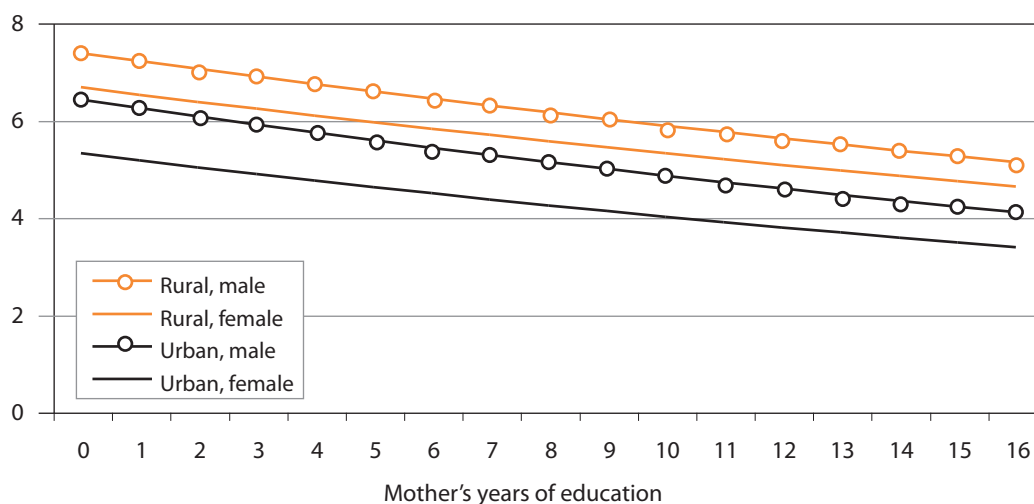
Impact of mother's education on children's health

The health status of children is better if their mothers are more educated. The under-five mortality rate is significantly higher for both boys and girls in urban and rural areas for less educated mothers (figure 5.2). In rural areas, the under-5 mortality rate for boys is 7.4 percent if they have illiterate mothers but drops to 6.0 percent if their mothers have completed basic education (6.6 percent and 5.4 percent for girls, respectively).¹⁶³ One of the contributing factors for the lower mortality rates of children with more educated mothers is greater levels of vaccination. The probability of a child's getting a sufficient set of vaccinations¹⁶⁴ improves from 27 percent if the mother is illiterate to 47 percent if the mother has completed basic education. Registration of births also is more likely among children with more educated mothers.

162. Based on authors' analysis of MICS 2006.

163. Internationally, boys' mortality is generally higher than girls' mortality.

164. The analysis includes BCG, polio, DPT, hepatitis B, and measles.

Figure 5.2 Under-Five Child Mortality Rate by Level of Mothers' Education, 2006 (%)

Source: Authors' calculations using MICS 2006.

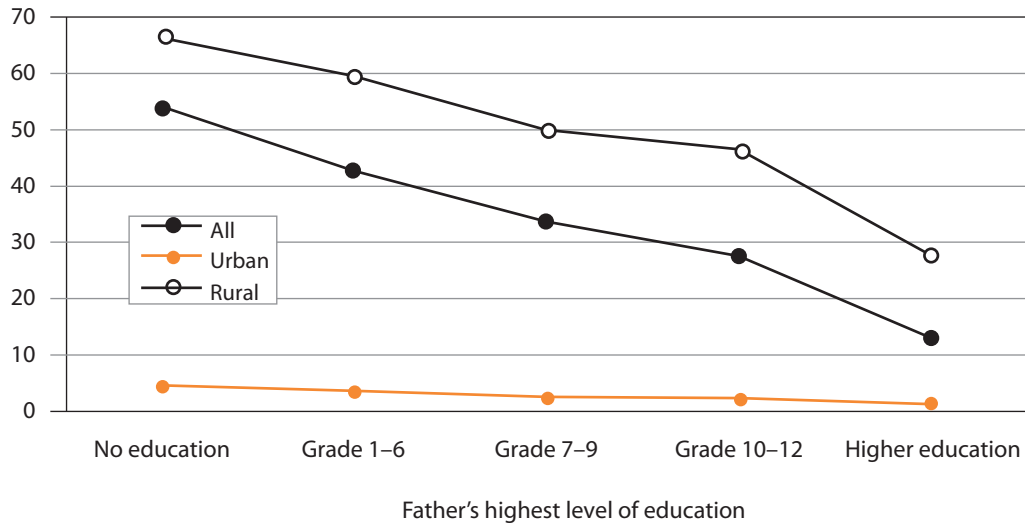
Impact of education on poverty

More education also is associated with lower poverty (figure 5.3). According to MICS 2006, the probability of being poor¹⁶⁵ is lower when the head of the household is more educated, especially in rural areas. The MICS data show that the majority of the poor live in rural areas, and as high as 66 percent of the uneducated are poor. After completing primary education, the probability of those from rural areas being poor drops to 60 percent, and further down to 27 percent among those with university education.

Given the large social impact and low unit cost of this level of education, social benefits can be increased cost effectively by focusing on education for all up to grade 6. Education improves people's lives through a variety of channels such as fertility rate, population growth, health, and poverty. The net social benefits of primary education are largest (high level of benefit and lowest unit cost). From a series of analyses of social indicators, the primary education level yields the highest proportion of social impact (43 percent of total social benefit incurred until university education) (appendix J). The unit cost of primary education per student is Yrls 189,858 with no repetition.¹⁶⁶ For Yrls 100,000 spent, the expected benefit is 23 percent. On the other hand, the expected benefits at the upper basic, secondary, and university levels are 11 percent, 12 percent,

165. Includes the 40% poorest households.

166. Annual cost Yrls 31,643 (table 4.6) multiplied by 6 years.

Figure 5.3 Probability of Being Poor by Father's Highest Level of Education, 2006 (%)

Source: Authors' calculations using MICS 2006.

and 5 percent, respectively. These figures imply that the marginal benefit is largest at the primary education level (appendix J).

5.2 Education, Wages, and Employment

*The impact of education on wages is small, with the exception of completing primary education or graduating from a university.*¹⁶⁷

An additional year of schooling increases wages on average by only 2.7 percent.¹⁶⁸ Completing primary education increases wages on average by 13.3 compared to remaining illiterate (table 5.1).¹⁶⁹ Completing upper basic education does not seem to increase wages beyond those earned by primary school graduates, and

167. Under conditions of informality and underemployment in the labor market in Yemen, conventional methodologies attempting to estimate the returns to education (for example, earnings functions) fail to produce reliable conclusions. Therefore, the results of earnings functions in this section can be interpreted more narrowly, that is, as a proxy indicator of how education affects wages (see technical discussion in appendix K).

168. This is the average effect of education on the average wages of all workers (men and women, located in the urban and rural areas, employed in the private and public sectors) controlling for experience (age), and hours of work. The full results of alternative specifications are reported in appendix K separately for women and men, and for workers in the public and in the private sectors.

169. This assumes that the 6-grade primary cycle is completed in 7 years and that each year in the primary cycle contributed equally to the increase in wages. The conversion from *level* impact to impact *per year in each education cycle* is based on the assumption that primary education is completed in 7 years, upper basic in 4 years, secondary in 4 years, and university studies in 6 years, taking into consideration some adjustment for repetition at these levels.

completing secondary education increases wages by merely 5.5 percent compared to basic education.¹⁷⁰ Attending TEVT does not exercise a positive effect on wages compared to attending general secondary schooling.¹⁷¹ On the other hand, getting a university degree boosts wages by 34 percent more than completing secondary education.

Quite unlike a typical labor market, in Yemen, work experience is valued more than additional education. An additional year of schooling increases wages on average less than an additional year of work experience. The effect of an additional year of schooling on wages—2.7 percent increase—is lower than that of experience (as approximated by the age of workers), which is nearly double this figure at 5.9 percent (table 5.1). This is a rather unconventional result because in a typical labor market the effect of schooling on wages is greater than that of experience. There are three main possible explanations. First, the nature of work in Yemen is rather simple and requires general skills, so additional education adds little to productivity. Second, the quality of education is low so is not valued by employers. Third, there may be an excess supply of educated workers so employers do not need to offer higher wages to attract educated workers.

Between 1999 and 2005, the relative rewards of education increased for primary education and secondary education but declined for upper basic and university education. A comparison of the rates of return in 1999 and 2005 indicate that, for both men and women, the returns to primary education have increased.¹⁷² In contrast, the returns to upper basic education not only have declined over time but now are negative (table 5.2). The rates of return to secondary education have increased for both men and women, and significantly so for women. The rates of return to university education have declined for both men and women but remain the highest compared to the returns from investing in education at all other levels. Thus, there is a greater incentive for parents to invest in primary education but not for the student to proceed to upper basic education unless the student intends to complete secondary education. At the top end, proceeding to university studies remains particularly attractive,

170. This is equivalent to an increase of 1.4% for each completed year of secondary education beyond basic education (and 0.8% for each additional year after primary education), again if all years in the secondary cycle counted the same.

171. See a more detailed discussion later in this chapter.

172. The calculations are based on the results of Labor Force Survey in 1999 and the Household Budget Survey of 2005–06. The methodologies, definitions, and coverage of these two surveys differ, so comparisons over time can be only tentative.

Table 5.1 Effect of Education on Wages, 2006

Effect from	Increase in wages (%)	
	Per level	Per year in level
One additional year of schooling	2.7	
One additional year of experience	5.9	
Completing primary education (compared to illiteracy)	13.3	1.9 ¹
Completing upper basic education (compared to primary)	0.0	
Completing secondary education compared to:		
Primary	5.5	0.8
Basic education	5.5	1.4
Attending TEVT (compared to secondary) ²	-2.9	
Completing post-secondary (compared to secondary)	-3.3	
Completing university (compared to secondary)	34.3	5.7

Source: Appendix K.

Notes:

1 The *per year in level* calculation assumes that the primary cycle is completed in 7 years and that each year in the primary cycle contributed equally to the increase in wages. The conversion from impact per level to impact per year in each education cycle is based on the assumption that primary education is completed in 7 years, upper basic in 4 years, secondary in 4 years, and university studies in 6 years, taking into consideration some adjustment for repetition at these levels.

2 Effect for TEVT includes 2-year vocational, 2-year technical, and 3-year vocational education courses.

even after the apparent decline in the wage premium paid to university graduates.¹⁷³

The effect of education on wages is smaller for the poor, which adversely affects the decision of poor households to invest in education of their children. An analysis shows that the impact of education on the wages of workers who come from poor households is significantly lower than on the corresponding earnings of workers who belong to non-poor families. On average, an additional year of education increases the labor earnings of the non-poor by 3.5 percent, but for workers from poor households by only 1.7 percent.¹⁷⁴ This difference is not unexpected as the non-poor may have better access to information, more effective networking, or simply better health and access to higher quality education. However, this significant finding adds to the disincentives for the poor to invest in education. When combined with low incomes and survival needs, the small effect of education on wages adversely affects the decision of poor households to invest in the education of their children.

173. These observations are in line with some demand-side explanations for the recent trends in education enrollments, that is, the difficulty to expand basic education among the poorer, whereas there has been a relatively vibrant increase in enrollments at secondary level, especially in universities (among the more affluent).

174. World Bank 2007c. This controls for other factors such as age, urban-rural residence, gender, years of schooling, working hours, and type of job.

Table 5.2 Change in the Rates of Return to Successively Higher Levels of Education between 1999 (Labor Force Survey) and 2005–06 (Household Budget Survey)

	Male			Female		
	1999	2005–06	Change	1999	2005–06	Change
Illiterate to primary	-1.2	2.0	3.2	-0.1	1.0	1.1
Primary to upper basic education	-0.4	-1.7	-1.4	1.7	-0.2	-2.0
Upper basic to secondary education	-1.5	1.3	2.7	3.9	10.0	6.1
Secondary education to university	8.4	7.5	-0.9	7.7	4.8	-2.9

Source: Appendix K.

Notes: Rates of return are derived from aggregate data on average wages by level of education. They are calculated as the difference in the average wages between two successive levels of education divided by the product of years required to reach the higher level of education and the wages of the lower level of education. Taking into account repetition, successive levels of education are assumed to be complete in 7 years for primary, 4 years for upper basic, 4 years for secondary, and 6 years for university.

Irrespective of workers' levels of education, especially for females, the overall level of wages and the premium for education are higher in the public sector than in the private sector.¹⁷⁵ After controlling for other differences, for men, the wage level of government sector employees and public administration workers are 7.8 percent and 6.8 percent higher, respectively, than those in the private sector. For women, the corresponding wage premiums are much higher. 41 percent in public administration and 37 percent in the government sector compared to the private sector. The incremental effect of education on wages in the public sector is practically double the corresponding effect in the private sector. An additional year of schooling increases male wages in the public sector by 3.8 percent, compared to 1.8 percent in the private sector; and female wages by 4.9 percent in the public sector and 2.7 percent in the private sector.¹⁷⁶

Proportionally higher wage benefits for higher education in the public sector are possibly encouraging the more educated, especially women, to seek public sector jobs and to overinvest in education. While the premium of having a university degree is the largest for private and public sector employees, the size of the premium is larger for the public sector (53 percent in the public sector compared to 48 percent in the private sector). The bigger effect of education on public sector wages may encourage the more educated, especially women, to seek employment in the public sector. The larger effect also encourages “overinvestment”

175. This analysis controls for education, age, hours, and location (urban/rural) (appendix K).

176. The background regressions upon which this discussion is based appear in appendix K.

in education by job-seekers as a way to find employment in the public sector.

In addition to higher wages, less demanding working conditions in the public sector provide an additional incentive to get a public sector job. Wages in the private sector relate closely to hours of work while this correlation is weaker in the public sector, especially for women.¹⁷⁷ This link is an additional incentive for women to join the public sector, in which wages seem to be unrelated to hours worked.

Workers with TEVT qualifications fare worse in terms of wages than those with general education. The wages of workers with TEVT qualifications are not materially different than wages paid to workers with lower levels of general education. For post-basic TEVT graduates (2-year courses after basic education), the wage premium received is much lower than for general secondary graduates in the private and public sectors.¹⁷⁸ In fact, most graduates of TEVT institutes are employed in the public sector.¹⁷⁹ Of the 78,000 workers with such qualifications, 67,000 (85 percent) are found in the broad public sector.¹⁸⁰ Possibly, the majority of them are involved either as teachers in public training centers and institutes, or as maintenance workers in public buildings. These findings are compatible.¹⁸¹ It is probable that job-seekers with TEVT qualifications are attracted more by the prospects of finding employment in the public sector than by the wage levels per se. It also is probable that such workers are not valued much by the private sector.

177. For men, a 10% increase in hours worked increases wages in the private sector by 3.8%, but by only 1.7% in the public sector. For women, a 10% increase in hours worked in the private sector increases women's wages by a sizeable 6.2%; but it does not increase wages in the public sector, implying that hours worked are not linked to wages.

178. While 3-year secondary level TEVT graduates have higher wages than general secondary graduates (in the public sector but not in the private sector), the number of cases used for the analysis was only 28, which is not sufficient to generalize its impact.

179. The failure of TEVT to increase wages is not unexpected if those who attend such courses are dropouts from the general education system or face some other systematic disadvantage such as restricted mobility or limited networking that the data do not capture and therefore the authors cannot control for. However, if there had been some strong demand for technical and vocational skills to the extent that employers would have had to bid up wages, then a positive effect from TEVT could have been detected.

180. Authors' calculation using HBS 2005.

181. There are almost no female TEVT graduates working in the private sector.

5.3 Employment Creation, Skills Requirements, and Unemployment

The main limiting factor for employment creation is Yemen's more or less uniformly slow rate of economic growth, particularly, the difficulty for the formal sector to expand. Employment creation depends critically on the growth in economic activities and output. The successes of macroeconomic and industrial policies as well as the performance of the private sector drive most of the sustainable outcomes in the labor market. Education can help create a more skilled and mobile labor force and thus support the creation of a more productive economy for the employers and a more rewarding society for citizens. However, education alone does not create jobs nor does it increase productivity.¹⁸²

Despite the recent increase in more qualified job-seekers, the labor market remains largely informal and agricultural, and the required skills are mostly basic. In 2005, 45 percent of 15–64 year olds were in the labor market. Of these 4.5 million workers, 90 percent worked in the informal sector and 41 percent in agriculture. While the number of female labor force participants has been increasing, the share of female workers in the labor market is only 18 percent. Of these, 82 percent work in the agricultural sector. Because Yemen's labor market is largely informal, the skills required are primarily basic.

Employment creation

Employment creation is fairly limited in Yemen, especially in the formal sector. The number of jobs created in the formal sector is at best 25,000 per year. Of these, 10,000 are in the public sector and 15,000 are in the private sector.¹⁸³ The public sector is already over-staffed so is unlikely to significantly increase recruitment. On the other hand, the labor market added nearly 230,000 workers in 2007. Although detailed data about the informal labor market are not available, it is likely that 200,000 new workers annually go to the informal sector. Alternatively, if they decide to look for formal employment, they remain unemployed for some time.

182. The few opportunities for work in the local labor market lead many Yemenis to resort to emigration. Around 1 million Yemenis are reported to be working abroad and in the wage sector—compared to domestic employment of approximately 4.5 million Yemenis, half of whom receive wages outside the public sector.

183. These numbers are estimated from HBS 2005 and the trend in population growth. More detail is shown in table 5.4.

Despite a recent improvement in the investment climate, the incentive regime and structure of production are not conducive to employment creation. In 2009 Yemen was ranked 98 of 181 countries for which the overall ease of doing business was assessed.¹⁸⁴ Yemen's ranking on the ease of starting a business scale improved very significantly from 151 in 2004 to 50 in 2008. Nevertheless, the rate at which new private establishments are created across the economy in a single year is only 4 percent. Job creation in these new establishments also is low: 2.5 new jobs per 100 establishments, excluding the owners.^{185, 186} More than 90 percent of firms are small, employing fewer than 5 workers.¹⁸⁷ Small enterprises also are prevalent in manufacturing, in which medium and large enterprises are small minorities (7.3 percent and 1.4 percent, respectively).

The pace of employment creation is slow because of the slow macroeconomic growth. Despite the ambitious predictions of the Second Five-Year Plan (2001–05), development targets for almost all sectors failed. The structure of the economy is dominated by the oil sector, which creates 28 percent of GDP but provides employment for barely 18,000 workers. Shifting to a non-oil economy has not been successful so far. Since 2000, the non-oil sectors achieved an average growth of 5.3 percent against an original target of 8 percent. The goods and services sectors, including manufacturing, utility, and construction, as well as agriculture did not meet their development targets.¹⁸⁸

Output per worker (productivity) decreased in industry and services sectors, indicating that these sectors have been acting as a

184. World Bank 2009c.

185. World Bank 2005.

186. A 2006 World Bank study on investment climate shows that there are still many constraints to invest in Yemen (World Bank 2006c). They include macroeconomic uncertainty, tax rates, corruption, anticompetitive or informal practices of competitors, smuggling or dumping, and problematic electricity. Two additional constraints are access to land and the cost of finance. Skills and education were ranked 16 in the list of 18 constraints. Labor regulation was last (World Bank 2006c).

187. The number of small enterprises (employing 1–4 workers) increased from 210,000 facilities/firms in 1994 to nearly 400,000 in 2004. The comprehensive survey of facilities/firms in 2004 indicated that they employed approximately 1.2 million workers.

188. The average growth of the goods and services sectors reached 4.2% and 6.4%, respectively, compared to targets of 8.1% and 9.1%. Manufacturing industries, originally seen as engines for economic restructuring, grew at an average rate of 4.8%, compared to the targeted 10%. Average annual growth in the water, gas, and electricity utility sectors reached 7.6%, falling short of the targeted 9.2%. Similarly, the building and construction sector failed to reach its 11% target, averaging 5.8%. Sectoral growth in agriculture (excluding fishing) was particularly disappointing. Agricultural growth averaged only 2.9% per year against a target of 6.1%. The production of cereals dropped significantly, followed by a fall in money crops. However, qat cultivation grew at the expense of other crops and occupied nearly 11% of all cultivated land in 2005 compared to 9.1% in 2000—a significant 15% increase.

Table 5.3 Output, Employment, and Productivity, 1994–2004

	Agriculture	Industry	Services	Total
Output (GDP, Yrls mil)				
1994	209,164	254,425	1,045,932	1,509,521
2004	300,706	361,375	1,663,215	2,325,296
Annual increase (%)	3.7	3.6	4.7	4.4
Employment				
1994	1,603,081	355,130	1,105,878	3,064,089
2004	1,797,496	578,000	1,874,000	4,249,496
Annual increase (%)	1.2	5.0	5.4	3.3
Output/ employment ratio				
1994	130,476	716,428	945,793	492,649
2004	167,292	625,216	887,521	547,193
Annual increase (%)	2.5	-1.4	-0.6	1.1

Source: 1994 and 2004 Census; CSO 2006 Statistical Yearbook.

Notes: Output is GDP in millions of Yrls, excluding government services, household sector, services by non-profit organizations, custom duties, and oil sector. Industry is the sum of manufacturing, electricity and water, construction and building, and mining and quarrying.

“sponge” to absorb surplus labor at constant wages. Table 5.3 indicates that the recent increase in educational attainment has not led to increases in productivity except, somewhat unexpectedly, in the agricultural sector, whose employment gains have been minimal. The rapid employment increases in the industrial and services sectors are more compatible with the hypothesis that these two sectors also have been acting as “sponges” absorbing surplus labor at constant, if not declining, wages. In other words, employment growth has been driven by an increasing labor supply desperate to find work at more or less any wage rate more than by a genuine growth in aggregate demand.¹⁸⁹

By 2025, the number of workers will reach 11 million, with as many as 9.9 million predicted to be working in the informal sector unless the labor market structure changes. Due to rapid population growth, 5.7 million additional workers are expected to join the labor market between 2007 and 2025. However, the main sectors identified as key for growth are agriculture and fisheries, manufacturing, tourism, and construction¹⁹⁰—most of which may not require high skills or formal establishments. Therefore, if the labor market structure remains the same (that is, 90 percent of workers in the informal sector), in 2025 in Yemen, 9.9 million workers will be working

189. If so, investments in education seem to be related more to the prospect of finding work at a given wage than to getting higher wages. In turn, this implies that the income effect on education (affordability) is more important than the price/wage effect (rewards to education). One implication of this is that the poor may under-invest in education while the better off will over-invest.

190. Government of the Republic of Yemen 2002.

Table 5.4 Simulation of Labor Market Structure, 2007–25

Characteristics of labor market (<i>stock</i>)	2007 ¹			2025		
	No. (000s)	% of		No. (000s)	% of	
		15–64 year olds	Active labor market		15–64 year olds	Active labor market
Population	22,269	–	–	35,672	–	–
Aged 15–64	11,792	100	–	20,564	100	–
Labor market participants	5,229	44	100	10,970	53	100
Formal	523	–	10	1,098	–	10
Wage employment	498	–	10	1,045	–	10
Nonwage workers	25	–	0	53	–	0
Informal	4,706	–	90	9,873	–	90
Wage employment	1,820	–	35	3,818	–	35
Nonwage workers	2,886	–	55	6,055	–	55
Unemployed	632	5	–	1,102	5	–
Inactive	4,342	37	–	5,721	28	–
Students	1,589	13	–	2,771	13	–
Characteristics of labor market (<i>flow</i>)	No. (000s)	Distribution (%)		No. (000s)	Distribution (%)	
Labor supply						
Annual new intake to labor force	252	100		399	100	
Uneducated	90	36		132	33	
Educated	162	64		267	67	
Low skill	121	48		180	45	
Basic education graduate	51	20		74	19	
Secondary education graduate	70	28		106	27	
High skill	41	16		86	22	
TEVT graduate	13	5		28	7	
University graduate	27	11		58	15	
Labor demand						
Annual increase in employment ²	252	100		399	100	
Formal sector	25	10		40	10	
Low skilled labor demanded ³	12	5		19	5	
Highly skilled labor demanded	13	5		21	5	
Informal sector	226	90		359	90	
Low skilled labor demanded ⁴	215	85		341	85	
Highly skilled labor demanded	11	4		18	4	
Over-production of highly skilled workers	16			48		

Source: Authors' estimates using population data from UNESCO Institute of Statistics (May 2009) and HBS 2005.

Notes:

1 Number of labor market participants for 2007 is estimated from HBS 2005 and assumes same labor market structure.

2 Assumes no increase in unemployment.

3 Assumes 48% of the formal sector requires low skills (box 5.1)

4 Assumes 95% of the informal sector requires low skills, and 5% requires some high skills such as management and leadership.

in the informal sector (table 5.4). From a labor supply perspective, 41,000 highly skilled workers join the labor market annually (the number should increase to 86,000 by 2025). However, it is unlikely that these highly educated workers will find jobs in the formal sector or in jobs that require high skills (appendix L).

Skills requirements

The current labor market requires more general than specific skills. This requirement is likely to continue under Vision 2025. An analysis of the current labor market demand shows that in the formal sector (only 10 percent of the labor market), half of the labor demand is for basic skills with less than university degrees. Of the 2,000 annual job openings in the private formal sector, 29 percent of the jobs may have no educational requirement (box 5.1). The government's Vision 2025 envisages the sources of economic growth to come from the rejuvenation of coastal regions, acceleration of industry—particularly mining—balanced development of agriculture and fisheries, investment in tourism and environment, and development of the export sector through free zones. Except for industry, these strategic areas are primarily in the informal sector. Thus, the skills requirements are likely to be basic skills (basic reading, writing, numerical, and entrepreneurial skills). Therefore, without a structural change in the Yemeni economy (a long-term undertaking), the skills required in the medium term are likely to continue to be those that can be obtained through good basic education.

Skills shortages in the formal labor market are mostly for general skills, with special focus on leadership, English, and computer skills. Of nearly 3,000 establishments surveyed in 2003, 85 percent reported difficulties in finding skilled labor; 74 percent reported a general lack of skill, implying inadequate training and inadequate experience; and only 11 percent had problems in finding specific skills among the job-seekers such as knowledge of a foreign-language, accounting, management, leadership, computer, equipment operation, and electronics (table 5.5). The skills most sought by employers are English, computer, and leadership (proactivity, independent delivery of results, ability to lead a team, confidence, and taking responsibility). These skills are usually considered to be basic skills that can be acquired through the general education system.

It will be useful for Yemen to consider the possibilities of apprenticeship training in the informal sector labor market to improve skill matches. In addition to formal schooling, skills can be learned through apprenticeships. Apprenticeships can be more relevant to

Box 5.1 Analysis of Vacancy Announcements in Newspapers in Yemen

In April and May 2009, 333 job openings were posted in one of Yemen's most popular daily Arabic newspapers, *Al-Thawra*. Jobs advertised in newspapers are considered formal sector jobs since most small businesses find employees through personal connections. The 333 jobs within a 2-month period equate to approximately 2,000 jobs posted in the newspaper annually, and can be a proxy for the degree of job creation in the formal private sector. Of the 333 jobs advertised, 31 percent were in sales; 15 percent were in administration; and 13 percent were for technicians (engineers). Fifty-two percent (173) of the jobs required university degrees. These jobs were primarily in management, accounting, and administration. In the formal sector, 48 percent of the jobs were offered for workers with less than university qualifications; 29 percent required no qualification; 7 percent required basic education; 9 percent required secondary education, and 4 percent required a post-secondary diploma. Occupations that required only low skills included drivers, sales, technicians, public relations, and general employees.

Commonly required skills in these 333 positions were English and IT skills, which were required for 38 percent and 29 percent of positions, respectively. These skills were more demanded for highly skilled posts: 61 percent and 46 percent of jobs that required university degrees also required English and IT skills, respectively.

This analysis of vacancy announcements shows that there is still a great need for basic skills. These jobs can be obtained with less than basic education even in the formal Yemeni labor market, which occupies only 10 percent of the share of the country's total labor market. The analysis also supports the notion that job openings in the formal sector are very limited, given that only approximately 2,000 new positions open per year.

Source: Authors' analysis from *Al-Thawra* newspaper.

the current labor market conditions in Yemen, can be cost effective, and usually are self-financing.¹⁹¹ There are many successful examples of using apprenticeships to develop skills that are required in the informal sector labor market in African countries whose informal sector employment is as large as Yemen's. For example, in Ghana, in which 87 percent of the employment is in the informal sector, close to 90 percent of all basic skills training comes from traditional or informal apprenticeships.

Due to the lack of job creation in the private sector and generous pay and employment conditions in the public sector, many university graduates appear to be waiting to be recruited as civil servants.

191. Johanson and Adams 2004.

Table 5.5 Areas of Skill Deficiencies as Perceived by Employers, 2002–03

	No. of establishments	%
General lack of skills	2,150	74
Specific lack of skills	330	11
Inadequate contracts	77	3
Insufficient funds	356	12
Total	2,913	100

Source: Labor Demand Survey 2002–03.

There are 155,000 job-seekers for only some 10,000 vacancies in the public sector (table 5.6). More than half (57 percent) of the applicants are university graduates despite the fact that the proportion of university graduates among those who enter the labor market is only 11 percent.¹⁹² The more educated job-seekers tend to be more selective about the kind of jobs they accept.

The highest rates of mismatch are among those who studied education, commerce and administration, the arts, and law/Shari'a. Such graduates comprise the majority of unplaced applicants to government jobs: nearly 3 of 4 unplaced applicants have these qualifications (table 5.7). However, the number of annual university graduates from engineering, oceanography, and petroleum and mineral sciences also is excessive relative to the stock of graduates already awaiting placement in the public sector (table 5.7, last column). Even in these subjects, the annual outflow from universities is more than 50 percent of the unplaced stock of similarly qualified previous graduates.

Table 5.6 Unplaced Applicants to the Civil Service by Highest Level of Education Completed, 2007

	No.			Distribution (%)		
	Male	Female	Total	Male	Female	Total
University (Bachelor's)	57,048	32,305	89,353	55	62	57
Diploma	37,432	11,494	48,926	36	22	31
Secondary education or equivalent	2,478	6,691	9,169	2	13	6
Post-basic education/vocational course	6,267	1,785	8,052	6	3	5
Master's	52	4	56	0	0	0
Doctorate	13	3	16	0	0	0
High diploma	5	2	7	0	0	0
Total	103,295	52,284	155,579	100	100	100

Source: SCEP 2006–07.

192. Calculated from table 5.4.

Given the slow economic growth and fast education expansion, unemployment is high and rising, especially among the more educated job-seekers. The unemployment rate reported by the 1994 census was 9 percent. It increased to 11.5 percent in 1999,¹⁹³ and to 16 percent in 2005–06 according to the Poverty Assessment.¹⁹⁴ The urban unemployment rate is 19.1 percent, compared to 14.7 percent in rural areas. Women’s unemployment has doubled in the last decade and, according to the 2005–06 HBS, stands at 46 percent, compared to 12 percent for men. The youth unemployment rate was already 25 percent in 1999 and has now reached more than 30 percent. The unemployment rates increase with the level of education. They reach 46 percent among those with intermediate education¹⁹⁵ and peak at 54 percent among university graduates.¹⁹⁶

Job-seekers from poor and marginalized households who do not have personal connections with employers are less likely to get employed than others at the same educational level. One-third of wage earners (33 percent) found their current jobs through personal connections with their employers, and 28 percent of wage earners found their job through friends.¹⁹⁷ While 15 percent found jobs through civil service offices, anecdotal evidence suggests that personal connections are influential in getting civil service jobs as well.¹⁹⁸

Education, emigration, brain gain, and brain drain

Possibilities of emigration attract more youngsters to obtain university educations in Yemen. Many MENA countries (such as Lebanon) suffer from “brain drain,” that is, skilled workers leave the country. On the other hand, Yemen seems to benefit from the “brain gain” effect in that possibilities to emigrate induce more youngsters to attend higher education than if they were contemplating finding a job in the small local labor market (appendix M).

The impact of remittances and positive externalities can offset the loss from skilled emigration. An estimate shows that skilled emigration appears to reduce the per capita income in Yemen by

193. Labor Force Survey 1999.

194. The 2004 census reported a rate of 10%, but the DPPR 2006–10 puts unemployment at 15% in 2005. The 2004 census reported an unemployment rate for women of 12.5%, compared to 46% suggested by the 2005–06 HBS.

195. Intermediate education refers to higher than basic but less than university education.

196. HBS 2005–06.

197. Authors’ estimation from HBS 2005.

198. World Bank 2006a.

Table 5.7 Unplaced Applicants to Civil Service (2007) and University Enrollments, 2006

Faculty/major	Unplaced applicants to civil service 2007			University enrollments 2006			Annual university graduates as % of unplaced applicants		
	Male	Female	Total (%)	Male	Female	Total (%)	Male	Female	Total
Education	46,670	26,532	73,202	52,262	22,328	74,590	44	21	25
Commerce and administration	18,437	5,688	24,125	26,775	4,303	31,078	18	19	32
Arts	5,351	4,607	9,958	11,254	8,123	19,377	11	44	49
Shari'a and law	6,591	850	7,441	13,844	1,378	15,222	9	41	51
Health institutes	5,153	1,396	6,549						
Sciences	3,226	2,060	5,286	3,710	2,625	6,335	4	32	30
Technician	4,771	510	5,281						
Medicine	2,117	1,728	3,845	4,709	3,897	8,606	5	38	37
Vocational institute	2,836	65	2,901						
Engineering	2,402	346	2,748	7,031	1,300	8,331	5	75	61
Agriculture/veterinary	1,052	104	1,156	1,335	242	1,577	1	47	27
Computer sciences	877	273	1,150	1,504	434	1,938	1	40	42
Languages	360	431	791	805	890	1,695	1	56	54
Media	451	99	550	626	103	729	0	35	33
Physical education/sports	395	0	395	286	0	286	0	18	0
Petroleum and minerals	162	0	162	414	1	415	0	51	0
Oceanography	105	32	137	583	142	725	0	111	89
Fine arts	40	45	85	128	91	219	0	80	51
Teachers institutes	11	6	17						
Other subjects	2,288	7,512	9,800						
Total	103,295	52,284	155,579	125,266	45,857	171,123	100	24	18

Source: SCEP 2006 and MOCSI.

Note: University enrollments are converted to annual graduates by dividing enrollments by 6 for medicine, 5 for engineering, and 4 for all others.

3 percent.¹⁹⁹ However, after taking into account remittances and positive externalities, Yemen seems to be doing considerably better than other MENA countries. On the other hand, the fact that most skilled Yemenis immigrate to non-OECD countries (mostly Gulf countries) may compromise the potential benefit of immigration.²⁰⁰

5.4 Summary of Key Findings

Yemen faces multiple challenges that limit the effectiveness of even a well-designed and efficient education system. Many of these challenges are found outside the education system and the labor market. The absence of viable short-term alternatives to the declining oil production is bound to put stress on public spending on the social sectors as well as on public investments. Moreover, private investment also is declining compared to public developmental spending. The growth rate of sectors that contribute significantly to the country's GDP is small and not expected to increase greatly in the immediate future. Overall, in 2008 GDP growth was estimated at only 3.8 percent, which was only marginally greater than the growth of the labor force.²⁰¹ Furthermore, the backlog of university graduates will take years to be absorbed into the domestic labor market. However, the analysis in this chapter highlights several issues in the education sector that, if appropriately addressed, can lay the foundations for better future outcomes.

Diverse forces are operating with respect to demand for education by poor and non-poor households. On the one hand, the poor seem unable to fully participate in the education expansion that is taking place, even at the basic education level. There are doubts whether the EFA targets will be achieved on time. On the other hand, there seems to be strong social demand for education by better-off households, who can afford to invest in education even if the labor market rewards are low. It is perhaps immaterial whether public policies accommodate this demand intentionally or unintentionally, for example, by various experimentations at the post-basic education level, such as an expansion of TEVT or the introduction of parallel programs in public universities. What is more important is to decide how the limited public funds for education should be spent so that they do not disadvantage the poor while they are contributing to the creation of a more productive labor force.

199. See Docquier and others 2009.

200. If emigrants had gone to OECD countries, they would have experienced more benefits from their skills transfers and higher wage rates, and thus would have returned higher benefits to Yemen.

201. World Bank 2009a.

Compared to the fast-increasing and more educated labor supply, the size and structure of Yemen's economy suggest that, irrespective of most shortfalls in the education system, new job-seekers apparently are over-educated by today's characteristics and the dynamics of labor demand. The subsidized public university sector provides some answers as does the public TEVT, which claims 6 percent of the education resources against only 0.2 percent of enrollment. Private universities have been successful in attracting students while a "parallel" fee-paying system of admissions has been introduced in public universities. Obviously, there is an increasing social demand for education by the better-off families. This demand contrasts with the status of school enrollment among the poor, in which many poor children are still out of school. These issues raise concerns not only about the current employment/education balance but also about increasing inequality in the future.

By 2025, the number of workers is expected to reach 11 million. Of these, 9.9 million will be working in the informal sector unless the labor market structure changes. Because the key sectors identified by the government may not require high-level skills, the labor market structure is likely to remain the same. From the labor supply perspective, annually 41,000 high skilled workers join the labor market (the number should increase to 86,000 annually by 2025). However, it is unlikely that these highly educated workers will find jobs in the formal sector or jobs that require high skills.

In pursuing multiple objectives, the education system seems to be facing competing choices with varying success. The system tries to achieve universal basic education but is unlikely to achieve its stated target. In attempting to meet rather hypothetical skills requirements, TEVT is expanding fast when skills shortages are not immediately obvious in the economy and while most graduates from the TVET system are currently employed in the public sector. The abundant supply of university graduates faces low wages and extremely high unemployment rates.

Governance and Management

The preceding chapters have identified areas that have substantial scope to improve the access, efficiency, equity, learning, and employment outcomes of Yemen's education system. In most cases, improving performance and implementing the desired changes will depend not only on sound education policies and adequate finance but also on strengthening sector governance and management to effectively define and carry out these policies. This chapter investigates the governance and management factors that inhibit effective delivery of education services and constrain the implementation of reform.

6.1 Institutional Framework

*Some of the constraints to efficient and effective delivery of education in Yemen arise from prevailing challenges at the national level in the broader governance and public sector environment.*²⁰²

These constraints include a weak legislature and judiciary; politicized, unmeritocratic appointment practices; a public service culture that discourages initiative, teamwork, information-sharing, and collaboration within departments and ministries, or with other agencies; overstaffing; inadequate compensation; prevalent corruption; and strong distrust between the public and private sectors. The government is addressing these constraints through a range of ongoing initiatives, including the National Reform Agenda and the program to modernize the civil service. However, this process is inherently long term. Despite the progress being made, these constraints are systemic. Although they continue to inhibit successful management of the education sector, to a significant extent, they are beyond the scope of the sector itself to resolve.

202. See appendix N for definition of governance.

A fundamental challenge for the education system is to secure coherence and coordination, while strengthening the roles of the private sector, employers, civil society, and beneficiary communities. Coherence and coordination across the education system are limited, both across the multiple central agencies that have roles in the sector (horizontally); and among the central agencies, local governments, and the schools or education institutions themselves (vertically). Yemen shares the difficulties experienced in many developing countries that are attempting to decentralize and democratize their education systems. Because of the political nature of education decisions at all levels, tensions and obstacles are inevitable. Mechanisms and incentives are needed to collect and share information, mediate differences, and address trade-offs within a common vision for the sector as a whole.

In this environment, addressing the service delivery constraints frequently is handled by devolving authority before the rules, roles, and responsibilities are fully clarified and known to all concerned; and before the necessary capacity has been developed to fill the new functions at the decentralized level. Establishing clear and well-defined roles of critical stakeholders (private sector, civil society, employers, and parents) takes political will and time—to test and adapt new structures; build capacity; and change the incentives, expectations, and behaviors of those concerned.

Central agencies

The three education ministries differ in their mandates and experience, but they share critical constraints in exercising their core functions. First, their functions in policy development are hampered by the traditional tendency for significant policy decisions to be made independently above the ministry level. The means and incentives to build serious policy and analytical capacity in the ministries (and the information base to support it) are limited when decisions are seen often to be politically driven. Second, the funding for educational institutions is under the direct control and regulations of the MOF and bypasses the education ministries. Third, the staffing of educational institutions (and the ministries themselves) is under the direct control and regulations of the Ministry of Civil Service (MOCS). As a result, when it comes to their role of implementing strategy and introducing new policies, the education ministries have little leverage. On their own, they have little scope to change the structure of incentives to support the desired new practices and behaviors.

In this context of external constraints, it is difficult to impact the performance of the ministries through training or internal restructuring alone. An ongoing program to restructure and build capacity in the Ministry of Higher Education to fulfill its policy, monitoring, and planning functions has made little progress. Efforts by strong individuals to improve ministry procedures and performance can have some impact but are frustrated by the lack of control over rewards and sanctions, as well as by the traditional civil service culture, which operates against delegation, accountability, and performance evaluation. Typically, a few staff are working hard to carry most of the load, while many others are underemployed and unmotivated. Although official working hours are from 8 a.m. to 3 p.m., in practice, working hours are typically fewer than 5 hours per day, due partly to the tradition of chewing qat in the afternoons and partly to overstaffing/underemployment. The low pay produces the need for many civil servants to supplement their incomes by doing other jobs and is an incentive for corruption.

Targets for the ministries' programs often are overly ambitious and unrealistic. Because the plans are unrealistic and ambitious, it is normal for them not to be fulfilled,²⁰³ to be discouraging for those involved, and to be difficult for holding anyone accountable. Each of the education ministries has a sound strategy to develop its subsector, formulated with substantial stakeholder consultation. However, the associated implementation plans contain comprehensive and complex measures with unrealistic timetables. This tendency is natural and difficult to overcome since everything is needed and many interventions are interdependent. This tendency also may be encouraged by donors, who can contribute to overloading the agenda.

The existing structure of central authority presents a challenge to coordination across the education sector as a whole. Many cross-cutting questions are mediated by MOPIC or the MOF, but the lack of coordination in education policy is creating serious problems in some areas. For example, important questions related to sector-wide planning and budgeting must be addressed. These include the appropriate balance of public resources (1) across each education level, (2) between general secondary schooling and TEVT at the post-basic level, and (3) between degree and nondegree programs at the tertiary level. Teacher management (chapter 3) suffers from serious inefficiencies and ineffectiveness in meeting teachers' needs in basic and secondary education, and frustrates measures to

203. An assessment of the annual work planning process of the MOE revealed that only 40% of the 289 activities planned in the 2008 MOE annual work plan were accomplished during the year (MOE 2009).

increase girls' enrollment in rural areas. Similarly, curriculum revision, admission standards and procedures, and assessment and examination processes are managed by each ministry without reference to the others, limiting "second-chance" opportunities and life-long learning. Efforts to develop information systems for education have been highly fragmented, even within ministries. For example, there are no common policies on the definition of indicators, data collection methodology, compatibility of technology, and efficiency.

While the need to coordinate the three education ministries is recognized, efforts to move in this direction have failed to date. Several horizontal coordinating bodies, councils, and committees have been attempted, but none has yet proved fully effective. The Supreme Council for Education Planning (SCEP) consolidates statistics from the three education ministries and produces annual reports on sector developments. Interministerial committees have been assigned to provide the mechanism for coordination. However, the existing incentives—even within ministries, including necessary communication, information-sharing and collaborative work at the technical level—reinforce protection of territorial interests rather than collaboration toward a common goal.²⁰⁴

While some form of consolidation of the education ministries should be considered, it is not likely to resolve the current problems. New incentives still would be needed to promote coordination within ministries. In addition, many of the issues require collaboration with other ministries, including MOE, MOCSI, and the Ministry of Local Administration (MOLA). International experience yields examples of countries that have successfully managed their education systems with 2 or 3 separate education ministries, and others that have managed less successfully with 1 education ministry. For instance, Lebanon's consolidation of its education ministries failed to produce the desired improvements in coordination.

More fundamentally, an independent national body could help to mediate political pressures in the overall national interest. For example, given broad stakeholder representation and technical expertise, a national education commission or a buffer body with

204. A new attempt has been made to fill this gap through establishing committees to work on the urgent coordination issues for teacher training. These committees could provide a useful model for working groups in other areas, such as preparatory work toward a national qualifications framework and coordination of education information management. To be successful, under clear terms of reference, the groups would need to be incentivized and held accountable for specific outputs that then could be referred for stakeholder consultation and to the Cabinet level for review and decision. These committees could be supported as relevant by champions.

responsibility for tertiary education could help to take some of the political weight from politicians in determining difficult trade-offs within the sector, such as between expansion and quality, and different levels of education; or in committing to controversial reforms. A national body could help to make explicit the trade-offs, costs, benefits, and rationale for new policies and improve public acceptability. Without such a body, it may be more difficult for politicians to withstand pressure to increase all levels of education through public provision. Such pressure has led, for example, to excessive expansion of public higher education in Yemen.

Decentralizing to local governments

Progressive decentralization of financing and administrative authority to the governorates and districts is part of Yemen's overall governance policy, and applies to education as much as to other sectors. International evidence is mixed on the impact of decentralizing authority to manage education. In principle, locally elected authorities could be held more directly accountable by their constituents for the performance of schools. In practice, success and accountability depend on clear rules and on local capacity. Local management also necessitates having in place an appropriate legal and regulatory framework, the understanding of respective roles and responsibilities, and skilled decisionmakers with capacity to implement good decisions (including financing, human resources, and information base). Making available clear standards and holding officials accountable for performance are key elements of a successful decentralization policy.

Performance of the basic and secondary education system in Yemen is affected by unclear roles, overlapping mandates, duplication of tasks between the central and decentralized levels, and limited capacity. The decentralization of education management in Yemen already has advanced considerably in the wake of the 2000 Local Authority Law (LAL) and is a reality to which the MOE is adapting. However, there are significant problems: (1) contradictions and lack of detail in the legal decentralization framework²⁰⁵;

205. A 2004 assessment of local MOE capacity found a high level of confusion as to the responsibility of each level of government, as well as overlaps in responsibility and tasks among departments (Cameron 2004). Reporting structures and procedures were unclear, leading to confusion and lack of accountability. Budget procedures did not seem to exist and were seen as a waste of time because higher authorities did not respond to budget requests. Financial management, monitoring, and control were minimal and fraught with confusion concerning the responsibilities between the central and governorate offices. The dedication of a number of key employees was a major strength. However, it was clear that most employees were underemployed and unmotivated. Although many staff were academically well qualified, none was reported to have received job training.

(2) deviation between written laws and actual practice due to deficient administrative systems and lack of transparent processes; (3) continued adherence to traditional centralized principles (the MOE has not yet been able to effectively change its role from implementer to setting policies and standards and monitoring performance); and (4) lack of training—for administrative and supervisory cadres in the MOE, Governorate Education Offices (GEOs), and District Education Offices (DEOs); and for school principals—and lack of basic office equipment, materials, and telecommunications systems. Furthermore, because the MOE has a limited mandate over the staff and resources allocated to deliver education services, the ministry is in a difficult position to monitor and affect the quality of education service delivery. More than 90 percent of the staff and budget for education service delivery is outside the responsibility of the MOE. Technical accountabilities of the GEOs and DEOs are not linked to the MOE, which sets policies and standards, but to the governors and district directors, who are elected officials according to the 2008 amendment to the current LAL. Furthermore, the MOE submits to the MOCSI its staffing needs (number and qualifications of teachers, supervisors, and school principals). However, the MOE does not participate in the selection of candidates to fill vacant posts, nor in the deployment of these new and existing teachers, which are done by the Local Councils at the district level.

Similar ambiguities and constraints exist in the relation between MOTEVT and the governorates that manage the TEVT institutions. Funding for the TEVT institutions is channeled directly from the MOF to the governorates and is managed at the governorate level. Nevertheless, the ministry retains responsibility for planning, developing policy, monitoring, developing curriculum, managing new investment, and accrediting nongovernmental institutions. The lead MOTEVT official appointed in each governorate reports to the governor but in practice also can be answerable to the ministry. The extent to which good communication and coordination are sustained tends to depend on the personalities and loyalties of individuals rather than on clear lines of responsibility and accountability. Some functions are duplicated by officials at the ministry and in the governorate. Other functions can be neglected at both levels.

Although the legal framework for decentralization is outside the mandates of MOE and MOTEVT, these ministries could work to clarify their respective responsibilities in the sector. The dissemination of information to all staff on the roles and responsibilities at the central, governorate, district, and school levels, together with the introduction of job descriptions for all ministry staff, would

provide an essential basis for developing more transparent procedures and accountability. Compiling this information would need to be supported by more effective monitoring and auditing than is currently available.

Decentralizing to schools, colleges, and universities

Internationally, there is strong evidence to support the trend of devolving authority to the level of the individual school or institution. Actors at this level have the best access to information on the specific needs, priorities, and opportunities for improvement. They can be accountable directly to beneficiary communities, including parents and employers, giving these local actors strong incentives to understand the needs and demonstrate flexibility and efficiency in responding to them. The nature and degree of autonomy needed vary in different circumstances and for different types of institutions. However, in all cases, autonomy would encompass discretion over the allocation of resources, allowing for strategic planning and encouraging initiative and innovation. Transparent rules need to be established—for the governance structure and procedures at the school level through councils or boards, and for accounting and reporting—as well as investment in training.

Yemen is beginning to take limited steps in this direction, but there is still very little independence at the school/institution level. For basic and secondary education, the MOE is considering the potential of capitation grants and, through donor financing, is experimenting with small-scale pilot initiatives. These include the JICA-sponsored Broadening Regional Initiative for Developing Girls' Education (BRIDGE) program, the UNICEF-sponsored child-friendly schools, and the BEDP-sponsored Whole School Improvement schemes. Early lessons from these experiments indicate huge potential benefits, particularly by involving parent councils. They also demonstrate the need for substantial specific training (in planning, budgeting, monitoring, and reporting), and general capacity building of MOE staff, particularly those in districts and governorates (including social workers, community participation directors, supervisors, inspectors, and MOF representatives).

Although there is a broad international consensus favoring a high degree of autonomy for training institutions, Yemen's TEVT institutions have very little autonomy in critical areas such as planning, budgeting, investments, program offerings, and staffing. Revenue generation through fee-paying services is permitted but involves complex rules and procedures that deter entrepreneurial

efforts by the institutes. TEVT instructors and other staff are centrally hired civil servants. Budgets are established and controlled by the MOF according to line items and managed by the governorate. Consequently, the scope for any initiative to improve efficiency or introduce new programs to meet local demand is extremely limited. In contrast, to meet the training needs of their students and of employers, these institutions need to be highly flexible and responsive to changing demand, which in turn requires incentives for good relations with employers, and a significant degree of autonomy in managing their financial and human resources. The directors of training centers are close to the market and in the best position to know local demand. To sell courses and training programs, they need to be able to set fees, hire temporary staff, give extra pay for extra work, pay bills, purchase materials, and sign contracts for the programs.

Whereas the universities are autonomous of the MOHESR in most respects, their financial management is controlled principally by the MOF. Line item control by MOF of university expenditures is a primary factor in the lack of responsiveness of Yemen's university programs to changing needs. The existing system perpetuates bureaucratic rigidity, prevents strategic planning at the university level, and provides little incentive for efficiency or innovation.

For both higher education and TEVT, the sector strategies envisage reforms to decentralize authority to the institutions and to provide public funding through block grants on the basis of national priorities. The need for careful planning is acknowledged. It would combine legal/regulatory, governance and finance elements to ensure competence and accountability by the governing board. The four priorities would be:

1. Training for board members
2. Developing the necessary management capacity
3. Establishing new accounting systems
4. Defining the precise limits of autonomy, for example, in hiring, firing, and compensation of staff; borrowing funds; or pledging assets.

It is proposed that the new arrangements would be piloted first in one or more selected institutions and supported by intensive capacity building and monitoring. Considering the scope of the required changes in behaviors and expectations and the need to develop arrangements that fit the country context, a step-by-step approach to piloting, monitoring, and adjusting the new arrangements is a sound one. Although the principles of the reforms have

been broadly agreed, resistance to the changes from some sources would be natural, so a cautious pilot-and-demonstrate approach is more likely to be acceptable.

Finally, particular attention will be needed in selecting and training leaders for education institutions—school principals, institute directors, university rectors, and deans. Even under the current institutional arrangements, in which relatively little discretionary power is divested to this level, the quality of leadership is a huge factor in the performance of schools and institutions. This impact is evident in the TEVT sector, for example, in which the variation in the quality of directors is reflected in radically different standards of general order and the learning environment apparent immediately on visiting these institutions.

Private sector's role in providing education

The potentially significant role of the private sector—absorbing excess demand in post-basic education, diversifying student options, and mobilizing nongovernment resources—is constrained by the existing regulatory framework. Yemen has done little to mobilize nongovernment resources for secondary education. Furthermore, despite great demand for secondary education, in 2007–08 the private sector accounted for only 2.7 percent of the total secondary enrollment. The main barriers include (1) excessive requirements to obtain and maintain a license to operate, which needs to be renewed annually; (2) requirement of dual approvals from the MOE and the local authority; and (3) a high tax rate of 35 percent of the income. Private secondary schools have been constrained by the curriculum and language of instruction and are required to administer a separate final examination.

In post-secondary education and training, recent growth in the number of private providers has been more significant, but capacity is limited and quality is variable. The role of private vocational training institutions is still limited to relatively small enterprises geared primarily to language and computer skills. The MOTTEV's accreditation role is not yet fully developed, and the regulatory environment discourages commitment to long-term investment in private TEVT. The number of private universities has grown rapidly in the last few years although the majority are small and of doubtful quality. The significant potential is demonstrated by the University of Science and Technology, which achieves good standards and is the first university in the country to have established an internal quality assurance system.

Constraints to enhanced private provision include government restrictions on the programs that private universities are allowed to offer. In addition, the recent practice in public universities of admitting growing numbers of fee-paying parallel program students is not only tending to reduce demand for places in private universities but also contributing to lower quality of inputs in public universities. Half of the proceeds from these tuition fees go to the teaching staff and half to the university administration, introducing perverse incentives. The policy for fee-paying students is liable to be driven by the interests of university teachers and administrators to maximize their incomes, rather than by the government's education objectives.

Strengthening the contribution of the private sector would require relaxing some of the existing regulatory constraints while establishing and strengthening quality assurance and accreditation mechanisms. Traditional distrust of the private sector, combined in some cases with a perceived threat of competition, still limits enthusiasm in the public sector for promoting opportunities in the private sector or for developing public-private partnerships (PPPs). Nevertheless, there is growing acceptance of the need to exploit the potential benefits for the system as a whole. Each of the education subsector strategies includes a proposed larger role for the private sector. The Secondary Education Development and Girls Access Project (SEDGAP) aims to lay the institutional foundations to encourage private sector investment in education in Yemen. For higher education, a semi-autonomous Quality Assurance and Accreditation Council recently was established. This council will begin working with the public universities and will need substantial time and resources to develop capacity and operational effectiveness. Nevertheless, this initiative is a crucial first step—in particular, in recognizing that these functions need to be independent of both public and private sector interests.

Roles of beneficiaries, employers, and civil society

On the “demand” side of governance, there are crucial roles for students, parents, civil society, and employers (box 6.1). These actors can hold education providers accountable; provide oversight and monitoring; contribute essential information on education needs and priorities; provide a voice in the policy dialogue, through either Parliament or more direct mechanisms; disseminate information, build awareness, and strengthen the demand for education, especially in rural areas and among girls. These roles are not yet well developed in Yemen but are strengthening.

Box 6.1 Importance of Public Accountability for Performance of Education Systems in MENA

A recent flagship report by the World Bank, “The Road Not Traveled: Education Reform in the Middle East and North Africa,” identifies accountability as a key factor in the performance of education systems in the region (2008b). The report posits that successful education reforms need to combine improvements on three fronts: (1) in the education process (through physical resources, curriculum and teaching, finance, and administration); (2) in motivating the actors concerned (through incentives, monitoring and evaluation, and information); and (3) in public accountability, ensuring the “voice” of students, parents, and employers at the national and local levels.

The study addressed the question of why past investment in education in MENA has not generated commensurate economic returns to individuals and society. Overall, the study found that countries in the MENA Region had focused too much on the education process and too little on incentives and accountability. The study had rated access, equity, efficiency, and quality of education in each country. The top performers—Jordan, Kuwait, and Lebanon—all had relatively higher levels of public accountability than the least performing countries, including Saudi Arabia and Yemen. Morocco presented an exception, with relatively high public accountability but low education performance.

Why is accountability important? Even if the education process is efficient and the incentives of the actors involved are aligned with desired results, education outcomes still may be suboptimal. Two examples are (1) objectives that are set to serve the interests of the elite, or (2) outcomes that lead to demand for unproductive but highly paid jobs. Different groups in society typically want education to achieve distinct and sometimes contradictory objectives. To reconcile the conflicting demands on education, each society needs mechanisms through which different groups can voice their concerns and a process through which diverse concerns can be addressed. At the national level, this dialogue and consensus-building can take place through democratic processes, parliamentary debates, education reform commissions, and stakeholder conferences. Decentralization has the potential to enhance public accountability but can erode it if not well designed and implemented. At the school level, parents’ councils and the involvement of local enterprises can enhance accountability.

Without good information about different aspects of education, it is impossible to enhance accountability and hold politicians and public officials accountable for outcomes. In the MENA Region, information disclosure acts leave much to be desired, and nongovernmental organization laws are restrictive. However, there are signs that things are changing for the better. More active

(continued)

Box 6.1 *(continued)*

roles are available for civil society, and education debates feature increasingly in newspapers, television, and the internet. Moreover, a number of independent institutes are conducting and disseminating research on education issues, such as the Arab Human Development Report (2003) on knowledge in the region. Notwithstanding this progress, more reforms are needed to make information more available and timely and to strengthen the role of civil society.

Source: World Bank 2008b.

The MOE has established a General Directorate for Community Participation in the central ministry, as well as Departments for Community Participation at the GEO and DEO levels to promote community participation through Fathers' and Mothers' Councils.

Most schools have such councils, but the MOE believes that not all councils are working effectively.²⁰⁶ Parents' councils and local councils have no official role in school maintenance or in systematic improvement, although they could play strong and important roles in these areas. The MOE also has launched two pilot schemes—the Female Teacher contract scheme and the Whole School Improvement (WSI) scheme—which rely to a large extent on community accountability and involvement for effective implementation. The selection and testing of female teachers as well as the contracting of female teachers is done jointly by the school principal, MOE staff, and representatives of the parents' councils. Because one of the signatories of the contract is the head of the parents' council, the system provides a mechanism for community accountability. Under the WSI scheme, communities have specific roles in defining school needs. Numerous initiatives by nongovernmental organizations, the Social Fund for Development, and donor agencies have involved parents and community groups in school construction and improvement projects and in encouraging girls' access.

Civil society organizations focused on governance have grown rapidly in Yemen—some 56 are registered. They undertake a wide range of activities across all governorates. Their activities include raising public awareness and promoting the demand for good governance; prompting response to this demand; providing independent analysis of the adequacy of existing laws, policies, or budgets;

206. A 2007 survey found that approximately 70% of schools had Fathers' and Mothers' Councils, and 83% of the councils were in operation (World Bank 2007b).

and monitoring their implementation. For example, active in the education sector, the Democracy School civil society organization (CSO) has tracked leakages of funds/mismanagement by obtaining public expenditure documents and receiving corruption complaints from the public; helped school children obtain their school's budget and monitor expenditures; organized meetings for school children to voice complaints on the quality of their schooling to local councils and suggest improvements; and blacklisted schools for refusing to open their budgets and expenditures to students.

To address the concern in Yemen about education's lack of relevance to labor market needs, the increased involvement of employers in post-basic education is essential. International experience demonstrates a wide range of mechanisms for achieving employers' involvement. Examples are surveys of employers; employer participation in curriculum design, standards, assessment and certification through arrangements at the institution level and through central mechanisms such as sector councils representing specific industries; on-the-job experience for students and teachers; employer representation on governing boards of institutions; and employer-managed training funds. When the private sector is relatively weak, as it is in Yemen, and when there is no tradition of public-private partnership, employer involvement is more challenging but no less necessary. In the short run, the role of champions could be important in pioneering and demonstrating the potential benefits. Attention is needed to the incentives facing all concerned. While some employers may participate freely due to public spirit or anticipated benefit to workforce skills, they need to budget their participation costs. The existing lack of trust between public and private sectors is a significant constraint.

In vocational and technical education, some progress has been made. At the central level, the MOTEVT has been striving to increase the involvement of employers in curriculum design, assessment and management of programs, and even management of institutions, with a degree of progress. These efforts are beginning to overcome the private sector's skepticism of the potential value of public training institutions and to establish collaborative relationships between the private sector and the institutions. The Skills Development Fund (SDF), now proposed to be reconstituted under private sector management, is providing a forum for further dialogue between public and private sectors (box 6.2). Nevertheless, the majority of educational programs remain supply-driven, and—as with the universities—the institutions themselves have insufficient incentive to reach out to the employer community.

Box 6.2 Purposes and Principles of Levy-Based Training Funds

Most countries have found it necessary to establish some form of specialized fund to promote training to support economic growth. Without such a mechanism, enterprises fail to invest enough in training, and the provision of training is not adequately geared to the needs of employers. Earmarked levies on enterprise payrolls—such as for Yemen’s SDF—have become the most widely adopted mechanism for private enterprise financing of training throughout the world. The purposes of training levies are to:

- Mobilize private resources for skills development
- Stimulate enterprise-based training
- Link training with employer demand
- Increase the overall level and quality of skills in the workforce through vocational training
- Ultimately, raise productivity, profits, growth, and employment to assist in achieving economic development.

From international experience, these funds have been successful when they have:

- Clarity of purposes and objectives
- Stakeholder ownership and control
- Operational autonomy
- Strong administration and management
- Effective collection and secure income
- Use of funds only for training purpose
- Avoidance of providing training themselves. In other words, the financing of training is separated from the delivery of training.

Yemen’s Skills Development Fund is a potentially strong mechanism to represent the interests of employers and orient training to real employment needs. However, it has had a difficult history and needs fundamental reform. The SDF was created with the primary purpose of mobilizing additional funds for training. Unfortunately, its objectives, legal status, mandate, and relationship with MOTEVT were not clearly defined. In addition, insufficient training and technical assistance were provided to the new organization. The lack of initial direction and support resulted in poor performance, overstaffing on a civil service basis, controversy over control of the funds, and conflicts among key stakeholders. A 2006 policy forum was charged with deciding whether to close the fund or reconstitute it on a new legal and operational basis following the principles outlined above. Consensus was reached on giving

the fund autonomous status, with a private sector majority on its Board of Directors. The Chambers of Commerce and Industry and the labor unions as well as the closely involved ministries would be represented on the board to facilitate alignment with national policy. New staffing and operational procedures and capacity building plans were agreed. However, maintaining the consensus of key stakeholders on the proposed legal and institutional reforms has proved politically challenging. The principles behind the reforms of the SDF are still alien to many. The restructuring has been endorsed by Parliament through the creation of the new law. Implementation is likely to depend, at least in the early stages, on individual champions.

Yemen's universities are isolated from the employer community.

A conference held by the MOHESR in 2008 explored the scope for developing linkages between higher education and the labor market and reviewed international experience in building mutually beneficial partnerships between universities and industry. Yemen's higher education sector is becoming much more aware of the urgent need for change in this respect—underlined by the graduate unemployment statistics. Nevertheless, under the existing governance and financing arrangements, the incentives to universities to partner with the private sector are limited. As a result, initiatives tend to depend on individual leadership.

6.2 Governance and Management Effectiveness

Management of public financial resources

Budget allocations and realizations at all levels of Yemen's education system are characterized by excessive rigidity, lack of predictability, and lack of transparency. The MOF's control over budgets allows no local-level flexibility in recurrent expenditures to account for shifting priorities. At the same time, the budget preparation process tends to encourage inflated demands, leading to under-budgeting of important operating and maintenance expenditures. These factors are behind the inefficiencies and inequities in expenditures (chapter 4). Although the drawbacks of the existing procedures are understood, the strong role of the MOF is supported partly due to tradition, familiarity, and vested interest; and partly to its lack of trust. Relaxing MOF's control would require a higher level of trust in the competence and diligence of spending agencies at the central and local levels. Greater trust, in turn, would depend on central and local levels' adherence to transparent procedures and more effective monitoring and auditing.

A number of measures could improve expenditure prioritization, fiduciary control, and efficiency. The report on a 2006 survey to track expenditures in basic education proposed 5 fundamental changes²⁰⁷:

1. Check budget execution performance throughout the fiscal year, instead of only at the end, to eliminate loopholes in the effectiveness of internal control systems.
2. Subject budget circular instructions to revision to take account of shifting national priorities.
3. Establish a baseline of service delivery indicators at the school level to monitor performance, and consider establishing a set of performance indicators for budget allocation within reform initiatives such as NBEDS.
4. Provide a budget envelope to individual spending units to enable more appropriate prioritization of needs. This envelope could be the first step toward developing a multi-annual approach to planning and budgeting.
5. Increase the autonomy of governorates and districts in expenditure decisionmaking to enable them to make recurrent spending from their own revenue sources. Under the LAL, they can make only capital expenditures. This limitation distorts the incentive structure in favor of new investments. However, it would be critical to establish pathways for the decentralized levels to also work in close harmony with the central ministries to ensure that there is no disconnect between the priorities set by the central ministries and the actions undertaken by the decentralized levels.

The role of the MOF in budgeting for Yemen's universities is very unusual and seriously limits planning, efficiency, and innovation.

The MOF is still the primary decisionmaker on exactly how much can be spent on what by each university. Each university negotiates its budget annually directly with the MOF, based primarily on the expenditure pattern and level of the previous year. Expenditures are strictly controlled by line item by MOF staff in each university. Allocations are highly inequitable among universities, with student unit costs varying for the same discipline in different institutions. As it stands, there are few incentives and little scope for a tertiary institution to plan its own strategic development, to respond flexibly to new needs and opportunities, or to increase efficiency. Furthermore, the MOF offers, in effect, a system of bonuses to officers who return a portion of their budgets at the end of the year. In recent years,

207. World Bank 2006e.

approximately 10 percent of the higher education budget has been returned in this way, and, in some universities, the figure is much higher. There have been times that less than 50 percent of the allocation for new book acquisition has been used—while the shortage of library resources is a critical constraint across all the country's universities. Thus, expenditure decisions are influenced by perverse incentives that encourage under-spending and waste while discouraging strategic planning, efficiency, initiative, and innovation.

Delivery of salaries needs to be accomplished in a more prompt and transparent way. The 2006 tracking survey found serious discrepancies between formal rules and actual practices. Salary payments often were made by the district salary cashier in the DEO. The agreement between schools and the cashier was that the latter could deduct Yrls 200 for cashing and bringing the salaries to schools. It appeared that the agreement was routinely abused. Teachers reported higher deductions and even consenting to much higher deductions when the cashier delayed cashing their salaries until the teachers became desperate for their incomes. Some teachers reported other deductions, either as a “government-approval donation” or a penalty for days of absence; and of never receiving the same salary amount for two consecutive months. Since teachers did not receive pay stubs, they had no record showing their base salaries and deductions. The government is addressing this issue for the civil service as a whole with a salary payment process through post offices and biometric identification. However, it will be some time before this system is available throughout the country and in remote areas. In the meantime, transparency could be greatly improved by issuing pay stubs to all teachers with their salaries each month.

Management of teachers

The key to more efficient deployment of teachers lies in the coordination among the ministries involved. The MOF decides on the budget and the number of teaching posts. The MOCSI recruits and deploys teachers. The MOE articulates needs and manages the schools and teachers. The MOHESR is in charge of universities, including the FOEs, who prepare teachers. Furthermore, under the decentralization policy through the LAL, much of the day-to-day decisionmaking in teacher deployment and management takes place at lower levels of the educational system.

Better coordination between the MOE and the MOHESR could improve the quality of the current and future teaching force. No communication or coordination exists among the MOE, the

MOHESR, and the universities regarding the type of teacher education programs required and the number of students needed in them. In most cases, the universities still prepare teachers exclusively and specifically for the upper end of secondary education. However, some new programs seem to have been initiated, particularly at the University of Aden.

A critical lack of linkage in content, duration, mode of study, and qualification persists between the pre-service training program and the in-service training. The MOE has an ambitious program to upgrade the skill of the current pool of teachers through massive in-service training programs. However, these programs are not linked to a qualification framework that recognizes the multitude of trainings attended by a teacher in the form of a diploma or university-equivalent degree. In fact, while the country has a Supreme Council of Higher Education, there is no organized and institutionalized mechanism for the FOEs to incorporate the teaching needs into their curriculum. Working backward, no framework for professional teaching standards exists with articulated general teacher competencies and subject-specific knowledge and skills requirements that would guide different providers.

The sustained provision of female teachers for rural areas calls for coordinated efforts by five different ministries. These efforts need to be coordinated among (and within) the MOE, the MOHESR, the MOCSI, the MOLA, and the MOF. The crucial need for increasing the number of qualified female teachers, particularly in rural areas, remains largely unmet as the incentives to retain qualified females in remote rural areas (including housing benefits and wage premiums) have not been effective. In 2007 the MOE initiated a contract scheme whereby girls with secondary education could work in their own villages. These girls are provided with a 12-module in-service teacher training course and will be offered 2-year equivalent diplomas by the MOE. There is a memorandum of understanding between the MOE, the MOF, and the MOCSI to recruit these girls into the civil service on completion of this training. However, possible loopholes might negate the positive results that could be drawn from this scheme. Most importantly, the in-service training program has been prepared by the MOE and is not linked to the system for qualification of new teachers, which is under the mandate of the MOHESR through the FOEs.

Inter- and intraministerial coordination also is needed to prevent migration of teachers from rural to urban areas. Coordination also will be necessary among the MOE, the MOCSI, the local authority,

and the MOLA to ensure that once a teacher is recruited to a particular school, the position is tied to the school rather than to the individual (per the MOE-issued Decree of 2007). This arrangement should minimize transfers to urban areas. Furthermore, the curriculum and supervision sector of the MOE needs to closely coordinate with the training sector of the MOE to ensure that the new recruits get sufficient mentoring through regular principal and supervisor support to facilitate quality education, particularly in these remote areas in which access to learning materials is notoriously limited.

Greater involvement of the key stakeholders can minimize inefficiencies and waste in the system, including teacher absenteeism. In collaboration with the governorates, the MOE determined to tackle the issue of absent teachers by deducting from their payroll an amount equivalent to the time of unexplained absence. From anecdotal evidence, the MOE believes that these payroll deductions began to show some effect by late 2007. These amounts are then transferred to the budgets of the Local Councils. This approach has been quite effective in initially increasing the budgets of the Local Councils, and giving them an incentive to undertake spot checks on schools to determine the accuracy of the teacher absenteeism information. It is claimed that the degree of teacher absenteeism has declined because the teachers now have a disincentive to be absent without due cause. Parent involvement in schools also can have an important impact. A 2006 survey of teacher absenteeism found an average of 14 percent of teachers absent in schools with established Fathers' and Mothers' Councils, compared with 19 percent in schools without such parent councils.

Management of student admissions and assessment

An important indicator of education governance is the extent to which students and their parents can count on fair and transparent processes for student admission, assessment of student achievement, and selection of deserving students for further study. A survey commissioned for this report found serious shortcomings in all these areas.

Rules and procedures for student admissions and registration are poorly documented and often ignored. Copies of the relevant laws, acts, decrees, and regulations have never been widely disseminated and were extremely difficult to find. They have been printed in separate bulletins over the years, and most copies have disappeared. No comprehensive and integrated version has been issued. There are no mechanisms for communicating relevant information to

stakeholders, who are mostly ignorant of the regulations and directives. There appear to have been no explanatory manuals produced, or relevant training provided, or efforts to monitor the implementation of procedures. Not surprisingly, only a small proportion of the sampled schools were committed to apply the official admission and registration policies. Many schools, especially in rural areas, applied different and unsystematic policies, accepted students in violation of the regulations, and neglected filing and recordkeeping. Few of the city schools had the facilities to archive students' admission documents. The majority returned the documents to the student or parents on transfer or graduation, leading to poor use and circulation of the documents, fraud, and forgery.

Admission to university used to require only a Secondary Education Certificate (SEC). Due to the growing number of secondary graduates and increasing skepticism about the validity of the SEC, the universities now set additional requirements, including admission tests and interviews. In 2000 the Supreme Council of Universities unified admission requirements with specific SEC grades required for different disciplines. This revision decreased the proportion of secondary graduates admitted to public universities. Universities and colleges conduct admission tests and interviews at different times, and students may apply to more than one. In this way, more than one place may be held for one student while other students are unnecessarily rejected. In addition, it was reported that colleges and institutes are sometimes forced to accept a number of students who have not passed the admission tests or interviews, on the orders of top officials in the ministry or the governorate.

The examination system in basic and secondary education is fraught with corruption and poor planning, management, and reporting. School-based assessment lacks mechanisms to promote consistency. The general examinations (grades 9 and 12) increasingly are criticized for the level of cheating and abuse. The first general examination does not occur until grade 9 so students are not familiar with this type of assessment. In the school-based examinations, researchers found substantial differences in standards and processes among teachers, schools, and districts. No mechanism exists to monitor this variance or to compare achievement at the national level. The general examinations are under the responsibility of a Higher Committee headed by the Vice Minister of Education. The perceptions of abuse focus on the level of the examination center, at which committee members may be selected based on favoritism instead of qualifications. Teachers and others concerned report that students try hard to cheat. Some overseers allow students to cheat.

Higher education has no systematic information on examination procedures or quality standards. Capacity is lacking even in basic data collection and monitoring in the sector. The universities have not yet established internal quality assurance mechanisms. The establishment of the Accreditation and Quality Assurance Council for universities is a significant step forward.

Management of information

Information is crucial to governance and management for accountability and for sound policy and decisions on resource allocation. Availability and dissemination to all stakeholders of reliable information on policy directions, sector indicators and targets, monitoring and evaluation (M&E) results, and school performance enables a system to hold public officials accountable. Sound decisionmaking also requires good evidence of what is working and what is not, and information on social costs and benefits. Box 6.3 presents a case of creation of demand for M&E.

Dissemination of information to stakeholders in Yemen is very weak. It is possible that improvements may be prompted by CSOs, which are increasingly active. Good dissemination is expensive and competes with other priorities in the sector for limited resources. In addition, in developing their sector strategies, all the ministries of education have made efforts to organize systematic stakeholder consultations. The immediate priority is to improve the quality and availability of the government's regular M&E outputs.

Effective implementation of an education management information system (EMIS) is likely to depend on new incentives that generate the demand. Many donor-funded initiatives have supported development of an EMIS but have experienced very limited results for the levels of investment over long periods. Similar low results frequently have been the experience in other international contexts when there is no culture of evidence-based decisionmaking and little or no demand for the information. In Yemen, the result has been fragmentation of information systems even within individual ministries, reinforced by the existing incentives to protect territory.

Although the MOE is capable of producing a wealth of information on the education sector, the EMIS draws its information from different directorates. Of these, 2 are under the Technical Office (Office of Director General of Statistics and Planning and Office of Director General of Information Systems), and 1 is under the Project and

Supplies Sector (Office of Director General of School Mapping). There is little coordination and information sharing, either horizontally among the offices of the Directors General located under different departments, or vertically among the MOE and the GEOs and DEOs. The lack of communication seriously hampers the efficient collection and utilization of the data for analysis and timely decisionmaking.

Box 6.3 How to Create Demand for Monitoring and Evaluation

A study of the experience of developed and developing countries in building monitoring and evaluation (M&E) systems yielded consistent lessons. The use of M&E systems depends, above all, on the nature and strength of the demand for M&E information, that is, on the incentives to use M&E. The study found that:

- Substantive demand by the government is a prerequisite to successful institutionalization of M&E systems. Relying on a law, decree, or cabinet decision is not sufficient.
- It helps to start with diagnosis of what M&E functions currently exist, and their strengths and weaknesses on supply and demand sides.
- Other factors in success are having a powerful “champion”—a powerful minister or senior official who is able to lead the effort to institutionalize M&E—and stewardship of the process by a powerful ministry.
- A common mistake is to over-engineer an M&E system, with an excessive number of performance indicators. The level of complexity should be matched to the current capacity for data collection and analysis.
- M&E needs to be based on reliable ministry data systems. If data are known to be of poor quality, they will not be used or useful. Moreover, if there is no feedback to the local level on how and why the data are used, there is little incentive for data collectors to improve accuracy. Regular feedback should be institutionalized.

Incentives may be in the form of “carrots, sticks, or sermons.” Carrots provide positive encouragement and rewards, such as public recognition or financial incentives to ministries that conduct M&E. Sticks include financial or other penalties for ministries or individual civil servants who fail to take performance and M&E seriously. Sermons include high-level statements of endorsement and advocacy, efforts to raise awareness and publicize examples of cost-effective evaluations, and training. The focus of incentives for M&E depends on how a country envisions using M&E information. Government M&E systems tend to be conceived with the ambition of including all possible

continued

Box 6.3 (continued)

uses of M&E, an approach that would involve all stakeholders and a complex set of incentives that may be unrealistic:

- *Learning function.* If the main intended use of M&E is to assist line managers in sector ministries and agencies, then the broad civil service culture is important. Managers are not willing to be held accountable for performance if they do not have some surety of the resources available to them or substantial control over the outputs of their activities.
- *Accountability.* In this case, the spectrum of key government stakeholders whose demand for M&E would be paramount would be much narrower: the office of the president or prime minister, the Parliament, the finance and planning ministries, and the auditor-general.
- *Performance budgeting.* The finance ministry, and probably some other central ministries, would be the key stakeholders. In a broad-based performance budgeting system (such as Australia's), sector ministries also would be stakeholders.
- *Evidence-based policy formulation and analysis.* Stakeholders are likely to include all ministries.

Source: Mackay 2007.

Basing school establishment decisions on a school map was instituted in 1984. The first complete school maps were available in 2005 in accordance with Cabinet Decree (No. 209). However, the information in the school mapping database is not updated regularly so may lead to inconsistencies in planning.²⁰⁸ Furthermore, school mapping has only recently been used to make school establishment decisions. Therefore, there is a large mismatch between the government's regulations for school establishment and the reality on the ground (see discussion on the issue of school size rationalization in chapter 4).

Data on the performance of post-secondary education institutions is extremely weak. Making progress in strengthening these data is a high priority, especially considering the intended policy direction of moving toward increased autonomy of tertiary institutions. MOTEVT recently began tracking graduates' progress and posting

208. The school-mapping exercise updates 10 of the 21 governorates every year, that is, a complete updated school map is prepared every 2 years.

information on graduates on its website to facilitate matching them with potential employers. Nevertheless, information on institutional performance and outcomes is still extremely limited, and IT functions, which conceivably could consolidate data across departments, are fragmented in different ministerial departments with no linkages.

For the universities, an ambitious ICT Master Plan includes establishment of the Yemen Higher Education Management Information System (YHEMIS). The first module for student registration has been completed but is not fully operational. There is still no ready access to a simple database on basic higher education indicators. The Yemen Center for Information Technology has been established as a support center for all ICT functions in universities, including YHEMIS, and has great potential. The ICT center has been established as a semi-autonomous agency not bound by civil service salaries and procedures, and has been able to recruit a very competent team. To ensure sustainability, its activities are financed through a small fee paid by every student. Its plans are sound but very ambitious, and prioritization of activities will be important.

6.3 Summary of Key Findings

National governance and service delivery constraints continue to significantly inhibit successful management of the education sector, and are beyond the scope of the sector itself to resolve. Therefore, improving the performance of Yemen's education sector will depend largely on the success of a range of important ongoing national programs to strengthen governance and public service delivery. They include the National Reform Agenda, civil service modernization, and anticorruption initiatives. There also are significant opportunities within the education sector to change the structure of incentives facing all actors in the system to better support the national objectives for education quality, equity, and efficiency. The priorities are:

Intragovernmental coordination. Lack of effective communication and coordination among the three education ministries—the MOE, MOCSI, and MOLA—and the governorate and district authorities is preventing a cohesive and coherent approach to education planning, budgeting, curriculum, standards, qualifications, and information management. The impact is particularly serious for the training and management of teachers. Some form of consolidation of the education ministries often is discussed, but, by itself, it would not be

a solution. Measures are needed to clarify respective roles and responsibilities and to introduce job descriptions for all ministry staff. Incentives are needed at the technical level to promote collaboration on cross-cutting issues such as teacher training and preparing a qualifications framework. Assuming it had broad stakeholder representation and technical expertise, an independent national body, such as a national education commission or a buffer body with responsibility for tertiary education, could help mediate political interests in favor of national social and economic objectives.

Autonomy at the school/institution level. Yemen's public schools, colleges, and universities have very limited discretionary authority and are constrained by rigid and inefficient budgetary processes. Providing a spending envelope, instead of line-item budget and/or in-kind resources, could greatly enhance performance by giving the institutions themselves the means and incentives to plan, respond flexibly to local needs, and allocate their resources more efficiently. This autonomy is especially critical at the tertiary level, in which flexibility, initiative, and innovation have become essential for the continual reassessment and adjustment of programs in response to evolving technology and employment needs. Moving toward institutional autonomy must be carefully planned. It combines legal/regulatory, governance, and finance elements, as well as relevant training to ensure competence by those responsible and clear accountability arrangements. Considering the scope of the required changes in behaviors and expectations, a pilot and demonstration approach in selected institutions can facilitate close monitoring and adjustment to fit the country context.

Role of nongovernmental stakeholders. On the "demand" side of governance, numerous crucial roles of students, parents, civil society, and employers are not yet well developed. These roles include holding education providers accountable; contributing to oversight and monitoring; providing information on education needs and priorities, and a voice in the policy dialogue; disseminating information, and raising public awareness. Initiatives at the school level for community participation and parent councils have shown promising results that can be built on. Civil society organizations focused on governance, including in the education sector, recently have grown in number in Yemen. However, the role of employers continues to be negligible, hampered in part by the traditional distrust between the public and private sectors. Yemen possesses enormous scope to improve the quality and relevance of education and training, especially at the post-basic level, by involving employers

through a variety of mechanisms. Some of these are employer surveys; employer participation in curriculum design, standards, and assessment, through arrangements at the institutional level and through central mechanisms such as sector councils; on-the-job experience for students and teachers; employer representation on governing boards of institutions; and employer-managed training funds. Yemen's SDF has had a difficult history, but it has the potential to play a very significant role when its revised legal status is implemented.

Private provision of education. The existing legal and regulatory environment discourages private investment in the provision of education, limiting the potential benefits to the system as a whole. Especially at the post-basic level, the expansion of private institutions can help to absorb excess demand, diversify student options, promote innovation, and mobilize nongovernmental resources. Strengthening the contribution of the private sector would require relaxing some of the existing regulatory and tax constraints while establishing and strengthening quality assurance and accreditation mechanisms. A semi-autonomous Quality Assurance and Accreditation Council for higher education recently was approved by Cabinet. The council could play an important role in this respect.

Information management, monitoring, and evaluation. In the absence of a culture of evidence-based decisionmaking, monitoring capacity is weak, and management information functions are highly fragmented, even within individual ministries. Fundamentally, improving Yemen's sector governance will depend on increasing the demand for information, both as the basis for education policy and decisionmaking and to hold public officials accountable.

The Way Forward

Education in Yemen is characterized by a combination of positive traits and weaknesses. Building on the strengths and mitigating the weaknesses is a massive challenge. Decisions taken in addressing this challenge will shape the future of the country. However, despite its specific characteristics, Yemen is not the only country in the world that faces such challenges. Many countries, regardless of their levels of economic development, their political regimes, or their social and cultural fabrics, have faced similar issues. The aim of this report is to use the available local and global information and data to propose a diagnosis of the sector. In this chapter, the report concludes by offering directions for policy actions to improve the education system. A policy matrix also is provided to help guide the discussion on critical policy directions moving forward.

7.1 Perspectives and Horizon

Educational challenges in Yemen must be seen in a broad, holistic perspective. The education sector is not a closed system. The sector percolates throughout the society and the economy. One way or another, and with various levels of intensity, education affects most households in Yemen. Its stakeholders are everywhere: in towns and rural areas, among rich and poor, youth and their parents, workers and employers, residents, and those who have emigrated. The relationship between the sector's products and their absorption by the (predominantly informal) labor market is of particular importance, quantitatively and qualitatively.

Similar to health, education is intersectoral. It is made up of many levels, subsectors, or segments. Although they are not always in communication with one another (for example, kindergartens and

universities), all of the levels are intrinsically linked, whether pedagogically, financially, or administratively; and, primarily, systemically.

What is needed from Yemen's education system is tied to the country's connection to the world as well as to its rich and diverse topography and society. Yemen has cultural, religious, political, and/or economic links with other countries in the Middle East and North Africa Region. It also is part of the global group of low-income countries, with which it shares common specific economic problems. Yemen also is a member of the globalized economy, in particular, through exports of its natural resources and imports of various goods. To add complexity, the country is composed of several population subgroups—including tribes—who live in extremely diverse geographic, social, and cultural environments; who enjoy very different styles and levels of prosperity; and who endure different forms and intensity of poverty. In addition, although Yemen has moved out of a civil war, the roots and remnants of it linger in internal conflicts.

Time plays an important part in educational change. Education has a unique characteristic of being an intergenerational phenomenon. Decisions taken today have an impact with a lag of up to a quarter of a century. Furthermore, most good education systems took more than half a century of consistent reform and prioritization before the fundamentals were well enough established to move to a better and higher level of education. Another aspect of time is that the education sector and the economy in Yemen are dynamic. The education system in Yemen is in a constant state of change, marked, among other characteristics, by a significant expansion at all levels and a growing social demand for more and better quality of education, particularly at the higher levels. The economy also is on a dynamic path and striving to prepare for the post-oil era. Toward this end, Yemen is working to diversify its economy, to enhance the business environment, and to improve governance, while raising the living conditions of its fast-growing population. Furthermore, high rates of rural to urban migration are changing the landscape of service provision. Migration also is causing tension between enhancing coverage to remote rural communities versus dealing with the ever-increasing population of the urban disadvantaged. As a result, the core relationship between education and the economy—mediated primarily by the labor market—also is changing over time, making the perfect match between supply and demand a very elusive objective.

Education in Yemen could benefit from lessons of other countries. All countries are struggling with their education systems. Those on top of the ladder fear they will lose their edge. Those at the bottom are wondering how to climb up. Those in the middle are striving to be on an upward trend. Complaints about their countries' low—and declining—level of literacy of primary education graduates and about the poor level of competency of secondary education graduates regularly come from rich countries such as Japan, UK, or US, and even from high performers such as Finland and Korea. Waste generated by high dropout rates, frustration in graduates unable to find jobs, and exasperation of employers unable to find the “right” skills feed the media. These plights are the focus of countless commissions and studies in all regions of the world, OECD countries included. Reforms to upgrade their education systems keep piling up in these better-off as well as low-income countries, without the expected outcomes. Yemen can learn from these successes and failures and select which strategies best fit its own situation.

The diagnosis in this report calls for action to develop a sound vision so that education can play the role that Yemen's society expects of it. The present definition and role of education are limited to what the three core ministries can and hope to deliver through their specific and often separate mandates. Therefore, any improvements in the system are limited to only what the current institutional set-up can deliver. Yet, as stated above, the education of a nation transcends institutional boundaries. As in other countries, education in Yemen is multidimensional and on a dynamic path, necessitating it to be both responsive and proactive. A holistic, systemic approach to education will be possible only if a vision is developed without the current structural constraints. A smooth articulation of the various bodies that share the responsibility for the sector must be in place to facilitate flexibility of the education system, to disaggregate and diversify streams and disciplines, and to build pathways between general and vocational education. These new goals to bring Yemen's education system up to date with the realities of globalism cannot be achieved unless the relevant sponsor institutions establish the structure for continuous, systematic dialogue and effective coordination among themselves.

Finally, putting the Yemeni education sector on track to a better future requires first, the national recognition that this sector is not equally accessible. Second, additional efforts must be made to reach out to those who—for social, economic, cultural, gender, or geographic

reasons—have been excluded from the benefits of a good-quality education. Similarly, the regional contexts are not homogeneous. This reality also must be factored into the vision for the sector.

7.2 Milestones Along the Road

Solid foundational education that reaches all children is an essential strategic pillar of a good education system. Few priorities are as strategic and clear as the need to continue expanding the coverage of primary education. Although they are little disputed, the Education For All goals will not be achieved in Yemen unless public resources are realigned and bold actions taken at the basic and other levels of the education pyramid. Difficult trade-offs will need to be made. They include expanding universal coverage of primary versus basic education, and introducing early childhood education versus promoting better quality basic education. Enrolling children who, until now, have been out of school requires that both supply factors (availability of schools) and demand factors (reasons for not enrolling in available schools) are addressed simultaneously. Supplying adequate facilities in the right place and pedagogic inputs in the right quantity and in an optimal mix is still far from being a finished agenda. Nevertheless, taking care of demand-side factors that prevent some groups from enrolling in school no longer can be ignored.

However, countless convincing cases around the world have demonstrated that quantitative expansion of basic education is meaningless if it is achieved at the expense of quality. Hence, a number of measures will have to be considered to ensure that all children not only will be enrolled, but also will attend school, graduate within the normal timeframe, and acquire basic skills. Currently, grade 4 students are performing poorly in mathematics and science, and their levels of literacy are low. Inability to read is a pervasive problem that follows Yemenis throughout their lives. Greater emphasis will be required on students' correctly acquiring the fundamentals of a good education in their early years. This goal likely will necessitate the elimination of the system's policy of automatic promotion for the first three grades.

To bring about quality education, standards must be established, needed support must be organized, and results must be monitored. Clear standards are particularly crucial in the areas of student learning achievements, teaching and learning hours, and teacher professional qualification (in both subject matter and

pedagogy, with some specific skills such as multi-grade teaching). Support is needed particularly in in-service teacher training and curriculum implementation. Finally, results must be assessed, both at the level of students, through transforming the current examination system (without over-assessing the students, taking from precious teaching time, as is practiced through monthly examinations at schools); and at the school and national levels, through establishing a (sector-wide) education management information system.

After exiting from basic education, children (equipped with the expected academic skills) should be given choices, and these choices should not be irremediable. In a lifelong perspective and an ever-changing environment, two key features of post-basic education should be flexibility and agility. The very specific characteristic of secondary education is that it plays two very different roles: (1) it is the entry point to economic activity through vocational and technical education and training, and (2) it is the entry point to tertiary education. Past and present experiences suggest that these two roles should not be mutually exclusive and that access to tertiary education should be open. Maintaining pathways and bridges between streams and disciplines and keeping options open have become critical in organizing modern post-basic education. As proven in most countries in South and East Asia, equipping both staff and students with a higher level of information and communication technology (ICT) and English proficiency greatly enhances further trainability and future employability.

Currently, graduates from Yemen's (expensive) technical education and vocational training (TEVT) sector do not fare well in the labor market. Consequently, refocusing TEVT on quality and relevance should take precedence over expanding it. In fact, given that most TEVT graduates become teachers in mostly public TEVT institutes, there is a need to overhaul the country's entire system of TEVT. Furthermore, the needs, and absorptive capacity, of the civil service have reached their ceilings. Therefore, closer linkages with the world of employers and aligning the sector with market signals would help make Yemen's TEVT more relevant.

Personal and social waste emanate from the one-year wait rule for university entrance and the lack of adequate career and education decisionmaking counseling at the basic, secondary, and university levels of education. For students who are selected by universities, the one-year waiting period has no pedagogic justification and

amounts to personal and social waste. Students and their families need advance support and information to make appropriate decisions about education and careers. Addressing this necessity requires building capacity to institute and staff a strong career counseling system.

Inadequate quality and relevance are as pervasive at the tertiary education level as they are at the lower levels, and call for equally energetic measures. The first beneficiary of such measures will be the teaching staff. The measures will strengthen teaching staff qualification in their subject areas and in their pedagogic (student-centered/multi-grade teaching) methods skills through initial training, and in science areas. These measures alone, however, will not turn around the current situation and attract and retain highly qualified teachers. More broadly, in-service training, career development, and merit-based promotion also will be necessary. In addition, it is urgent to develop a comprehensive quality assurance system that embraces both public and private institutions, uses clear common standards, and implements similar processes. Finally, the phenomenon of mushrooming parallel programs must be tackled at its root and seen from the point of view of the students enrolling in these programs and their demand for good quality, higher education—not simply as a source of revenues for the universities that offer them. The value of graduating from a parallel program must be revisited, and the governmental inputs going to such programs need to be re-evaluated as well. A larger dose of well-targeted distance education could be considered to respond to the strong social demand that has triggered the development of these parasitic parallel programs, which feed on the resources of the university system without bringing benefits to the students who register and pay for these resources.

Most of the measures suggested in this report and recapped above have a financial impact. As do the measures themselves, this impact must be approached holistically and within a medium-to-long-term horizon (factoring in both demographic and economic prospects). It is true that the declining trend of per-student expenditures must be reversed and that additional public resources probably need to be channeled to the education system as a whole. It also is obvious, however, that funds for such additions are limited. Public monies allocated to education are already at a relatively high level, both as a share of GDP and as a share of total government expenditures. Therefore, other avenues must be explored.

It is advisable to weigh the respective budgetary allocations among the various levels/subsectors of education. There is no absolute, undisputable stick by which to determine these allocations. However, it is useful to proceed to some basic benchmarking by comparing Yemen with countries that have or had a similar level of development of their education system (and a not too dissimilar level of economic development). Any comparative benchmarking should keep in mind the strategic priorities.

Without compromising the unconditional priority to be given to quality, efficiency gains are possible. The most obvious area of reform is the large salary composition of the public budget. This large share renders limited results and reduces the possibilities of better resourcing educational institutions, thus reducing quality. There are a number of areas of inefficiency in the resourcing of teachers. High on the list are the absenteeism rate, low time on task, random deployment, overcrowded urban classrooms that are unmanageable for teachers, absence of the much needed female teachers in rural schools, and “ghost workers” in the system. Given the very diverse population settlements in Yemen, the key to achieve universal education in a fiscally sound manner necessitates rationalization of school sizes. It is suggested to provide smaller schools close to communities for grades 1–6 with multi-grade teachers; and provide larger, better resourced schools for grades 7–12 at a reasonable distance from communities to cover bigger catchment areas.

In addition, Yemen needs to reduce teacher absenteeism; increase time on task; reduce teaching loads in urban areas; and deploy teachers based on student enrollment numbers, gender, and education levels. These changes may imply that some teachers who already are on the payroll may be given higher salaries and bonuses for extra hours worked or for qualifications gained. The changes also may mean that teachers in urban schools are paired with teaching assistants (who could be hired on contract and operate permanently outside the civil service and paid lower wages) to lessen workloads and enable more learning in the classroom. Teachers also can be contracted outside of the civil service to fill this urgent gap in the supply of qualified teachers. A gradual increase of student-teacher ratios would enable modulating salary rates according to hardship, and pegging them at least partially to performance. The savings would enable procuring pedagogic inputs and scientific equipment, and establishing and maintaining libraries.

When the prospect for additional fiscal room is limited, diversification of resources becomes a necessity, especially at the levels of education in which the benefits incur more directly to individuals. Sharing the costs of education at the post-basic level is a universally observed trend, which simply reflects the fact that governments cannot bear all of the rising costs of increasing enrollments. Equity reasons also suggest that charging a portion of the costs to those (still a privileged minority) who reach post-basic education is fairer than spreading these costs to taxpayers. However, any policy to introduce fees must be enshrined in a broader context that takes into account the diversity of the student populations and builds in carefully crafted student aid schemes. These should combine needs-based scholarships and some dose of student loans. However, diversification cannot be limited to students. It also is up to institutions to generate their own resources through a range of activities and to garner philanthropic support from the “outside” world.

A more positive, supportive relationship needs to be sought with the private sector. Relying on the private sector to provide and finance education at all levels proves to be a promising route, so long as a balanced system of safeguards and incentives are in place. Public-private partnerships (PPPs) no longer are at the experimental stage. Several examples in the world suggest that PPPs also contribute to a rationalization of resources and a healthy distribution of roles as well as to the delivery of high-quality education.

In addition to the technical conditions and the financial considerations attached to the suggested reforms, the governance framework of the sector needs to be revised. Cardinal principles exist to guide this exercise. Three are clarity, transparency, and accountability. One of the first areas in which these principles need to be implemented is the decentralization framework to clearly delineate responsibilities and set up reporting lines. TEVT and tertiary education institutions are another clear target for a revised legal and regulatory framework. It will give these institutions the autonomy that they require over admissions, pedagogic, administrative, and financial matters, and will hold them responsible through transparent performance-based allocation mechanisms and well-defined quality control.

Also needed is a revamped legal and regulatory framework for private education providers to encourage private investments and to facilitate a healthy cohabitation of private and public institutions (especially at the pre-basic and post-basic levels).

This variety of measures would lessen the burden borne by the central ministries in charge of the various subsectors of the education system. In so doing, these measures would facilitate the ministries' focusing on strategic goals, articulating a sectoral vision, and facilitating implementation of policies. For such a transition to happen smoothly, two more conditions need to be met: efficient interministerial coordination mechanisms and reliable, timely information from the ministries to the stakeholders on the performance of the system.

7.3 Change Management

Reforms need to be well sequenced with enough flexibility to accommodate changes over time. Several of the policy reforms suggested above can be implemented without delay. Others will have to be introduced gradually, and/or at a later stage. It is at this point that the time dimension again becomes important: the proper, logical sequencing must be found. However, this logic is not purely technical. Technicality has its constraints. For example, revisiting examinations, revising textbooks, and developing curricula require a specific sequencing. Technicality also has a strong political dimension. The political feasibility of reforms often dictates the timing of both their announcement and their implementation. Firmness on the principles has to be paired with the flexibility and even opportunism of their enforcement. Political, practical, and financial considerations together contribute to decisions whether to go full scale with a reform; or whether a period of experimentation is needed, followed by a serious evaluation. Generally speaking, in the education sphere, experimentation is a good strategy. Very few measures are guaranteed to be successful in a specific country, even if they have been largely successful in several or even many other national contexts.

While few reforms make all stakeholders happy, honest dialogue and inclusiveness are the best ways to overcome the politics of reform. Reforms per se engender a range of reactions from enthusiasm to skepticism to resistance. The last two reactions are particularly frequent concerning education. Even if they have a long-term, strategic vision of education and opt for reforms that will not necessarily bear fruit during their tenures, politicians are in a delicate situation. They must push for reforms that elicit the opposition of many stakeholders. An inclusive process is the only way to overcome such opposition. Genuine, wide consultation with all stakeholders—the public and private sectors, clients and agents (and

their respective associations and trade unions), and providers and users—is a prerequisite for the success of the reforms. Without an inclusive process, even if the reform is formally adopted, its actual implementation can be jeopardized if the real actors are not on board. Even though it is rare to see consensus among these groups (since their interests often are divergent to start with), they must be heard. Few reforms make all stakeholders happy. The costs and benefits of the reforms must be clearly spelled out, recognizing that those who bear the former are by nature more vocal than those who receive the latter. Transitional mitigation measures are often needed to mediate these effects.

Change succeeds when enough incentives are put in place for those who are supposed to make it happen. Incentives can take multiple forms, both monetary and nonmonetary. Lessons from international practice suggest that carefully prepared and properly organized devolution of responsibilities to the echelons closest to the points of delivery (such as schools) is likely to offer the best results. Experience also teaches that strong and durable political will conditions the entire process of reform and the success of the consultations themselves. Coupled with the support of highly motivated champions and the buy-in of the major actors, political resolve at the top is what will give education in Yemen the best chance to advance. Still a fragile state, Yemen needs to muster all available energies to instill an appetite for change and to bring the education sector to the forefront of the battle to improve the lives of its population.

A noncomprehensive policy matrix highlights some of the most fundamental issues for Yemen. In this chapter, the authors have attempted to provide a balanced system view. They have kept in perspective that education reform is a very long-term objective that necessitates difficult choices and differences in approach and priorities along the way. Demand for outlining policy options is high in Yemen. In response, the policy matrix presented below highlights some of the most fundamental elements of change that need to be considered as Yemen attempts to move to a high-quality education system. More detailed work will need to be done to move from the general directions to policy decisions.

In conclusion, Yemen has come a long way from the starting point of its fledgling education system in 1970. Nevertheless, many issues remain to be addressed to provide the country with an education system commensurate with the requirements of its society and economy. Moreover, given the status of the economy, labor market,

realities of implementation, capacity constraints, challenges of implementing reform, and dependence on other sectoral ministries and agencies to reform, expectations of what the education system can expect to deliver need to be realistic and under regular national dialogue and review. This dialogue is critical. It can best be undertaken through the development of a national vision for education, whereby difficult choices are openly debated and decided in the most representative manner.

Table 7.1 Policy Matrix for Education Reform in Yemen**A. Within the Education System**

Topic	Strengths	Weaknesses
Coverage and provision	<ul style="list-style-type: none"> • Despite very significant demographic and geographic challenges, enrollments at all levels of education, especially for girls, not only maintained but also improved • Reduction of number of out-of-school children from 2.2m in 1999 to 1.8m in 2005 • Strong social demand for education, especially from better-off families and for higher education • Improved retention rates for girls who reach secondary education 	<ul style="list-style-type: none"> • Low primary completion rate • Not likely to reach MDGs by 2015 given low enrollment and retention and high population growth rates • 1.8 million children still out of school • Increasing number of marginalized children, street children, and working children • Primary GER still low by international standards but post-basic GERs approximately same as low-income country average • Primary GER very low for girls compared to low-income countries • Rural areas, girls, and poor faring significantly worse at all levels • Stagnation of boys' enrollment • High repetition and dropout at all levels • Focus very much on the supply side (expanding public sector provision), especially at post-basic education levels • Strong constraints on demand side (lacking female teachers and good sanitary facilities in rural areas in basic and secondary, poverty constraints at all levels, low returns to education) • Too much reliance on public provision; weak and unsupportive regulatory environment for private sector at all levels • Inadequate facilities in many basic education schools with poor sanitary facilities • Mismatch of what students learn in secondary (mostly science) and what they end up choosing to study in university (mostly humanities and arts) • High rates of rural-to-urban migration putting pressure on the system to reach the rural underserved and growing marginalized communities in urban areas

Short-term policies	Long-term policies 5 years and beyond
<ul style="list-style-type: none"> • Prioritize primary education over other levels for public financing • Launch a strong national educational media campaign (start school on time and stay in school until at least grade 6) • Subsidize education (expand conditional cash transfers, or CCTs, to cover poor boys in basic and secondary) • Recruit more female teachers in rural areas • Where supply is an issue, build more schools/ classrooms with appropriate facilities • Rationalize expansion of public higher education and public TEVT • Reexamine usefulness of parallel programs in public universities 	<ul style="list-style-type: none"> • Build on expanded coverage in primary education • Professionalize teaching force: recruit teachers outside civil service; recruit teachers with lower qualifications and provide appropriate in-service training to fill supply gap in remote areas • Tie in ECE strategy to get the more difficult-to reach children into the system; possibly finance ECE for the poor and ease restrictions for private ECE provision • Without expanding MOE's ECE provision, provide scholarships for poor children (who have the most to gain from ECE) to attend high-quality private ECE centers • Remove restrictions on private financing with appropriate quality assurance at all levels • Reorient higher education financing priorities for the public sector: more cost recovery with targeted scholarships for the poor • Remove unnecessary restrictions on private universities

continued

A. Within the Education System *(continued)*

Topic	Strengths	Weaknesses
Quality	<ul style="list-style-type: none"> • Participation in international tests resulting in useful benchmarks for learning outcomes • Student-centered and discovery-based curricula in place in basic and secondary education • Ambitious teacher training program in basic and secondary education • Cabinet Decree establishing the QA system for higher education 	<ul style="list-style-type: none"> • Low learning achievements at all levels, starting in primary education • Inability of students to read in early grades, which affects their educational outcomes throughout life • High repetition and dropout rates at all levels • Outdated teaching methods at all levels rendering ineffective a reasonably good general education curriculum • Teacher inputs plagued with high proportion of unqualified teachers, high degree of absenteeism, uneven geographical distribution, low time on task, "ghosts," negative teaching behaviors • Large urban class sizes vs. multiple-grade classes in rural areas • Quality inputs (good teachers, universities, libraries, laboratories, lab technicians) lacking at all levels, with particular disadvantage to rural areas • Good-quality (that is, error-free) and appropriate textbooks and teaching and learning materials not available in basic and secondary schools • Effective assessment system absent, yet spending too much time on assessing students • Not enough employer participation in TEVT curriculum, delivery, and assessment • Lack of systematic monitoring and evaluation at all levels • Large class sizes in universities
Financing and efficiency	<ul style="list-style-type: none"> • Public spending for pro-poor basic education • Government commitment and relatively high public expenditure on education • Donor fund availability • Possibilities for cost recovery 	<ul style="list-style-type: none"> • Education's share of total government expenditure declining over time • More so for basic education, contrary to government's commitment to EFA • Government financing linked to international oil price • Public spending too high on administrative staff cost and too low on goods and services • TEVT too expensive • Low internal efficiency at all levels • Public financing inequitable at higher levels • Low student-teacher ratios in primary education • Inefficient resource allocation to schools (does not appear to affect students' learning outcomes)

Short-term policies	Long-term policies 5 years and beyond
<ul style="list-style-type: none"> • Eliminate automatic promotion policy in grades 1–3 • Ensure timely provision of textbooks in all schools • Add libraries in rural schools • Providing support (in-service training, curriculum; learning/teaching materials/facilities and infrastructure) • Curriculum review and renewal in higher education • Laying foundations of QA system for higher education • Implement restructuring of Skills Development Fund under private sector management • Remove restrictions from private universities to train and qualify teachers • Realign teacher remuneration system to meet system needs 	<ul style="list-style-type: none"> • Introduce a National Qualifications Framework • Curriculum diversification, streaming and linkages between academic and vocational secondary • Professionalization of the teaching force for basic and secondary education (including: establishment of pre-and in-service teaching standards, upgrading the entrance requirements into Faculties of Education (FOEs) for basic and secondary school teachers; introduction of high quality basic education teacher preparation program at FOEs; making teacher pay commensurate with education and experience and hardship of post and introducing incentives and wage premia for certification) • Complete overhaul of the FOEs in public universities—curriculum, teaching and learning, qualifications, and enabling the private sector to compete in terms of quality standards. • Establish student learning standards • Monitor results (student learning assessment system, core indicators, regular tracer studies) • Implement QA system for higher education • Remove restrictions on private universities • Introduce minimum years of labor market experience requirement to recruit TEVT instructors, recruit more part-time staff from the labor market • Encourage and fund research and provide salary incentives for research in higher education
<ul style="list-style-type: none"> • Rationalize school size: smaller schools near communities for grades 1–6; larger and better resourced schools for grades 7–12 • Increase spending on primary education • Increase cost recovery at post-basic levels • Train multi-grade teachers to serve in small schools in remote areas 	<ul style="list-style-type: none"> • Use small schools for primary education and merge provision of grades 7–12 to the extent possible • Redeploy teachers • Improve efficiency of salaries by improving teacher and staff deployment based on needs • Increase allocation to goods and services by limiting spending on administrative staff • Reduce the teacher wage bill by exploring options for differentiated pay for differentiated employment contracts • Introduce efficiency incentives in post-secondary institutions through reform of governance and finance

continued

A. Within the Education System *(continued)*

Topic	Strengths	Weaknesses
Management and governance	<ul style="list-style-type: none"> • Consultative processes for participation of stakeholders in sector strategy development • Public-private partnerships beginning to be developed in TEVT • Law revised for Skills Development Fund to allow more autonomy under private sector management (pending approval of Parliament) 	<ul style="list-style-type: none"> • Multiple agencies involved—3 education ministries, local administration authorities, Ministries of Civil Service, Finance, Planning and International Cooperation, TEVT, and other ministries—but no coordination • Decentralization framework designation of responsibilities unclear; capacity lacking at local levels; monitoring weak • Private sector unnecessarily controlled by government, not involved enough in TEVT, perceived negatively by higher education • MOF control of finance by line item depriving post-secondary institutions of flexibility and incentives to plan, innovate, or increase efficiency • No job descriptions, limited accountability of ministry staff • Rules and procedures for admissions and examinations not effectively or equitably enforced; perception of widespread corruption • Information management weak—for both accountability and policy • Legal environment unfriendly for private investors
Overall sector vision	<ul style="list-style-type: none"> • Detailed subsector strategies that can serve as basis for development of integrated sector vision and strategy 	<ul style="list-style-type: none"> • No sectoral vision • All subsector strategies vying for limited public funds • Limited opportunities for lifelong learning and continuing education, dead-end paths (especially by attending TEVT), entrance rules facilitating dropout from the system • Higher levels not linked to labor market • Over-investment by public sector in post-basic education even though labor market requires basic skills that a good general education system should provide • Wasteful 1-year wait rule between secondary and higher education • Limited role for private sector in education • Lack of concerted message for education and prioritization of public funds perpetuating a dual society through education and employment opportunities

Short-term policies	Long-term policies 5 years and beyond
<ul style="list-style-type: none"> • Review ambitiousness of priorities, targets, and implementation plans and commit to realistic ones • Establish working groups of technical staff to address key areas needing urgent coordination • Define responsibilities of ministry staff at all levels; introduce job descriptions • Review laws and regulations for post-secondary private providers • Implement revised Skills Development Fund law 	<ul style="list-style-type: none"> • Increase coordination among the 3 education ministries • Establish new finance and governance arrangements for post-secondary institutions; phase out civil service status of staff • Introduce incentives for greater role of private providers
<ul style="list-style-type: none"> • Formulate one integrated vision for all education subsectors including ECE • Prioritize needs and focus on getting the basics right • Abolish 1-year waiting rule for university enrollment • Prioritize focus of public resources • Encourage resource mobilization by private sector at all levels; take private funds into account in allocating public funds 	<ul style="list-style-type: none"> • Build pathways to enable life-long learning system • Ease TEVT entrance requirements to orient system toward a culture of lifelong learning and skill enhancement of labor force • Support sector reforms through lens of a qualifications framework that enables flexibility

continued

B. Outside the Education System

Topic	Strengths	Weaknesses
Economic environment	<ul style="list-style-type: none"> • Still some oil revenues • Private sector reforms being undertaken 	<ul style="list-style-type: none"> • Low economic growth • Large investment projects with low impact on employment
Civil service environment	<ul style="list-style-type: none"> • Reform programs and initiatives ongoing 	<ul style="list-style-type: none"> • Non-meritocratic appointment practices • Overstaffing and inadequate compensation • Work culture that discourages initiative, teamwork, information sharing, accountability
Labor market	<ul style="list-style-type: none"> • Mobile labor force (including willingness to migrate, internally and abroad) • Oversupply of educated young workers in local labor markets 	<ul style="list-style-type: none"> • Dual (public/private) labor market • Over-reliance of jobseekers on public sector employment • High unemployment rates, especially among the more educated • Lack of quality labor statistics • Low wage/employment incentives for investment in education among the poor • Education impact on wages generally small
Social	<ul style="list-style-type: none"> • Increasing acceptance of female education and work performed by women • Strong family and social networks • Targeted public support through well-functioning programs (the Social Fund for Development and the Public Works Program) 	<ul style="list-style-type: none"> • High malnutrition, which affects educational attainments (intake and performance) • Unrealistic work attitudes and expectations of jobseekers and workers • Social restrictions on deployment of female teachers • Early marriage • Increasing poverty and potential inequality

Short-term policies	Long-term policies 5 years and beyond
<ul style="list-style-type: none"> • Start adopting broad-based, labor-absorbing macro-investment policies • Aggressively promote private sector development in all sectors, including education 	
<ul style="list-style-type: none"> • Transparently recruit teachers from among the most qualified • Ensure rules and penalties for absenteeism apply 	
<ul style="list-style-type: none"> • Introduce career guidance in school curricula • Undertake study on internal and external migration • Facilitate emigration (negotiate agreements in receiving countries) • Introduce annual labor force surveys to assess priorities and labor policies 	<ul style="list-style-type: none"> • Better align public sector wages and employment conditions with local labor market conditions
<ul style="list-style-type: none"> • Implement minimum legal age for marriage rule • Urgently tackle malnutrition at early childhood level • Initiate public information campaign on benefits of education, especially for girls 	

Appendices

Appendix A

Population Indicators and Profile of the Yemeni Labor Force

Table A1. Population Indicators, by Governorate, 1994–2004

	Population 2004			Growth rate 1994–2004 (%)	Urban areas (%)	Immigrants (%)
	Total	Female	Male			
Ibb ¹	2,131,861	1,087,501	1,044,360	2.5	18	11
Abyan	433,819	212,593	221,226	2.4	26	16
Sana'a City	1,747,834	786,105	961,729	5.5	98	53
Al-Baida	577,369	285,032	292,337	2.4	19	10
Taiz	2,393,425	1,243,157	1,150,268	2.5	22	12
Al-jawf	443,797	202,660	241,137	2.4	13	9
Haja	1,479,568	708,513	771,055	3.0	9	5
Al- Hodeidah	2,157,552	1,048,266	1,109,286	3.3	35	14
Hadramout	1,028,556	498,372	530,184	3.1	46	9
Dhamar	1,330,108	669,555	660,553	3.0	14	15
Shabwah	470,440	227,290	243,150	2.5	16	10
Saadah	695,033	335,357	359,676	3.7	15	16
Sana'a ²	918,727	451,077	467,650	2.1	3	10
Aden	589,419	275,864	313,555	3.8	100	42
laheg	722,694	361,680	361,014	2.6	9	7
Mareb	238,522	111,134	127,388	2.7	13	14
Al- Mahweet	495,045	246,427	248,618	2.9	7	3
Al-Mahrah	88,594	40,484	48,110	4.5	42	8
Amran	877,786	426,380	451,406	1.8	17	10
Al- Daleh	470,564	229,425	241,139	3.5	13	8
Rymeh	394,448	201,336	193,112	3.0	1	11
Total	19,685,161	9,648,208	10,036,953	3.0	29	15

Source: CSO Statistical Yearbook 2005, authors' calculations using HBS 2005.

Notes:

1 The % of immigrants is estimated from the 2005 Household Budget Survey (HBS). It represents the % of individuals who said that their current places of residence are not their birthplaces.

2 The Sana'a governorate does not include Sana'a City.

Profile of the Yemeni Labor Market

The 2005 Yemen Household Budget Survey (HBS) was used to construct a profile of the labor force (table A2). The HBS 2005 has information on working status, such as “employed” or “self-employed,” but it does not classify work type by “formal” or “informal.” Therefore, to estimate the degree of employment in the informal sector, the authors applied the following assumptions:

1. All workers are considered to be working in the “formal” sector if they are:
 - a. Wage workers with job stability. This category includes all employees who have worked more than 31 hours per week during the last 12 months and who receive at least 1 type of benefit (pension, paid leave, health insurance) from their employment, or
 - b. Nonwage workers who have worked more than 31 hours per week during the last 12 months in a firm that has more than 5 employees.
2. All workers are considered to be working in the “informal” sector if they do not meet the above criteria.

To construct the labor force profile, an adjustment was made for female agricultural workers. According to the 1999 Labor Force Survey (LFS), rural women in agricultural households are classified as “agricultural workers.” In the 2004 census and the 2005 HBS, these female agricultural workers were classified as economically “inactive.” To make the definition consistent with the LFS, the number of female agricultural workers was adjusted in the HBS and the census by using the proportion of female workers who were found to be in the agriculture sector in the 1999 LFS (88 percent of female workers were in the agricultural sector).

Table A2. Working Status and Average Years of Schooling for 15-64 Year Olds by Gender, 2005

	Males	Females	Total
Total population aged 15-64 (1)	5,108,554	5,337,013	10,445,567
Working population (2) = (3)+(4)	3,392,048	1,135,692	4,527,740
Employed (3)	1,896,456	110,438	2,006,894
Stable wage (formal)	399,749	31,546	431,295
Semistable wage (informal)	790,389	58,569	848,958
Unstable wage (informal)	670,706	17,568	688,274
Unknown (informal)	35,612	2,754	38,366
Self-employed (4)	1,495,592	1,025,254	2,520,846
Nonagriculture regular nonwage (formal)	20,989	702	21,691
Nonagriculture regular nonwage (informal)	398,795	13,335	412,130
Nonagriculture nonregular nonwage (informal)	200,106	14,024	214,130
Agriculture nonwage (informal) (8)	875,702	997,193	1,872,895
Unemployed (5)	321,355	239,607	560,962
Inactive (6)	430,463	3,519,825	3,950,288
Students (7)	964,688	441,889	1,406,577
Studying only	745,463	435,443	1,180,906
Working part-time	219,226	6,446	225,672
Formal sector workers (9)	420,738	32,248	452,986
Informal sector workers (10)	2,971,310	1,103,443	4,074,753
Labor force participation rate (%) = ((2)+(5))/(1)	72.7	25.8	48.7
Unemployment rate (%) = (5)/((2)+(5))	8.7	17.4	11.0
% of workers in the informal sector = (9)/(2)	87.6	97.2	90.0
% of workers in the agricultural sector = (8)/(2)	25.8	87.8	41.41

Source: Authors' calculations based on HBS 2005.

Notes: The inactive population includes those who are working "unpaid." It is not possible from the HBS 2005 to distinguish between domestic workers and agricultural workers. The definitions for working status follow. Stable wage includes those working regularly (more than 31 hours per week for the last 12 months) with employment benefit (any of pension, paid leave, health insurance). Semistable wage includes those working regularly but without employment benefit, or those working nonregularly (working either less than 31 hours per week or less than 12 months) but with employment benefit. Unstable wage includes those not working regularly and without employment benefit. Nonagriculture regular nonwage formal includes those working regularly in nonagricultural sectors without wage and in establishments with more than 5 employees (5+). Nonagriculture regular nonwage informal includes those working regularly in nonagricultural sectors without wage and in workplaces with fewer than 4 employees (1-4). Nonagriculture nonregular nonwage includes those working nonregularly in nonagricultural sectors without wage. Agriculture nonwage includes those working regularly in the agricultural sector without wage. Female agricultural workers are adjusted using the LFS 1999 definition.

Appendix B

Admission Requirements and Costs of Regular, Parallel, and Private Expense Programs at Sana'a University

The admission requirements for Sana'a University are¹:

1. Students must wait for one year after the date of their secondary education certificate (SEC) before they enter the university.
2. To apply, students must have achieved the minimum score for the required track in their secondary education examinations. For humanities, both humanities and science secondary certificates are accepted. For sciences, only graduates of the science track are accepted.
3. Graduates of TEVT institutes can be admitted to the same faculties as their specialization on an exceptional basis: only the top three students from each vocational secondary school, technical institute, and community college can be admitted.
4. Admission is granted based on the secondary education examination score and an entrance examination (table B1).

Those who do not meet the minimum scores in the secondary education examination but who wish to enter university can apply for parallel programs. Parallel programs are offered mostly for humanities faculties (*Sharia* and Law, Arts, Commerce, Mass Communication, and English), and for some science faculties (Agriculture). There is no entrance examination for parallel program students. They are enrolled on a first-come-first-served basis up to the number of allocated places for each faculty.

Courses in parallel programs usually are separate from the courses in regular programs and are offered in the afternoon.² According to regulations, the content of the parallel courses should be the same as the regular program. However, according to anecdotal evidence,

1. Prospectus of Sana'a University for 2008–09.

2. When the number of parallel program students is fewer than 50 per department, they are placed in regular course classes. In such cases, the quality of education in the regular programs is affected (chapter 3).

Table B1. Admission Requirements for Sana'a University by Faculty

College	Minimum score in secondary education examination	No. of available student places	Type of secondary education certificate (SEC) required
Science (average score)	80	1,425	Science
Medicine	85	100	Science
Nursing	80	100	Science
Dentistry	85	50	Science
Pharmacology	85	100	Science
Engineering	80	300	Science
Science	75	375	Science
Computing	80	150	Science
Agriculture	70	400	Science
Humanities (average score)	7	10,210	Humanities or science
Sharia and Law	75	1,200	Humanities or science
Education	80	1,250	Humanities or science
Arts	70	1,150	Humanities or science
Commerce ¹	75/80	1,200	Humanities or science
Languages ²	70/80	780	Humanities or science
Mass Communication	75	200	Humanities or science
Physical Training	70	130	Humanities or science
Education—Mahweet	75	900	Humanities or science
Education—Arhab	75	1,250	Humanities or science
Education and Arts- Khawlan ³	70/75	1,000	Humanities or science
Education, Arts and Science- Marib ³	70/75	1,000	Humanities or science

Source: Prospectus of Sana'a University for 2008–09.

Notes:

1 Minimum scores are 75 for the humanities track and 80 for the science track.

2 Minimum scores are 80 for English and 70 for other subjects.

3 Minimum scores are 70 for education and 75 for arts.

due to the low admission criteria, the level of education is often very different and substantially lower.

Regular university students have no tuition fees, although they do pay an admission fee, activity fees, and examination fees. In contrast, parallel program students must pay annual tuition fees of Yrls 35,000 (approximately US\$175) for most departments, or Yrls 45,000 for the English department (table B2). The total cost that a parallel program student must pay for 4 years in the English department is Yrls 198,000 (\$990)—more than 10 times the cost for regular students (Yrls 17,900, or \$90). While parallel programs are offered mostly in humanities departments, some science faculties (including medicine and engineering) offer a program called the “private expense” program. It is equivalent to parallel programs except that the tuition range is 10 times greater than it is for parallel programs (\$1,500–2,500 per year).³

3. All non-Yemenis also are enrolled as private expense students.

Table B2. Student Fees for Regular and Parallel Programs at Sana'a University (Yr/s)

	Parallel			Regular	
	Humanities	English	Science	Humanities	Science
Admission ¹	3,500	3,500	5,000	4,100	5,600
Government fee ²	3,500	3,500	5,000	—	—
Tuition ³	35,000	45,000 ⁴	35,000	—	—
Activity fee ⁴	2,750	2,750	3,150	3,200	3,600
Entrance examination fee	—	—	—	1,000	1500–2500
Estimated total cost for 4 years	158,000	198,000	162,600	17,900	21,500 ^e

Source: Prospectus of Sana'a University for 2008–09; Sana'a University bylaw No. 434 of 2003, modified by Decree No. 211 of 2005 and No. 199 for 2005 (Article 23).

Notes:

1 Admission fee is charged only once.

2 Government fee goes to MOF. Fee is charged only once.

3 Anecdotal evidence shows activity fees usually are higher.

4 English department has higher fees due to high demand.

Appendix C

Enrollment by Governorate and Determinants of Enrollment

Table C1. Enrollment and Schools by Governorate, 2007–08

Governorates	No. of students in grades 1–9		Age 6–14 enrollment rate (%)		Urban enrollments (%)	No. of schools	Private schools	Double shift schools (%)
	Male	Female	Male	Female				
Ibb	307,403	232,650	80	68	19	1,485	3	14
Abyan	55,867	38,085	82	64	31	442	0	7
Sana'a City	200,357	183,518	87	84	95	339	48	49
Al-Baida	68,687	47,676	70	44	20	527	0	16
Taiz	339,869	274,446	82	70	20	1,558	3	15
Al-jawf	30,448	22,999	87	61	17	418	0	4
Haja	142,964	88,484	65	38	14	1,409	0	11
Al- Hodeidah	212,042	151,487	58	42	39	1,296	2	12
Hadramout	130,245	97,786	74	62	46	708	4	10
Dhamar	178,555	100,799	76	40	18	1,225	0	7
Shabwah	63,965	35,007	79	50	20	501	0	11
Saadah	71,969	38,030	65	32	25	677	0	7
Sana'a	140,661	98,591	76	49	2	1,122	0	6
Aden	59,872	49,356	83	78	100	132	26	58
Laheg	94,291	68,499	79	58	9	585	0	17
Mareb	27,289	21,359	70	48	16	425	0	4
Al- Mahweet	61,195	45,390	80	59	9	593	0	8
Al-Mahrah	9,984	8,562	82	76	20	121	0	3
Amran	116,180	78,228	86	47	20	1,112	0	7
Al- Daleh	69,462	50,911	85	73	10	410	1	5
Rymeh	48,877	29,556	70	45	1	457	0	2
Total	2,430,182	1,761,419	76	56	29	15,542	2	111

Source: MOE AES 2007–08; enrollment rate from HBS 2005.

Determinants of Enrollment

The Household Budget Survey (HBS), conducted by the Central Statistical Organization (CSO) of Yemen, was used for the analysis to identify the determinants of enrollment. The sample frame for the HBS was the 2004 Population Census. While Yemen consists of 21 governorates, the study population was sorted into 38 strata (19 urban

and 19 rural strata). The target sample size was 14,400 households; of these, 13,136 households were officially acknowledged as complete samples. The data in HBS includes household status, individual demographics of household members, job information, property ownership, asset, and consumption data.

The methodology for the econometric analysis was binary probit regression modeling. The dependent variable was the enrollment status of a child, which takes the value of 1 if the child is enrolled in school and 0 if not. The independent variables included personal and household variables as well as sibling role model variables and fathers' and mothers' education variables. A detailed list of variables and their descriptive statistics is shown in table C2. The results of the analysis are shown in table C3.

Table C2. Summary of the Variables Used in the Determinants of Enrollment Model

Variables	Female		Male	
	Mean	Standard deviation	Mean	Standard deviation
Currently enrolled	0.55	0.50	0.75	0.43
Individual variables				
Age 6	0.12	0.32	0.13	0.33
Age 7	0.12	0.33	0.12	0.33
Age 8	0.12	0.33	0.12	0.33
Age 9	0.10	0.30	0.09	0.29
Age 10	0.13	0.34	0.13	0.34
Age 11	0.08	0.28	0.09	0.29
Age 12	0.12	0.32	0.12	0.32
Age 13	0.10	0.30	0.10	0.30
Age 14	0.10	0.30	0.09	0.29
Married	0.00	0.02	0.00	0.02
Disability	0.02	0.14	0.03	0.16
Household variables				
Log household expenditure per capita	11.22	0.56	11.24	0.55
No. of children aged below 15 in the household	5.48	2.78	5.43	2.83
Number of elderly aged above 60 in the household	0.37	0.64	0.37	0.64
Urban	0.24	0.43	0.24	0.43
Livestock	0.68	0.47	0.68	0.46
Cooking fuel (primitive)	0.00	0.05	0.00	0.04
Cooking fuel (wood, coal)	0.40	0.49	0.40	0.49
Cooking fuel (gas, kerosene, electricity)	0.59	0.49	0.60	0.49
Water (primitive)	0.17	0.38	0.17	0.38
Water (public network)	0.40	0.49	0.38	0.49
Water (well)	0.43	0.50	0.44	0.50
Sibling role model variables				
Sister's role model	0.11	0.31	0.10	0.30
Brother's role model	0.28	0.45	0.26	0.44
Father's (household head) highest level of education				
Illiterate	0.10	0.30	0.09	0.29
Basic	0.15	0.36	0.14	0.35
Secondary	0.08	0.27	0.08	0.28
TEVT	0.02	0.14	0.02	0.14
Post-secondary	0.02	0.15	0.02	0.15
University	0.05	0.21	0.05	0.22
Mother's (household head's spouse) highest level of education				
Illiterate	0.07	0.25	0.07	0.25
Basic	0.05	0.21	0.05	0.21
Secondary	0.02	0.12	0.01	0.12
TEVT	0.00	0.05	0.00	0.05
Post-secondary	0.00	0.05	0.00	0.06
University	0.00	0.07	0.01	0.08

Source: Authors' calculations based on HBS 2005.

Note: "Cooking fuel-primitive" includes straw and animal wastes. "Water-primitive" includes pond, spring, and rainwater. Sisters' and brothers' variables are dummy variables, taking 1 if sisters or brothers in the same household aged 16–25 have secondary and above education, or are currently enrolled above secondary level.

Table C3. Marginal Effects on Probability of Enrollment in Basic Education, by Gender

	Girls' enrollment		Boys' enrollment	
	Marginal effect	z-score	Marginal effect	z-score
Individual variables				
Age 6	Base		Base	
Age 7	0.38**	31.9	0.20**	33.86
Age 8	0.45**	48.95	0.25**	46.62
Age 9	0.47**	60.98	0.24**	48.75
Age 10	0.46**	51.93	0.28**	51.94
Age 11	0.44**	54.07	0.25**	50.21
Age 12	0.42**	41.04	0.26**	50.49
Age 13	0.39**	34.37	0.25**	49.67
Age 14	0.31**	20.76	0.23**	46.62
Married	-0.40*	-1.87	-0.13	-0.63
Disability	-0.17**	-4.86	-0.29**	-9.91
Household variables				
Log household expenditure per capita	0.08**	7.99	0.06**	7.6
No. of children aged below 15 in the household	0.00	-1.21	0.00	0.43
No. of elderly aged above 60 in the household	-0.01	-0.82	0.02**	2.78
Urban	0.08**	4.82	-0.01	-0.79
Livestock	-0.08**	-5.58	-0.03**	-2.86
Cooking fuel (primitive)	Base		Base	
Cooking fuel (wood, coal)	0.26**	2.16	0.34**	6.38
Cooking fuel (gas, kerosene, electricity)	0.44**	3.79	0.54**	7.48
Water (primitive)	Base		Base	
Water (public network)	0.06**	3.93	-0.05**	-4.02
Water (well)	-0.04**	-2.76	-0.06**	-5.93
Sibling role model variables				
Sister's role model	0.24**	15.24	0.05**	3.94
Brother's role model	0.15**	13.14	0.14**	17.9
Father's (household head) highest level of education				
Illiterate	Base		Base	
Basic	0.10**	6.77	0.08**	8.98
Secondary	0.15**	8.31	0.11**	10.6
TEVT	0.10**	2.81	0.05**	2.48
Post-secondary	0.24**	9.34	0.08**	4.1
University	0.25**	10.65	0.13**	9.99
Mother's (household head's spouse) highest level of education				
Illiterate	Base		Base	
Basic	0.16**	6.37	0.07**	3.7
Secondary	0.19**	4.65	0.14**	7.05
TEVT	0.17	1.6	0.09	1.28
Post-secondary	0.20**	1.71	0.06	0.91
University	0.15	1.45	0.06	1.1
No. of observations	12,058		13,192	
Weight total	2,502,476		2,742,826	
Log likelihood	-6252.3		-5242	
Pseudo R2	0.245		0.296	
Prob Wald (chi)	0.00		0.00	

Source: by Author's calculation from HBS 2005

Notes:

* = statistical significance at 0.1, using robust standard error.

** = statistical significance level at 0.5.

Appendix D

Simulation of the Impact of Female Teachers on Girls' Enrollment

In a traditional community such as Yemen, it is commonly argued by parents that girls and boys should not mix, especially after the onset of puberty. This social factor is considered by policymakers as a major constraint to achieving universal primary education. To counter the problem, the government encourages the recruitment of female teachers because parents often find it acceptable for their children to go to mixed schools if female teachers are available. Because of the scattered population in Yemen, it is difficult to build gender-separated schools in villages. Therefore, an assessment of the impact of deploying female teachers is necessary. This analysis aims to capture the impact on student enrollments of female teachers at mixed schools. From the MOE AES 2006–07, the general findings are:

1. Gender-separated schools have higher average retention rates to grade 6 than mixed schools. While the difference is not very large among boys, it is quite substantial among girls. Girls' retention rate to grade 6 in female schools is 73 percent, compared to 42 percent in mixed schools (table D1). However, it is not known whether this disparity is due to the gender-separated schools, or to the greater numbers of female teachers in girls' schools.
2. Incomplete schools (schools that do not have the full 9 grades of basic education) have lower retention rates. Students in schools with 9 grades have higher proportions of students staying in school up to grade 6 than do schools with only 6 grades. The availability of upper grade classes likely affects students' retention rates to grade 6.

Table D1. Apparent Retention Rates to Grade 6 by Gender, School Type, and Urban/Rural Status (%)

	All		Urban		Rural	
	Females	Males	Females	Males	Females	Males
Gender-separated schools	73	76	86	89	68	71
Mixed schools	42	66	55	69	41	66

Source: : Authors' calculations based on AES 2006–07.

Table D2. Simulated Female Retention Rates to Grade 6 in Mixed Schools by Percentage of Female Teachers in School

	Female teachers					
	0	10	20	30	40	50
Grade 1–6 schools	33	38	42	47	52	56
Grade 1–9 schools	37	44	51	57	64	70
Grade 1–12 schools	48	55	61	68	75	81

Source: : Authors' calculations based on AES 2006–07.

In mixed schools, a higher percentage of female teachers clearly correlates with higher retention rates for girls to grade 6. A regression analysis was undertaken to determine the marginal impact of increasing the percentage of female teachers in mixed schools for primary schools (grades 1–6), basic schools (grades 1–9), and basic-secondary combined schools (grades 1–12). A simple simulation using the results shows that basic schools (with 9 grades) have average retention rates to grade 6 of 37 percent in the absence of any female teachers, increasing to 70 percent when half of the teachers are female (table D2). This retention rate to grade 6 of 70 percent is very close to the average in girls-only schools. Consequently, this analysis concludes that the presence of female teachers is more important for girls' retention than the gender separation of a school.

Appendix E

Fast Track Initiative Indicative Framework

Table E1. Fast Track Initiative Indicative Framework

Indicator	Average for some successful countries
Resource mobilization	
Public domestically-generated revenues as % of GDP	14–18
External grants as % of GDP	—
Education share of budget (%)	
<i>Defined as public recurrent spending on education as % of total public recurrent discretionary spending¹</i>	
• Estimate including grants	20
• Estimate excluding grants	20
Primary education share of education budget (%)	42–64
<i>Defined as public recurrent spending on primary education as % of total public recurrent spending on education, including grants²</i>	
Student flows	
Intake into first grade, total ³	100
• Girls' intake rate	100
• Boys' intake rate	100
Primary completion rate, total ⁴	100
• Girls' completion rate	100
• Boys' completion rate	100
% repeaters among primary school pupils	10 or less
Service delivery	
Pupil-teacher ratio in publicly-financed primary schools ⁵	40:1
Average annual salary of primary school teachers: ⁶	3.5
<i>(for countries with both civil service and contract teachers, use the weighted average salary)</i>	
Contract teachers	
• No. of new contract teachers recruited this year	
• Total stock of contract teachers	
• Average salary civil service teachers	
• No. of new civil service teachers recruited this year	
• Total stock of civil service teachers	
• Average salary	
Recurrent spending on items other than teacher remuneration as % of total recurrent spending on primary education ⁷	33
Annual instructional hours	
<i>Estimated effective hours of schooling (not official hours) in publicly-financed primary schools</i>	850–1000
Private share of enrollments % of pupils enrolled in exclusively privately-financed primary schools	10 or less

Source: Education for All-Fast Track Initiative Framework 2004.

continued

Table E1. *(continued)**Notes:*

- 1 Public recurrent spending on education includes all spending through ministries or other government units providing primary and secondary schooling, vocational/technical education, and higher education. It also includes public expenditures for education transferred to private and nongovernmental providers, and educational grants and subsidies to students or their families. Public recurrent discretionary spending is defined as public spending from all sources—including external grants—less debt service (interest payments only). The education proportion of total public recurrent spending should be presented both including and excluding external grants.
- 2 This benchmark is prorated to the nationally defined length of the primary cycle, that is, 42% if it is 5 years, 50% if 6 years, 58% if 7 years, and 64% if 8 years. Countries whose basic education cycle is longer than 8 years are encouraged to report data for a primary-equivalent subcycle of 5 or 6 years.
- 3 Defined as students enrolled in grade 1, net of repeaters, as a % of the population cohort at the official age of entry to grade 1.
- 4 Defined as students completing the final grade of primary school as a % of the population cohort of official graduation age. If data on students completing the final grade are not reported, a proxy primary completion rate should be used. The proxy should be defined as students enrolled in the final grade of primary school, adjusted for the average repetition rate in last grade, as a % of the population cohort of official graduation age.
- 5 Includes all teachers on payroll. “Publicly financed schools” refers to schools supported by government, whether publicly or privately managed, and all teachers fully paid by the government, either directly or indirectly.
- 6 Expressed as a multiple of GDP per capita. Includes salary and budgeted cost of benefits (pension, health services, transport, housing, and other items paid for by the state). For countries with a two-tier teacher contracting system, disaggregated information on teacher stocks, flows, and average monthly salaries (in local currency units with exchange rate, or in US\$) also should be presented.
- 7 Recurrent spending on items other than teacher remuneration includes all nonsalary spending (such as teaching/learning materials, student assessment, school feeding, student stipends) plus salaries of administrative and other personnel who are not classroom teachers.

Appendix F

Efficiency of Teacher Allocation by Governorate

Teacher salaries usually are the single largest expenditure category for education. Hence, it is important to examine the efficiency of its use. The education sector accommodates the largest proportion of civil servants in Yemen. In 2007 the government allocated 84 percent of the MOE's recurrent budget to teacher salaries. An analysis of the distribution of teacher deployment was conducted to examine the efficiency of teacher resources in basic and secondary schools in Yemen. The data used for the analysis was the MOE Annual Educational Survey (AES) 2006–07 data, which covered 13,797 public basic and secondary schools.

The index for the efficiency of teacher distribution by governorate was created by (1) a measure of the randomness of teacher distribution at each level (primary, basic, and secondary) and (2) the average number of teachers in each of the levels, which indicated the abundance of resources. The randomness of teacher distribution in each governorate was estimated by taking the R-square of ordinary least squares regressions, in which the number of teachers was estimated using the number of students (in grades 1–3, 4–6, 7–9, and 10–12) per school. Separate regressions were calculated for the three types of schools (primary, basic, and secondary) in each governorate. The score for each governorate was obtained by calculating the unweighted average of the R-squares for the three types of schools.

The abundance of resources was estimated from the regression equations using the national average number of students for primary, basic, and secondary schools. This gives the average number of teachers for each governorate given the same number of students. When the number of teachers is larger for the same number of students, it indicates that the governorate has more abundant resources than the national average. For the 3 levels of education, the governorates were assigned scores from 0 to 2, setting the national average at 1. The consolidated score for the 3 levels of education was

calculated by taking the unweighted sum of the 3 levels. The score for the national average was 3, and the score could vary from 0 (minimum) to 6 (maximum). Scores for these two indices are shown in figure 3.9.

Appendix G

Distribution of Test Scores and Resources

From teacher distribution patterns, it is evident that individual schools receive disparate levels of resources for the same school size. A question arises as to whether a different level of resource availability at a school affects students' learning. This analysis shows a pattern of average grade 12 examination score distribution across schools at different resource levels. The analysis finds that there is no strong correlation between the level of resource inputs at a school and the students' learning.

The 2006–07 MOE Annual Educational Survey (AES) contains information about teaching and nonteaching staff at each school. From the 2008 payroll data, the average salary for teaching and nonteaching staff was calculated, and the total salary costs at each school were calculated based on the number of teaching and nonteaching staff at each school. To obtain the teaching staff unit and nonteaching staff unit costs, the total salary costs for teaching and nonteaching staff at each school were divided by the number of students. The sum of the teaching and nonteaching staff unit costs is known as the staff unit cost.

The student achievement data originated from the 2006–07 grade 12 examinations. The average of 8 tested subjects was calculated separately for the science and literary streams at each school. The staff unit cost for each school was plotted against the average score for science and literary streams (figure 3.10).

Appendix H

Unit Cost Analysis

To understand the detailed cost structure, a unit cost analysis for education expenditure was conducted. Because many schools in Yemen are multilevel (offer both basic and secondary education), the MOE does not have separate budgets for basic and secondary education. Therefore, the first step in the unit cost analysis was to identify the resources within the MOE that were spent on the first 6 grades (primary education), the following 3 grades (upper basic education), and grades 10–12 (secondary education). Due to limited information on the budgets for TEVT and higher education, the analysis could not be extended to unit costs for different departments; therefore, they are at a more aggregated level.

There are 3 types of basic and secondary schools: (1) those that offer at most up to grade 6 (approximately 6,600 such schools with 29,000 teachers and over 800,000 students); (2) those that enroll students up to grade 9 (approximately 4,800 such schools with 73,000 teachers and 1.8 million students) and (3) those that offer up to grade 12 (approximately 3,500 such schools with 75,000 teachers and approximately 1.9 million students). The MOE Annual Educational Survey (AES) of 2006–07 includes the number of students by grade as well as the total number of teachers at each school. Using an econometric model, the number of teachers in each of the 3 types of schools was estimated. The average salary of teachers employed at the 3 types of schools was identified from the 2008–09 payroll. These averages provided the distribution of the total salary for teachers in schools by type of school. Nonteaching staff (at both the school and service level) were distributed according to the total salary of teachers at the different types of school. The results are shown in table H1.

Expenditure on nonsalary items has been distributed across levels of education under MOE according to the ratio of total salary at the school level. For higher education and TEVT, distinctions in nonsalary expenditure were made between the (1) purchase of goods and services to aid the operation of the system and (2) scholarships (at both local and central levels) granted to students studying abroad.

Table H1. Distribution of Recurrent Spending and Unit Cost Estimates by Level of Education, 2007

	Basic							MOE	TVET	Higher	Total
	Grades 1-3	Grades 4-6	Grades 1-6	Grades 7-9	Secondary	Others	MOE				
Personnel											
Teaching staff in schools											
No.	67,050	40,152	107,203	45,745	23,830	3,031	179,809				
Total annual salary (Yr/s mil)	43,414	25,998	69,413	29,955	16,488	1,943	117,799				
Average monthly salary (Yr/s)	53,958	53,958	53,958	54,568	57,659	53,428	54,594				
Ratio of average salary to GDP per capita	3.36	3.36	3.36	3.40	3.60	3.33	3.40				
Non-teaching staff in schools											
No.	5,936	10,051	15,987	8,460	6,237	586	31,270				
Total annual salary (Yr/s mil)	3,597	6,091	9,689	5,221	3,707	328	18,945				
Average monthly salary (Yr/s)	50,503	50,503	50,503	51,426	49,533	46,682	50,488				
All staff in schools											
No.	72,986	50,203	123,190	54,205	30,067	3,617	211,079				
Total annual salary (Yr/s mil)	47,012	32,090	79,101	35,176	20,195	2,272	136,744				
Service staff											
No.	16,444	11,225	27,669	12,304	7,064	795	47,832				
Total annual salary (Yr/s mil)	9,090	6,205	15,294	6,801	3,905	439	26,439				
Average monthly salary (Yr/s)	46,063	46,063	46,063	46,063	46,063	46,063	46,063				
All staff (schools + service)											
No.	89,431	61,428	150,859	66,510	37,131	4,412	258,911			16,544	182,530
Total annual salary (Yr/s mil)	56,102	38,294	94,396	41,977	24,100	2,711	163,183			4,566	152,300
Goods and services (Yr/s mil)	3,269	2,232	5,501	2,446	1,404	158	9,510			1,154	15,230
Total recurrent expenditure (Yr/s mil)	59,371	40,526	99,897	44,423	25,504	2,869	172,693			3,957	197,760
Scholarships for students abroad (Yr/s mil)											
Total with scholarships (Yr/s mil)	59,371	40,526	99,897	44,423	25,504	2,869	172,693			178	12,701
No. of students in public institutions											
Per-student spending (Yr/s)	1,827,905	1,329,071	3,156,976	863,285	534,525	21,103	174,035			195,941	121,297
Per-student spending (% pc GDP)	16.9	15.8	16.4	26.7	24.8	101.8	63.0				

Source: Author calculations based on MOE payroll and AES; TEVT and higher education expenditure from MOF.

Note: The unit costs for basic and secondary education in table H1 are lower than those reported in table 4.5 because they are calculated differently (by multiplying the average salary by the number of teachers on the payroll) and there are unknown costs that cannot be attributed to either basic or secondary education level using this method.

The information contained in table H1 can be used in at least three different ways: (1) to estimate unit cost, (2) to assess its distribution across the different purposes of expenditure, and (3) to aid in understanding the factors that characterize the delivery of services (policy levers) and that account for the level of per-student spending.

Appendix I

Salary Structure for Civil Servants

Teacher salaries follow the general salary scale for civil servants in Kuwait. This scale is revised occasionally, most recently in 2005 and 2007. Table I1 shows the salary scale in 2005 and 2008 (based on the 2007 revision). Civil servants also are entitled to an annual increment of their salaries based on their levels and ranks.

Newly recruited civil servants are ranked according to their academic qualifications: Ph.D. (rank 6), Master's degree (rank 8), Bachelor's degree (rank 10), 2-year post-secondary diploma (rank 12), secondary education or equivalent (rank 14), and basic education (rank 16).⁴

In addition to the base salary, MOE employees are entitled to various allowances (approved through MOE decree no. 37 for 1998, revised by the MOCSI in 2005). Allowances include a "nature of work" allowance for teachers and head teachers (up to 29 percent of the base salary), rural allowance (30 percent–60 percent), accommodation allowance, and travel allowance. In addition, a "modernization" allowance was created in 2005 (1 percent of base salary) to adjust the salaries of employees who earned more under the pre-2005 salary strategy.

4. World Bank 2007c.

Table I1. Salary Scale for Civil Servants

Level	Rank	Base salary			Annual increments
		2005	2008	Increase 2005–08 (%)	
Higher authority	Minister	100,000	140,000	40	4,000
	Vice-Minister	80,000	110,000	38	3,200
Level 1	1	60,000	80,000	33	2,400
	2	50,098	65,905	32	2,004
	3	44,730	58,844	32	1,789
Level 2	4	41,417	52,539	27	1,657
	5	38,349	48,647	27	1,534
	6	35,508	46,794	32	1,420
Level 3	7	33,498	43,311	29	1,340
	8	32,210	41,646	29	1,288
	9	30,676	38,561	26	1,227
	10	29,496	37,077	26	1,180
Level 4	11	27,311	33,105	21	1,092
	12	25,288	30,652	21	1,012
	13	23,634	29,474	25	945
	14	22,296	27,290	22	892
Level 5	15	21,439	25,269	18	858
	16	21,018	24,297	16	841
	17	20,606	23,363	13	824
Level 6	18	20,402	23,146	13	816
	19	20,200	22,880	13	808
	20	20,000	22,400	12	800

Source: World Bank 2007c; 2008 base salary from MOE.

Appendix J

Social Impact of Education

It is now widely accepted and empirically demonstrated globally that education confers significant benefits across a country's population and the economy. Table J1 categorizes the benefits of education according to economic and social, and public and private domains.

A number of international studies have illustrated the social benefit of education. They have argued the importance of educating girls and the influence that doing so has on behaviors, practices, and outcomes for population and health, including contributing to achieving the MDGs. From a policy perspective, it is important to identify the specific impact of the different levels of schooling since there is a possibility that most of the impact is obtained, for example, from primary education or from secondary (or even higher) education.

Table J1. Economic and Social Benefits of Education

Economic		Social	
Public	Private	Public	Private
Increased tax revenues	Higher salaries and benefits	Reduced crime rates	Improved health and life expectancy
Greater productivity	Employment	Increased charitable giving and community service	Improved quality of life for offspring
Increased consumption	Higher savings levels	Increased quality of civic life	Better consumer decisionmaking
Increased workforce flexibility	Improved working conditions	Social cohesion and appreciation of diversity	Increased personal status
Decreased reliance on government financial support	Personal and professional mobility	Improved ability to adapt to and use technology	More hobbies and leisure activities

Source: Forest and Altbach 1998.

The data used for this analysis were from the Multiple Indicator Cluster Survey III (MICS III) conducted in 2006 by UNICEF, Yemen's Ministry of Public Health and Population, and the Pan-Arab Project for Family Health. Of the 3,979 households selected for the sample, 3,586 were successfully interviewed, giving a household response rate of 90 percent. In the interviewed households, 3,912 ever-married women (age 15–49) were identified, of whom 3,742 were successfully interviewed; and 3,783 questionnaires were completed for children under age five.

The social impact of education was measured in the following five areas: (1) impact of education on population growth of the country; (2) intergenerational impact on girls' education; (3) impact of mothers' education on maternal health; (4) impact of mothers' education on children's health; and (5) impact of parents' education on poverty. A summary of the analyses, types of econometric models, and samples are listed in table J2.

Table J2. Analyses of Social Impact of Education in Yemen

Areas of impact	Analysis	Model	Samples
Impact on population growth of the country	No. of children ever born	OLS ¹	Ever-married women aged 15–19
	Age at first marriage	OLS	Ever-married women aged 15–19
	Average years of birth space	OLS	Ever-married women aged 15–19
	Use of modern contraceptive methods	Logit	Ever-married women aged 15–19
Intergenerational impact on girls' education	Girls' access rate to basic schools	Logit	Children aged 12–14
	Girls' retention rate to grade 6	Logit	Children aged 16–18
Impact of mothers' education on maternal health	Probability of accessing antenatal care	Logit	Ever-married women aged 15–19
	Probability of accessing professional delivery assistance	Logit	Ever-married women aged 15–19
Impact of mothers' education on children's health	Under-5 mortality rate	Logit	Children under 5
	Probability of sufficient vaccination	Logit	Children under 5
	Probability of having birth certificate	Logit	Children under 5
Parents' impact on poverty	Probability of being poor	Logit	Household head

Source: Prepared by authors based on MICS III 2006.

Note:

1 OLS = "ordinary least squares" regression.

Table J3. Relative Social Impact of Education by Highest Level of Educational Attainment

	Urban				Rural			
	Primary	Basic	Secondary	University	Primary	Basic	Secondary	University
Literacy								
Female literacy (reading with some difficulty)*	96	4	0	0	93	6	1	0
Intergenerational effect								
Girls' access rate to grade 1	56	18	13	12	84	10	4	2
Girls' retention rate to grade 6	41	19	18	22	43	21	18	18
Probability of household being poor	60	17	12	11	37	20	19	24
Population								
Age of first marriage	8	17	26	49	12	18	25	45
No. of children ever born*	29	18	21	32	31	18	21	31
Average year of birth space	38	19	19	25	38	19	19	25
Maternal health								
Probability of accessing antenatal care	46	20	17	18	38	20	19	23
Probability of accessing professional delivery assistance*	43	19	18	21	31	19	21	29
Child health								
Male-under-5 mortality rate*	43	19	17	21	42	19	18	22
Probability of a child's getting sufficient vaccination*	40	19	18	22	35	20	20	26
Probability of a child's having birth certificate	33	19	20	29	25	18	22	35
Index of social benefit of education	44	17	17	22	42	17	17	23
Impact per YrIs 100,000 spent on education (ratio of impact/unit cost)	23	11	12	5				
Combined urban-rural	43	17	17	23				
Index of social benefit of education with selected indicators (with *)	52	16	14	18	45	17	17	22

Source: Authors' calculations based on MICS III 2006.

Note: The relative size of the social impact is standardized, with total impact size (from illiterate to university) being 100. The numbers shown in the table are the % of impact for obtaining a higher level of education.

Appendix K

Wage Regression

In the context of the Yemeni labor market, estimating returns to education is not feasible. Nevertheless, an analysis of wage information can provide useful insights into the workings of the labor market, especially with respect to the rewards to education. It is extremely difficult to assess the returns to education in labor surplus economies in which the conventional properties of production do not hold. One reason is that additional employment can be created even in the absence of increasing wages. Another reason is that additional employment does not necessarily create additional output. For example, the amount of agricultural output produced by a family holding a plot of a given size may not increase when a new member is added to the family's effort. Moreover, when economic activities are informal, it is hard to separate the contribution of labor to output and incomes from other factors of production such as capital and variable inputs, for example, fertilizers or raw materials. Under such conditions of informality and underemployment in the labor market, conventional methodologies (for example, earnings functions) that attempt to estimate the returns to education fail to produce reliable conclusions. Therefore, the results of earnings functions presented here can be interpreted more narrowly, that is, as a proxy indicator of how education affects wages.

The data used for this analysis was the Household Budget Survey (HBS) conducted in 2005–06 by the Central Statistical Organization (CSO). Of the 14,400 households selected for the sample, 13,396 were successfully sampled. After data review, the valid number of sampled households was 13,136. Of 53,306 samples of 15–64 year olds (10,432,562 when weighted), 11,805 were recorded as wage earners (10,727 males and 1,078 females). To avoid distorting the analysis of the local market, only government, public enterprise, and local private sectors were included in the analysis. The endowment, international organization, and foreign firm sectors were excluded. Outliers were removed from the data: cases with more

than Yrls 500,000 per month and less than Yrls 3,000 per month were excluded from the analysis. As a result, 9,740 cases for male and 997 cases for female (total of 10,737) were used for the study. Descriptive statistics for the variables used in the analysis are shown in table K1. The results of the regression models are shown in table K2 (for years of schooling) and table K3 (for educational levels).

Table K1. Descriptive Statistics for Variables Used in the Wage Regressions

Variables	Mean	Standard deviation	Minimum	Maximum
Log monthly wage	10.19	0.79	8.10	14.53
Years of schooling	7.82	5.48	0.00	21.00
Age	31.96	10.71	15.00	64.00
Age squared	1136	769	225	4096
Male ¹	0.95	0.23	0.00	1.00
Urban ¹	0.39	0.49	0.00	1.00
Government sector ¹	0.30	0.46	0.00	1.00
Public sector ¹	0.11	0.31	0.00	1.00
Log monthly working hours	5.20	0.38	1.44	6.72
Primary ¹	0.09	0.28	0.00	1.00
Basic ¹	0.11	0.31	0.00	1.00
Secondary ¹	0.16	0.37	0.00	1.00
Post-secondary ¹	0.05	0.22	0.00	1.00
University ¹	0.12	0.32	0.00	1.00
TEVT (2-year vocational) ¹	0.01	0.11	0.00	1.00
TEVT (2-year nonvocational) ¹	0.02	0.15	0.00	1.00
TEVT (3 year) ¹	0.00	0.05	0.00	1.00

Source: Authors' calculations based on HBS 2005–06.

Note:

1 Dummy variables.

Table K2. Wage Regression Results for Model with Years of Schooling

Variable	All	Male			Female		
		All	Private	Public	All	Private	Public
Years of schooling	0.027	0.027	0.017	0.038	0.037	0.027	0.050
TEVT	-0.085	-0.102	-0.025	-0.098	0.050	-0.094	0.069
Age in years	0.059	0.060	0.063	0.047	0.043	0.009	0.064
Age squared	-0.001	-0.001	-0.001	0.000	0.000	0.000	-0.001
Male	0.383						
Urban	0.029	0.033	-0.019	0.086	0.028	0.123	-0.007
Government	0.098	0.086			0.366		
Public administration	0.099	0.077			0.402		
Log monthly hours	0.281	0.283	0.378	0.164	0.224	0.619	-0.004
Constant	6.889	7.269	6.841	7.891	7.121	5.572	8.142
No. of observations	10,951	9,950	5,400	4,550	1,001	264	737
Adjusted R-squared	0.121	0.112	0.097	0.103	0.250	0.146	0.156

Source: Authors' estimation based on HBS 2005–06.

Notes:

1 Italic = insignificant coefficients.

2 Monthly earnings are those from main job excluding 51 observations with earnings below Yrls 3,000 per month and above Yrls 500,000 per month.

Table K3. Wage Regression Results for Model with Educational Level Dummy Variables

Variable	All	Male			Female		
		All	Private	Public	All	Private	Public
Educational level							
Primary	0.127	0.123	0.054	0.265	0.314	0.141	0.535
Basic	0.032	0.030	0.002	0.094	0.102	0.006	0.258
Secondary	0.180	0.182	0.131	0.273	0.212	0.163	0.292
TEVT (2 year vocational)	0.059	0.044	0.037	0.109	0.196		0.288
TEVT (2 year non-vocational)	0.123	0.099	0.183	0.162	0.343	0.120	0.430
TEVT (3 year)	0.360	0.357	0.397	0.406	0.441		0.548
Post-secondary	0.146	0.130	0.091	0.204	0.320	0.096	0.463
University	0.472	0.479	0.481	0.528	0.496	0.478	0.583
Age in years	0.046	0.046	0.063	0.014	0.039	0.004	0.062
Age squared	0.000	0.000	-0.001	0.000	0.000	0.000	-0.001
Male	0.414						
Urban	0.036	0.039	-0.017	0.085	0.046	0.162	0.025
Government	0.138	0.123		0.040	0.440		-0.016
Public administration	0.129	0.105			0.461		
Log monthly hours	0.289	0.292	0.382	0.118	0.193	0.579	-0.029
Constant	7.156	7.558	6.895	8.912	7.474	5.908	8.589
No. of observations	11,212	10,176	5,521	4,655	1,036	279	757
Adjusted R-squared	0.124	0.115	0.099	0.099	0.248	0.151	0.118

Source: Authors' estimation based on HBS 2005–06.

Notes:

1 Italic = insignificant coefficients.

2 Monthly earnings are those from main job excluding 51 observations with earnings below Yrls 3,000 per month and above Yrls 500,000 per month.

Appendix L

Technical Appendix for the Labor Market

The purpose of this simulation is to give a picture of the labor market in 2025 if the current labor market structure continues. Baseline data were taken from the 2005 Household Budget Survey (HBS), and the baseline population was from 2007. The single age population projections for males and females were taken from the United Nations Population Division 2008 Revision of the Population Database.

The simulation first estimates the size of the labor market. It assumes that the labor force participation rate will increase annually by 0.5 percentage point (the inactive population decreases by 0.5 percentage point), reflecting the recent trend of labor force participation growth especially among females. As a result, between 2007 and 2025, the labor force participation rate is estimated to increase from 44 percent to 53 percent. The proportion of unemployed in the age 15–64 cohort is assumed to be the same. The growth of enrollments in basic education is assumed to be 1 percentage point faster than the average for the last 3 years, giving enrollment growth of 3 percent every year, which is slightly faster than the population growth rate. Hence, the enrollment rate for 6–14 year olds will grow from the current 75 percent to 88 percent in 2025. Enrollment growth of secondary, TEVT and university education is assumed to be the same as the growth rate for basic education.

The annual labor demand increase was estimated by keeping the same proportion of formal and informal sector employment. By assuming no increase in the unemployment rate, all new labor market participants are absorbed by the labor market. Because of the enrollment rate growth at all levels of education, the proportion of educated workers (both highly skilled, including higher education and TEVT graduates, and low skilled, including basic and secondary graduates) increases over time. On the other hand, the labor demand is fixed to the current labor market structure, so the formal sector proportion will remain the same as in 2005. The mismatch of the labor supply and this labor demand is estimated and presented as skill mismatch.

Appendix M

Effect of Skilled Emigration

In countries in which the domestic return to human capital is low, skilled emigration prospects can induce more people to become educated (“brain gain”) compared to the number who would become educated if employment were available only in the domestic economy. Skilled emigration, and emigration more generally, safely can be assumed to confer net benefits to emigrants. However, whether skilled emigration is beneficial overall for the country of the emigrant would depend on multiple factors, including:

- How many additional workers become educated to emigrate
- How many of them actually emigrate (“brain drain”)
- Whether emigrants remit some of their earnings to their families for consumption or investment purposes
- Whether emigrants return, and, if they do so, at what age, and what do they do after they return.

Moreover, there can be many positive or negative externalities associated with emigration arising from changing investments initially in physical investments at home, adoption of new technologies, increased networking, and building better institutions at home.

Simulation results from a recent study⁵ suggest that emigration can lead to brain gain for Yemen (and for another five countries in MENA) although the gains for Yemen are small—probably partly because the data do not take into account the Yemen’s recent substantial increases in university enrollments. The actual effect of skilled emigration on domestic incomes cannot be determined solely from the proportion of skilled and unskilled workers in the local labor market. The effect would depend on, among other factors, prevailing economic conditions in the product and labor markets, and the use of technology. In the worst-case scenario, skilled

5. Docquier and others 2009.

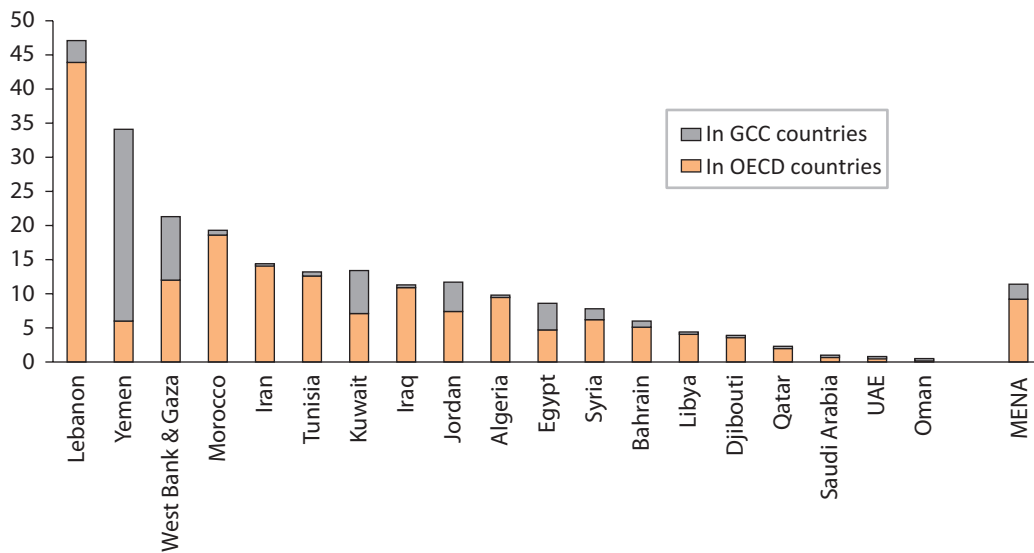
emigration appears to reduce the per capita income in Yemen by 3 percent. However, after taking into account remittances and positive externalities, the possible loss would not be as large in Yemen as it would be in other MENA countries.

Although tentative, especially with respect to the indicated magnitudes, the results of the study suggest that education in Yemen may be playing a relatively more beneficial role for Yemeni job seekers and workers abroad than the role enabled by the local labor market. In the local labor market, returns to human capital investments are low, as manifested by the low wage impact of education and high unemployment rates of university graduates. The first set of results suggests that, while other regional economies may be suffering from brain drain, Yemen is more likely to benefit from brain gain. In fact, this is compatible with the fast increase in enrollments at higher education levels, especially, in recent years, at the university level. In the group of the 13 countries considered by the study, the second set of results indicates that when remittances and other externalities are taken into account, the impact of skilled emigration on per capita incomes in Yemen is second only to the impacts in Egypt and Jordan.

Furthermore, the potential effects of emigration may be underestimated given that the vast majority of skilled emigration from Yemen is to low-wage economies. Figure M1 shows that the emigration rate of skilled workers from all other MENA countries to OECD countries is higher than to non-OECD countries, including to countries of the Gulf Cooperation Council (GCC). Yemen is the only exception, as its skilled emigration rate to OECD countries is barely two-thirds that of other MENA countries (6.0 percent in Yemen compared to 9.2 percent for other MENA countries). Unsurprisingly, the Yemeni skilled emigration rate to non-OECD countries is much higher than emigration from other regional economies to the same countries. Yemen's emigration to non-OECD countries reaches 3 times the second highest rate in the region: 28.1 percent compared to 9.3 percent from West Bank and Gaza, the runner up; and is more than 10 times greater than the MENA regional average (2.2 percent). To the extent that access to high-wage economies is actually restricted for Yemenis, the potential gains to Yemen from skilled emigration are reduced because the emigrants do not get high-wage jobs. This phenomenon induces "brain waste" in that it creates lower returns to human capital investments, and reduces the possibilities for skills transfer from being employed in technologically demanding jobs and for networking with advanced countries—particularly important aspects of globalization.

Even at this level of generality of the underlying evidence, a forceful policy conclusion for Yemen is that governmental attempts to control the provision of higher education by nongovernmental providers, which is driven by social demand, need to be reconsidered. The use of sensible licensing and quality measures cannot be overrated in protecting less informed families and students. However, controls to restrict the size and types of university education can harm brain gain and the incomes not only of workers in Yemen but also of those who are, as a result, restricted from emigrating or do not emigrate to high wage economies (“brain waste”). Moreover, reduced emigration increases the pressure arising from the rising numbers of graduate unemployment domestically.

Figure M1. MENA Skilled Emigration Rates to OECD and GCC Countries, 2000 (%)



Source: Docquier and others 2007.

Appendix N

Definition of Governance

Governance can be defined as the “traditions and institutions by which authority in a country is exercised for the common good.” When these traditions and institutions are not well established, educational resources are liable to be diverted away from societal objectives for the sector. The most obvious outcomes are mismanagement and corruption. Relevant indicators include transparency in budget execution and the extent of budget and payroll leakages; degree of transparency and competition in hiring decisions; level of staff absenteeism; and extent of informal payments for education services or qualifications. However, another important aspect of governance is the extent to which the legal and regulatory framework for the sector adapts to evolving needs and opportunities: beyond deterring corruption, does the regulatory environment provide the means and incentives for individuals and organizations to contribute fully to common objectives?

The core of good governance is the existence of appropriate “incentives” that encourage adherence to sound and transparent rules and performance standards. Good governance requires mechanisms for holding public officials accountable for their behavior and results and for applying rewards and sanctions accordingly. Good governance also requires mechanisms to provide “voice” or participation of beneficiaries and other stakeholders in decisionmaking. Each of these in turn depends on the availability of good information and on effective management practices and procedures.

Incentives—and hence performance in support of education efficiency, equity, and quality objectives—thus depend on a range of factors. They include:

- The structure of responsible agencies, and their the legal and regulatory frameworks
- Clarity in assigned roles and responsibilities
- Enforcement of formal rules and procedures

- Mechanisms and procedures for effective coordination among different central agencies or between central and decentralized agencies
- Mechanisms and procedures for effective participation of stakeholders (parents, employers, civil society) in decisionmaking
- Competition and transparency in staff and student selection decisions
- Clear and accepted standards of performance
- Information, and dissemination of information, on the performance of individuals and institutions against standards and targets
- Rewards and sanctions based on performance
- Trust that the commitments or promises of others will be fulfilled.

Finally, performance also depends on staff at all levels having the necessary knowledge, skills, and facilities to carry out their responsibilities effectively. When incentives are changed (such as through changes in the formal authority and responsibilities of any agency), the change needs to be accompanied by relevant training and capacity building. At the same time, interventions that aim to improve performance through provision of training and equipment are unlikely to be successful unless measures also are taken to ensure appropriate incentives.

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