The Knowledge Economy and Education and Training in South Asia

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e views expressed are those of the World Bank team and do not necessarily re ect the views of governments in the South Asia region or of the World Bank, its executive directors, or the countries they represent. Please send any comments to Michelle Riboud at mriboud@worldbank.org or Hong Tan at htan@worldbank.org.

Executive Summary

How education and training systems respond to the sweeping changes brought about by globalization and the knowledge economy can have far-reaching implications for developing countries in terms of sustainability of growth, competitiveness, job creation, and poverty reduction. is issue is especially pertinent to the countries of South Asia, which are currently growing at a rapid pace and are gradually becoming more integrated into the world economy. Despite this, little systematic research has been undertaken on the progress the region has made in relation to skills development (broadly de ned to include both education and training) and how skills a ect labor market outcomes. Even less is known about how the pace of progress di ers across countries in South Asia; whether the supply response for skills in the region is adequate given global trends in trade, knowledge generation, and technology di usion; and what their competitor countries in other regions are doing.

is regional study is a rst attempt to address these questions. Its main objective is to document and compare trends in education and training in the countries of South Asia, as

well as the associated changes in earnings and employment. It draws upon household, labor force, and rm-level surveys from 1990 to the most recent year available. e analysis focuses on Bangladesh, India, Pakistan, and Sri Lanka (countries with well-developed surveys), with some references to Bhutan, the Maldives, and Nepal, along with comparisons with countries in East Asia and with other regions.

e analysis in each chapter provides many policy-relevant insights, but the following conclusions stand out:

- Despite ongoing progress and clear commitment to education in all the countries of South Asia, other than the Maldives, none of the countries is currently upgrading the skills of its population at a speed that will allow it to catch up with East Asia and the rest of the world over the medium term. Some indications even suggest that the gaps relative to some East Asian competitor countries may be widening rather than closing.
- Progress across countries has been uneven. Aside from Sri Lanka, which is an outlier in the region given its early achievement of universal primary education, in the near future, those countries that started with the lowest levels of education in 1990 seem likely to catch up with the front-runners with respect to the achievement of universal primary education.
- Progress in terms of gender equality has also been unequal. In recent decades, the gender gap has diminished substantially in all the countries and has disappeared in some of them at the level of primary education. e challenge now is to repeat this achievement at levels beyond primary education.

- The supply of skills is clearly lagging behind demand. Returns to higher secondary and tertiary-level education have remained high, and even increased relative to returns to lower levels of education, despite sizable investments by governments in the region, indicating that education policies and programs have not yet fully responded to the high and rising demand for skills. is phenomenon is particularly striking in India.
- In recent decades, South Asian countries have focused their e orts on promoting elementary education. Even though pockets of excellence can be observed at other levels of education and di erences are noticeable across countries, secondary and higher education, vocational education and training, and in-service training have not yet received the same attention from the public sector, and most of the expansion that has taken place in these areas is due to the private sector. Post-school training is a particularly neglected area despite evidence of large, positive impacts of such training on wages. For example, the incidence of training in manufacturing is among the lowest in the world.
- The high unemployment rate among university graduates should not detract policy makers from investing in education. While the more educated initially have higher rates of open unemployment because of their more intensive search for a good job match, their unemployment rates are subsequently lower than those of other groups as those with more education gain labor market experience.
- Available data on education and training are relatively robust and amenable to rigorous analysis. ey are, however, limited, and substantial improvements in

survey design, systematic data collection, and analysis would be required to allow governments to better monitor skills requirements and labor market outcomes and to design appropriate education and training policies.

Some indications suggest that South Asian countries are becoming aware of the pressures on skills resulting from globalization. Both employers and the media increasingly ag the shortage of skills as a critical issue, especially in the region's rapidly growing countries. Countries are taking various initiatives to accelerate the achievement of universal primary education, develop strategies for reforming higher education, and make the vocational training sector more responsive to the skill needs of the private sector. What is not yet clear, however, is whether governments are as yet fully aware of the crucial importance of education and training policies for sustaining the current high rates of growth in the region, and whether such policies feature prominently in relation to other national priorities on governments' agendas.

e foregoing ndings and the analyses detailed in this regional study suggest that this is not yet the case.

1
Introduction

Globalization and the knowledge economy pose numerous challenges as well as opportunities for developing countries, not least in the area of skills development. Expanding trade and the globalization of production and capital create pressures for economies to restructure, making it imperative to retrain those made redundant in declining industries and to upgrade the skills of those employed in new industries. In addition, the increased global ow of information made possible by new information technologies creates demand for higher-level cognitive skills and for continuous learning over the work life, as the skills people acquire in school and in the workplace become obsolete more quickly and they need new and more complex skills to respond to accelerating technological change. How education and training systems respond to these sweeping changes and the challenges they pose will have far-reaching implications for the economic growth and competitiveness of South Asian countries and for income

growth, employment, job creation, and poverty reduction.

Some e ects of globalization and the knowledge economy on the growing relative demand for skills are well known. Economists have documented diverging trend changes in earnings distributions by level of education for many developing countries and regions in the late 1980s and 1990s, paralleling similar trends in countries of the Organisation for Economic Co-operation and Development that started in the 1970s (Berman, Bound, and Machin 1998). Some have attributed this global phenomenon to skill-biased technological change whereby the di usion of skill-intensive, advanced technologies developed in countries of the Organisation for Economic Co-operation and Development generates a corresponding, but lagged, pattern of change in relative skills demand in developing countries. How important an in uence skill-biased technology has on relative pay by skill level will also depend on supply-side changes in skills and on the speed of globalization. Education and training policies, as well as policies regarding trade liberalization and market orientation, can o set demand shi s, and thereby mitigate the e ects of skill-biased technology on relative pay by skill level.

Policy makers in the South Asia region are already grappling with the challenges of reforming national education and training systems. For example, the release of a report on the knowledge economy in India (Dahlman and Utz 2005) has sparked policy interest in how best to reposition education and workforce skills to take advantage of the opportunities a orded by the knowledge economy. Pakistan, recognizing the imperative of expanding access to postschool vocational education and training (VET), has established the National Vocation and Technical Education Commission, an

apex training body, to develop and implement a scaled up national training strategy for the workforce. e World Bank is also helping the governments of Bangladesh, India, and Sri Lanka with education, vocational training, and labor market sector studies and/or projects.

Objectives of the Regional Study

is volume seeks to complement and inform these ongoing, but still nascent, initiatives through a cross-country study of education and training in the South Asia region. e focus is on Bangladesh, India, Pakistan, and Sri Lanka, for which data on education and training are available for large samples of households and rms from several di erent surveys. e objectives of this regional study are to

- identify and assemble available household and firm-level survey data for the four countries from the 1990 to the most recent year for which data are available;
- document and compare trends in the education and training of the workforce in these four countries and associated changes in the earnings of groups that di er in terms of level of education and demographics;
- ascertain what kinds of economic analyses can be done with existing data on the life cycle choices individuals, families, and employers make about education, pre-employment VET, and in-service training and the outcomes of such human capital investments on school to work transitions, employment, earnings, and productivity growth.

e ndings reported here suggest that the available data on education and training, while limited, are relatively robust and amenable to more technically rigorous analysis. Improvements over time in survey design and sustained collection of better data on education and training should allow governments in the region to better monitor the skill requirements necessitated by globalization and the knowledge economy and to design and implement education and training policies that better address those skill needs.

Data Sources

e regional study relies principally on two main data sources, namely:

- *Household surveys and labor force surveys (LFSs).* Each of the four South Asian countries has household surveys and LFSs for several points in time. All contain information on educational attainment, demographic attributes, employment, wages and salaries or incomes, industry of employment, and region of residence. e surveys do not cover postschool technical and vocational training as well. LFSs are available annually in Sri Lanka and periodically in Pakistan, while household surveys with information on education, employment, and earnings are available for selected years in India (selected rounds of the national sample survey or NSS) and Pakistan (integrated household survey or PIHS). For Bangladesh, the household income and expenditure survey (BHIES) is available, but for only two rounds in 2000 and 2004.

- *Investment climate surveys (ICSs).* For each of the four South Asian countries, cross-sectional information on enterprise-based training (by in-company programs and by external public and private sector training providers) is available from firm-level surveys of manufacturing establishments conducted between 2002 and 2005. For these countries, the cross-sectional relationships between education, training, and outcomes on firm productivity and wages can be investigated, as can simple hypotheses about the demand-side roles of trade, investment, foreign ownership, and skill-biased technological change.

2
Trends in Education Attainment: Stocks and Flows

is chapter begins by looking at the evolution of educational attainment in South Asia over a period of two to four decades depending on the country. Following a review of data sources, it looks at the distribution of educational attainment, or the stock of human capital, in the population at di erent points in time. e stock of human capital at a given time may be characterized by the percentage of the total population aged 15 years and older that has attained the following four levels of education: is illiterate (no education), has completed primary schooling, has completed secondary schooling, or has achieved a level of education above secondary. In all cases, this grouping refers to the highest level of education attained.[1]

1. For India, the NSS de nes education levels as follows: illiterate—not literate, literate through attending nonformal education centers or alternative education centers or by means of the total literacy campaign, literate but below primary; primary—primary or middle school completed; secondary—secondary or higher secondary completed; above secondary—university graduate and above. For Pakistan, the PIHS education categories are as follows: illiterate —not literate, completed grades 1–4 (less than primary); primary—completed grades 5–9 (primary or middle school completed);

e chapter then turns to the speed at which each country is upgrading the skills of its population. To study changes, or ows, in the stock of human capital over time, we compare changes in the distribution of educational achievement across cohorts of individuals born at di erent times.

Data Sources

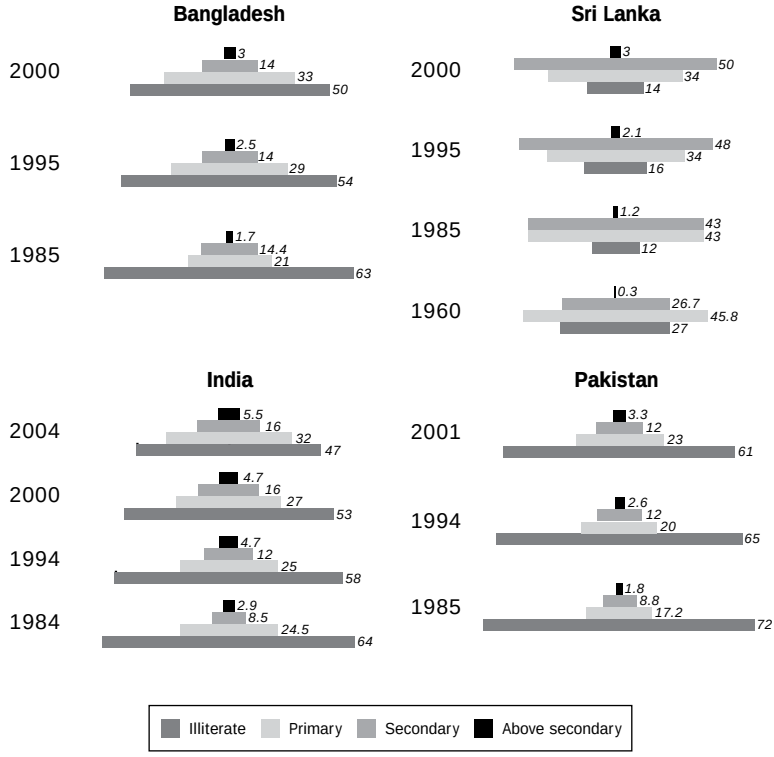
e data for this exercise are based on household surveys. For India and Pakistan, where relatively long time series data are available, we use several rounds of India's NSS and Pakistan's PIHSs for several roughly comparable years. We use secondary data from Barro and Lee (2000) for Bangladesh and Sri Lanka and for two East Asian comparator countries (China and Malaysia), either because we do not have access to household survey data or because such data are not available for comparable periods. e Barro and Lee classi cation of education levels is based on criteria adopted by the *International Standard Classi cation of Education* (United Nations Educational, Scienti c, and Cultural Organization 1976).

Stock of Skills in the Population

e stock of skills at a given point in time re ects past investments in education. When the mean number of years of schooling in a country is low, the distribution of educational attainment resembles a pyramid. e base, which corresponds to the fraction of the population with no education

secondary—completed grades 10–13 (secondary or higher secondary); and above secondary—bachelor's degree and above.

Figure 2.1 Educational Attainment, Selected South Asian Countries and Years (percentage of the population aged 15 and older)

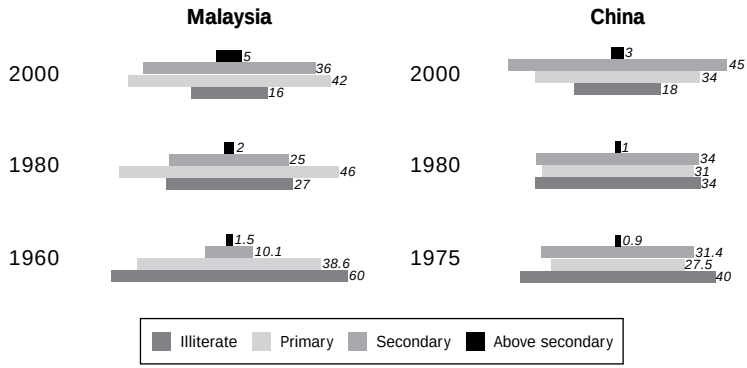


Source: Household surveys. Barro and Lee 2000.

or with less than a primary education, is relatively wide, and the middle and top sections taper o to re ect the smaller shares of the population with higher levels of education.

is pattern characterizes Bangladesh, India, and Pakistan since the mid-1980s (gure 2.1). Over time, as these coun-

Figure 2.2 Educational Attainment in China and Malaysia, Selected Years
(percentage of the population aged 15 and older)



Source: Barro and Lee 2000.

tries have upgraded the skills of the population by focusing on the lower levels of education, the base has narrowed and the middle sections have become wider. Nevertheless, in both Bangladesh and India, about half the population aged 15 and older is still illiterate, and in Pakistan the gure is even higher.

When countries pursue their investments in education to the point where more adults have primary education than are illiterate, the education distribution takes on a diamond shape. is has been the case in Sri Lanka since the early 1960s. e middle sections of the distribution have continued to grow since that time, and by 2000, more than 80 percent of the population had either completed primary education (34 percent) or secondary education (50 percent). Educational

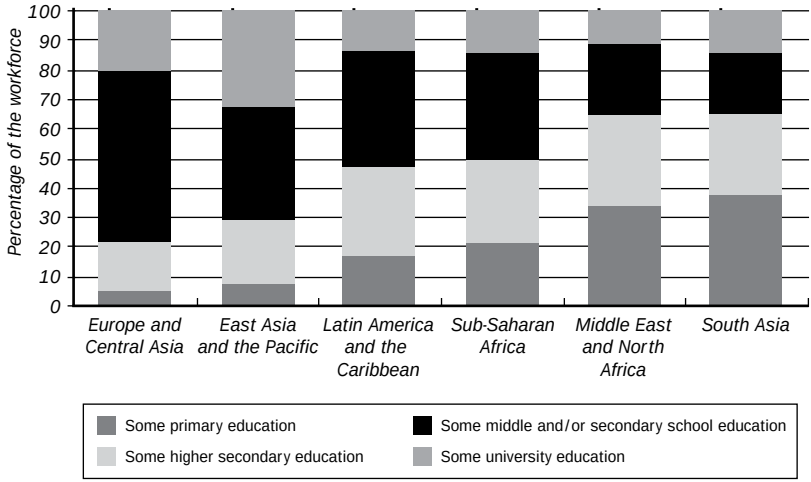
progress has not, however, been such that the distribution of education resembles an inverted pyramid shape.

When looking at how South Asia compares with East Asian countries such as China or Malaysia, which have enjoyed longer periods of economic and total factor productivity growth, gure 2.2 shows that the region is far behind East Asia. e proportion of the population that was illiterate in India in 2004 was similar to that observed around 1970 in China or around 1960 in Malaysia. e fraction of the population that had completed secondary education in India in 2004 (16 percent) is half of the gure that had prevailed in China in 1975. Bangladesh and Pakistan lag even further behind. It is only at the level of tertiary education that the South Asian countries resemble their East Asian counterparts, with India actually having a slight advantage over China and being roughly on a par with Malaysia. However, when taking the population as a whole into account, South Asia lags behind East Asia by about 30 years. A comparison with other parts of the world also shows that the distribution of educational attainment in South Asia today is similar to that observed in Latin American countries in the 1960s (de Ferranti and others 2003). Only Sri Lanka, a clear outlier, did much better, but its comparative advantage has been gradually eroded over time.

Investment climate surveys (ICSs), which were conducted worldwide between 2000 and 2005, provide another useful source of information for comparing the stocks of human capital across regions. ese are broadly comparable rm-level surveys that the World Bank has carried out in the manufacturing sectors of more than 40 developing countries to obtain employers' assessments of the business environment in the country. ey include indicators of governance, of the

predictability of economic policy, of the judicial system, of access to nance, and of general constraints to business operations.[2] In addition to these indicators, the ICSs elicited information on the educational distribution of the workforce. Figure 2.3 shows the distributions separately for six regions for which country ICS samples are weighted using the rm

Figure 2.3 Distribution of the Workforce by Level of Education in Manufacturing, by Region, 2000–4



Source: ICSs.

2. To ensure the comparability of ICSs across countries, a sampling frame is used that is based on the distribution of private rms in each country by sector, size, number of employees, and location. Each ICS includes information on rm size (number of employees, extent of sales and assets); years in operation; debt and growth performance; sources of nance; and a mix of qualitative and quantitative indicators of the business environment.

size distribution of India as the norm.[3] e gure suggests that South Asia's stock of human capital di ers little from that of the Middle East and North Africa region and lags behind that of most other regions.

Flows of Human Capital: Investments in Educating New Generations

South Asia's stock of human capital is clearly still low compared with that in other parts of the world. However, the evidence indicates continuous skill upgrading in the region over time. How rapid has this progress been? Has it been di erent across countries and is South Asia likely to catch up with other regions?

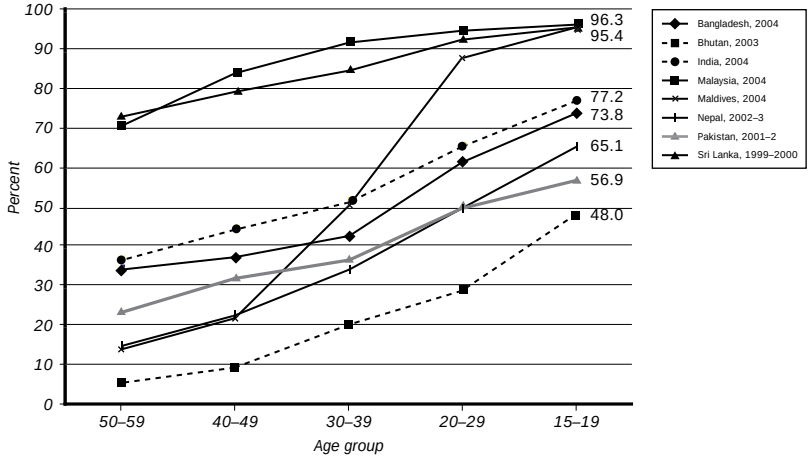
Trends in enrollment rates over time could answer these questions, but the limited availability of household surveys at di erent points in time for all countries in the region makes the use of enrollment rates to compare trends over time dif- cult. To overcome this di culty, we use data from the most recently available survey and look at the educational attainment of age cohorts of individuals born at di erent times. For example, individuals aged 50–59 years in 2000 were born

3. e countries in South Asia are India (2002), 1,824 rms; Pakistan (2002), 914 rms; and Sri Lanka (2004), 451 rms. e countries that make up the other comparator regions are as follows: Sub-Saharan Africa, 2,387 rms, 11 countries—Eritrea (2002), Ethiopia (2002), Kenya (2003), Mali (2003), Mozambique (2001), Nigeria (2001), Senegal (2003), South Africa (2003), Tanzania (2003), Uganda (2003), and Zambia (2002); East Asia and the Paci c, 3,083 rms, 4 countries—Cambodia (2003), China (2002), Indonesia (2003), and the Philippines (2003); Europe and Central Asia, 280 rms from Kosovo (2003), Montenegro (2003), and Serbia (2003); Latin America and the Caribbean, 5,112 rms, 8 countries—Bolivia (2000), Brazil (2003), Ecuador (2003), El Salvador (2003), Guatemala (2003), Honduras (2003), Nicaragua (2003), and Peru (2002); and the Middle East and North Africa, 2,889 rms, 5 countries—Algeria (2002), Egypt (2004), Morocco (2004), Oman (2003), and the Syrian Arab Republic (2003).

in the 1940s, those aged 40–49 were born in the 1950s, and so on. With this perspective, we can identify changes in educational investments across di erent generations and compare the speed at which the human capital stock was upgraded over time. As this only requires using the most recent survey, we were able to add information on additional countries in South Asia, namely, Bhutan, the Maldives, and Nepal. For purposes of comparison across regions, we also add similar data on Malaysia, a rapidly growing East Asian country.

Figure 2.4 shows the share of the population completing at least grade 5 in the countries under consideration. It depicts changes in primary school achievement across di er-

Figure 2.4 Proportion of the Population Who Completed at Least Grade 5, Selected Asian Countries and Year



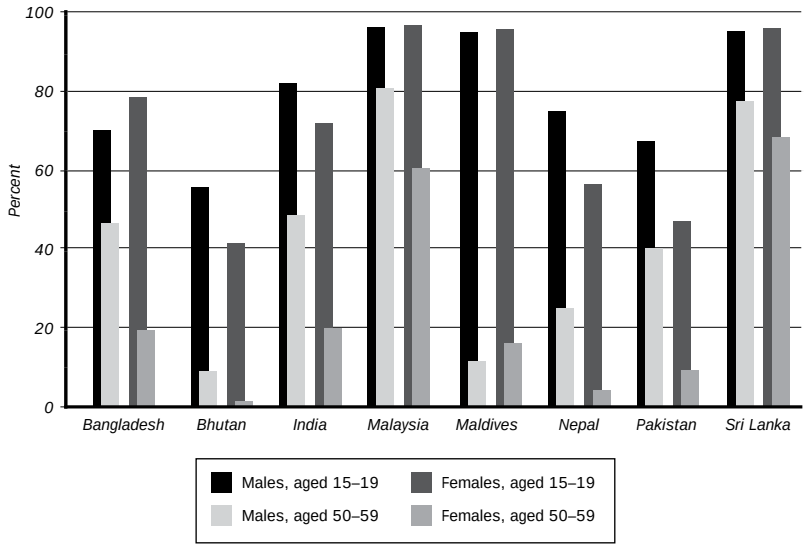
Source: Leopold R. Sarr and authors' calculations for Bangladesh, India, and Malaysia.

ent generations ranging from those now in their 50s to those aged 15–19 at the time of the surveys. Once again, Sri Lanka is the outlier in the South Asia region: more than 70 percent of Sri Lankans born in the late 1940s had completed at least ve years of education, and continuous progress during the next 40 years led to practically universal primary education. For all the other South Asian countries, the starting point was much lower, ranging from 5 percent for Bhutan to 35 percent for India. Countries that started with the lowest educational level improved at a more rapid pace. e most spectacular changes took place in Bhutan and in the Maldives. Over a 20-year period, Bhutan moved from a situation where only a tiny proportion of children went to school to a situation where almost half of children spend at least ve years in school, and the Maldives was able to increase access to primary education to practically 90 percent of children and catch up with Sri Lanka. Nepal also stands out, with a 4.5-fold increase in the proportion of children completing at least ve years of schooling.

Bangladesh, India, and Pakistan made slower progress. During four decades, those three countries increased the proportion of children who completed at least a primary education about 2.5-fold. India has continued to fare better than Bangladesh, which in turn has fared better than Pakistan; however, these di erences are not extremely large, and may be overstated, as the data for Bangladesh and India refer to 2004, while the data for Pakistan refer to 2001, and the country's enrollment rates have increased dramatically. At this level of education, only Sri Lanka can be compared with Malaysia: both countries have the same starting and ending points, although Malaysia's progress toward universal primary education has been faster.

In relation to the pace of progress for boys and girls, clearly this has not been similar. In all the countries, including Malaysia (gure 2.5), the proportion of boys completing primary education 40 years ago was signi cantly higher than that of girls. In some of them, such as Bhutan, Nepal, and Pakistan, only a tiny fraction of women had access to education. Forty years later, the gender gap has narrowed everywhere and has disappeared in Bangladesh, the Maldives, and Sri Lanka. Girls have clearly bene ted the most from progress

Figure 2.5 Proportion of the Population Completing Grade 5 by Gender and Age, Selected Asian Countries and Years



Source: Household surveys.

during this time. Perhaps the most spectacular changes have

Table 2.1 Country Rankings by Educational Attainment and Net Enrollment Rates, Selected Asian Countries and Years

Country	*Share of the population aged 15–19 with at least five years of schooling*	*Country*	*Net enrollment rates in primary education*
Maldives	95.4	Maldives	87.7
Sri Lanka	95.4	Sri Lanka	77.0
India	77.2	Nepal	72.4
Bangladesh	73.8	Bhutan	69.4
Nepal	65.1	Bangladesh	66.5
Pakistan	56.9	India	62.5
Bhutan	48.0	Pakistan	52.0

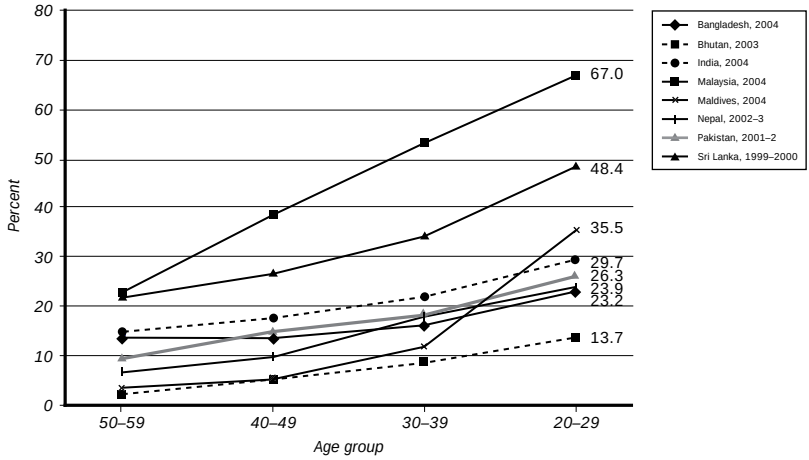
Source: Authors' calculations based on household surveys.

taken place in Bangladesh, where the proportion of women with a primary education is now larger than that of men, and in the Maldives, which achieved universal primary education for both boys and girls over a relatively short period.

What will be the situation in these South Asian countries by 2015, when countries are supposed to have met the Education for All goal of universal primary education? If current trends persist, most likely Bangladesh and India will have moved closer to, although not yet have reached, that goal, and the region's other countries would still have a long way to go. However, the most recent available data on net enrollments suggest that all the countries in the region have accelerated their investments in primary education, and that those that made the least progress in past decades are now trying hard to catch up with the front-runners. As table 2.1 shows, the ranking of countries by educational attainment di ers from the ranking of countries by net enrollment rates during similar periods.

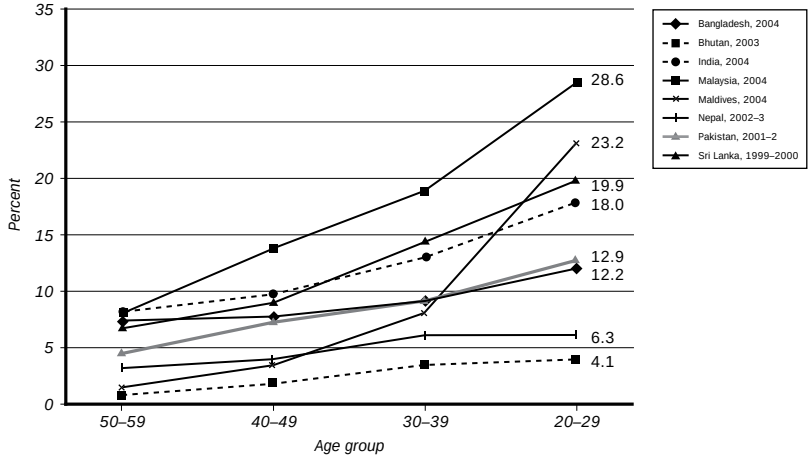
A number of points stand out when we turn to gures 2.6 and 2.7 and focus on secondary education. First, e orts to upgrade skills beyond primary education have been steady in the region. Trend lines in relation to the attainment of at least 10 years of school are broadly parallel, with the exception of the Maldives and Sri Lanka, which have experienced faster progress for the youngest generation. e Maldives in particular is now approaching the level of attainment in Sri Lanka, which has the highest proportion of children attained grade 10. Second, with respect to the achievement of 12 years

Figure 2.6 Proportion of the Population Who Completed at Least Grade 10, Selected Asian Countries and Year



Source: Leopold R. Sarr and authors' calculations for Bangladesh, India, and Malaysia.

Figure 2.7 Proportion of the Population Who Completed at Least Grade 12, Selected Asian Countries and Year



Source: Leopold R. Sarr and authors' calculations for Bangladesh, India, and Malaysia.

of schooling, Sri Lanka no longer appears as an outlier.[4] It has concentrated its e orts on basic education and focused much less on levels of schooling beyond that level. While 48 percent of children from the youngest generation achieved at least 10 years of schooling,[5] the proportion of those with 12 years of schooling drops to less than 20 percent, and India now performs almost as well. Recent data on secondary-lev-

4. Estimates for Sri Lanka are lower than and not fully consistent with those provided by Barro and Lee (2000). is discrepancy may be because Barro and Lee do not measure completion of a full cycle of education, but only "some" primary or secondary education. LFSs also give lower estimates.
5. e numbers for secondary school attainment are signi cantly lower than those Barro and Lee (2000) report.

Table 2.2 Educational Attainment, Selected Levels of Education, Selected Asian Countries

Category	*Bangladesh*	*Bhutan*	*India*	*Maldives*	*Nepal*	*Pakistan*	*Sri Lanka*	*Malaysia*
Share of population aged 15–19 who attained at least grade 5								
Male	70.0	55.1	81.9	95.1	74.5	67.5	95.1	96.3
Female	78.4	41.4	71.6	95.7	56.3	46.7	95.8	96.4
All	73.8	48.0	77.2	95.4	65.1	56.9	95.4	96.3
Share of population aged 20–29 who attained at least grade 10								
Male	28.9	19.3	35.8	34.4	33.5	33.7	45.7	62.9
Female	18.5	9.5	23.6	37.1	17.2	19.5	51.1	71.3
All	23.2	13.7	29.7	35.5	23.9	26.3	48.4	67.0
Share of population aged 20–29 who attained at least grade 12								
Male	16.4	5.7	21.3	22.2	9.2	16.0	16.8	25.2
Female	8.7	2.9	14.6	24.6	4.2	10.0	22.9	32.2
All	12.2	4.1	18.0	23.2	6.3	12.9	19.9	28.6

Source: Authors' calculations based on household surveys.

el net enrollment con rm that secondary school attendance is increasing faster in India than in Sri Lanka.[6] Bangladesh, while still behind, is also rapidly catching up with Sri Lanka.

e nal point that emerges from gures 2.6 and 2.7 is that South Asia is unlikely to catch up with East Asia in terms of education, at least in the medium term. With the exception of the Maldives, none of the countries in the region has adopted a path that will enable it to reach the education levels Malaysia has attained in the near future if those countries continue to invest in their human capital at the same rate. Indeed, di erences between South Asian countries and Malaysia are larger for younger than for older generations, suggesting that the gap is widening over time. Note that In-

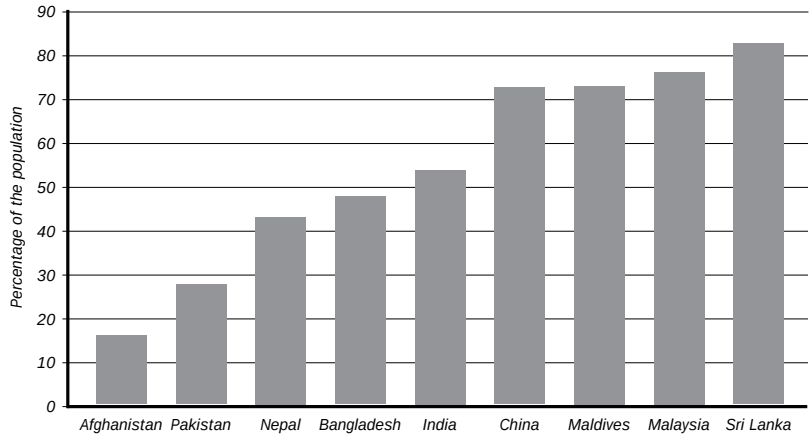
6. e net enrollment rate at the secondary level is equal to 42.2. in Bangladesh (2004), 49.4 in India (2004), and 45.6 in Sri Lanka.

dia, Malaysia, and Sri Lanka shared almost the same starting point for grade 12 completion (those aged 50–59 in gure 2.7), but their trends diverged over time.

Table 2.2 provides similar information disaggregated by gender for the youngest cohorts completing at least grades 5, 10, and 12. In countries that have made the most progress in education, such as the Maldives, Sri Lanka, and the comparator country Malaysia, the proportion of girls achieving a given number of years of schooling is larger than that of boys.

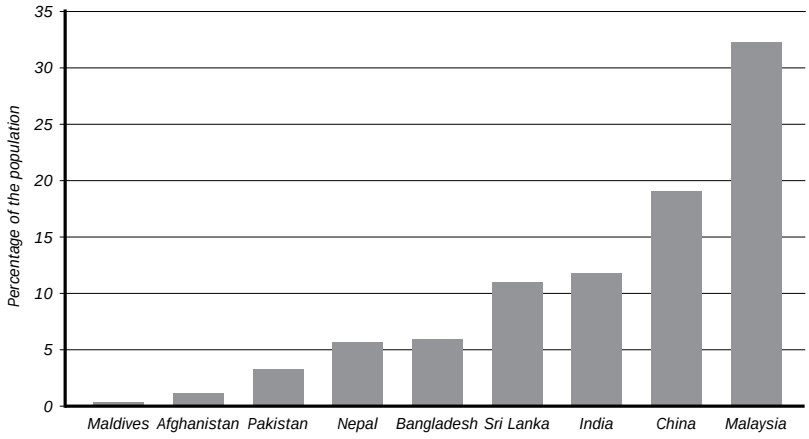
e reverse — higher levels of attainment by boys than by girls — is generally true for the other South Asian countries at all three grade levels, except for Bangladesh at the level of primary education.

Figure 2.8 Gross Enrollment Rates, Secondary Education, Selected Asian Countries, 2004



Source: World Bank 2006b.

Figure 2.9 Gross Enrollment Rates, Tertiary Education, Selected Asian Countries, 2004



Source: World Bank 2006b.

Despite ongoing progress, the speed at which the South Asian countries are currently upgrading their populations' skills will clearly not allow them to catch up quickly with other parts of the world, especially East Asia. Comparisons of enrollment rates at the secondary and tertiary levels across countries con rm this conclusion (gures 2.8 and 2.9). Even though the proportion of the population with higher education was similar in China, India, and Malaysia, di erences in enrollment rates suggest that the two regions are not making similar e orts in terms of the ow of human capital. South Asia is clearly lagging behind East Asia, with the implication that levels of attainment of tertiary education are likely to diverge further over time.

3
Returns to Investment in Education

e previous chapter documented the current status of human capital accumulation in South Asia both in terms of the distribution of skills in the population at a given time and in terms of changes in educational investments over time. is chapter turns to the use of these skills by the labor market and their pro tability or rate of return.

Data Sources and Methodology

To calculate rates of returns to education, we use household surveys for Bangladesh (BHIESs), India (NSSs), and Pakistan (PIHSs) and LFSs for Sri Lanka. Surveys at di erent points in time are available that cover about one decade for Pakistan and Sri Lanka and two decades for India. For Bangladesh, BHIESs were only available for 2000 and 2004, so no comparisons of long-term trends in schooling returns

were possible. We focus on the sample of males and females aged 15–64 who work for salaries or wages. We exclude the self-employed and those for whom compensation for work is not reported.[1] We use information on the sample's wages, salaries, and cash and in-kind payments for their primary occupation or employment to calculate hourly wages, adjusting for the number of hours worked last week.

Following the standard methodology popularized by Mincer (1974), we estimate the rate of return to education by regressing the logarithm of wages on years of schooling, a measure of years of potential work experience, and a set of other control variables. In this semi-log wage model speci - cation, the coe cient of schooling is interpreted as the rate of return to an additional year of schooling and the coe - cient of potential experience measures returns to postschool investments in on-the-job training. Given our interest in investigating the potentially di erent rates of return by level of schooling, we estimate the following expanded speci cation of the Mincer wage model:

$$\log(hourlywage_i) = fn(EDUC_i, EXP_i, OTHER_i, LOCATION)$$

e dependent variable, the logarithm of hourly wage, is related to the following sets of explanatory variables:

- *EDUC* consists of ve 0,1 indicator variables (six in the case of India) for levels of schooling completed: *literate, below primary* = 1 if the person is literate but has

1. As this section focuses on the returns to human capital, we exclude those earners for whom no compensation is reported, as well as the self-employed, whose incomes include a pro t component that re ects returns to their (unmeasured) capital equipment.

not completed primary education; *primary* = 1 if primary education is the highest level of education completed; *middle* = 1 if middle school is the highest level of education completed; *secondary and higher secondary* = 1 if secondary or higher secondary education is the highest level of education completed; *tertiary* = 1 if any level of tertiary education has been completed; *technical education dummy* (India only) = 1 if any technical education has been completed. In the regression analysis, the illiterate group is omitted.

- *EXP measures years of potential experience*, measured as age – education – 5 (in the case of Pakistan) or 6 (in the case of Bangladesh, India, and Sri Lanka), and its quadratic EXP^2 or *years of potential experience squared*.
- *OTHER* is a vector of individual attributes, including *male* = 1 if the respondent is male; SCST = 1 if the person belongs to a scheduled caste or scheduled tribe (India only); *regular worker* = 1 for those who receive monthly or annual salaries; and *regular worker* = 0 for casual workers, that is, those who are paid on a daily basis.
- *LOCATION* controls for place, where *urban* = 1 if the household lives in an urban area and = 0 if it lives in a rural area. e Sri Lankan LFS distinguishes between urban, rural, and estate location, and to re ect this possibility, both urban and rural dummies are used, with estate as the omitted category.

e underlying human capital model establishes a link between investments in di erent levels of education, as proxied by foregone earnings while in school, and the value that the labor market attributes to skills thus acquired. e es-

timated coe cients on the di erent educational categories allow us to calculate what the corresponding annualized private rates of return are to completing that level of education.

Several caveats are important. First, the analysis does not capture the full social value of human capital for a country, as it does not measure nonmarket bene ts and possible externalities. Second, it does not take into account either government spending on education or direct outlays by families. What the analysis provides are estimates of private rates of return. e omission of families' outlays is unlikely to have an important e ect, as international experience indicates that foregone earnings represent the bulk of private costs. In addition, this e ect may be o set by the omission, on the bene t side, of earnings from secondary jobs. ird, investments in education are crudely measured by the number of years that reaching a given level of education normally takes, for example, ve years for completing primary education. e data do not allow us to take class repetition or the quality of education into account.

e estimated schooling coe cients may also be biased by the endogenous choice of education. Selectivity bias arises because some of the individual and household attributes that shape schooling choices, such as ability, motivation and social background are unobserved, and these are correlated with wage outcomes. Even though we are familiar with selectivity biases and the literature on correcting for such biases using multi-equation and panel data models (for example, Barnow, Cain, and Goldberger 1981; Heckman 1979; Patrinos, Ridao-Cano, and Sakellariou 2006), we do not explicitly address these issues for several reasons. First, identifying valid instrumental variables (correlated with the choice variable but not with the outcomes of interest) that are common

across all the di erent surveys is di cult; using di erent instrumental variables in each country would limit the comparability of results across countries. Second, the literature suggests that while selectivity corrections o en reduce estimated rates of return to education, corrected estimates do not substantially change the key policy ndings based on simpler models. Finally, comparisons of estimated returns over time across countries are still valid if, as is plausible, selectivity (and ability) biases do not change systematically over time.

Despite those caveats and the potential for selection bias, our estimates of private rates of return can provide useful rst insights into the interaction between the demand for and supply of skills and changes over time in the balance of supply and demand across the di erent countries.

Wage Regressions for South Asia

Table 3.1 reports the wage regressions estimated for each of the four South Asia countries using the most recent data available. From empirical evidence based on numerous studies in many countries that covers many di erent periods of time, we would expect to nd that earnings increased with level of educational attainment and, for any given level of education, that earnings increased with the number of years of labor market experience, although at a decreasing rate. Our results are fully consistent with these expectations.

Investing in formal education is pro table in all the countries, and additional investment increases earnings substantially. Despite some well-founded concerns about the low quality of primary education, some schooling, even without completion of primary education, results in a signi cant

Table 3.1 Wage Regressions for South Asia

Category	*Bangladesh, 2004*	*India, 2004*	*Pakistan, 2000–1*	*Sri Lanka, 2001–2*
Literate, below primary	0.087 (1.94)	0.195 (12.53)	0.108 (4.69)	0.057 (2.36)
Primary	0.236 (9.29)	0.249 (18.38)	0.225 (12.63)	0.185 (7.44)
Middle		0.461 (34.31)	0.421 (18.72)	0.341 (13.52)
Secondary and higher secondary		0.717 (52.25)	0.788 (44.38)	0.606 (24.08)
Secondary	0.443 (10.26)			
High	0.585 (12.14)			
Tertiary	0.943 (22.90)	1.329 (79.64)	1.397 (61.34)	0.875 (26.31)
Technical education dummy		0.18 (10.87)		
Potential experience (years)	0.024 (6.82)	0.056 (53.99)	0.06 (36.90)	0.026 (18.63)
Potential experience squared	–0.001 (–5.27)	–0.001 (–39.40)	–0.001 (–27.69)	–0.001 (–16.76)
Male	0.601 (17.05)	0.446 (47.68)	1.089 (63.42)	0.403 (40.72)
Urban	0.110 (6.28)	0.221 (26.06)	0.189 (15.73)	0.271 (12.69)
Rural				0.059 (3.03)
SCST indicator		0.005 (0.67)		
Regular worker indicator	0.272 (10.71)	0.798 (81.86)		0.362 (33.31)
Constant	1.103 (16.91)	–0.219 (–13.29)	0.581 (21.32)	2.163 (68.73)
Number of observations	4,729	39,190	16,200	20,838
R^2	0.319	0.546	0.396	0.292

Source: Authors' calculations.
Note: t-statistics in parentheses.

wage gain. e wage gains from completing secondary and higher levels of education are signi cantly greater than for primary education. e estimated wage-experience pro les are also consistent with wages increasing with labor force experience, although at a decreasing rate.

Table 3.1 also indicates several other noteworthy points. First, as might be expected, regular workers command higher wages than casual workers for any given level of education and experience. A similar observation applies to workers located in cities compared with rural areas or estates (in the case of Sri Lanka). Second, belonging to a scheduled tribe or caste in India does not have a signi cant impact on earnings a er controlling for the level of education and other personal attributes. For these disadvantaged groups, the di culty is access to education, but for those who succeed in accessing education, the returns are no di erent than for the population at large. Finally, the earnings received by men and women di er strikingly, with men, on average, earning 40 to 100 percent higher wages than women for a given level of education and controlling for other attributes.

e wage regression results are broadly similar across all four countries, but some di erences are apparent. For instance, in Sri Lanka, the returns to incomplete education are low compared with those in the other countries. Sri Lanka is also noteworthy for the relatively lower return to investment in higher education, as well as its much atter wage-experience pro le, which may re ect the increased supply of those with a tertiary-level education relative to the demand for such workers. Another point that stands out is the large wage premium that men in Bangladesh and Pakistan receive relative to that earned by observationally comparable women workers.

Rates of Return to Education

Comparing the pro tability of investments in di erent levels of education and how they vary over time and across countries is greatly facilitated by calculating standardized rates of return to education. Taking into account the number of years normally required to complete any particular level of education, one can use the coe cients of the regression to calculate standardized rates of return for that level of education.

e normal time taken to complete each level of education is as follows:

- primary—primary coe cient/ ve years for all the countries under consideration,
- middle—middle coe cient minus primary coe cient/ three years for India and Pakistan and four years for Sri Lanka,
- secondary and higher secondary—secondary coef- cient minus middle coe cient/three years for India and Pakistan and four years for Sri Lanka,
- tertiary—tertiary coe cient minus secondary coe - cient/four years for India and Pakistan and three years for Sri Lanka.[2]

e results are interpreted as the rate of return for one additional year of schooling at a given level of education.[3]

2. Because of speci cs of the education system in Bangladesh, the levels of education, and therefore the methodology for calculating returns, di er from those used for other countries: primary = primary coe cient/ ve years, secondary = secondary coe cient minus primary coe cient/ ve years, high secondary = high secondary co- e cient minus secondary coe cient/two years, tertiary = tertiary coe cient minus high secondary coe cient/four years.
3. We compared these estimates by level of schooling to the coe cient of a continuous measure of years of schooling and can reject the null hypothesis that the rates of re-

Table 3.2 Rate of Return to Schooling by Education Level, Selected South Asian Countries and Years (percent)

Country and level of education	*Survey and year*		
Bangladesh		*BHIES 2000*	*BHIES 2004*
Primary	—	7.0	4.7
Secondary	—	6.4	4.1
Higher secondary	—	10.8	7.1
Tertiary	—	10.7	9.0
India	*NSS 1993*	*NSS 1999*	*NSS 2004*
Primary	8.3	8.5	8.5
Middle	9.5	8.4	10.7
Middle	23.3	22.7	16.8
Higher secondary	11.7	15.0	16.3
Tertiary	12.6	15.2	18.9
Pakistan	*PIHS 1993–4*	*PIHS 1996–7*	*PIHS 2000–1*
Primary	4.4	4.5	4.8
Middle	5.7	6.4	6.6
Secondary	9.5	9.3	14.2
Higher secondary	10.1	11.4	13.9
Tertiary	13.5	11.5	13.9
Sri Lanka	*LFS 1992–3*	*LFS 1997–8*	*LFS 2001–2*
Primary	5.6	5.0	5.8
Middle	13.2	12.1	11.6
Secondary	10.6	7.8	8.8
Higher secondary	14.4	16.0	18.4
Tertiary	7.1	9.9	9.6

Source: Authors' calculations.
Note: — = not available.

Table 3.2 shows the rates of return to di erent levels of education. Except for Bangladesh, estimates are calculated

turn to schooling are the same for completion of all levels of schooling.

from wage regressions estimated at three points in time: the early 1990s, the late 1990s, and the early 2000s (appendixes 1–3). In India, the pro tability (rate of return) of each year of primary education averages 8.5 percent and the return for each of the following three years of middle education is between 8.4 and 10.7 percent. Table 3.2 also shows that the pro tability of such investments tends to rise with the level of educational attainment, most dramatically in India and Pakistan, and to a lesser extent in Sri Lanka.

Gender Gap

One of the striking ndings in the previous chapter was the size of wage di erentials between men and women by level of education. While gender di erences in gross wages of the order of 30 to 40 percent are not uncommon in other countries, those di erences usually narrow when wages are standardized by education, age, hours of work, and other individual characteristics. In South Asia, by contrast, even a er standardization, gender-related wage di erentials ranging from 50 percent in India and Sri Lanka to almost 300 percent in Bangladesh and Pakistan are still observable. Many possible explanations may account for this, including type of employment, sector, and discrimination.

Table 3.3 shows estimates of the rates of return to investments in di erent levels of education by gender. ey are calculated from wage regressions estimated separately for men and women that control for work experience, location, and type of employment. One nding common to all the countries is the sharp change observed a er primary education. While returns to primary education are signi cantly higher

Table 3.3 Rate of Return to Schooling by Education Level and Gender, Selected South Asian Countries and Years (percent)

Country and level of education	*Survey and year*					
			BHIES 2000		*BHIES 2004*	
Bangladesh	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*
Primary	—	—	14.1	5.8	13.4	4.2
Secondary	—	—	10.7	4.8	11.6	3.3
Higher secondary	—	—	15.3	10.0	2.2	7.5
Tertiary	—	—	5.0	10.9	105	8.9
	NSS 1993		*NSS 1999*		*NSS 2004*	
India	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*
Primary	5.5	8.0	6.9	8.2	6.7	8.2
Middle	14.3	8.7	9.3	8.2	10.3	8.2
Middle	45.0	20.1	42.0	20.0	31.5	20.0
Higher secondary	13.7	10.8	14.6	14.2	20.7	14.2
Tertiary	9.4	12.8	11.5	15.6	16.8	15.6
	PIHS 1993–4		*PIHS 1996–7*		*PIHS 2000–1*	
Pakistan	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*
Primary	4.3	4.3	12.9	4.0	5.4	4.1
Middle	13.1	5.6	7.2	6.5	17.1	6.2
Secondary	12.1	9.0	17.2	8.1	30.2	12.3
Higher secondary	7.6	9.8	12.8	11.2	18.5	11.9
Tertiary	15.4	13.3	11.2	11.0	18.9	11.9
	LFS 1992–3		*LFS 1997–8*		*LFS 2001–2*	
Sri Lanka	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*
Primary	2.6	5.7	1.5	7.1	1.9	7.6
Middle	18.2	12.0	13.7	11.7	17.8	10.0
Secondary	11.5	10.2	9.6	7.1	10.0	8.1
Higher secondary	8.5	17.0	13.6	16.5	14.7	19.6
Tertiary	9.3	5.6	14.2	6.2	11.7	7.5

Source: Authors' calculations.
Note: — = not available.

for men than for women in India and Sri Lanka (in Bangladesh and Pakistan, returns to primary education are higher for women than for men), returns to higher levels of education are usually much higher for women, especially at the secondary level, and to a lesser extent at the tertiary level.

us estimates of average wage ratios, even when standardized, hide an important phenomenon, namely, that access to higher levels of education allows women to reduce the gender gap. For example, when comparing the wages of men and women in India who are otherwise similar, say regular workers living in urban areas with some 20 years of experience, gure 3.1 indicates that the relative wage di erential drops by half when the level of education is secondary or higher. is pattern is particularly strong in India and Pakistan.

e results suggest that in countries where access to higher levels of education is more di cult for women than for men and where labor force participation by women is still low, women who succeed in overcoming these obstacles do relatively well in the labor market. is may imply that part of the returns to education estimated for women may actually re ect the greater motivation and ability of the educated women entering the labor market (please refer to the earlier discussion on unmeasured ability in selection bias).

Changes over Time in Returns to Education

e evidence also indicates that rates of return to higher secondary and tertiary education increased over time in the three countries for which we have time series data. ese in-

Figure 3.1 Predicted Log Hourly Wage by Gender and Level of Education, Selected South Asian Countries and Years

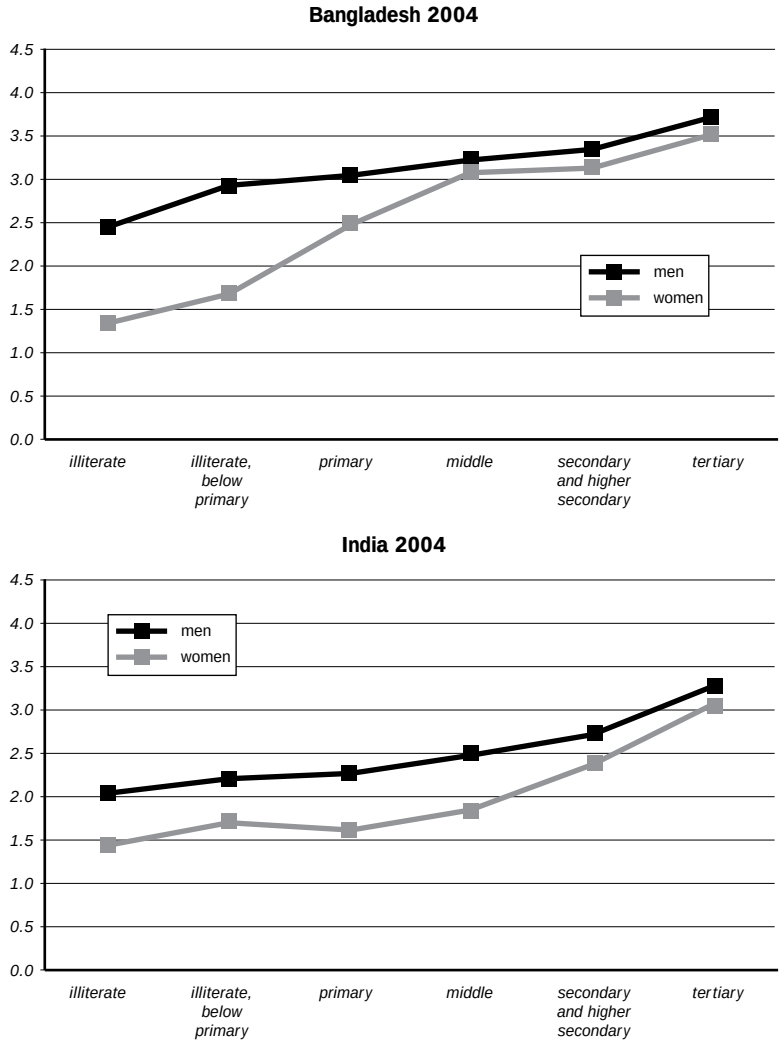


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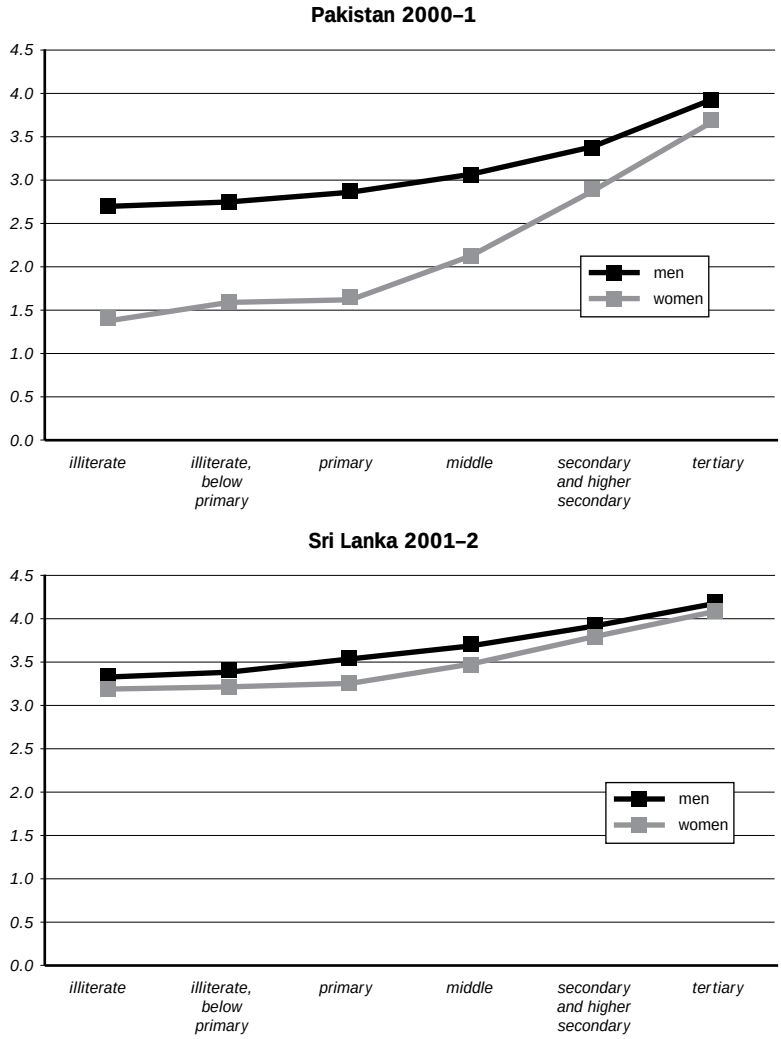
Figure 3.1 (continued)



Source: Authors' calculations.
Note: These calculations are for regular workers who live in urban areas and have 20 years of experience. In addition, in India they do not belong to a scheduled tribe or caste and do not have a technical education.

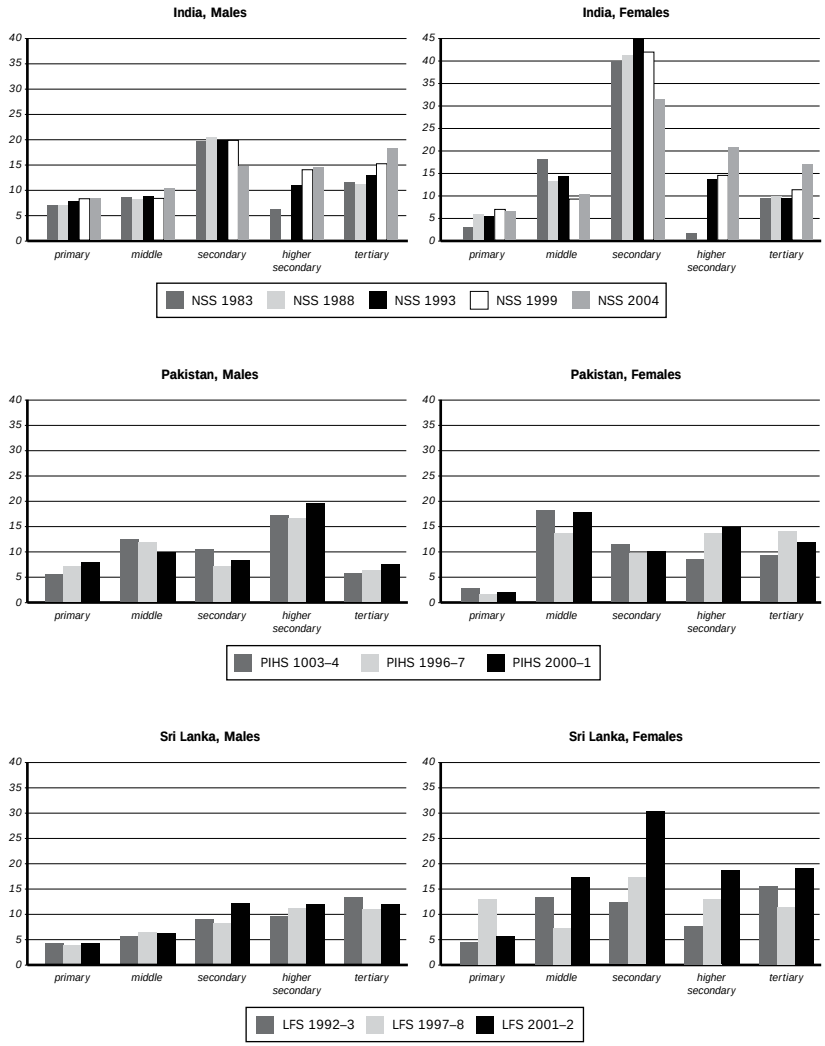
creased returns were most pronounced for India:[4] between 1993 and 2004, as reported in Table 3.2, the returns to higher secondary education for both males and females rose from 12 to 16 percent and the returns to tertiary education for males rose from 13 to 19 percent. More modest increases in returns were registered for Sri Lanka and Pakistan during the same decade. e increases in returns for Sri Lanka were 14 to 18 percent for higher secondary and 7 to 10 percent for tertiary education; the corresponding increases for Pakistan were 10 to 14 percent and 13 to 14 percent. ese time trends resemble similar increases in the relative returns to higher education reported in other regions, including Latin America,[5] and may re ect the e ects of globalization and/or of skill-biased technological change.

ese time trends are more readily apparent when rates of return are presented graphically. Figure 3.2 shows the estimated returns to di erent levels of schooling for all available years. For each country, the data are shown separately for males and females. e gure con rms the following results. First, returns to education have grown over time, especially for higher secondary and tertiary education. Second, as noted earlier, returns to education are especially high for females, and they too have grown over time. Finally, the returns tend to be higher for the high-growth countries (India and Pakistan) and lower for slower growing Sri Lanka.

ese results suggest that the demand for highly educated and skilled workers is increasing in South Asia and is

4. Patrinos, Ridao-Cano, and Sakellariou (2006) analyze 16 East Asian and Latin American countries and obtain similar results. In almost all the countries they look at, returns to university quali cations exceeded returns to all other levels.
5. For evidence from Brazil and Mexico, two countries with long time series data on returns to education, see Blom, Holm-Nielsen, and Verner (2001) and Lachler (1998). Also see Giovagnoli, Fiszbein, and Patrinos (2005) for evidence of increasing returns to higher levels of education in Argentina during 1992–2002.

Figure 3.2 Returns to Education over Time by Level of Education and Gender, Selected South Asian Countries and Years (percent)



Source: Authors' calculations.

doing so more rapidly than the supply of graduates, and also that this phenomenon coincides with periods of fast growth.

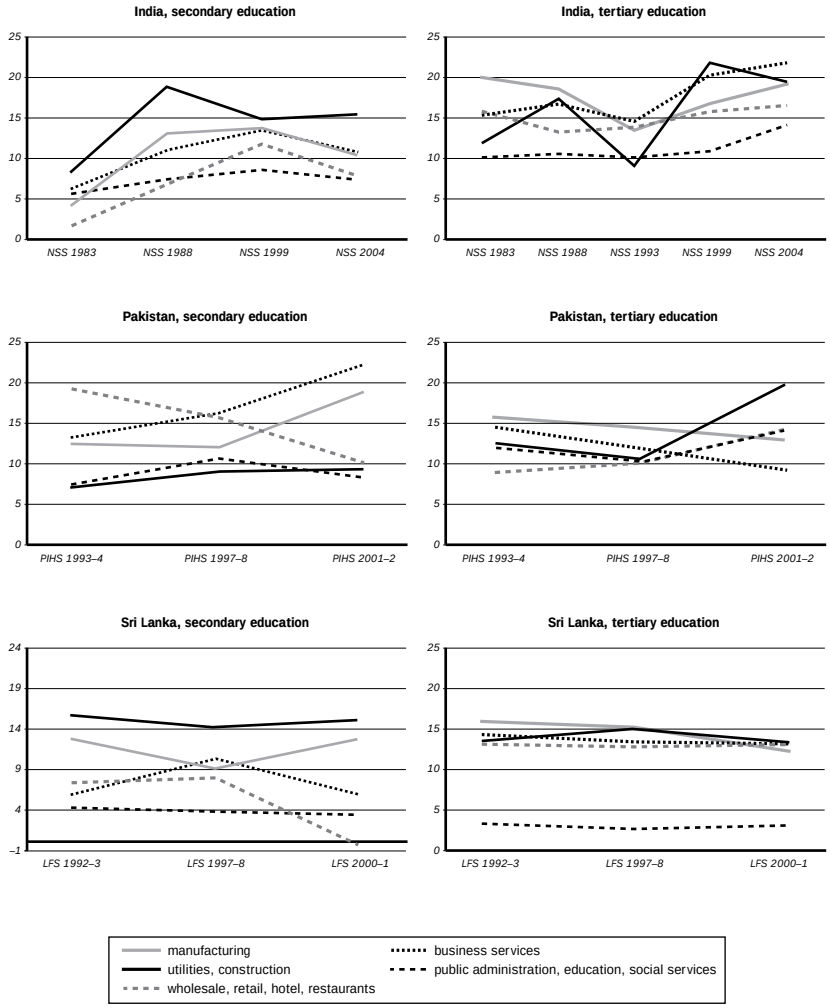
is is consistent with the evidence observed in other developing and developed countries and with the hypothesis that openness to trade, rapid growth, and technological innovations fuel increasing demand for skilled relative to unskilled labor. Education and training policies in South Asia have not yet responded to the needs of and signals provided by the labor market.

Differences in Returns to Education by Sector

Globalization and economic growth may also create differential demand for a more educated workforce across different sectors of the economy. To explore this possibility, we estimated the returns to education for ve sectors: (a) manufacturing; (b) utilities and construction; (c) wholesale, retail, hotels, and restaurants; (d) business services; and (e) public administration, education, and social services. Figure 3.3 presents estimates of the time trends in returns to higher secondary and tertiary education for India, Pakistan, and Sri Lanka by sector.

In India, where economic growth has been most dramatic since the mid-1990s, a clear trend of rising returns to tertiary education is apparent a er 1993, with the most rapid increase being in the business services sector. is is consistent with the well-publicized growth in demand for highly educated workers in call centers and nance, where the use of information technology is intensive. For higher secondary graduates, the returns to schooling have been growing since 1983, though growth rates had slowed by 2004.

Figure 3.3 Rate of Return to Higher Secondary and Tertiary Education for Males by Sector, Selected South Asian Countries and Years (percent)



Source: Authors' calculations.

In Pakistan, the picture looks di erent possibly because of the ts and starts in economic growth during the period under review. e returns to tertiary education declined during 1993–2004 in manufacturing; business services; and public administration, education, and social services, although during the same period they increased in utilities and construction and in wholesale, retail, hotel, and restaurants. In contrast, for higher secondary education, the returns rose in business services and manufacturing, with increasing returns being especially pronounced for the former. However, the returns to higher secondary education declined over this period for utilities and construction and for wholesale, retail, hotels, and restaurants.

In Sri Lanka, the returns to both tertiary and higher secondary were unchanged over time for construction and for public administration, education, and social services. Greater variability over time is apparent in the returns for the other sectors. For tertiary education, the returns generally rose during 1992—98, followed by a decline to 1992 levels by 2001, although in manufacturing, the returns declined until 1998, a er which they rose to 1992 levels. For higher secondary education, the returns to all sectors stayed relatively constant during the period.

4
School to Work Transitions

is chapter turns to how individuals completing di erent levels of education fare as they enter the labor market. We ask several questions about youth, de ned as those aged 15–29: What are unemployment rates like for youth in the four countries under review? Does more education facilitate school to work transitions? Are job search and school to work transitions improved through additional postschool training? ese issues are of considerable interest to policy makers concerned about high rates of open unemployment among youth in South Asia, especially the most educated.

ey also raise thorny questions about whether high rates of youth unemployment re ect the low quality and workplace relevance of education or whether the region's economic growth rates are inadequate to generate su cient new jobs to meet the rising in ow of new labor market entrants.

Definitions of Labor Force States

In comparing the school to work transitions of youth across the four South Asian countries, we first need to define broadly comparable measures of the different labor force states: employed, unemployed, and out of the labor force. Broadly similar definitions of these three labor force states are possible with the available household surveys in Bangladesh (BHIESs) and India (NSSs) and with the LFSs in Pakistan and Sri Lanka. In all four countries, the past week is the reference period,[1] and this is used to define

- employed—either engaged in some form of economic activity,[2] or employed but not at work because of sickness or other reasons;
- unemployed—not engaged in economic activity and either making tangible efforts to seek work or being available for employment if work is available;[3]
- not in the labor force—not engaged in any economic activity and also not available for work.

1. In Pakistan, the PIHSs use the past month as the reference period for defining employment status, which lowers estimates of open unemployment in Pakistan relative to the other countries, as the likelihood of working for at least one hour in past four weeks is likely to be much higher. Fortunately, the LFS uses the past week as the reference period for defining unemployment status.
2. The NSS (2004) defines economic activities as being self-employed, an employer, a helper in a household enterprise, a regular salary or wage employee, or a casual wage laborer or being employed but not at work because of sickness or other reasons.
3. In Bangladesh, an individual is unemployed if not working but is available for work, which includes seeking employment and not actively seeking employment.

Unemployment Rates by Education

We estimated unemployment rates by level of educational attainment for all years for which household or labor force surveys were available in each of the four South Asian countries.

e surveys available in each country were as follows:

- Bangladesh—BHIESs 2000 and 2004;
- India—NSSs 1988, 1993, 1999 and 2004;
- Pakistan—LFSs 1993–94, 1996–97, 1999–2000, and 2003–4;
- Sri Lanka—LFSs 1992, 1995, 1998, 2000, and 2002.

Table 4.1 reports the open unemployment rates estimated for the economically active population aged 15–64 in each of the four South Asian countries by survey year and level of educational attainment. Several points stand out. First, open unemployment rates are quite low. In Bangladesh, India, and Pakistan, open unemployment rates in the most recent year for which data were available ranged from 1.5 percent in Bangladesh to 5.1 percent in India. Sri Lanka is the outlier in this group, recording an open unemployment rate of 9.0 percent, or almost double that of the other countries.

Second, open unemployment rates for the economically active population tend to rise with level of educational attainment in all four South Asian countries. is is most pronounced in India, Pakistan, and Sri Lanka where unemployment rates for university graduates are double or almost triple those of people with only a primary school education. Di erentiation by education level is much less pronounced in Bangladesh, with open unemployment rates for primary

Table 4.1 Unemployment Rates by Level of Education, Economically Active Population Aged 15–64, Selected South Asian Countries and Years (percent)

Country and level of education	*Year*				
Bangladesh	*2000*			*2004*	
Illiterate	3.81			0.65	
Literate, less than primary	5.90			1.00	
Primary	7.85			1.97	
Secondary	8.24			3.11	
Higher secondary	8.27			1.48	
Tertiary	7.15			3.79	
Total	5.57			1.51	
India	*1987–8*	*1993–4*	*1999–2000*		*2004*
Illiterate	2.98	2.05	2.97		2.74
Literate, less than primary	3.34	2.02	2.92		3.15
Primary	4.92	2.79	3.62		4.29
Middle	7.98	5.02	5.62		6.03
Secondary	11.69	7.98	7.44		7.81
Higher secondary	—	11.09	10.17		9.20
Tertiary	13.06	11.99	11.14		11.86
Total	5.11	3.88	4.73		5.07
Pakistan	*1993–4*	*1997–8*	*1999–2000*	*2001–2*	*2003–4*
Illiterate	0.71	1.08	2.17	2.05	1.83
Literate, less than primary	1.28	1.57	4.13	4.27	3.37
Primary	1.65	2.21	3.50	3.57	3.57
Middle	2.69	4.04	7.06	5.51	5.43
Secondary	6.14	6.63	6.95	7.37	8.80
Higher secondary	5.30	6.87	6.65	8.96	9.86
Tertiary	5.05	6.08	5.93	7.80	8.21
Total	1.88	2.65	3.87	4.03	4.29
Sri Lanka	*1993–4*	*1997–8*	*1999–2000*	*2001–2*	*2003–4*
Illiterate	2.98	1.97	1.14	1.32	1.16
Literate, less than primary	1.83	3.32	2.44	1.02	2.07
Primary	9.65	7.56	4.93	4.17	3.85
Middle	21.63	17.10	11.92	9.47	10.67
Secondary	22.37	18.53	13.436	11.06	13.40
Higher secondary	26.09	23.71	19.33	16.45	18.47
Tertiary	6.31	6.63	6.93	5.61	8.82
Total	14.88	12.73	9.16	7.52	8.96

Source: Household and labor force surveys.
Note: — = not available.

school leavers being much more similar to those of university graduates.

ird, the three countries with long time series labor force data — India, Pakistan, and Sri Lanka — exhibit quite di erent time trends in relation to open unemployment. Sri Lanka's unemployment rate shows a downward secular time trend, from 15 percent in 1992 to 9 percent in 2002, while Pakistan's unemployment rate rises secularly over time, from 2 percent in 1993–94 to more than 4 percent in 2003–4. In the case of India, open unemployment rates vary within a narrow band of 4 to 5 percent to more than 5 percent during 1987–88 to 2004, with a slight rising trend a er 1993–94.

Finally, the data show di erent time trends of unemployment by level of educational attainment in the three countries. In Pakistan, the rise in overall unemployment rates from 1993–94 to 2003–4 is mirrored in rising unemployment rates across all educational groups. In Sri Lanka, the opposite trend is apparent, with declines over time in the unemployment rates for all educational groups except university graduates from the high levels of unemployment prevailing in the early 1990s. In India, by contrast, unemployment rates for those with a secondary education or lower show a rising trend from 1993 onward, while unemployment rates for those with an upper secondary education or a university degree or above either fall over time or remain roughly unchanged.

Youth Unemployment and School to Work Transitions

e unemployment rates, even when disaggregated by level of educational attainment, are not particularly informative

about youth unemployment issues and the job search dynamics that underlie school to work transitions by di erent educational groups. e higher unemployment rates for more educated workers observed in all four countries are the outcome of factors related to both age and time in the labor market. e unemployment rates shown in table 4.1 mix up workers in di erent age categories, for example, a group of people of the same age might include both new university graduates and workers with several years of labor market experience, and also combine rates for males and females, who may have quite di erent career aspirations and job search experiences.

To address this, tables 4.2 and 4.3 presents unemployment rates estimated from the most recently available household or labor force survey in each country disaggregated by gender, age cohort, and years of potential work experience (for more details, see appendixes 4 and 5). Potential work experience is de ned as age minus age at which primary school was started (ve years for Pakistan and six years for Bangladesh, India, and Sri Lanka) minus number of years of education.[4] Table 4.2 shows that high open unemployment rates are essentially a youth problem. Indeed, in all four countries, open unemployment rates are signi cantly higher among males aged 20–24 than among males aged 40–49. In Bangladesh, the unemployment rates among young males are under 4 percent, compared with less than 1 percent for prime age males. e corresponding gures are 10 and 2 percent in India, 8 and 1 percent in Pakistan, and 21 and less than 2 percent in Sri Lanka.

4. If the number of years of education were not available, we imputed the average number of years of education that a person would have on completion of a certain level of education without repeating or postponing any grades.

Table 4.2 Unemployment Rates by Age and Gender, Economically Active Population Aged 15–64, Selected South Asian Countries and Years (percent)

	Age cohort (years)							
Country and gender	*15–19*	*20–24*	*25–29*	*30–34*	*35–39*	*40–49*	*50–64*	*Total*
Bangladesh 2004								
Males	3.37	3.14	2.21	1.22	0.48	0.29	0.08	1.35
Females	5.19	3.82	1.93	4.23	2.37	1.07	3.07	2.96
India 2004								
Males	11.02	9.79	6.54	3.50	2.62	2.14	2.15	5.00
Females	8.27	12.07	7.84	4.96	2.64	2.02	1.90	5.22
Pakistan 2002–3								
Males	8.42	7.59	4.98	2.82	1.10	1.33	1.01	3.94
Females	8.42	12.21	7.86	5.35	4.00	2.30	1.17	6.06
Sri Lanka 2001–2								
Males	27.40	21.11	7.33	2.50	1.44	1.30	0.73	6.51
Females	33.53	32.52	18.30	8.84	4.53	1.67	0.77	12.30

Source: Household and labor force surveys.

Table 4.3 Unemployment Rates by Years of Potential Labor Market Experience and Gender, Economically Active Population Aged 15–64, Selected South Asian Countries and Years (percent)

	Potential labor market experience (years)							
Country and gender	*0–4*	*5–9*	*10–14*	*15–19*	*20–24*	*25–34*	*> 34*	*Total*
Bangladesh 2004								
Males	6.99	4.73	1.64	0.73	0.38	0.36	0.17	1.35
Females	11.36	1.79	1.94	0.24	2.66	3.21	2.40	2.96
India 2004								
Males	18.66	9.76	5.51	3.07	2.18	2.37	2.36	5.00
Females	26.29	12.52	6.37	4.57	3.23	2.43	1.91	5.22
Pakistan 2002–3								
Males	19.28	11.77	6.77	3.17	1.32	1.31	1.01	3.94
Females	30.81	19.34	6.63	6.43	3.81	2.93	1.92	6.06
Sri Lanka 2001–2								
Males	35.67	19.05	7.03	3.22	1.60	1.21	0.61	6.51
Females	45.57	28.27	13.23	9.62	4.22	1.85	0.72	12.30

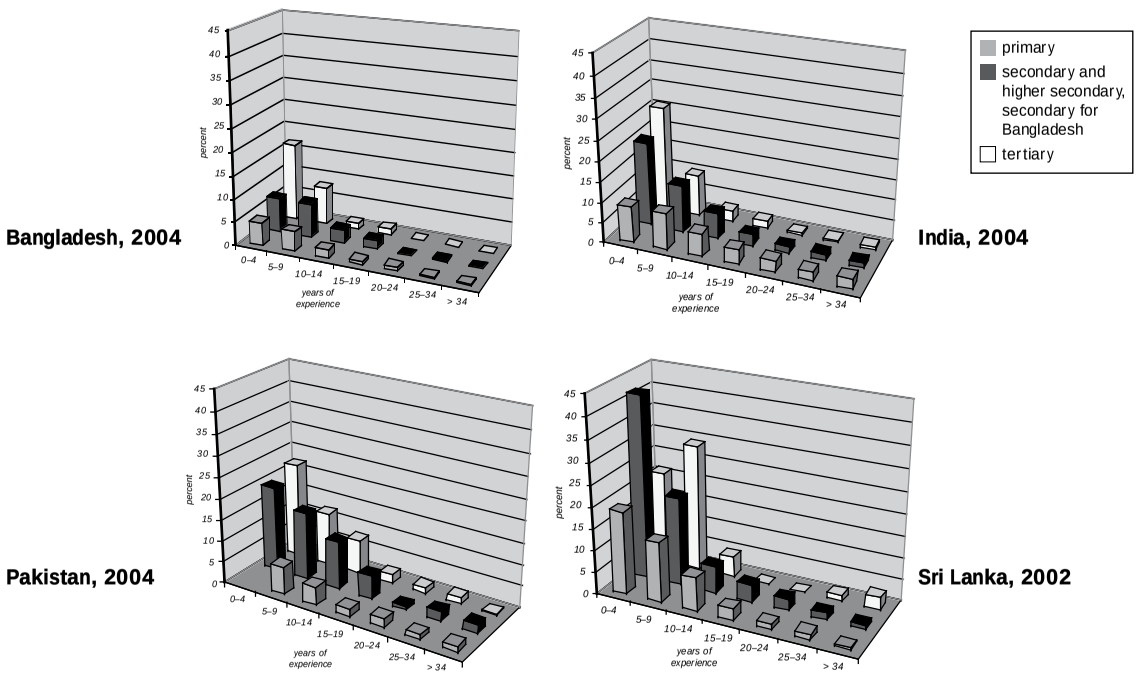
Source: Household and labor force surveys.

e higher unemployment rates among youth than among their older counterparts are consistent with the outcome of a time-dependent job search process. Information about both available jobs and the quality of job matches is initially scarce, so job search tends to be concentrated early in the labor market experience. Some school leavers nd a job match quickly and enter employment, while others fail to nd a job and continue their job search. With new information, those still seeking work adjust their expectations about wages and career goals, and either enter employment or continue their job search, and so on. To see this, the unemployment data in table 4.2 are recast in terms of years of potential labor market experience (table 4.3). Unemployment pro les are initially higher (one-and-a-half to three times higher in the 0–4 years of potential labor market experience interval than in the 15–19 years age interval), but then fall o more quickly with time in the labor market than pro les related to chronological age. is unemployment distribution with time in the labor market is consistent with the outcome of the job search process described earlier.

Finally, tables 4.2 and 4.3 indicate that with the exception of India, females of all ages are more likely to be unemployed than males at any level of education, age, or years of potential labor market experience. In Bangladesh, Pakistan and Sri Lanka, pro les of unemployment broken down by potential labor market experience are one-and-a-half to two times greater for females that for males. In India, by contrast, unemployment pro les for males and females are roughly similar.

With these insights, gure 4.1 revisits the earlier observation that open unemployment rates are higher among the more educated. It graphs unemployment rates by potential

Figure 4.1 Unemployment Rates by Education and Potential Labor Market Experience, Males Aged 15–64, Selected South Asian Countries and Year



Source: Household and labor force surveys.

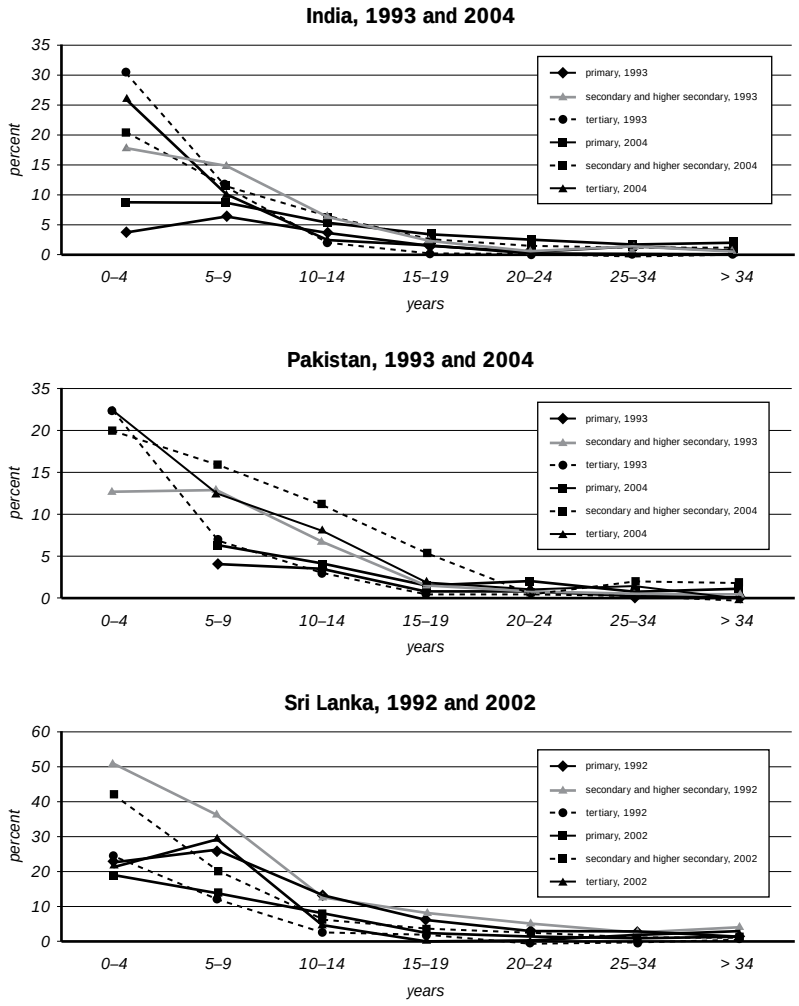
labor market experience for three groups of males — those with primary schooling, those with secondary education and upper secondary education combined, and those with tertiary education — using the most recently available survey in each country. e gure shows that the higher unemployment rates among the more educated are concentrated in the rst 5 to 10 years in the labor market. Subsequently, with time in the labor market, the more educated tend to experience open unemployment at lower rates than their less educated counterparts.[5]

is pattern suggests that the more educated tend to search more intensively for a good job match. One interpretation is that they have more speci c skills than their less educated counterparts, and as such need more time to nd a job that requires those speci c skills. Alternatively, the more educated enter the labor market with higher career goals and wage expectations that are more di cult to match with available employment opportunities. e more educated may also come from higher-income households that are able to support their job search over an extended period of time, whereas less educated youth unable to nance job search may begin working more quickly.

Have unemployment rates by potential labor market experience pro les changed over time as suggested by the aggregate unemployment rate gures reported earlier? Figure 4.2 graphs these pro les for males in the three countries with long time series data by three levels of education (primary, secondary and higher secondary, and tertiary) and for two points in time (1992 or 1993 and 2002 or 2004). For India, the aggregate data reveal a rising trend in unemployment

5 is trend is also common to other countries outside South Asia, including Chile, Malaysia, ailand, and Turkey (World Bank 2006a, chapter 5).

Figure 4.2 Unemployment Rates by Education and Potential Labor Market Experience, Males, Selected South Asian Countries and Years



Source: Household and labor force surveys.

rates a er 1993. Figure 4.2 con rms that unemployment pro- les for those with a primary education shi ed upwards over time, while those for tertiary graduates shi ed downwards. In the case of Pakistan, aggregate increases in unemployment rates over time are mirrored by modest upward shi s for those with a primary education and larger upward shi s for those with a tertiary-level education. Sri Lanka, which experienced a secular decline in aggregate unemployment rates, saw downward shi s in unemployment for those with a primary education and larger upward shi s for those with a tertiary-level education.

The Case of Sri Lanka

e previous graphical analyses for the four South Asian countries suggested that while more educated youth may experience higher initial rates of open unemployment, their subsequent likelihood of remaining unemployed declines more with time in the labor market compared with their less educated peers. is section examines this stylized fact more closely for Sri Lanka, taking advantage of the existence of a long annual time series of LFSs that include relatively detailed information about early years in the labor force and postschool training.

e school to work transition of Sri Lankan youth is of particular concern to the country's policy makers because of the long time many youth appear to spend in job search between the time they leave school and nd employment. According to the 2002 LFS, almost 85 percent of youth aged 15–29 who are currently unemployed report never having a job. is gure rises from about 75 percent for those with

a lower secondary education to almost 95 percent for university graduates. While these gures highlight the seriousness of this issue, as noted earlier, they can be misleading, as they mix more and less educated youth with di erent years of potential work experience, and thus di erent amounts of time spent in job search. Here we look at the same issue from another perspective, that of time to rst job a er completing schooling.[6]

Another question examined is whether school to work transitions are aided by postschool training, holding the level of education constant. is issue is also of considerable interest to policy makers concerned with high rates of youth unemployment and keenly interested in knowing whether additional training a er formal education is an e ective strategy for reducing youth unemployment. is issue can be addressed using information from the LFS on whether individuals received postschool formal or informal training, as well as the duration of that training.

Estimating Time to First Job

Studying school to work transitions requires information on the date of rst employment a er schooling completion.[7]

e challenge of using the Sri Lankan LFS is to determine the date of rst recorded employment for each individual with a given level of education,[8] from which the time from

6. e analysis in this section draws upon Tan and Chandrasiri 2004.
7. None of the household or labor force surveys in South Asian countries elicit this kind of information, although the Sri Lankan LFS comes closest.
8. Note that the rst recorded employment is not necessarily the rst job. Some individuals may have had several jobs prior to the recorded job, so time to rst recorded job may overstate the duration of job search, but no other information is available.

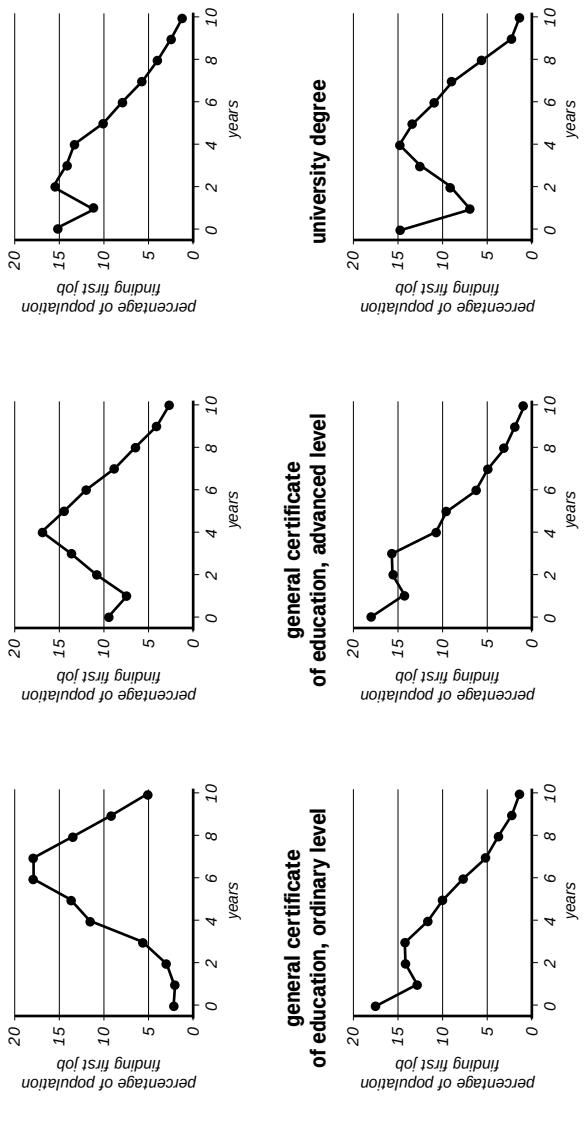
schooling completion to rst employment can be calculated. Beginning in 1996, the LFS asked the employed how long they had held their current job, so the start date of that job can be ascertained.[9] For the unemployed, the LFS asked whether they had ever had a job, and if so, the duration of time since the previous job.[10] If prior jobs are assumed to be of similar duration as those held by their currently employed peers (about two years), then this information and the intervening unemployment spell can be used to determine the start date of the previous job. For those who have never had a job, the duration of search for a rst job is still ongoing (or censored in the sense that the end date is unknown). Finally, search time is adjusted for those with technical and vocational training by subtracting time spent in training to re ect individuals' withdrawal from active job search while undergoing training.

ese time to rst job calculations were done for 39,000 individuals from the pooled LFS sample covering 1996–2002 and were restricted to those with some schooling up to university graduates and with 0–10 years of potential labor market experience to keep the focus on youth. Figure 4.3 presents the resulting distributions of time to employment for di erent levels of schooling attainment.[11]

Figure 4.3 suggests that low levels of schooling attainment disadvantage youth in their job search while higher-level school quali cations facilitate the school to work transi-

9. e 1996 LFS also started asking detailed questions on years of schooling, from which more precise schooling completion dates can be calculated than in the past.
10. e intervening unemployment spell is reported in several intervals, ranging from a few months to an open-ended ve or more years. Some assumptions are needed to impute duration (in years) of unemployment to these categories.
11. Note that these graphs understate time to rst job because they include unemployed youth who had still not found employment at the time of the LFS.

Figure 4.3 Time to First Job by Level of Schooling Completed, Sri Lanka, Pooled Sample 1996–2003



Source: Tan and Chandrasiri 2004.

tion. ose with less schooling — primary and lower secondary — are more likely to face a protracted job search before securing their rst employment. eir distributions of time to rst employment are concentrated around four to seven years a er completion of schooling. In comparison, most of those completing upper secondary schooling and with general certi cate of education ordinary level (GCE O-level) or general certi cate of education advanced level (GCE A-level) quali cations nd their rst job fairly soon a er schooling completion. eir distributions of time to rst job are concentrated around none to four years, tapering o with time in the labor market.

However, the school to work transition of those with university degrees resembles that of youth with lower secondary schooling more than those with GCE A-level quali cations. e distribution for university graduates is bimodal, that is, some nd a job within the rst year, while many others appear to take about three to ve years a er graduation from university. e protracted job search of the latter group may re ect the di culty of nding an appropriate job match for its members' more specialized tertiary-level training or, as some have speculated (World Bank 1999), may re ect queuing for limited but prestigious employment in the public sector.

Survival Models of Time to First Job

ese gures do not control for other factors that may also shape school to work transitions, such as gender, household characteristics, location, and postschool technical and vocational training. e joint e ects of schooling attainment and these other factors on time to employment can be studied

within a regression framework that accounts explicitly for the fact that one part of the sample is still actively searching for the first job.[12] Table 4.3 reports the results of estimating this regression model for the sample of youth as a whole and separately by training status to investigate how technical and vocational training affects school to work transitions.

Table 4.3 Time to First Job with and without Postschool Training, Sri Lanka
(dependent variable = time to employment)

	All youth		*Without training*		*With training*	
Category	*Coefficient*	*z-stat*	*Female*	*Male*	*Female*	*Male*
Lower secondary	–0.329	–15.6	–0.340	–15.8	–0.166	–1.7
Upper secondary	–0.471	–24.2	–0.492	–24.7	–0.294	–3.1
GCE O-levels	–0.434	–21.0	–0.448	–20.9	–0.284	–3.0
GCE A-levels	–0.454	–20.8	–0.445	–19.4	–0.350	–3.6
Degree	–0.340	–10.8	–0.276	–8.1	–0.459	–4.2
Formal training	–0.069	–6.0				
Informal training	–0.106	–5.2				
Male	–0.070	–8.1	–0.069	–7.3	–0.077	–4.0
Married	0.113	9.6	0.136	10.4	0.028	1.0
Urban	0.030	2.9	0.049	4.1	–0.040	–1.8
Provincial dummies	Yes		Yes		Yes	
Constant	1.964	54.0	1.979	50.2	1.771	14.7
Sample size	33,206		26,274		6,932	
Number finding jobs	24,605		19,678		4,927	

Source: Sri Lanka LFSs 1996–2002.
Note: The regressions are estimated by maximum likelihood using a parametric survival time model fit with a lognormal distribution. About one quarter of the samle were censored. The regression model included control variables for parental education and for LFS years.

12. Survival models are ideally suited for studying the determinants of time to a failure event, in this case, time taken to find a job after schooling completion, and for accommodating censored spells of job search. Such models may be fitted using alternative distributional assumptions about the underlying process, but the model used here is the lognormal distribution.

e results in table 4.3 make several points. First, compared with youth with primary schooling, more educated groups nd employment much faster, though as gure 4.2 suggests, those with a university degree are more like those with an upper secondary education than those with, say, GCE O-level or GCE A-level quali cations. Second, gender di erences are important, and males appear to nd employment faster than females. A contributing factor to this gender gap may be marital status, as marriage is o en associated with withdrawal from the labor market, and thus with delayed time to employment. Location also matters: job search is longer in urban areas and varies across provinces (not reported here). Finally, trends estimated by year dummy variables (not reported here) indicate that the overall length of job search has declined over time in parallel with falling overall unemployment rates.

As for the e ects of training, the second column of table 4.3 indicates that formal and informal training are both associated with shorter search time, with informal training appearing to have a larger impact (–0.10) than formal training (–0.07). e columns reporting results estimated separately by training status make the additional point that while having more education reduces time to employment for both those without training and those with training, the impact of education is more pronounced for the group with training.

e relative contributions of di erent levels of education to shortening time to employment in the group without training peaks with upper secondary education. In contrast, the contribution of schooling of the group with training rises linearly with level of education, peaking with university graduates. In other words, education and training interact positively to reduce the time spent in job search.

5
Postschool Training in the Labor Market

is chapter turns to an exploration of the pre-employment and on-the-job training that individuals may acquire a er completing their formal education. e analysis of school to work transitions and postschool training in Sri Lanka reported earlier suggests that training can improve young people's labor market outcomes by complementing their formal education. Here we identify household and labor force surveys in other South Asian countries that include information on postschool training to provide a broad overview of postschool training in South Asia, to ascertain its incidence among individuals with di erent levels of education, and to document some early nd-ings on the impact of training on wages.

Surveys of Postschool training

Information on postschool training in South Asia is limited. Pakistan and Sri Lanka's LFSs have elicited information

on postschool vocational training since the early 1990s. In the other South Asian countries, such information is rarely asked, and if asked, only periodically. Our review identi ed the following surveys with training information:

- *Bangladesh*—the BHIES 1995 asked, for just one year, whether respondents had received any vocational training, and if so, the type and length of training, the training institution, and the utility of the training to respondents' current work. Information on respondents' occupation and industry is available, but these data cannot be linked to individual employment and wage data to study the labor market outcomes of vocational training.
- *India*—the NSS (2004) asked individuals about vocational training for the rst time and restricted questions to those with at least a middle school education and aged 15–29. If respondents had received vocational training, the survey asked about the eld of training; the name of the training institution; the duration of the training; whether respondents had received a degree, a diploma, or a certi cate; and whether the training had been useful for respondents' current jobs or for taking up other jobs. e NSS also elicited information on occupation and sector of employment.
- *Pakistan*—the 1993–2004 LFSs and the 1997 PIHS asked individuals about whether they had completed vocational and technical training. In addition, the surveys elicited information on occupation and employer characteristics, such as industry and which of four employment size categories the respondents belonged to.

- *Sri Lanka*—the 1992–2002 LFSs asked all individuals whether they had received vocational training, and if so, whether the training had been formal or informal and how long it took. Information on the types of vocational training received was elicited, but rarely coded. In addition to the usual LFS questions, the survey asked about current occupation and sector of employment.

Incidence of Postschool Training

Table 5.1 shows the proportion of the population aged 15–64 reporting vocational training by educational attainment and gender in Bangladesh, India,[1] Pakistan, and Sri Lanka. e table is based on the most recent survey available for each country, typically in the early 2000s for India, Pakistan, and Sri Lanka and 1995 for Bangladesh. e table indicates that the incidence of postschool vocational training is quite low in South Asia. It is lowest in Pakistan, 2.4 percent, and highest, 12.0 percent, in Sri Lanka.

Overall levels aside, the incidence of training shows a strong tendency to rise with the level of educational attainment across all the countries. For example, of the Sri Lankan population with a lower secondary education, 9.8 percent had also received vocational training compared with 34.5 percent of graduates. e incidence of postschool vocational training tends to peak at or a er high school, a er which it declines before peaking again a er the rst degree. ese are the times when individuals end their formal education and

1. As noted earlier, the India NSS (2004) only asked people aged 15–29 who had completed middle school about training.

Table 5.1 Percentage of the Population Aged 15–64 Obtaining Any Vocational Training by Level of Education of Gender, Selected South Asian Countries and Year

	Bangladesh				*India*				*Pakistan*				*Sri Lanka*		
Education	*All*	*Male*	*Female*	*Education*	*All*	*Male*	*Female*	*Education*	*All*	*Male*	*Female*	*Education*	*All*	*Male*	*Female*
Illiterate	1.5	1.4	2.7	Illiterate	—	—	—	No formal	0.9	1.7	0.5	Illiterate	1.2	2.0	0.4
Primary	4.3	4.4	0.0	Primary	—	—	—	Below primary	2.1	2.6	1.3	Primary	4.7	6.0	2.0
Secondary, grades 6–8	9.2	8.1	49.5	Middle	0.9	0.7	1.1	Primary	2.5	3.0	1.7	Lower secondary	9.8	11.4	4.2
Secondary, grade 9	11.1	11.3	0.0	Secondary	4.0	4.4	3.4	Middle	2.5	3.1	1.4	Upper secondary	17.4	18.7	13.7
School certificate	13.3	12.5	67.5	Higher secondary	8.3	8.9	7.4	Secondary	4.3	5.1	3.0	GCE O-levels	25.0	24.8	25.3
Higher certificate	19.7	19.7	18.6	Diploma certificate	58.6	62.7	48.4	Higher secondary	6.4	7.4	4.7	GCE A-levels	37.4	36.0	39.2
BA general	11.1	11.3	0.0	Graduate	16.8	17.1	16.3	Degree	8.6	10.7	4.8	Graduate	34.5	35.1	33.8
BA with honors	6.7	6.7	0.0	Post-graduate	18.2	18.1	18.3	Post-graduate	7.6	8.5	5.6	Post-graduate	45.1	42.1	48.4
MA and above	27.5	27.5	0.0												
Total	4.7	4.6	5.8	Total	4.0	4.4	3.6	Total	2.4	3.6	1.2	Total	12.0	15.1	9.1

Source: Bangladesh, BHIES 1995; India, NSS 60 2004; Pakistan, LFS 2004; Sri Lanka, LFS 2002.
Note: — = not available.

obtain postschool vocational or technical training, either to become skilled workers a er high school or to become professionals a er completing their tertiary education.

Table 5.1 also shows that women are less likely to receive postschool vocational training than their male counterparts with the same level of education. In India, 4.4 percent of males receive vocational training versus 3.6 percent of females. e corresponding gender di erences are 3.6 and 1.2 percent in Pakistan and 15.1 and 9.1 percent in Sri Lanka. Bangladesh appears to be an anomaly in South Asia, with females being more likely to obtain vocational training (5.8 percent) than males (4.6 percent). e reason for this is unclear and requires further study.

As concerns which occupational groups are most likely to receive vocational training, even though de nitions of occupations vary from one country to another, the gures reported in table 5.2 suggest that professionals, technicians, and clerical personnel in South Asia are more likely to receive vocational training than those in other occupational groups. is makes sense, as these are occupations that tend to include a large number of the highly educated. In Pakistan and Sri Lanka, relatively high shares of plant and machine operators and assemblers and cra workers also receive training. e occupations with the lowest share of individuals receiving vocational training are employees in sales, services, and agriculture, where educational requirements tend to be low.

e incidence of postschool training also varies across sectors. Table 5.3 tabulates the percentage of the workforce acquiring postschool training by sector of employment. In Bangladesh, India, and Pakistan, the utilities sector tends to have the highest share of employees with postschool training, followed broadly by real estate and nance, and pub-

Table 5.2 Percentage of the Workforce Obtaining Vocational Training by Occupational Category, Selected South Asian Countries and Years

Occupation	*Pakistan, 2004*[b]	*Sri Lanka, 2002*[b]	*Occupation*	*India, 2004*[a]
Professionals	46.3	9.3	Professional, technical, and related workers	24.6
Technicians and associate professionals	27.8	11.5	Production, transport operators, and laborers	5.9
Plant, machine operators and assemblers	30.0	10.8	Clerical and related workers	17.2
Craft and related workers	29.1	11.1	Administrative and managerial workers	9.7
Clerical and related workers	20.7	8.7	Service workers	1.4
Legislators and senior officials	19.2	4.9	Sales workers	4.5
Service and sales workers	9.2	3.3	Farmers, fishermen, hunters, loggers, and related workers	5.3
Skilled agricultural and fishery workers	6.1	1.0		
Elementary occupations (manual labor, simple and routine tasks, etc.)	3.7	1.2		

Source: India, NSS 2004; Pakistan, LFS 2003–4; Sri Lanka, LFS 2002.
Note: Bangladesh is excluded because its occupational classification system differs so dramatically from that used in the other countries.
a. Respondents aged 15–29.
b. Respondents aged 15–64.

lic administration and social services. In the manufacturing sector, a relatively smaller percentage of workers receive postschool training. e sectors with the smallest share of workers obtaining vocational training are trade, construction, hotels and restaurants, and agriculture. e di erence in the extent of training in the mining sector are striking and unexplained, with 37.7 percent of employees in Pakistan receiving training, compared with 1.7 percent in India and none in Bangladesh.

Finally, table 5.4 reports the principal sources of postschool vocational training for Bangladesh and India (for these two countries, information is also available on elds of

Table 5.3 Percentage of the Workforce Obtaining Vocational Training by Sector of Employment, Selected South Asian Countries and Years

Bangladesh, 1995[a]		*India, 2004*[b]		*Pakistan, 2003–4*[a]	
Sector	*Percentage*	*Sector*	*Percentage*	*Sector*	*Percentage*
Electricity and gas	39.5	Electricity, gas, and water supply	23.6	Utilities	17.7
Finance, real estate, and financial services	17.7	Real estate, renting, business activities	19.4	Finance and business	12.8
Social and personal services	12.9	Financial intermediation	14.6	Social services and public administration	8.8
Transport	8.3	Community, social, and personal service activities	10.6	Transport	6.9
Manufacturing	13.9	Public administration and defense, compulsory social security	9.0	Manufacturing	10.0
Housing and construction	7.4	Transport	7.2	Trade	2.9
Business, hotels, and restaurants	2.5	Manufacturing	7.1	Construction	4.1
Mining and quarrying	0.0	Trade	5.5	Mining	37.7
Agriculture	1.4	Construction	4.4	Agriculture	0.9
		Hotels and restaurants	3.8		
		Mining and quarrying	1.7		
		Hunting, forestry	1.4		

Source: Bangladesh, BHIES 1995; India, NSS 2004; Pakistan, LFS 2004–5..
Note: Sri Lanka was excluded because the industrial classification system changed.
a. Respondents aged 15–64.
b. Respondents aged 15–29.

training received, see appendixes 6 and 7). In India, industrial training institutes and industrial training centers are by far the most important sources of vocational training (27.3 percent of trainees), especially for males (38.9 percent). In contrast, females were more likely to have received vocational training from tailoring, embroidery, and stitch cra institutes (22.5 percent). What institutes fall into the other institutes category is unclear (see Appendix 8 for a complete list of institutions). In Bangladesh, 30.8 percent of workers who

Table 5.4 Percentage of the Workforce Obtaining Training by Source of Vocational Training and Gender, Bangladesh 1995 and India 2004

Bangladesh				*India*[a]			
Training institutions	*All*	*Male*	*Female*	*Training institutions*	*All*	*Male*	*Female*
Government institution	30.8	29.4	53.5	Industrial training institutes or centers	27.3	38.9	7.2
Private institution	27.0	28.3	4.3				
Family member	13.8	12.5	34.25	Tailoring, embroidery, or stitch crafts	8.8	0.9	22.5
Private employer	7.4	7.6	3.9				
Nongovernmental organization	1.5	1.4	4.1	Polytechnics	5.8	7.6	2.8
				Secondary school offering vocational courses	5.2	5.6	4.6
Public sector employer	0.8	0.8	0.0				
Other	18.8	19.9	0.0	Other institutes	52.8	47.0	62.9

Source: Bangladesh, BHIES 1995; India, NSS 2004.
a. Appendix 8 provides more detailed breakdowns of training by training institution.

receive training do so in government training institutions, a figure that is especially high for females (53.5 percent) compared with males (29.4 percent). Private training institutions are an important source of training for males, and family members are an important informal source of training for females.

Trends in Postschool Training

Pakistan's and Sri Lanka's LFSs have time series data that can be used to examine trends in postschool training over a 10-year period. In Pakistan, the incidence of postschool training declined from 4.1 percent of the workforce in 1993 to 2.4 percent in 2003, but started to rise again in 2004. In Sri Lanka, the overall fraction of the workforce that received postschool training remained unchanged at about 12 percent

during 1992–2002, although the gures conceal considerable compositional changes by education, age, and type of training. We now exploit the availability of long annual time series data to look at training trends in the two countries.

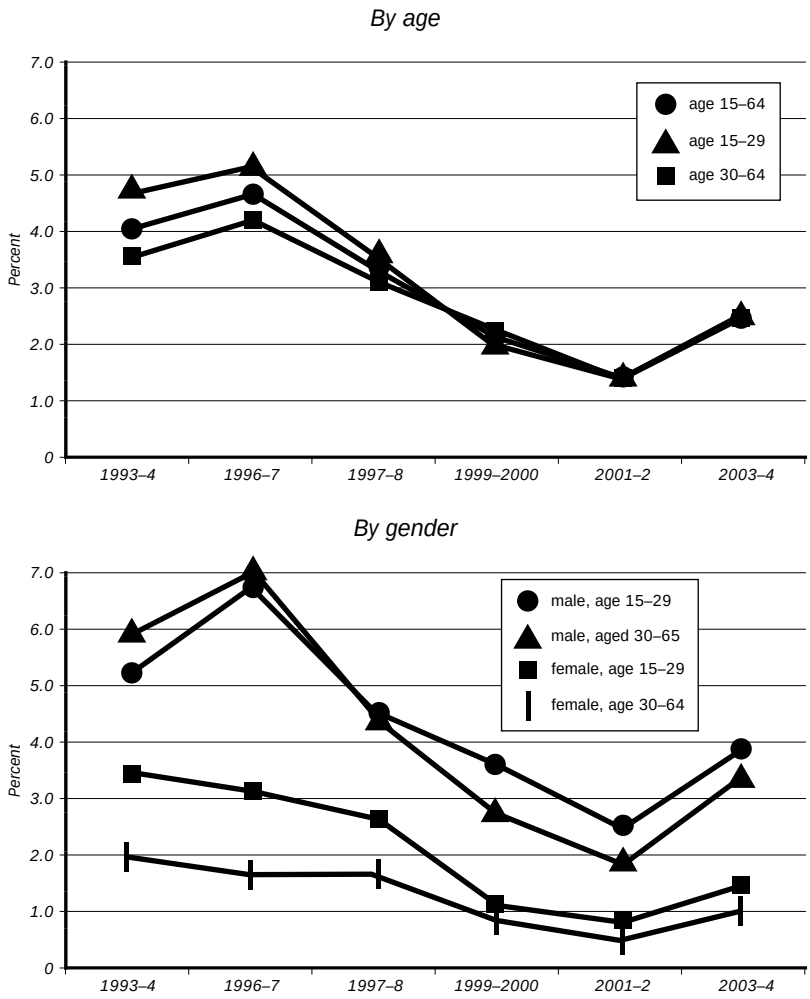
The Case of Pakistan

Pakistan's LFSs cover the period from 1993 through 2004. While they contain rich information on individual and household attributes and on labor force variables, information on postschool training is relatively limited. e training variable is limited to only two questions: (a) whether the respondent ever completed any technical or vocational training, and (b) if so, the type of training. e LFSs do not ask whether the training was formal (that is, if a diploma or certi cate was received) or informal, about the duration or year of the training, or which institution provided it.

Figure 5.1 reports trends in training incidence of the working population during 1993–94- through 2003–4. For the workforce as a whole, the share that received vocational training rose slightly from 4.1 percent in 1993–94 to 4.6 percent in 1996–97, then fell to l.4 percent by 2001–2 before rising to 2.5 percent in 2003–4, a level roughly half that prevailing in 1996–97.

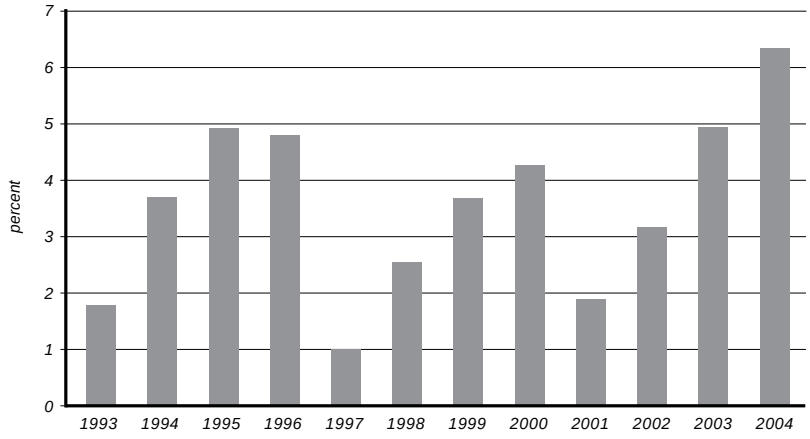
ese trends in the proportion of the workforce receiving training appear to mirror the overall growth of the economy, with perhaps a two- or three-year lag (gure 5.2). As noted earlier, training incidence, especially of youth, rose between 1993–94 and 1996–97 following an increase in the economy's annual growth rate from 1.8 in 1993 to 5.0 percent in 1995. When economic growth slowed down therea er, the

Figure 5.1 Proportion of the Population That Received Vocational or Technical Training by Age and Gender, Pakistan, 1993–4 to 2003–4



Source: LFSs.
Note: The data are weighted based on weights provided by the LFSs.

Figure 5.2 Annual Gross Domestic Product Growth, Pakistan, 1993–2004



Source: World Bank 2006b.

incidence of training also declined, and did not pick up until the economy started growing again. is correlation between growth and training suggests that individuals and employers invest pro-cyclically in training, seeing greater employment opportunities and rising demand for a skilled workforce when the economy is growing.

Figure 5.1 shows that Pakistani women are not only less likely than men to receive training, but that the gender gap in training incidence has increased over time: for youth and adults combined, the gender gap in training widened from 5.5 percent of men and 2.6 percent of women in 1993–94 to 3.6 of men and 1.3 percent of women by 2003–4. Also noteworthy is that adult males are usually more likely than young men to report vocational education, while the opposite is

Table 5.5 Percentage of the Population Aged 15–64 That Received Vocational Training by Level of Education and Gender, Pakistan, Selected Years

	Males			*Females*		
Level of education	*1993–4*	*1999–2000*	*2003–4*	*1993–4*	*1999–2000*	*2003–4*
No formal	3.53	1.28	1.69	1.70	0.46	0.52
Below primary	6.32	2.17	2.62	4.43	0.49	1.26
Primary	8.07	3.24	3.02	6.91	1.23	1.67
Middle	5.99	2.37	3.07	4.12	1.17	1.41
Matriculation	7.54	5.02	5.10	6.26	3.20	2.96
Intermediate (grades 11 and 12)	7.97	8.96	7.43	5.99	2.06	4.67
Degree	6.94	9.20	10.70	5.39	5.06	4.85
Postgraduate degree	8.32	10.42	8.55	8.09	4.86	5.60

Source: LFSs.

true for women, in that young women are more likely than adult women to obtain vocational training, though the difference between the two groups has narrowed over time.

Table 5.5 reports cross-tabulations of training and education by gender at the start, midpoint, and end of the 1993–94 to 2003–4 period. e table brings out three main points. First, training incidence rises with educational attainment, from 0.5 to 1.7 percent for females and from 1.3 to 3.5 percent for males for those with no formal education and from 4.9 to 8.1 percent for females and from 8.3 to 10.4 percent for males for those who have a postgraduate degree.[2] Second, females are less likely to get training at any given level of education, and this gender gap by education stays roughly constant

2. One exception is evident in 1993–94, when the incidence of vocational training is extremely high for those who completed primary school. ose numbers are higher than for any other superior level of education except for those with a postgraduate degree.

over time. ird, while the incidence of training declines over time, those with the lowest levels of schooling (no formal education through middle school) experience the greatest declines, though for males with degrees and postgraduate education, the incidence of training increased slightly (from 8.3 to 8.6 percent) between 1993–94 and 2003–4. is is consistent with the nding for other South Asian countries that the demand for skills rises with globalization and growth of the knowledge economy.

Pakistan's LFSs, unlike similar surveys in other South Asian countries, also elicit details about 43 types of vocational training received (appendix 9 provides a complete list of trades and the number of people who received vocational education in those trades). Most people report receiving vocational training in ve trades in 2003–4: 57 percent of those trained reported training in computers, driving, embroidery and knitting, garment making, or electrician courses, while the remaining 43 percent reported training in 38 other trades each accounting for less than 3 percent of the total workforce trained. As might be expected, some trades were more popular among men than women, for example, 70 percent of those trained in embroidery and knitting and garment making were women, who only accounted for 9 percent of those who received driving or electrician training.

Table 5.6 shows the top 10 trades in which males and females received vocational training over 1993–94 to 2003–4 ranked by popularity in 2003–4. Several points stand out. First, the composition of trade training changed signi cantly during the decade. Among men, the proportion getting training in masonry and garment making declined signi cantly, while increased training was reported in embroidery and knitting and civil engineering technology. Among women,

Table 5.6 Composition of Vocational Training Received by the Population Aged 15–64, Pakistan, Selected Years

Type of training received	*1993–4*	*1996–7*	*1997–8*	*1999–2000*	*2001–2*	*2003–4*
Males						
Computers	12.3	18.4	17.1	25.7	16.0	17.4
Driving	17.4	18.7	24.3	14.0	14.9	16.7
Electrician	6.2	5.8	5.4	7.3	6.8	7.9
Automobile mechanics	5.5	3.5	4.6	7.0	7.1	5.1
Embroidery and knitting	1.0	2.1	1.8	2.1	1.7	4.8
Garment making	9.2	7.0	6.4	3.8	1.6	3.8
Carpentry	4.4	4.4	4.1	1.9	5.1	3.4
Masonry	12.0	6.2	3.7	2.6	1.3	2.9
Welding	1.9	2.4	2.1	2.9	2.2	2.4
Civil engineering technology	1.3	3.1	2.9	3.2	3.9	2.4
Females						
Embroidery and knitting	11.5	15.4	32.8	18.3	12.1	32.2
Garment making	59.1	51.5	37.1	29.5	19.3	25.3
Computers	4.4	13.2	11.9	27.8	13.2	12.6
Weaving	8.4	1.5	3.4	3.3	4.0	2.7
General nursing	0.2	1.3	0.2	1.3	4.4	2.4
Health visitor	0.4	1.7	1.0	4.0	1.7	2.1
Electrician	0.2	0.4	0.7	1.2	0.9	2.0
Driving	0.5	0.7	0.3	1.6	0.2	1.7
Drafting	0.2	2.5	1.6	0.5	3.5	1.6
Civil engineering technology	1.6	3.1	2.1	2.1	5.4	1.6

Source: LFSs.

the proportion with training in garment making declined, but the proportion trained in embroidery and knitting increased. e proportion of women taking computer, general nursing, health visitor, electrician, and driving courses also increased.

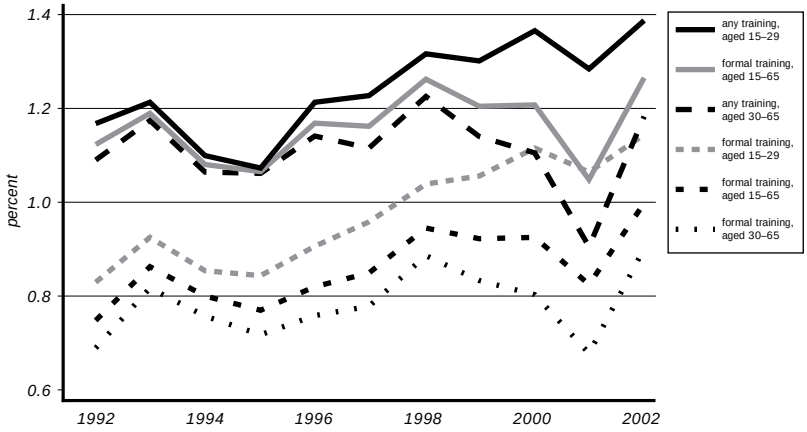
A second point that emerges is the large increase in the proportion of the workforce that reported training in computers over this decade. is was true for both men, from 12.3 to 17.4 percent, but especially for women, from 4.4 to 12.6 percent. e increase for both men and women was especially pronounced in 1999–2000, and may be explained by the increasing use of information technology in a growing number of jobs. e emergence of the knowledge economy and the mounting use of information technology in manufacturing and service sector jobs increase the demand for workers with computer literacy and, if this demand is not met by rising supply, lead to rising wages as well.

The Case of Sri Lanka

Figure 5.3 shows the weighted proportions of the working-age population that reported having received vocational or technical training separately for any training and for formal or certi cated training. Within each category of training, the proportions are shown separately for all ages, youth, and adults.

Several trends emerge from the gure. First, training incidence shows a secularly rising trend between 1992 and 1999, a stagnation and marked decline in 2001 in line with negative economic growth, and recovery by 2002. Second, the type of training received is increasingly more formal over time: the proportion of the workforce receiving any training rises from 11 to 13 percent during 1992–2002, but the proportion obtaining formal training rises from 7 to 10 percent. Finally, in each year a higher proportion of youth aged 15–29 years reported training than did adults aged 30–65, and over

Figure 5.3 Percentage of the Workforce with Vocational and Technical Training, Sri Lanka, 1992–2002



Source: LFSs.

time, these age-related di erences in training widened. In other words, recent entrants into the labor market are more likely to have received training than their counterparts from years past, which may re ect an increased supply of technical and vocational training, an increased derived demand for skills from employers, or some combination of both factors.

Table 5.5 reports cross-tabulations of training and education by gender at the start, midpoint, and end of the 1993–94 to 2003–4 period. e table highlights two time trends. First, females are less likely than males to get training at any given level of education, and this gender gap by education has stayed roughly constant over time. Second, while the incidence of training declines over time for most groups, those with the lowest levels of schooling (no formal education through mid-

dle school) experienced the greatest declines. Males with degrees and postgraduate education are the exceptions, and their training incidence increased slightly (from 8.3 to 8.6 percent) between 1993–94 and 2003–4, which is consistent with the finding for other South Asian countries that the demand for skills rises with globalization and growth of the knowledge economy.

Table 5.7 Training Trends by Education and Gender, Sri Lanka, Selected Years
(percent)

	Males			*Females*		
Education completed	*1992*	*1997*	*2002*	*1992*	*1997*	*2002*
Percentage receiving any training						
No schooling	2.6	3.7	2.4	1.2	0.7	0.7
Primary	8.0	6.2	5.5	2.0	1.2	1.5
Lower secondary	11.5	10.5	9.9	3.5	2.7	2.3
Upper secondary	15.9	14.8	15.8	8.7	6.8	6.8
GCE O-levels	21.0	22.7	21.2	15.9	16.3	13.6
GCE A-levels	29.0	34.0	37.3	27.8	29.3	32.6
Graduate	29.9	33.0	39.6	21.9	24.1	31.4
Postgraduate	57.5	53.3	46.9	41.8	48.9	46.7
Percentage of training that is formal						
No schooling	4.2	29.4	27.5	12.2	23.9	13.4
Primary	23.7	26.9	24.6	43.7	45.4	33.6
Lower secondary	35.7	37.2	46.8	47.1	54.3	38.8
Upper secondary	52.0	62.8	68.7	72.6	67.7	72.2
GCE O-levels	78.6	83.7	84.6	84.4	81.1	87.4
GCE A-levels	88.6	91.5	92.2	94.2	93.4	94.7
Graduate	97.9	94.8	96.3	95.6	100.0	93.1
Postgraduate	97.9	100.0	100.0	100.0	98.1	100.0

Source: LFSs.
Note: Figures are for the population aged 15–65 years, weighted using Department of Census and Statistics sampling weights.

Table 5.8 Percentage of the Population Trained by Age Group and Education, Sri Lanka, Selected Years

	Aged 15–29			*Aged 30–65*		
Education completed	*1992*	*1997*	*2002*	*1992*	*1997*	*2002*
No schooling	1.2	3.5	1.4	1.7	1.1	1.2
Primary	5.1	4.2	4.0	5.1	3.7	3.4
Lower secondary	6.8	5.9	5.7	8.2	7.3	6.6
Upper secondary	11.7	10.5	10.7	13.6	11.1	11.8
GCE O-levels	16.8	17.1	15.1	20.0	21.3	19.1
GCE A-levels	24.9	30.0	35.8	33.1	32.9	33.4
Graduate	27.4	24.0	28.7	26.0	30.4	37.5
Postgraduate	41.6	40.4	53.9	54.6	52.4	46.2

Source: LFSs.
Note: Weighted using Department of Census and Statistics sampling weights.

To examine training pro les as individuals complete their formal schooling and acquire work experience in the labor market, table 5.8 reports training data by educational attainment separately for two broad age groups, youth a and adults. Two points stand out. First, among youth aged 15–29, the incidence of training for those with GCE A-levels and above increases dramatically, but not for those with GCE O-levels and below. Among adults aged 30–65, the only group to show a rising trend in training is university graduates. Figure 5.3 showed similar age-related di erences in training, but across all education groups. Second, at each level of education, a roughly equal or higher proportion of adults reports having training than similarly educated youth, which is consistent with the cumulative probability of training as individuals age, though at a slower pace as they become older.

Postschool Training and Wages

e main labor market outcomes of investments in postschool training that are of policy interest are unemployment, job search, and earnings. is subsection asks whether postschool training a ects wages, and if so, how the returns to vocational training compare with those from investments in formal education. We use the term returns loosely, as postschool training is measured as an indicator variable — with a value of 1 if the individual reported getting vocational training and 0 otherwise — and not in terms of time (fraction of years) spent in training as was the case for schooling. As such, the estimated coe cient should be interpreted as the return to an average spell of postschool training.[3]

In training as in education, selectivity bias can arise because unmeasured productivity attributes of the individual are correlated with both the training choice and the outcome variables of interest. While econometric techniques to address selectivity bias in estimating the returns to training are available (Barnow, Cain, and Goldberger 1981), these are not pursued here for the same reasons noted earlier in relation to using simple models to estimate returns to schooling.[4]

We estimated broadly comparable wage models for India (2004), Pakistan (2004), and Sri Lanka (2002) using the most recent survey available for each country and including all in-

3. e India NSS (2004) was the only survey that reported training duration (appendix 8). Time spent in training ranged from a low of three months in carpet weaving centers to a high of three years in polytechnics, with one to two years being the average duration of postschool training.

4. Another reason for using simple models is that training returns corrected for selectivity bias are o en imprecisely estimated. For example, see the studies using a simple treatment e ects model to estimate the returns to training (such as Tan and Batra 1995) or more sophisticated studies using panel data (such as Dearden, Reed, and van Reenen 2006).

dividuals aged 15–64 who worked for wages and salaries last week. We calculated the logarithm of hourly wages based on the reported number of hours worked in the relevant interval and regressed it on indicator variables for postschool training, individual characteristics (years of education, gender, a quadratic measure of potential work experience), indicator variables for employment status and caste (India), and geographic location. Table 5.9 reports the results.

e table suggests that the average returns to postschool training are positive and statistically signi cant in all three countries, even a er controlling for educational attainment and other worker attributes.

- In India, the returns to formal vocational training are about 8 percent, almost equivalent to the 8.4 percent return to an additional year of education.
- In Pakistan, the returns to formal vocational training are comparable to those in India and equal 8.1 percent. is number is slightly lower than the returns to one additional year of education in Pakistan of about 9 percent. When vocational training is di erentiated by type (see model 2), the results indicate that the returns to computer training are substantially higher, 18 percent, than those from all other types of vocational training combined, 6 percent.[5]
- In Sri Lanka, formal vocational training is associated with relatively high returns of 17 percent, more than

5. e estimated high returns to computer training might plausibly explain both its popularity and its rising incidence among the Pakistani workforce aged 15–65 during 1994–2004. Using a time series of labor force surveys, Savchenko and Tan (2007) show that the proportion of male Pakistani workers who received computer training rose from 12 percent in 1994 to more than 17 percent by 2004. is trend was even more dramatic for women: the incidence of computer training among women tripled during this period from 4 to 12 percent.

Table 5.9 Postschool Training and Wages, Selected South Asian Countries and Years
(dependent variable = log[hourly wage])

		Pakistan		*Sri Lanka*	
Independent variables	*India*[a]	*Model 1*	*Model 2*	*Model 1*	*Model 2*
Years of education	0.084 (21.09)**	0.090 (63.02)**	0.089 (62.82)**	0.079 (54.80)**	0.078 (53.35)**
Formal vocational training	0.080 (2.55)*	0.081 (2.95)**		0.170 (13.68)**	0.211 (15.22)**
Computer vocational training			0.186 (2.81)**		
Other vocational training			0.061 (2.02)**		
Informal vocational or technical training					0.035 (1.46)
Male indicator	0.340 (14.5)**	0.285 (16.26)**	0.285 (16.23)**	0.328 (33.47)**	0.333 (33.89)**
Urban location	0.190 (11.0)**			0.294 (13.47)**	0.297 (13.63)**
Rural location				0.035 (1.76)	0.04 (1.99)*
SCST indicator	–0.003 (–0.15)				
Years of potential experience	0.065 (7.83)**	0.060 (32.68)**	0.060 (32.73)**	0.025 (17.67)**	0.025 (17.66)**
Experience squared	–0.001 (–2.53)*	–0.001 (–23.15)**	–0.001 (–23.21)	–0.000 (–14.66)**	–0.000 (–14.71)**
Regular worker dummy	0.626 (34.32)**	0.075 (5.75)**	0.075 (5.74)**		
Constant	0.27 (4.66)**	–0.460 (–16.89)**	–0.462 (–16.93)	2.078 (77.87)**	2.084 (78.13)**
Number of observations	8,299	13,515	13,515	21,328	21,328
R^2	0.29	0.34	0.34	0.25	0.25

Source: Authors' calculations.
Note: * = statistically significant at the 5 percent level, ** = statistically significant at the 1 percent level. Figures in parentheses are *t*-statistics.
a. Only those aged 15–29 who had completed middle school were asked about vocational education.

double those of an additional year of formal education. Differentiating between formal and informal vocational training results in statistically significant returns to formal vocational training of 21 percent, whereas the

returns to informal training of 3.5 percent are not signi cant.

ese estimates of the average returns to training should be treated cautiously, given the paucity of information about the reported training event and caveats about selectivity bias. Improved estimates of training returns will require household and labor force surveys to collect more detailed information about training, namely, when training took place (before employment or as part of in-service training), what the duration of training was, and who provided the training (the employer or public or private training institutes). e availability of panel data created by following individuals and their training and earnings experiences over time would also improve the estimation of training returns correcting for selectivity bias and unmeasured ability.

6
In-Service Training by Employers

Households and individuals take decisions about education, but once individuals get to the world of work, the more decisions about postschool skill development are taken jointly with employers. Household and labor force surveys do not typically elicit information on employers and the skills they require; in the best of cases they may ask about industry or employer size. To obtain insights into the factors that shape employers' demand for skills and their in-service training, we turn to firm-level surveys to study the in-service training practices of manufacturing firms in South Asia, their determinants, and their consequences for labor productivity and wages.[1]

In the four South Asian countries under review, comparable information on in-service training was elicited from employers as part of the World Bank's ICSs (box 6.1). The ICSs

1. This section draws heavily on Tan and Savchenko (2005, 2006).

Box 6.1 Investment Climate Surveys

The World Bank has carried out ICSs in more than 40 developing countries. In addition to a wealth of information about firm characteristics, production, wages, and the business environment, ICSs also collected data on enterprise innovation, research and development, use of new technologies, and workers' education and training. The training questions elicited information on formal training provided by employers and number of workers trained by occupation and source of training, and they distinguished between in-house training and training obtained from various external training providers, both public and private.

asked employers detailed questions about their workforce and training practices. ese data, together with information about di erent enterprise attributes and production, allow us to ask not only which rms provide in-service training, who they train, how much training they provide, and the source of the training, but also to examine the productivity and wage outcomes of training.

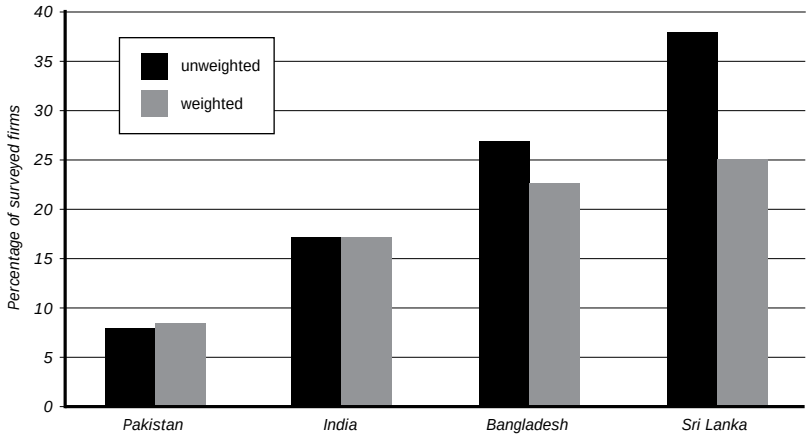
e World Bank has undertaken similar ICSs in many developing countries, therefore the in-service training practices of South Asian rms can be compared with those of similar rms in other countries. Such comparisons across countries can provide insights into whether or not the incidence of in-service training in South Asia is low, and if it is, can help policy makers design training policies to remedy identi ed weaknesses.

We ask several questions: How much in-service training goes on in manufacturing enterprises and do rms in South

Asia train more or less than their competitors, both regionally and globally? If levels of enterprise training are low, what factors constrain employers from providing training to their employees? Who are the main providers of in-service training: employers, public training institutions, private sector providers, or other rms? What are the factors that shape employers' decisions to provide employees with training? Is investing in in-service training worthwhile in terms of improving rms' productivity and is it bene cial to workers in the form of higher wages?

Figure 6.1 compares levels of in-service training in Bangladesh, India, Pakistan, and Sri Lanka. Estimates are presented with and without adjustments to re ect di erences in the rm size distribution of ICS samples across countries, in particular,

Figure 6.1 Incidence of In-Service Training in Selected South Asian Countries and Years (percentage of surveyed firms)

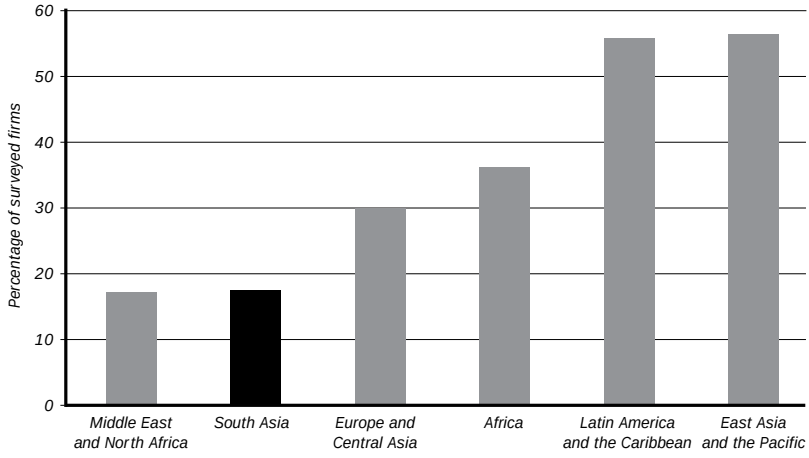


Source: ICSs.

that the Bangladesh ICS includes a higher proportion of large rms, which tend to train, while the India ICS has a more representative sample of rms of di erent sizes. e simple, unweighted tabulations suggest that at 37 percent, the incidence of in-service training is highest in Sri Lanka, followed by Bangladesh (26 percent), India (17 percent), and Pakistan (8 percent). e weighted incidence of in-service training using the size distribution of India as the norm yields the same country rankings, but reduces cross-country disparities.

As gure 6.2 shows, compared with other regions, the incidence of training in South Asia is among the lowest in the world, being almost half the average for Europe and Central

Figure 6.2 Incidence of Formal In-Service Training in Manufacturing, Regional Averages, Selected Years
(percentage of surveyed firms)



Source: ICSs.

Asia and less than half the average for East Asia and the Paci c, Latin America and the Caribbean.[2] is training de cit is especially pronounced when South Asian countries are compared with individual East Asian countries such as China and Malaysia (gure 6.3). If an educated and trained workforce is critical for technological change and for the knowledge economy, then low levels of education and this postschool training de cit put South Asia at a distinct competitive disadvantage relative to its neighbors in East Asia.

e ICSs in all four South Asian countries included questions about which groups of workers received in-service training and how many were trained. Table 6.1 tabulates the percentage of workers receiving in-service training in each of four groups — managers, professionals, production workers, and nonproduction workers — separately by country and weighted by rm size to make the estimates comparable across the four countries.

Table 6.1 Share of Workers Trained by Skill Group, Selected South Asian Countries and Years

Level of education	*Managers*	*Professionals*	*Production workers*	*Nonproduction workers*
Bangladesh (2002)	1.9	3.0	1.2	0.4
India (2002)	6.0	7.3	7.0	2.9
Pakistan (2002)	2.0	3.5	3.3	0.4
Sri Lanka (2004)	10.4	11.3	22.4	6.0

Source: ICSs.
Note: Estimates are weighted using India's firm size distribution.

2. e cross-country and regional averages shown in gures 6.2 and 6.3 are based upon ICS data from 35 countries and a total of 17,941 rm respondents. An earlier footnote lists countries and sample sizes in each region.

e cross-country rankings of the share of workers trained, or training intensity, vary with per capita income and years of schooling of the workforce in the country. Sri Lanka has the highest training intensity, followed by India, Pakistan, and Bangladesh.

How do these estimates for South Asia compare with the level of in-service training for di erent groups of workers in the fast-growing economies of East Asia. A World Bank (1997) study of Malaysian manufacturing estimated that in 1994, the overall proportion of workers receiving formal in-service training was 22 percent, or 24 percent of managers, 32 percent of technicians, and between 13 and 16 percent of production workers. South Asian employers are apparently not only less likely to provide in-service training to their workers than employers in other regions, but those that do provide training extend training opportunities to a smaller fraction of their workforce than their counterparts in other regions, especially those in East Asia. is training de cit in terms of the proportion of workers trained is especially signi cant in Bangladesh and Pakistan.

In relation to the main sources of in-service training in South Asia, table 6.2 presents information for Bangladesh, India, Pakistan, and Sri Lanka. Conditional on a positive response to the in-service training question, employers were asked about whether training was provided on company premises (henceforth referred to as in-house training) or at o -site locations by external training providers such as universities or VET schools and training institutes (henceforth referred to as external training). For convenience, these external sources of training may be clustered into two groups: public training providers (universities, VET schools, and government institutes)

Table 6.2 Percentage of Firms Providing Training by Source, Selected South Asian Countries and Year

	Formal training provided			*Source for those providing external training*				
Country	*Any*	*In-house training*	*External training*	*University*	*Private partner*	*Government institute*	*Private institute*	*VET school*
Bangladesh (2002)	24.1	17.7	13.1	6.9	25.7	17.6	19.8	31.1
India (2002)	16.9	13.8	8.0	10.2	10.2	34.7	53.1	46.3
Pakistan (2002)	8.15	6.63	5.04	29.20	18.66	33.91	49.93	34.73
Sri Lanka (2004)	25.0	15.7	18.0	7.6	15.9	59.1	41.3	n.a.

Source: Bangladesh, BHIES 1995; India, NSS 60 2004; Pakistan, LFS 2004; Sri Lanka, LFS 2002.
Note: n.a. = not applicable.

and private sector training providers (private training institutes and partner rms).

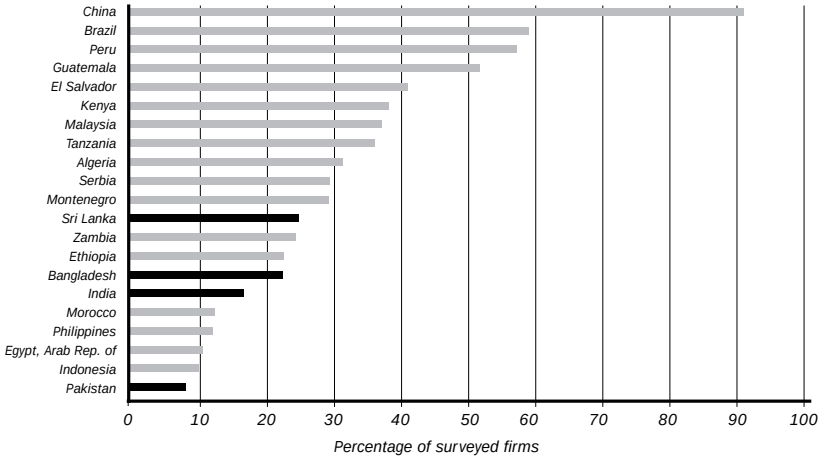
Several points stand out from table 6.2. First, while enterprises in all four South Asian countries rely on both in-house and external training providers, with the exception of Sri Lanka, in-house programs are a more common source of training than external training courses. Second, while rms in all four countries use a mix of public and private sources for their external training, the most common providers are government training institutes in Sri Lanka, private training institutes in India and Pakistan, and private sector partner rms in Bangladesh.

Constraints to Investing in Training

What accounts for the relatively low levels of in-service training in South Asia? e literature has suggested two broad sets of hypotheses. First, the business environment may not be conducive to investments of any kind, whether physical or human. Second, speci c market or policy-induced failures may inhibit employers from making socially optimal levels of investment in worker training. Figure 6.4 shows how rms in South Asia rank the severity of di erent investment climate constraints.

All four countries rank tax rates, economic and regulatory uncertainty, and access to nance as the top three constraints to doing business. e skills and education of available workers are not ranked as being as constraining as other factors such as access to land, transportation, and telecommunications, suggesting that South Asian employers may not yet recognize the importance of workers' skills for improving productivity. By

Figure 6.3 Incidence of Formal In-Service Training in Manufacturing by Selected Countries, Selected Years



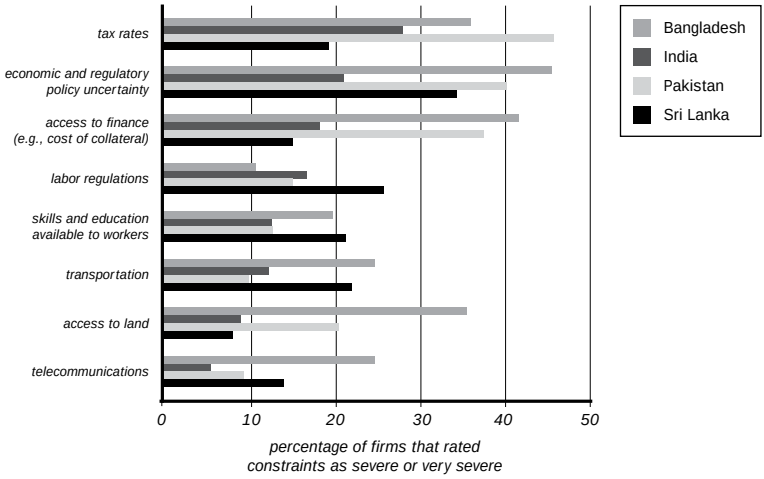
Source: ICSs.

contrast, Malaysian employers ranked skills availability as the top constraint (World Bank 2005a).

e South Asian ICSs did not elicit information on why employers might invest little in training, but this information is available in the world business environment surveys (WBESs) for a broad range of developing countries (Batra and Stone 2004).[3] e WBESs asked respondents to rank a series of statements about what factors in uenced their decisions to

3. e WBES was an enterprise survey elded using a standard core questionnaire to more than 10,000 rms in 80 countries between late 1998 and mid-2000 to investigate issues concerning the investment climate and rm performance. e analyses reported in Batra and Stone (2004) are based on a special survey module administered in 28 of the WBES countries that focused on competition, trade, technology, and worker training.

Figure 6.4 Rankings of Investment Climate Constraints, Rated Severe or Very Severe, Selected South Asian Countries and Years



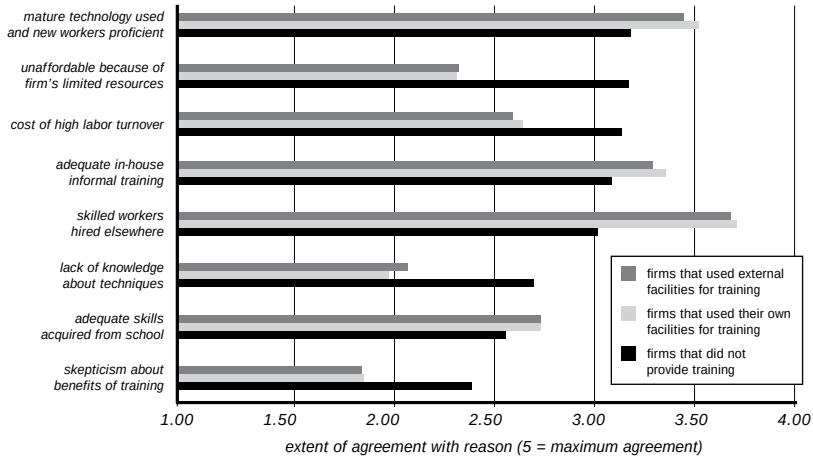
Source: ICSs.

invest in training workers. Figure 6.5 graphs these rankings separately for rms that train (using in-house or external facilities) and for those that do not.

Firms that do not train are substantially more likely than rms that do train to agree with the following key reasons for not training. First, a majority of rms that did not provide training identi ed the technologies they were using as mature, and hence indicated that their sta did not require training or skills upgrading to use new technology. Second, many noted that they could not a ord training because of limited resources, which might suggest a weakness in nancial markets.

ird, many alluded to the high labor turnover of trained sta , an externality that prevented rms from recouping the costs of

Figure 6.5 Ranking of Reasons for Not Providing In-Service Training, Selected Developing Countries and Years



Source: Batra and Stone 2004.

training employees. Finally, many employers opined that informal on-the-job training was adequate or that skilled workers were readily available, which suggests low skill requirements, possibly because of the use of mature technologies. Separate WBES tabulations by region indicate that the small sample of rms from South Asia that participated in the WBES cited the same key constraints.

Correlates of In-Service Training

To provide insights into the possible roles that integration into global markets and the knowledge economy play in pro-

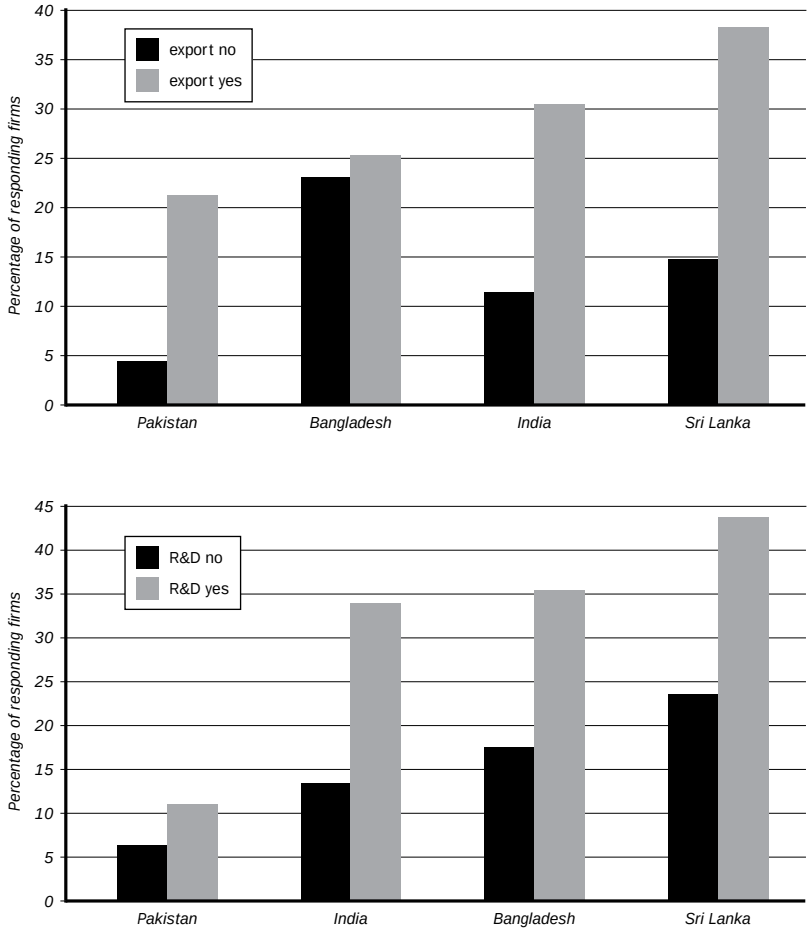
viding incentives for employers to provide in-service training, gure 6.6 compares the incidence of training in the four South Asian countries by crude proxy variables for enterprises' export orientation and level of technology. A rm's export orientation is measured by an indicator variable that takes a value of 1 if the rm exports and 0 otherwise, and its technology level is captured by an indicator variable for whether enterprises engage in research and development (R&D).[4]

Figure 6.6 suggests that rms in South Asia that export or are engaged in R&D activities are more likely to report in-service training than those that do not. e di erential incentive to train by export status is most apparent for India, Pakistan, and Sri Lanka. For Bangladesh, the incidence of training is not strongly correlated with export orientation. Export orientation can motivate rms to provide training so they can produce high-quality products that meet the exacting standards of foreign buyers and also increase their labor productivity to meet competitive pressures (Batra and Stone 2004; Tan and Batra 1995). In addition, the second panel of gure 6.6 strongly indicates that the incidence of in-service training is higher in enterprises that engage in R&D activities, a result that holds true equally across all four South Asian countries. is relationship between training and technology is consistent with studies that suggest that e ective use of new technology requires a more skilled and trained workforce (Bell and Pavitt 1992; Enos 1962).

e importance of these and other training correlates can be investigated within a regression framework using a probit

4. Studies have used several proxy measures for technological capabilities, including investments in R&D, the percentage of the workforce dedicated to R&D, the presence of technology licensing agreements, the recent introduction of new products, and the adoption of new technologies within the last three years.

Figure 6.6 Incidence of Formal Training by Exports and Research & Development, Selected South Asian Countries and Years



Source: ICSs.

model. e advantage of regression analysis over simple comparisons is that the independent e ects of each variable or set of variables can be analyzed holding the e ects of other hypothesized correlates constant. e probit model estimates the probability of in-service training by regressing the (0,1) indicator variable "any formal training" on a set of explanatory variables, including measures of rm size, exports, technology level, public sector or foreign ownership, workforce characteristics such as education, and unionization status. Table 6.3 reports the results of these probit regressions, and the estimated coe cients can be interpreted as the partial probabilities of training from a unit change in the explanatory variables.

Several points emerge from table 6.3. First, the incidence of training rises with establishment size, a common nding for all countries for which data are available, and re ects size-related di erences in access to nance, scale economies in training provision, education levels of workers, managerial capabilities, and use of new technologies. Second, some support is found for the hypotheses that the demand for in-service training is shaped by export orientation and technology. For India and Sri Lanka, both variables are positive and statistically signi cant; for Bangladesh, exports are positive and marginally signi cant; and for Pakistan, technology is positive and statistically signi cant.

Table 6.3 also indicates that formal education and post-school training are complementary forms of human capital. e probability of training rises with the average years of schooling attainment of the rm's workforce, a result consistent with the empirical evidence from many developing countries.[5] Educated workers are not only more productive when

5. See Tan and Batra (1995) for estimates of the relationship between education and training from ve developing countries in East Asia and Latin America and Tan

Table 6.3 Probits of Any Formal In-Service Training, Selected South Asian Countries

	Probability of any formal training			
Dependent variable	*Bangladesh*	*India*	*Pakistan*	*Sri Lanka*
Small firms (16–100 workers)	1.24 (2.80)***	0.58 (5.02)***	0.11 (0.37)	0.11 (0.29)
Medium firms (101–250 workers)	1.29 (2.88)***	0.88 (5.10)***	0.84 (2.06)*	0.23 (0.53)
Large firms (more than 250 workers)	1.56 (3.42)***	1.40 (7.25)***	1.55 (3.57)***	0.97 (2.09)*
Average years of education	0.03 (1.89)*	0.02 (0.99)	0.04 (2.07)*	0.03 (2.25)*
Education of general manager	–0.05 (–2.84)***	–0.51 (–3.13)***	0.35 (3.19)***	0.11 (2.84)***
Share of female workers	–0.16 (–0.65)	0.19 (0.68)	1.54 (2.51)**	0.18 (0.63)
Age of the firm	0.00 (–1.01)	0.00 (0.14)	0.01 (1.93)*	–0.01 (–1.50)
Unionization dummy	0.55 (4.09)***	0.22 (1.71)	0.36 (1.08)	–0.34 (–1.48)
Export dummy	0.24 (1.79)*	0.33 (3.04)***	0.39 (1.44)	0.53 (2.57)**
R&D dummy	0.15 (1.31)	0.27 (2.61)**	0.47 (2.23)*	0.60 (2.31)**
Foreign ownership dummy	–0.29 (–1.04)	0.29 (1.19)	0.29 (0.55)	0.03 (0.15)
Government ownership dummy	1.04 (2.11)*	0.53 (2.06)*		0.30 (1.14)
Intercept term	–1.61 (–3.08)***	–1.60 (–4.18)***	–10.61 (–5.24)***	–1.95 (–3.71)***
Number of observations	1,426	974	771	411
R^2	0.22	0.09	0.53	0.24

Source: Authors' calculations.
Note: * = statistically significant at the 10 percent level, ** = statistically significant at the 5 percent level, *** = statistically significant at the 1 percent level. The figures in parentheses are *t*-statistics.

performing given tasks, but they bene t more from training than less educated workers. A related hypothesis — that more educated managers understand the bene ts of training and are therefore more likely to implement in-service training — found mixed support. Firms with more educated general managers in Pakistan and Sri Lanka were more likely to train; in Bangladesh and India, the opposite and counterintuitive result was found. Finally, the share of females in the workforce was not signi cantly related to the likelihood of training, except in Pakistan, where the greater the share of female employees, the greater the likelihood that the rm would provide training.

Productivity and Wage Outcomes of Training

Providing in-service training only makes sense if employers' investments in training their employees and upgrading their skills yield positive returns in the form of higher productivity and pro ts.[6] In making these investment decisions, employers also need to decide where to obtain this training and who should receive it. Important considerations will be what type of training has the highest impact on the bottom line and which workers will bene t the most from the training. If training results in positive impacts on productivity, employers also need to determine whether, or to what extent, to share these productivity gains with workers in the form of higher wages. is calculus will depend on the transferability of skills gained from training to other potential employers

(2000) and World Bank (1997, 2005a) for related training analyses for Malaysia.

6. Cross-sectional studies have found a strong positive association between in-service training and rms' productivity and wage levels (Batra and Stone 2004; Tan and Batra 1995).

(Acemoglu and Pischke 1998; Becker 1975; Tan 1980). We address these questions using the ICS data for the four countries under review.

For the productivity analysis, we use a simple production function approach. The dependent variable — the logarithm of value added — is regressed on the logarithms of capital (book value of physical plant and equipment assets), employment, measures of in-service training, a set of control variables for worker attributes (mean years of education), location, and industry. In-service training is a choice variable, and employers make decisions about whether or not to provide training to their workforce based not only on an economic calculus of the profitability of such an investment, but also on its own unobserved (to the researcher) productivity attributes. To the extent that more productive firms are also more likely to train, these latter attributes can give rise to biased estimates of the returns to training. We recognize the potential for selectivity bias, but given the complexity of addressing it consistently across countries, decided to proceed with a single equation estimate of the production function that treats training as being exogenously determined.[7]

The analysis experimented with alternative measures of in-service training: simple (0,1) indicator variables for any formal training, in-house company versus external training by public or private sector providers, as well as the same training vari-

7. Addressing the selectivity bias in training is complex, especially with cross-sectional data such as the ICSs. This issue is more tractable with panel firm data, which provide longitudinal information on the same firms over time. Repeated data on the training and productivity of the same firms allow researchers to factor out firms' unobserved ability attributes and estimate the effects of changes in training practices on productivity growth free of selectivity bias. Panel studies of training that report positive effects of in-service training on productivity growth and wages include Dearden, Reed, and Van Reenen (2006) for the United Kingdom; Tan (2000) for Malaysia; and Tan and Lopez-Acevedo (2003) for Mexico.

ables measured in terms of the proportion of workers trained.

ese latter training measures were included to investigate the possible productivity rami cations of making training available to only a few workers. Tables 6.4 and 6.5 report the results of this productivity analysis for the four countries.

Before turning to the training results, some parameters estimated by these models are noteworthy. First, the estimated production function coe cients of capital and labor are positive and statistically signi cant and resemble those estimated for many other countries. Second, consistent with the belief that education raises rm-level productivity, the results for Bangladesh and India indicate that increased educational attainment of the rm's workforce by one year is associated with higher levels of rm-level productivity: 3.5 percent for Bangladesh and 5.8 percent for India (the results for both Pakistan

Table 6.4 Training and Productivity Results, Simple Indicator of Any Formal In-Service Training, Selected South Asian Countries
(dependent variable = log([value added])

Explanatory variable	*Bangladesh*	*India*	*Pakistan*	*Sri Lanka*
Log(capital)	0.247 (14.05)***	0.216 (14.36)***	0.290 (8.44)***	0.162 (5.31)***
Log(labor)	0.767 (24.09)***	0.849 (27.21)***	0.700 (12.59)***	0.786 (13.71)***
Mean years schooling	0.035 (3.93)***	0.058 (5.83)***	0.0002 (1.32)	0.017 (1.52)
Formal training indicator	0.066 (1.03)	0.156 (1.78)*	0.667 (3.23)***	0.364 (2.72)***
Intercept	10.186 (58.52)***	11.254 (49.96)**	14.026 (19.89)***	11.342 (32.27)***
Number of observations	969	1,790	892	374
R^2	0.108	0.662	0.507	0.743

Source: Authors' calculations.
Note: * = statistically significant at the 10 percent level, ** = statistically significant at the 5 percent level, *** = statistically significant at the 1 percent level. The figures in parentheses are *t*-statistics.

Table 6.5 Training and Productivity Results, Share of Workers Training and In-House Versus External Sources of Training, Selected South Asian Countries
(dependent variable = log[value added])

	Bangladesh		*India*		*Pakistan*		*Sri Lanka*	
Explanatory variable	*Training measured by share of the workforce receiving training*	*Training measured by source of training*	*Training measured by share of the workforce receiving training*	*Training measured by source of training*	*Training measured by share of the workforce receiving training*	*Training measured by source of training*	*Training measured by share of the workforce receiving training*	*Training measured by source of training*
Log(capital)	0.246 (14.07)	0.248 (14.07)	0.216 (14.41)	0.207 (13.11)	0.286 (8.27)	0.290 (8.40)	0.162 (5.34)	0.162 (5.30)
Log(labor)	0.768 (24.30)	0.767 (23.98)	0.859 (28.32)	0.829 (25.06)	0.741 (13.61)	0.716 (12.84)	0.808 (14.31)	0.768 (13.21)
Mean education	0.032 (3.65)	0.034 (3.82)	0.058 (5.76)	0.062 (5.96)	0.003 (1.71)	0.003 (1.65)	0.019 (1.72)	0.017 (1.58)
Training measures								
Share trained	0.575 (3.36)		0.285 (1.66)		0.351 (0.65)		0.715 (3.19)	
In-house training		0.089 (1.19)		0.069 (0.65)		0.397 (1.62)		0.151 (0.97)
External training		–0.009 (–0.11)		0.397 (2.96)		0.113 (0.37)		0.393 (2.53)
Constant	10.202 (58.94)	10.189 (58.21)	11.217 (50.03)	11.360 (48.41)	13.972 (19.71)	13.97 (19.74)	11.27 (32.30)	11.418 (32.25)
Controls								
Missing values	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
City	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	969	969	1,790	1,660	892	892	374	374
R^2	0.710	0.708	0.662	0.648	0.501	0.503	0.745	0.747

Source: Authors' calculations.
Note: The figures in parentheses are *t*-statistics.

and Sri Lanka were not statistically signi cant). ird, several characteristics of rms — those with a smaller share of female workers, those that undertake R&D, those with some foreign ownership, and unionized rms — tend to be associated with higher productivity levels across countries, with mixed results for export-oriented rms (not reported here).

In-service training is typically associated with higher productivity across South Asian countries. In table 6.4, where in-service training is measured by a simple (0,1) indicator variable, its productivity e ect is always positive, although the magnitude of the estimated impact and its signi cance level vary: 67 percent for Pakistan and 36 percent for Sri Lanka, both signi cant at the 1 percent level; 16 percent for India, signi cant at the 10 percent level; and 7 percent for Bangladesh, though not signi cantly di erent from zero. In table 6.5, when training is measured by the share of the workforce receiving training, its e ect on productivity is positive and statistically signi cant only for Bangladesh and Sri Lanka. In Pakistan, the e ect of the share of workers trained is positive, though not signi cant, which is curious given the strong positive result using a simple indicator measure. When training is distinguished by source), only external training has a positive productivity impact and then only for India and for Sri Lanka. In-house training also has a positive estimated effect, but never attains statistical signi cance.

For the wage analysis, we use a wage model that exploits all the occupation-speci c information elicited in the ICSs. For each of ve skill groups — managers, professionals, skilled production workers, unskilled production workers, and non-production employees — rms reported not only the number of workers trained (though not by source), but also mean monthly wages. is means that the wage model can be estimated for the pooled sample of occupations across all rms that had usable occupation-speci c information on numbers trained, wages, and number of workers in that occupation. In the wage model, the logarithm of hourly wages per worker is regressed on the training variables and a set of control variables for occupation, worker attributes (years of education,

age, tenure, and proportion of female workers), rm size, export and R&D indicators, unionization, and industry.

Tables 6.6 and 6.7 report the regression results for the wage model. Controlling for location and industry, rm characteristics have mixed e ects on wages, usually higher in larger rms (Bangladesh), rms that are unionized (Bangladesh and Sri Lanka), and rms that are export-oriented (Pakistan). However, in all the countries wage premiums are not associated with rms undertaking R&D. In terms of worker characteristics, employers pay higher wages for a more educated and experienced workforce (education e ects are particularly signi cant), but tend to pay lower wages when the workforce is predominantly female. Compared with the omitted skill group (skilled production workers[8]), managers and professionals are paid more, while unskilled and nonproduction workers receive lower pay. Relative wages across these broad occupations appear to be similar across the countries.

In-service training has mixed e ects on wages in South Asia. When training is measured as a simple indicator variable for the receipt of any formal in-service training, its wage e ects never attain statistical signi cance except in Sri Lanka (table 6.6). Similarly, when the source of training is distinguished, again using indicator variables, only in-house training is statistically signi cant, and then only for Sri Lanka, where any training is associated with positive wage gains. When training is measured by the proportion of workers trained in each occupational group, training is associated with positive and statistically signi cant wage gains in both Bangladesh and Sri Lanka, where previously no signi cant wage e ects were found using

8. In India, the ICS does not distinguish between skilled and unskilled production workers, so the omitted skill group consists of production workers.

Table 6.6 Training and Wages Results, Selected South Asian Countries
(dependent variable = log[hourly wage])

Explanatory variable	*Bangladesh*	*India*	*Pakistan*	*Sri Lanka*
Firm characteristics				
Small firms	0.19 (2.63)**	0.03 (0.57)	0.08 (1.33)	0.06 (0.48)
Medium firms	0.29 (3.80)***	0.20 (0.99)	0.16 (1.34)	–0.14 (–0.86)
Large firms	0.24 (2.92)***	–0.01 (–0.02)	–0.44 (–2.04)*	–0.01 (–0.05)
Exporter indicator	0.05 (1.09)	–0.02 (–0.25)	0.20 (2.96)***	0.13 (1.68)
R&D indicator	0.02 (0.52)	0.06 (0.55)	0.04 (0.83)	0.00 (0.00)
Unionization indicator	0.09 (1.97)*	0.11 (0.59)	0.00 (0.01)	0.24 (2.54)**
Worker attributes				
Managers	1.45 (40.48)***	1.32 (34.89)***	0.90 (30.44)***	1.17 (22.54)***
Professionals	0.98 (32.34)***	0.99 (25.08)***	0.65 (19.88)***	0.80 (12.55)***
Unskilled workers	–0.42 (–16.98)***		–0.32 (–9.62)***	–0.32 (–5.82)***
Nonproduction workers	–0.17 (–5.72)***	–0.19 (–5.62)***	–0.24 (–7.53)***	–0.06 (–0.84)
Mean years of education	0.02 (3.23)***	0.07 (3.69)***	0.02 (1.69)	0.01 (2.21)*
Any training indicator	0.06 (1.47)	–0.12 (–0.90)	0.00 (0.00)	0.20 (2.65)**
Share of female workers	–0.22 (–2.44)**	–0.59 (–2.03)*	0.00 (0.00)	–0.19 (–1.73)
Mean years job tenure	0.01 (1.26)	0.00 (0.08)	0.02 (2.63)**	
Constant term	2.00 (19.57)	2.50 (11.02)***	17.20 (142.37)***	3.68 (19.93)***
Missing values indicator	Yes	Yes	Yes	Yes
City indicator	Yes	Yes	Yes	Yes
Industry indicator	Yes	Yes	Yes	Yes
Number of observations	3,012	3,076	3,175	1,263
R^2	0.55	0.32	0.37	0.39

Source: Authors' calculations.
Note: * = statistically significant at the 10 percent level, ** = statistically significant at the 5 percent level, *** = statistically significant at the 1 percent level. The figures in parentheses are *t*-statistics.

Table 6.7 Training and Wages Results, Training by Source and Share of Workers Trained, Selected South Asian Countries
(dependent variable = log[wage])

	Bangladesh		*India*		*Pakistan*		*Sri Lanka*	
Explanatory variable	*Training measured by share of the workforce receiving training*	*Training measured by source of training*	*Training measured by share of the workforce receiving training*	*Training measured by source of training*	*Training measured by share of the workforce receiving training*	*Training measured by source of training*	*Training measured by share of the workforce receiving training*	*Training measured by source of training*
Indicator								
In-house training	0.052 (1.23)		–0.126 (–0.88)		0.00 (0.00)		0.138 (1.91)*	
External training	–0.006 (–0.11)		0.314 (1.22)		0.00 (0.00)		0.096 (1.28)	
Intensity								
Share trained		0.24 (3.30)***		–0.288 (–1.11)		0.00 (0.00)		0.379 (4.41)***
Number of observations	3,012	3,012	3,076	3,076	3,175	3,175	1,263	1,263
R^2	0.547	0.548	0.370	0.368	0.370	0.370	0.387	0.392

Source: Authors' calculations.
Note: The figures in parentheses are *t*-statistics.

the any training indicator. In India and Pakistan, no signi cant wage e ects were found for training however measured.

7
Concluding Remarks

Using available household, labor force, and rm-level surveys, this study of South Asia, which focused on Bangladesh, India, Pakistan, and Sri Lanka, sought to (a) document and compare trends in the education and postschool training of the workforce in each of the four countries; (b) identify what kinds of economic analyses can be done on the life cycle choices individuals, families, and employers make about education, pre-employment VET, and in-service training and on the outcomes of human capital investments on school to work transitions, employment, wages, and productivity; and (c) draw out the implications of globalization and the knowledge economy for education and training policy in South Asia. e ndings reported here suggest that the South Asia data pertaining to education and training from household, labor force, and rm surveys can yield empirically robust ndings and insights that are consistent with economic theory. e main ndings and policy implications follow.

Demand for and Supply of Formal Education

In relation to formal education, the analyses highlighted several important trends: on progress toward universal primary education and at higher levels of schooling, on gender equality in education, on the pro tability of investments in di erent levels of schooling, and on what continued high rates of return to schooling imply about the demand for education.

- Despite commitment to education and continuous progress, the stock of human capital in South Asia is still low compared with that elsewhere, in particular, East Asia. About half of the adult population in the largest South Asian countries is still illiterate. Except for the Maldives, none of the countries is currently upgrading the skills of its population at a speed that will allow them to catch up quickly with East Asia and the rest of the world over the medium term. Indeed, these gaps may be widening rather than closing relative to some East Asian countries.
- Progress has been unequal over time across countries within the region. Sri Lanka is clearly an outlier with its early achievement of universal primary education, and the Maldives is rapidly catching up with Sri Lanka. Among all other South Asian countries, Bhutan and Nepal, which started with the lowest educational levels, showed a faster pace of improvement, yet not rapid enough to catch up with Bangladesh, India, and Pakistan. In the near future, however, some of the slower countries will likely catch up with the front-runners with regard to universal access to primary

education. Only Pakistan still seems to be making slow progress in this direction.

- Progress over time has also been uneven in terms of gender equality. Forty years ago, with the exception of Sri Lanka, only a tiny fraction of girls had access to education. Since then, the gender gap has diminished substantially at the primary education level in most of the countries under review, and even disappeared in some of them. e challenge for the future is to repeat this achievement at levels beyond primary education, where the gap is still sizable.
- e evidence suggests that investments in formal education are pro table in all the countries and at all levels of education. Despite well-founded concerns about the low quality of education, having some schooling, even an incomplete primary education, provides individuals with a signi cant wage gain. Belonging to a scheduled caste or tribe does not a ect earnings negatively. For such individuals, the primary issue is access to educational opportunities.
- Despite increased investments in education over time, the returns to higher secondary and tertiary-level education have remained high, and even increased relative to lower levels of schooling, suggesting a rising relative demand for higher levels of education. Education policies have not yet responded to this increased demand.
- A large gender gap is apparent in wages for given levels of education and work experience, especially in Bangladesh and Pakistan. As levels of education increase, the gender gap is dramatically reduced by signi cantly higher returns to education for women than for men,

but the higher relative returns are still insu cient to completely eliminate the gender gap in wages.

Unemployment and the School to Work Transition

e analyses addressed policy concerns that high unemployment rates among more educated youth might re ect the low quality and limited workplace relevance of education and offered an alternative explanation based on time-intensive job search during the school to work transition.

- Even though the countries exhibit quite di erent time trends in open unemployment, the most recent data show a low open unemployment rate overall in South Asia. Open unemployment rates range from 1.5 to 5.0 percent depending on the country, with the exception of Sri Lanka, which has open unemployment rates of 8.9 percent.
- When disaggregated, unemployment rates in all the countries rise with education levels, but these gross gures obscure the fact that while more educated youth have higher initial rates of unemployment during the school to work transition, they face lower unemployment rates than other groups as they acquire more work experience.
- Unemployment rates also vary by age, and high unemployment rates are essentially a youth problem. Youth unemployment is essentially the outcome of a job search process that underlies school to work transitions by groups that di er in terms of their level of education, with the more educated tending to search

more intensively for a good job match that requires their speci c skills.

Postschool Training

e analyses of pre-employment and in-service training provide insights into the incidence of and trends in postschool training in the region and its e ects on the school to work transition, wages, and for one sector (manufacturing) on productivity.

- e available data on postschool VET suggest that investments in VET facilitate school to work transitions and yield wage returns roughly comparable to or larger than those from education.
- e incidence of postschool training is still quite low in South Asia, being lowest in Pakistan and highest in Sri Lanka, with the other countries falling in between. Trend patterns (which could only be analyzed for two countries) di er markedly, re ecting overall trends in macroeconomic growth in the two countries. While the incidence of VET in the workforce remained roughly unchanged in Sri Lanka over the past decade, it declined sharply in Pakistan until 2002, a er which it started to rise again.
- Overall levels aside, the incidence of postschool training rises with levels of educational attainment in all the countries, re ecting the complementarity between education and training observed in other parts of the world. It is particularly low in some sectors, such as wholesale and retail trades, construction, agriculture,

and hotel and restaurant businesses. It is higher for men than for women, mirroring the gender gap observed in formal educational attainment.

- e incidence of in-service training in manufacturing rms in South Asia is among the lowest in the world, and is less than half the average for East Asia, Europe and Central Asia, and Latin America and the Caribbean. To the extent that training is associated with productivity growth and is required for technological change, a low incidence of training has negative implications for the competitiveness of the region's countries. e de cit is particularly pronounced when South Asian countries are compared with their competitor countries, such as Malaysia, where the incidence is double that in South Asia, and China, where it is triple that in South Asia.
- South Asian employers are not only less likely to provide their workers with in-service training than employers in other regions, but those who do extend training opportunities to a smaller fraction of their workforce. is training de cit in terms of the proportion of the workforce trained is especially signi cant in Bangladesh and Pakistan.
- e low level of training suggests that employers may not yet recognize that a lack of worker skills is one of their primary constraints to doing business. Nevertheless, one can observe an incipient response to incentives shaped by integration into global markets and the knowledge economy, as rms that train tend to be larger, export oriented, and innovators. While we cannot draw causal inferences from cross-sectional data, the results also suggest that rms that train are more productive and tend to pay above average wages.

Implications

Despite data limitations, this study provides substantial evidence that the demand for highly educated and skilled workers in South Asia is increasing more rapidly than the supply. It also shows that concerns about unemployment among the more educated — which is essentially a temporary school to work transition phenomenon — should not distract policy makers from investing more in the education of their populations.

All the countries are increasingly aware that an educated and trained workforce is critical for technological change and for creating a knowledge economy, but many of them have yet to make education and training high priorities, and many education and training policies and programs have yet to respond fully to the needs of and signals from the labor market. e relatively low levels of education and postschool training put South Asian countries at a distinct competitive disadvantage relative to some of their East Asian neighbors, and the challenge for South Asia is to shi emphasis to higher levels of education without neglecting the un nished education agenda at the primary level.

is study did not focus on how education and training policies and programs in the region could be improved to address the skill needs of globalization and the knowledge economy. at is a subject for future research. Considerable research is already under way on improving the quality of and access to primary and secondary education. As concerns higher education, research is starting on issues of governance, nancing of tertiary education, and the role of universities in science and technology development. Research on postschool training is even more nascent, and there is a need for

careful studies on reforming public VET institutions to make them more responsive to the skills needs of employers and the market, on the role of private sector training providers, and on policies and programs to encourage greater provision of in-service training by employers.

South Asian governments have considerable scope for improving the kinds of questions labor force and household surveys ask to help policy makers better monitor changes over time in education and training investments and labor market outcomes. More precise information about the timing and duration of training, about training providers (whether public, private, or part of a government program), and about nancing sources could help governments formulate appropriate VET policies. For many kinds of labor market analysis, knowing the age at which individuals complete their formal schooling is important so that the extent of the school to work transition (or of time in the labor market) can be determined with greater accuracy. Knowing if individuals participated in training programs during spells of unemployment or did so as part of in-service training sponsored by employers is also useful. Developing countries in other regions, especially Latin America, have incorporated such improvements into their surveys and are now using them to monitor and evaluate their education and training policies and labor market interventions.

Appendix 1
Hourly Wage Regressions, India

	NSS 1983–4			NSS 1987–8			NSS 1993–4		
Dependent variable	*All*	*Males*	*Females*	*All*	*Males*	*Females*	*All*	*Males*	*Females*
Literate, below primary	0.107 (11.21)	0.103 (10.17)	0.058 (2.17)	0.177 (13.57)	0.143 (10.02)	0.086 (2.78)	0.107 (11.21)	0.103 (10.17)	0.058 (2.17)
Primary	0.212 (22.56)	0.22 (22.26)	0.07 (2.59)	0.23 (18.77)	0.192 (14.49)	0.161 (5.11)	0.212 (22.56)	0.22 (22.26)	0.07 (2.59)
Middle	0.384 (35.78)	0.377 (34.15)	0.408 (10.68)	0.42 (31.59)	0.377 (26.97)	0.428 (10.65)	0.384 (35.78)	0.377 (34.15)	0.408 (10.68)
Secondary and higher secondary	0.712 (64.14)	0.671 (57.78)	0.998 (30.29)	0.762 (61.08)	0.673 (49/95)	1.072 (34.68)	0.712 (64.14)	0.671 (57.78)	0.998 (30.29)
Tertiary	1.123 (76.76)	1.094 (70.68)	1.314 (33.16)	1.288 (89.53)	1.197 (76.87)	1.56 (45.72)	1.123 (76.76)	1.094 (70.68)	1.314 (33.16)
Technical education	0.161 (10/90)	0.14 (8.90)	0.126 (3.23)	0.195 (14.05)	0.182 (12.22)	0.136 (4.14)	0.161 (10.90)	0.14 (8.90)	0.126 (3.23)
Male dummy	0.473 (69.78)			0.486 (55.86)			0.473 (69.78)		
Urban dummy	0.266 (40.28)	0.294 (40.99)	0.154 (9.85)	0.186 (20.66)	0.151 (13.71)	0.173 (10.38)	0.266 (40.28)	0.294 (40.99)	0.154 (9.85)
SCST dummy	–0.012 (–1.98)	–0.042 (–5.94)	0.063 (4.93)	0.07 (8.54)	0.013 (1.28)	0.175 (11.74)	–0.012 (–1.98)	–0.042 (–5.94)	0.063 (4.93)
Experience	0.04 (45.50)	0.046 (46.78)	0.021 (1013)	0.051 (48.76)	0.058 (48.26)	0.035 (15.80)	0.04 (45.50)	0.046 (46.78)	0.021 (10.13)
Experience squared	–0.001 (–38.92)	–0.001 (–38.60)	0.000 (–10.17)	–0.001 (–37.69)	–0.001 (–35.42)	–0.001 (–13.86)	–0.001 (–38.92)	–0.001 (–38.60)	0.000 (–10.17)
Regular worker dummy	0.62 (85.46)	0.602 (77.53)	0.637 (34.36)	0.612 (66.93)	0.591 (58.99)	0.568 (27.54)	0.620 (85.46)	0.602 (77.53)	0.637 (34.36)
Intercept	–0.392 (–30.75)	0.018 (1.34)	–0.128 (–4.50)	–0.388 (–24.95)	0.119 (6.25)	–0.216 (–6.61)	–0.392 (–30.75)	0.018 (1.34)	–0.128 (–4.50)
Number of observations	81,521	61,586	19,665	47,568	33,812	13,756	81,521	61,856	19,665
R^2	0.447	0.406	0.322	0.526	0.409	0.455	0.447	0.406	0.322

Source: Authors' calculations.
Note: NSS = national sample survey. Figures in parentheses are *t*-statistics.

	NSS 1999–2000			NSS 2004		
Dependent variable	*All*	*Males*	*Females*	*All*	*Males*	*Females*
Literate, below primary	0.181 (19.84)	0.156 (15.66)	0.187 (8.52)	0.195 (12.53)	0.157 (9.13)	0.248 (6.83)
Primary	0.280 (30.08)	0.262 (26.23)	0.240 (9.72)	0.249 (18.38)	0.233 (15.53)	0.198 (6.12)
Middle	0.438 (47.78)	0.420 (43.23)	0.398 (14.91)	0.461 (34.31)	0.439 (30.03)	0.414 (11.69)
Secondary and higher secondary	0.800 (86.03)	0.729 (72.98)	1.126 (46.18)	0.717 (52.25)	0.656 (44.01)	0.972 (27.27)
Tertiary	1.355 (120.79)	1.277 (104.55)	1.619 (58.81)	1.329 (79.64)	1.229 (66.71)	1.640 (41.15)
Technical education	0.268 (17.51)	0.272 (16.96)	0.292 (6.61)	0.180 (10.87)	0.179 (9.90)	0.162 (4.07)
Male dummy	0.423 (68.19)			0.446 (47.68)		
Urban dummy	0.219 (37.78)	0.215 (34.39)	0.217 (15.31)	0.221 (26.06)	0.201 (21.99)	0.292 (13.83)
SCST dummy	0.037 (6.77)	0.019 (3.03)	0.088 (7.40)	0.005 (0.67)	–0.014 (–1.54)	0.079 (4.32)
Experience	0.052 (70.26)	0.055 (65.86)	0.046 (27.17)	0.056 (53.99)	0.060 (51.59)	0.047 (19.96)
Experience squared	–0.001 (–53.78)	–0.001 (–48.88)	–0.001 (–23.08)	–0.001 (–39.40)	–0.001 (–37.34)	–0.001 (–15.55)
Regular worker dummy	0.680 (99.06)	0.679 (92.80)	.0620 (34.52)	0.798 (81.86)	0.815 (78.22)	0.666 (26.17)
Intercept	–0.075 (–6.57)	0.352 (29.15)	–0.035 (–1.35)	–0.219 (–13.29)	0.230 (13.21)	–0.180 (–4.86)
Number of observations	80,108	61,614	18,494	39,190	30,682	8,580
R^2	0.552	0.520	0.519	0.546	0.519	0.529

Source: Authors' calculations.
Note: NSS = national sample survey. Figures in parentheses are *t*-statistics.

Appendix 2
Hourly Wage Regressions, Pakistan

	PIHS 1993–4			PIHS 1996–7			PIHS 2000–1		
Dependent variable	*All*	*Males*	*Females*	*All*	*Males*	*Females*	*All*	*Males*	*Females*
Literate, below primary	0.173	0.152	0.868	0.037	0.010	0.428	0.108	0.071	0.213
	(5.55)	(4.97)	(3.12)	(1.01)	(0.29)	(1.55)	(4.69)	(3.20)	(1.90)
Primary	0.220	0.213	0.212	0.223	0.198	0.636	0.225	0.193	0.247
	(14.79)	(14.48)	(1.85)	(14.46)	(13.32)	(4.78)	(12.63)	(11.31)	(2.75)
Middle	0.390	0.379	0.602	0.415	0.393	0.847	0.421	0.376	0.752
	(21.00)	(20.66)	(4.27)	(22.79)	(22.44)	(5.39)	(18.72)	(17.54)	(5.98)
Secondary and higher secondary	0.643	0.619	0.913	0.675	0.627	1.270	0.788	0.691	1.506
	(45.13)	(43.17)	(12.41)	(47.23)	(44.87)	(15.02)	(44.38)	(39.90)	(20.53)
Tertiary	1.183	1.151	1.455	1.174	1.106	1.775	1.397	1.216	2.288
	(65.56)	(62.50)	(17.97)	(60.72)	(57.60)	(17.92)	(61.34)	(53.16)	(28.69)
Male dummy	0.377			0.650			1.089		
	(19.14)			(32.89)			(63.42)		
Urban dummy	0.214	0.220	0.182	0.215	0.196	0.414	0.189	0.169	0.250
	(21.32)	(21.83)	(3.37)	(21.17)	(19.68)	(6.95)	(15.73)	(14.24)	(5.46)
Experience	0.056	0.058	0.047	0.060	0.063	0.052	0.060	0.062	0.062
	(38.95)	(39.90)	(6.93)	(39.86)	(42.44)	(7.02)	(36.90)	(38.96)	(10.10)
Experience squared	–0.001	–0.001	–0.001	–0.001	–0.001	–0.001	–0.001	–0.001	–0.001
	(–31.12)	(–31.52)	(–6.22)	(–30.63)	(–32.84)	(–5.45)	(–27.69)	(–29.85)	(–7.41)
Intercept	1.008	1.368	1.061	1.152	1.794	0.864	0.581	1.696	0.289
	(37.95)	(66.29)	(10.60)	(42.76)	(85.78)	(8.02)	(21.32)	(71.00)	(3.28)
Number of observations	10,553	9,887	666	11,589	10,813	776	16,200	14,155	2,045
R^2	0.422	0.417	0.444	0.405	0.373	0.498	0.396	0.266	0.402

Source: Authors' calculations.
Note: PIHS = Pakistan integrated household survey. *t*-statistics in parentheses.

Appendix 3
Hourly Wage Regressions, Sri Lanka

	LFS 1992–3			LFS 1997–8			LFS 2001–2		
Dependent variable	*All*	*Males*	*Females*	*All*	*Males*	*Females*	*All*	*Males*	*Females*
Literate, below primary	0.039 (1.87)	0.062 (2.38)	0.101 (3.76)	0.017 (0.86)	0.071 (2.52)	–0.042 (–1.44)	0.057 (2.36)	0.092 (2.84)	0.024 (0.63)
Primary	0.224 (10.58)	0.279 (10.76)	0.318 (11.33)	0.172 (8.24)	0.245 (8.54)	0.052 (1.54)	0.185 (7.44)	0.245 (7.51)	0.059 (1.41)
Lower secondary	0.485 (23.00)	0.522 (20.13)	0.610 (22.11)	0.337 (15.68)	0.406 (13.85)	0.243 (7.12)	0.341 (13.52)	0.377 (11.47)	0.308 (7.32)
Secondary and higher secondary	0.852 (42.03)	0.857 (33.54)	0.926 (35.48)	0.553 (25.85)	0.591 (19.89)	0.532 (16.47)	0.606 (24.08)	0.615 (18.46)	0.621 (15.38)
Tertiary	1.088 (36.79)	1.074 (29.72)	1.143 (29.67)	0.828 (26.07)	0.798 (18.05)	0.877 (18.82)	0.875 (26.31)	0.849 (18.75)	0.909 (17.82)
Male dummy	0.302 (31.99)			0.381 (40.98)			0.403 (40.72)		
Urban dummy	–0.130 (–9.35)	–0.134 (–8.55)	–0.153 (–7.61)	0.277 (16.64)	0.448 (21.26)	0.033 (1.20)	0.271 (12.69)	0.402 (14.95)	0.089 (2.47)
Rural dummy	–0.244 (–17.15)	–0.259 (–16.18)	–0.280 (–13.68)	0.041 (2.76)	0.216 (11.31)	–0.207 (–8.76)	0.059 (3.03)	0.219 (8.77)	–0.19 (–5.97)
Experience	0.030 (21.34)	0.031 (19.88)	0.031 (15.84)	0.023 (17.21)	0.028 (17.20)	0.013 (5.75)	0.026 (18.63)	0.033 (19.86)	0.014 (5.86)
Experience squared	0.000 (–18.13)	0.000 (–16.06)	–0.001 (–13.75)	0.000 (–15.93)	0.000 (–14.95)	0.000 (–6.87)	0.000 (–16.76)	–0.001 (–17.50)	0.000 (–5.64)
Regular worker dummy				0.324 (32.19)	0.305 (26.01)	0.365 (18.93)	0.362 (33.31)	0.332 (27.22)	0.447 (19.70)
Intercept	2.392 (89.11)	2.661 (73.29)	2.493 (58.54)	2.273 (86.64)	2.373 (66.13)	2.650 (64.12)	2.163 (68.73)	2.316 (55.03)	2.466 (49.05)
Number of observations	24,535	19,168	12,563	23,229	14,421	7,808	20,838	14,009	6,829
R^2	0.258	0.219	0.249	0.281	0.245	0.282	0.292	0.255	0.302

Source: Authors' calculations.
Note: LFS = Labor force survey. *t*-statistics in parentheses.

Appendix 4
Unemployment Rates by Level of Education and Age Cohort, Economically Active Population Aged 15–64, Selected South Asian Countries and Years

Country, gender, and level of education	*Age cohort*							*Total*
	15–19	*20–24*	*25–29*	*30–34*	*35–39*	*40–49*	*50–64*	
Bangladesh, 2000								
Males								
Illiterate	4.69	0.93	0.56	0.96	0.85	0.48	1.00	1.17
Literate	10.30	3.33	0.00	0.00	1.04	0.00	3.59	2.76
Primary	13.37	5.35	1.81	0.86	0.42	1.33	1.23	3.56
Secondary (grades 6–10)	38.51	4.99	2.09	3.83	0.00	0.81	1.15	3.93
High (grades 11–12)	30.10	17.79	3.30	1.70	2.76	2.28	0.00	4.60
Tertiary	43.07	27.60	17.31	1.15	0.58	0.00	0.95	5.61
Total	9.92	4.60	2.18	1.08	0.75	0.78	1.14	2.41
Females								
Illiterate	24.01	26.52	20.76	16.71	21.94	17.86	29.83	21.73
Literate	49.47	39.39	17.16	64.57	26.20	0.00	67.33	42.51
Primary	65.09	44.03	56.80	59.28	47.27	60.13	72.65	57.65
Secondary (grades 6–10)	74.97	53.85	28.45	63.64	23.95	12.63	0.00	43.17
High (grades 11–12)	78.83	40.23	62.27	10.06	23.37	0.00	0.00	42.52
Tertiary	100.00	13.60	35.61	5.08	16.11	0.00	58.19	22.61
Total	48.61	34.34	31.32	26.62	25.28	22.13	34.98	31.44

Country, gender, and level of education	*Age cohort*							*Total*
	15–19	*20–24*	*25–29*	*30–34*	*35–39*	*40–49*	*50–64*	
India, 2004								
Males								
Illiterate	4.85	3.52	2.93	2.56	2.93	2.38	2.60	2.88
Literate	9.06	2.85	1.47	2.56	3.72	2.56	2.55	3.31
Primary	9.84	5.92	4.07	3.53	2.03	2.43	1.90	4.29
Middle	13.44	8.52	6.26	3.05	2.16	2.27	2.26	5.82
Secondary	20.53	15.41	8.10	3.99	2.57	1.56	1.36	6.94
Tertiary	49.81	32.66	17.01	5.87	2.57	0.89	0.42	9.12
Total	11.02	9.79	6.54	3.50	2.62	2.14	2.15	5.00
Females								
Illiterate	3.38	3.59	3.39	2.78	2.43	1.92	2.15	2.58
Literate	4.96	2.80	1.15	4.20	2.46	1.58	0.77	2.55
Primary	5.48	5.75	4.34	6.02	2.05	2.88	0.72	4.27
Middle	12.81	9.34	6.18	5.55	2.80	2.49	1.38	7.23
Secondary	24.25	26.02	17.87	16.80	5.18	1.36	0.13	17.04
Tertiary	29.43	49.44	36.17	13.11	4.26	2.54	0.00	24.54
Total	8.27	12.07	7.84	4.96	2.64	2.02	1.90	5.22

Country, gender, and level of education	*Age cohort*							*Total*
	15–19	*20–24*	*25–29*	*30–34*	*35–39*	*40–49*	*50–64*	
Pakistan, 2003–4								
Males								
Illiterate	4.48	2.32	1.37	1.03	0.98	1.06	0.57	1.60
Literate	9.16	3.74	1.84	1.06	1.00	0.57	1.63	3.22
Primary	6.84	2.91	1.91	2.00	1.27	1.07	1.45	2.87
Middle	11.65	8.37	4.41	2.22	1.11	1.62	0.94	5.30
Secondary	18.46	14.23	9.64	4.19	0.66	2.46	2.08	7.92
Tertiary	n.a.	21.94	11.65	7.91	2.33	0.76	1.84	6.75
Total	8.42	7.59	4.98	2.82	1.10	1.33	1.01	3.94
Females								
Illiterate	2.98	3.22	2.61	2.29	2.82	2.39	1.26	2.46
Literate	6.67	12.08	0.00	0.00	0.00	4.88	0.00	5.55
Primary	10.74	12.28	15.65	13.21	16.20	2.98	0.00	11.10
Middle	15.26	8.40	4.54	0.00	0.00	0.00	0.00	7.81
Secondary	27.89	26.00	18.03	17.34	10.05	3.12	0.00	19.75
Tertiary	n.a.	35.88	17.67	10.80	0.90	0.00	0.00	15.95
Total	8.42	12.21	7.86	5.35	4.00	2.30	1.17	6.06

Country, gender, and level of education	*Age cohort*							*Total*
	15–19	*20–24*	*25–29*	*30–34*	*35–39*	*40–49*	*50–64*	
Sri Lanka, 2001–2								
Males								
Illiterate	4.88	6.10	1.30	0.00	0.77	0.00	0.00	0.88
Literate	12.48	7.46	3.25	0.51	0.48	0.83	0.52	1.64
Primary	17.77	10.61	4.20	1.38	0.44	1.31	0.48	3.36
Middle	30.17	19.34	6.82	2.66	1.53	1.47	0.86	8.79
Secondary	44.65	31.26	9.63	3.95	3.09	1.75	0.98	10.04
Tertiary	77.19	2.62	29.29	4.74	0.00	0.00	2.69	5.52
Total	27.40	21.11	7.33	2.50	1.44	1.30	0.73	6.51
Females								
Illiterate	8.19	3.85	0.00	1.37	0.00	1.12	0.56	1.02
Literate	12.36	8.08	5.48	1.91	2.72	0.97	0.39	2.21
Primary	22.79	14.52	8.08	2.13	2.88	2.82	0.94	5.29
Middle	31.34	21.59	12.25	10.97	3.74	1.60	0.91	12.56
Secondary	48.95	45.07	24.84	11.99	7.96	1.84	1.06	21.41
Tertiary	100.00	34.02	32.26	15.02	3.22	0.00	1.52	12.72
Total	33.53	32.52	18.30	8.84	4.53	1.67	0.77	12.30

Source: Bangladesh, household income and expenditure survey 2000; India, national sample survey 60; Pakistan, labor force survey 2003–4; Sri Lanka, labor force survey pooled 2001 and 2002.

Appendix 5
Unemployment Rates by Education and Years of Potential Work Experience, Economically Active Population Aged 15–64, Selected South Asian Countries and Years

Country, gender, and level of education	*Years of potential work experience*							*Total*
	0–4	*5–9*	*10–14*	*15–19*	*20–24*	*25–34*	*> 34*	
Bangladesh, 2000								
Males								
Illiterate		5.54	3.57	0.81	0.57	0.93	0.64	1.17
Literate		9.32	5.26	0.00	0.00	0.63	2.40	2.76
Primary	19.27	7.22	1.83	1.21	0.59	1.09	1.29	3.56
Secondary (grades 6–10)	26.55	1.82	4.54	1.08	1.22	0.12	1.49	3.93
High (grades 11–12)	20.50	12.11	3.00	2.20	1.84	1.63	0.00	4.60
Tertiary	42.50	14.44	5.92	0.59	0.00	0.76	0.00	5.61
Total	22.27	7.91	3.09	1.12	0.67	0.93	1.35	2.41
Females								
Illiterate		12.59	26.58	20.14	20.74	20.37	23.47	21.73
Literate	0.00	49.47	35.66	28.17	74.78	22.81	51.34	42.51
Primary	71.66	41.64	64.27	47.74	59.80	49.63	76.96	57.65
Secondary (grades 6–10)	73.18	42.91	48.93	22.06	22.57	25.48	0.00	43.17
High (grades 11–12)	62.57	69.85	17.21	12.37	46.11	0.00	0.00	42.52
Tertiary	34.60	28.41	17.56	6.94	8.28	0.00	58.19	22.61
Total	65.85	42.79	51.24	32.00	48.60	36.22	67.13	31.44

Country, gender, and level of education	*Years of potential work experience*							*Total*
	0–4	*5–9*	*10–14*	*15–19*	*20–24*	*25–34*	*> 34*	
India, 2004								
Males								
Illiterate		2.81	4.58	3.72	2.37	2.86	2.46	2.88
Literate		9.06	3.51	1.79	2.54	3.01	2.60	3.31
Primary	8.88	8.93	5.64	3.58	2.83	2.09	2.39	4.29
Middle	12.72	9.54	6.69	3.46	2.14	2.30	2.27	5.82
Secondary	20.76	11.59	6.24	2.77	1.66	1.60	1.39	6.94
Tertiary	25.90	10.06	2.73	1.71	0.41	0.46	0.59	9.12
Total	18.66	9.76	5.51	3.07	2.18	2.37	2.36	5.00
Females								
Illiterate		1.20	4.03	3.75	2.83	2.62	1.90	2.58
Literate		5.44	3.16	0.13	5.13	1.48	1.77	2.55
Primary	0.24	7.61	3.53	5.16	4.42	2.16	2.69	4.27
Middle	11.56	10.86	6.86	5.96	2.78	2.85	1.21	7.23
Secondary	25.27	24.02	16.60	11.34	4.75	0.37	0.18	17.04
Tertiary	44.88	22.67	7.57	4.85	0.62	0.00	0.00	24.54
Total	26.29	12.52	6.37	4.57	3.23	2.43	1.91	5.22

Country, gender, and level of education	*Years of potential work experience*							*Total*
	0–4	*5–9*	*10–14*	*15–19*	*20–24*	*25–34*	*> 34*	
Pakistan, 2003–4								
Males								
Illiterate		3.61	4.43	2.34	1.37	1.01	0.82	1.60
Literate		11.85	5.61	3.83	0.47	0.93	1.24	3.22
Primary		6.56	4.21	1.70	2.15	1.05	1.36	2.87
Middle	9.63	11.11	7.46	3.73	1.41	1.41	1.13	5.30
Secondary	19.94	15.89	11.17	5.52	0.71	2.24	1.95	7.92
Tertiary	22.38	12.39	8.15	2.03	1.31	1.51	0.24	6.75
Total	19.28	11.77	6.77	3.17	1.32	1.31	1.01	3.94
Females								
Illiterate		3.61	4.43	2.34	1.37	1.01	0.82	1.60
Literate		11.85	5.61	3.83	0.47	0.93	1.24	3.22
Primary		6.56	4.21	1.70	2.15	1.05	1.36	2.87
Middle	9.63	11.11	7.46	3.73	1.41	1.41	1.13	5.30
Secondary	19.94	15.89	11.17	5.52	0.71	2.24	1.95	7.92
Tertiary	22.38	12.39	8.15	2.03	1.31	1.51	0.24	6.75
Total	19.28	11.77	6.77	3.17	1.32	1.31	1.01	3.94

Country, gender, and level of education	*Years of potential work experience*							*Total*
	0–4	*5–9*	*10–14*	*15–19*	*20–24*	*25–34*	*> 34*	
Sri Lanka, 2001–2								
Males								
Illiterate			4.88	6.10	1.30	0.44	0.00	0.88
Literate		10.32	9.40	4.56	0.58	0.63	0.59	1.64
Primary	19.10	13.92	7.74	2.61	1.15	1.23	0.44	3.36
Middle	30.82	19.71	7.15	2.73	1.52	1.47	0.83	8.79
Secondary	42.17	20.43	6.21	3.84	2.63	1.54	0.77	10.04
Tertiary	21.18	29.29	4.74	0.00	0.00	1.39	2.97	5.52
Total	35.67	19.05	7.03	3.22	1.60	1.21	0.61	6.51
Females								
Illiterate			8.19	3.85	0.00	0.55	0.82	1.02
Literate		13.18	6.20	8.67	2.32	2.25	0.39	2.21
Primary	25.91	23.50	3.97	6.38	3.82	3.07	0.89	5.29
Middle	31.55	22.08	12.37	10.64	4.15	1.60	0.88	12.56
Secondary	52.69	33.89	16.40	11.44	5.93	1.01	1.42	21.41
Tertiary	33.70	31.76	14.79	3.23	0.00	1.55	0.00	12.72
Total	45.57	28.27	13.23	9.62	4.22	1.85	0.72	12.30

Source: Bangladesh, household income and expenditure survey 2000; India, national sample survey 60; Pakistan, labor force survey 2003–4; Sri Lanka, labor force survey pooled 2001 and 2002.

Appendix 6
Percentage of the Population Trained by Field of Training and Average Duration of Training, India, 2004

Training field	Percentage trained			Weeks of training
	All	Male	Female	
Computer trades	25.3	24.6	26.5	45.2
Electrical and electronic engineering trades	15.6	22.9	2.9	83.5
Mechanical engineering trades	12.7	19.4	1.2	95.4
Textile-related work	11.2	1.3	28.5	41.1
Health- and paramedical services-related work	6.5	4.8	9.4	94.6
Driving and motor mechanic work	4.2	6.5	0.2	40.8
Office- and business-related work	3.2	2.1	5.0	44.9
Civil engineering and building construction	3.2	4.4	1.0	107.4
Artisan, craftspersons, cottage-based production	1.7	1.2	2.7	60.9
Childcare, nutrition, preschool, and childcare	1.2	0.0	3.3	38.1
Beautician, hairdressing, and related work	0.9	0.0	2.5	47.2
Noncrop-based agricultural services	0.9	1.3	0.1	60.0
Creative arts, artists	0.8	0.9	0.7	99.3
Catering, nutrition, hotels, and restaurant work	0.8	0.7	0.9	99.8
Chemical engineering trades	0.6	0.6	0.7	68.2
Printing technology-related work	0.6	0.4	0.9	48.5
Agriculture, crop production, food preservation	0.4	0.5	0.1	85.1

Training field	*Percentage trained*			*Weeks of training*
	All	*Male*	*Female*	
Photography and related work	0.3	0.5	0.0	59.4
Leather-related work	0.2	0.3	0.1	56.0
Journalism, mass communication, media work	0.1	0.1	0.0	147.9
Other	9.5	7.4	13.2	46.9

Source: National sample survey (2004).

Appendix 7
Percentage Trained by Field of Training, Bangladesh 1995

	Percentage trained		
Training field	*All*	*Male*	*Female*
Transport mechanic	15.83	16.77	—
Cottage industry	10.11	10.4	5.36
Tailoring, embroidery	7.33	6.25	25.49
Polytechnic	6.47	6.69	2.65
Agriculture, livestock	6.38	5.83	15.59
Weaving	6.04	5.92	8.03
Typing, shorthand	5.52	5.59	4.33
Health, family planning	4.59	3.36	25.38
Electrical-related work	4.15	4.39	—
Computer-related work	0.87	0.92	—
Others	32.72	33.87	13.18

Source: Household income and expenditure survey 1995.
Note: — = not available.

Appendix 8
Percentage Trained and Duration of Training by Training Institution, India 2004

Training institution	Percentage trained			Weeks of training
	All	Male	Female	
Industrial training institutes/industrial training centers	27.31	38.87	7.25	79.2
Tailoring, embroidery, and stitch craft institutes	8.81	0.92	22.49	38.8
Polytechnics	5.85	7.62	2.77	125.1
School offering vocational courses (secondary and higher secondary level)	5.21	5.57	4.57	67.1
Hospital and medical training institutes	2.74	2.93	2.41	105.0
Institutes run by companies and corporations	2.41	2.12	2.91	67.4
Recognized driving schools	2.38	3.63	0.19	19.3
Nursing institutes	2.21	0.20	5.68	103.0
University Grants Commission (first degree level)	1.88	2.08	1.52	99.7
Small industries service institutes, district industries centers, toll room centers	1.65	1.48	1.93	35.7
Nursery teachers' training institutes	1.35	0.06	3.58	41.6
Institutes giving diploma in pharmacy	1.13	1.32	0.80	71.0
Secretarial institute	0.81	0.45	1.43	45.6
Recognized beautician schools	0.56	0.00	1.54	47.1
Institutes for journalism and mass communication	0.48	0.66	0.18	59.7
National open school	0.44	0.38	0.53	56.1
Hotel management institutes	0.41	0.28	0.64	118.1
Handloom, handicraft design training center, Khadi and Village Industry Commission	0.41	0.08	0.98	47.7
Institutes offering training for agricultural extension	0.38	0.60	0.00	73.7

Training institution	*Percentage trained*			*Weeks of training*
	All	*Male*	*Female*	
Community polytechnic	0.32	0.27	0.41	35.3
Fashion technology institutes	0.30	0.17	0.51	60.2
Rehabilitation, physiotherapy, ophthalmic, and dental institutes	0.10	0.15	0.01	74.9
Food craft and catering institutes	0.09	0.14	0.00	48.0
Training provided by carpet weaving centers	0.02	0.00	0.07	12.0
Other institutes	32.77	30.00	37.57	44.2

Source: National sample survey (2004).

Appendix 9
Number of People with Vocational Education by Training Field and Year, Pakistan

Type of training	*1993–4*	*1996–7*	*1997–8*	*1999–2000*	*2001–2*	*2003–4*
Computer course	173,070	370,908	261,398	287,142	131,455	273,480
Driving course	212,173	308,561	284,463	122,727	99,746	217,508
Embroidery and knitting course	79,186	116,129	193,125	62,513	34,001	200,902
Garment making	453,303	390,657	269,708	104,196	47,410	158,904
Electrician	75,506	97,096	66,012	64,974	46,762	108,231
Automobile mechanic course	67,831	57,144	54,318	59,219	48,134	64,088
Carpentry	55,249	71,792	47,208	16,393	34,386	48,684
Mason	166,263	104,353	49,010	23,125	8,778	37,394
Civil engineering technology	25,296	66,862	40,976	32,323	36,212	37,226
Weaving course	100,030	48,266	33,726	23,027	13,845	36,497
Draftsperson	6,413	32,075	26,826	12,320	24,436	34,182
Welding course	23,594	38,767	24,953	24,537	15,884	31,855
Electrical engineering technology	9,376	30,077	28,487	23,162	10,774	27,449
Typing and shorthand course	41,864	41,843	43,502	36,745	21,514	25,480
Pharmacy course	17,496	44,603	27,044	32,248	17,773	24,783
Mechanical engineering technology	19,732	25,073	23,413	17,519	14,449	17,381
Refrigeration and air conditioning	12,183	16,292	5,798	4,763	9,603	16,726
General nursing course	4,120	9,452	1,128	3,562	10,367	15,094
Plumbing and pipe fitting	5,481	13,969	10,777	13,759	12,592	14,107
Automobile and farm machinery	14,164	29,177	13,284	13,576	9,641	13,918
Laboratory technician	2,872	9,240	13,288	9,532	7,150	13,264
L.H.V. course	3,672	10,530	5,406	12,046	3,281	12,965

Type of training	*1993–4*	*1996–7*	*1997–8*	*1999–2000*	*2001–2*	*2003–4*
Diploma in radio and TV	10,562	17,866	15,024	15,159	11,167	11,603
Leather work	91,814	59,416	52,297	5,756	2,413	10,837
Textile technology	12,562	9,361	10,379	11,086	4,071	8,959
Diploma in arts	4,820	9,341	2,777	4,481	1,223	6,828
Cooking course	1,087	5,412	4,900	2,422	3,646	5,537
Midwifery course	5,706	8,835	5,168	7,616	10,840	5,269J
Jewelry and embroidery	7,171	7,874	8,333	6,169	1,527	4,606
Machinery course	13,529	42,247	13,308	17,907	5,646	4,347
Woodwork	18,027	29,769	15,888	6,385	4,477	3,454
Polishing and soldering	1,497	8,849	13,128	1,176	811	2,897
Architectural technology	6,709	4,700	5,334	3,659	0	1,442
X-ray technicians	2,339	2,508	4,560	3,057	858	1,141
Livestock and poultry farming course	1,949	0	699	0	170	1,115
Metallurgy and mining technology	11,372	4,926	6,065	4,730	0	74
Ceramics technology	16,096	7,385	0	1,678	2,431	0
Foundry technology	5,880	6,584	0	2,854	0	0
Interior decoration	1,653	1,066	1,094	0	0	0
Diploma in design	668	3,508	2,411	259	3,997	0
Flower making course	0	2,084	1,988	2,069	0	0
Pattern making course	1,571	1,676	1,586	917	3,927	0
Other	0	0	0	0	139,249	196,303
Total	1,783,886	2,166,273	1,688,789	1,096,788	854,646	1,694,530

Source: Pakistan LFSs.
Note: The number of people with vocational training was estimated by multiplying the frequencies reporting each field of training by the population weights assigned to survey respondents.

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