

Skills or jobs—which comes first?

Since human capital theory first established a link between skills and economic performance, it generally has been held that education and training are wise investments for increasing employment and earnings—and are hence necessary ingredients for growth and job creation. The risk of living in poverty declines with the acquisition of basic cognitive skills, especially numeracy and literacy, and the associated enhancement in earning opportunities. Skills, especially cognitive abilities, are strongly related to productivity growth, more so than school attendance rates.⁷¹ They also are closely associated with structural transformation, especially for low- and lower-middle-income countries where they create opportunities for people outside of agriculture.⁷² Across 1,500 subnational regions in 110 countries, education emerges as the critical determinant of knowledge spillovers and entrepreneurship.⁷³ And skills can shape how jobs link people to neighbors, communities, and societies.⁷⁴

But around the world, available skills are not fitting well with the demands of the economy. Skills mismatches are arguably growing rather than shrinking. Albeit not easy to pinpoint, up to one-third of the employed in countries as diverse as Brazil, Costa Rica, Pakistan, Sri Lanka, and Tanzania are either under- or over-qualified for the work they do.⁷⁵ Managers of registered, formal firms around the world judge workforce skills as an obstacle of above-average importance in the production process.⁷⁶ In countries at all development levels, skills obstacles are also judged to be more acute now than in the first half of the 2000s (figure 5.13).

Skills shortages are an especially serious constraint for the most dynamic entrepreneurs.⁷⁷ Larger as well as younger and growing firms tend to identify skills as a constraint more than medium-sized and smaller firms.⁷⁸ Export-oriented firms in Indonesia and the Philippines report skills bottlenecks more than firms producing for the domestic market in those countries.⁷⁹ Across 106 developing countries, firms that adopt technology more rapidly and those that are more globally integrated take longer to

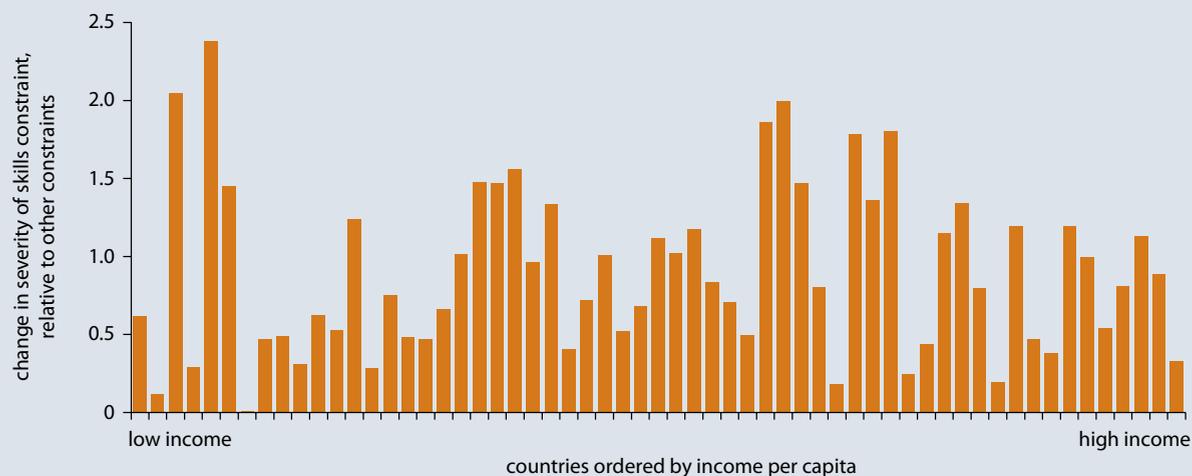
fill job vacancies through external candidates than other firms—a sign of skill-related constraints being more binding.⁸⁰ On the other hand, farmers and entrepreneurs of unregistered firms in both rural and urban environments tend to rate skills bottlenecks as less severe.⁸¹

The straightforward response to such mismatches would be for private firms or individuals to upgrade skills through further education or training—but several well-known reasons prevent this from occurring. Firms and farms—especially smaller ones—and workers seldom have the necessary funds nor can they borrow for this purpose.⁸² Firms are also reluctant to invest in training employees for fear that workers will leave after being trained.⁸³ And both firms and workers may lack the information needed to identify skills gaps.

Because of such market failures, policy makers often turn to education and training systems to deal with high unemployment or stifled productivity growth. Many countries are currently making a big push to hone the skills of the current and soon-to-be workforce through increased emphasis on on-the-job training and on pre-employment (vocational) education. Turkey's Public Employment Agency has expanded vocational training enrollment almost tenfold since 2007, delivering close to 250,000 courses in 2011. India has launched the National Skills Mission with a stated goal of training 500 million people by 2022.

The pitfalls of skills building

The importance of skills cannot be overstated (box 5.7). But caution is needed before jumping from this recognition to the launching of large skills-building programs. The root cause of skill shortages or mismatches might not lie with the education and training system. Shortages and mismatches may instead result from wrong signals generated by market distortions and institutional failures elsewhere in the economy. If a civil service career pays overly well, young people may study to obtain such jobs, even if they need to queue for them. This can

FIGURE 5.13 *Relative to other obstacles, skills have become a more severe constraint to business*

Source: World Development Report 2013 team based on enterprise surveys.

Note: The figure shows the changes in the relative importance of skills obstacles between beginning and end of the 2000s. The relative skill obstacle is defined as the ratio between (a) the share of firm managers saying that lack of skills is a major or severe obstacle and (b) the share of firm managers rating other constraints as major or severe. A positive score indicates that the skills constraint became more severe relative to others.

BOX 5.7 *How skills are formed, and how they can be measured*

Skills are acquired throughout life. People learn, adapt, and form their skills through a multitude of interactions and mechanisms within the household and neighborhood, during the formative years of schooling, at work, and in training. Cognitive skills include verbal ability, working memory, numeracy, and problem-solving abilities. Social skills are based on personality traits that underlie behaviors such as teamwork, reliability, discipline, or work effort.^a Technical skills enable the performance of specific tasks. Because all jobs require a combination of skills that are formed in multiple ways and in diverse circumstances, policy makers face complex challenges in forging the best path for skills development.

The first months and years of life are the most crucial for skill formation. This is when intelligence and learning abilities, the foundations for the development of core cognitive and social skills, are cemented.^b Brain maturation occurs in steps, with new skills building on earlier ones. If the foundation is strong, higher-order cognitive and social skills can be added later on. This leads to higher adaptability in rapidly changing job environments and the acquisition of job-specific techniques. In the slums of Mumbai, a special program run in parallel to primary schooling raised children's self-

esteem, self-efficacy, and aspirations, increasing scores on school-leaving examinations and initial labor market outcomes.^c But while foundations are laid early on, skills are also shaped after childhood and in working life.

Attention to the measurement of skills has gained prominence worldwide. Achievement tests provide information for parents, instructors, and administrators, and enable a better understanding of systemwide performance and achievements. While the skills measured on these tests appear to be purely academic in nature, test scores reflect more than individuals' cognitive skills. A good part of the variation in achievement tests can be attributed to personality traits or social skills as well as to incentive systems. These personality traits and social skills are critical in predicting individuals' life outcomes, including educational attainment and earnings.

More recently, efforts have gone in the direction of assessing adult competencies, by measuring the variety, intensity, and frequency of skills used in the workplace. These measures range from assessing different types of manual and workplace skills of a more routine manner to complex capabilities, such as problem solving abilities.^d

Source: World Development Report 2013 team.

a. Barrick and Mount 1991.

b. Grantham-McGregor and others 2007; Knudsen and others 2006.

c. Krishnan and Krutikova 2010.

d. OECD 2012; Skills toward Employment and Productivity Measurement Study based on World Bank 2010.

lead to the acquisition of skills that are irrelevant in the private sector and to unrealistic expectations, as was observed, for example, in the Arab Republic of Egypt.⁸⁴ Similarly, compressed pay scales reduce the incentives to invest more in education and training.⁸⁵ Lack of information about employment opportunities, transportation costs, or housing market failures may be the real reasons why workers do not take available jobs. In all of these cases, constraints that seem to be skills related actually reside outside the education and training system.

Besides, the successful delivery of skills-building services is difficult. Pre-employment and on-the-job training show varying success in the developing world. On-the-job training is consistently found to go hand-in-hand with higher labor earnings and productivity increases, even more so in developing than in industrial countries.⁸⁶ But only a fraction of workers have access to it; those with less education and those working in smaller and informal enterprises seldom have the opportunity to benefit from training. Technical and vocational education (TVE) has a mixed record: compared with general education, TVE led to higher earnings in Rwanda, Sri Lanka, and Thailand, more or less equal earnings in Indonesia and India, and lower earnings in Pakistan.⁸⁷ The reach of TVE in rural areas is often very limited.⁸⁸ In some countries, TVE has actually reinforced socioeconomic inequalities rather than fostered social mobility.⁸⁹ Poor quality and inequitable access are key constraints in many countries.

Accountability and governance arrangements are often the weak link of skills-building initiatives, with institutional failures often replacing market failures. On the positive side, modern and flexible skills-development strategies have generally replaced old-fashioned and mechanical manpower planning (box 5.8). Many countries have also created oversight entities, such as the Pakistan Sindh Technical and Vocational Training Authority, to separate quality control and management of providers from financing. In India, the National Skills Development Strategy is based on the principle that the institutions in charge of training, certification, and accreditation should be strictly separated.⁹⁰ On the negative side, scattered responsibilities across many ministries, distance from the private sector, slow response to rapidly changing skill needs, and capture by providers continue to

plague training programs and pre-employment education around the world.

What is being taught matters as well. Social skills are often the ones missing, but they can rarely be acquired in schools or training centers. In India, employers of engineers stress reliability, willingness to learn, and entrepreneurship as more important than specific technical skills, or the command of mathematics, science, or English.⁹¹ In Botswana, theoretical and practical knowledge of the job, as well as other job-specific skills, are generally considered to be less important than skills such as commitment, communication, and basic problem-solving.⁹² In Peru, 40 percent of employers complain about the lack of dependable work ethics and personal qualities such as team work, persistency, ability to reach consensus, or initiative among their employees. This subjective assessment is confirmed by harder evidence showing that returns to the socioemotional trait of perseverance are as high as returns to average cognitive ability.⁹³

Learning through jobs

Just as skills are important for jobs, the reverse is true as well. Many technical and social skills can be built through experience in the workplace—shaping skills on the job carries sizable returns. On average across countries, the return to one additional year of work experience in nonagricultural activities is roughly one-half the return to one additional year of education at the beginning of work life.⁹⁴ And managers put a premium on experience. In five African countries, managers identified work experience as more important for hiring decisions than technical skills and education.⁹⁵

Apprenticeship programs, fostering the integration of education and learning through jobs, exist in various shapes around the world. They range from the informal model of Sub-Saharan Africa to the dual model of Central Europe. Informal apprenticeship, often the primary mechanism for technical skills to be passed through generations, can be strengthened through its gradual integration into national training systems.⁹⁶

The dual model, deeply rooted in Germany, combines classroom-based schooling—geared to building general and transferable skills—with learning on the job in the training company.⁹⁷ In France, Germany, and the Netherlands, the

BOX 5.8 *Manpower planning has given way to dynamic skills development*

Manpower planning, a technique that used macroeconomic and sector forecasts to derive how many workers with specific technical skills would be needed was popular in the 1960s and 1970s. It was successful in a few cases in which it was closely integrated with the overall economic development strategy of the country and benefited from a universal basic education system, as it did in the Republic of Korea.^a But its rigidity soon became stifling. Manpower planning generally assumed a fixed relationship between labor and outputs, implicitly ruling out technological change. It also emphasized technical skills to the detriment of cognitive and social skills. And it was slow to adapt to rapid changes in the world of work brought by globalization.^b

Gradually the focus shifted from merely ensuring an adequate supply of skills to delivering demand-responsive, quality-skills development programs. The Republic of Korea stopped developing long-term macroeconomic plans with explicit industrial policies by the mid-1990s. Industrial projections of manpower supply took a backseat to the country's new initiatives emphasizing quality and relevance of education and skills development.^c The scope became broader and more integrated, replacing mechanistic forecasting. In the 1980s and 1990s, Singapore developed an integrated strategy to upgrade, retrain, and provide lifelong learning for its labor force, especially for those with lower levels of education and skills.

The rapid pace of globalization increasingly requires the private sector to be a driving force in skills development. India's National

Association of Software and Service Companies (NASSCOM) developed standardized skills assessments and certification arrangements in 2006. The Korea University of Technology and Education (KUT) established the Bridge Model, a three-way partnership also involving a single major enterprise and clusters of small and medium enterprises (SMEs) that serve as its main subcontractors. The major enterprise contributes technical knowledge, the SMEs bring in the employees to be trained, and KUT supplies the teaching facilities and content.^d Samsung was the first "bridge" in 2006; five other major companies have become bridges since then.

Much can be learned from comprehensive skill-building systems, especially from those of East Asia. But these systems require sophisticated institutional mechanisms that may be out of reach in lower-capacity contexts.^e Over 100 countries have embarked on comprehensive National Qualification Frameworks, built around the definition of competencies, certification, and accreditation. But with exceptions, results and impact are sobering.^f Often, the administrative capacity available in low- and middle-income countries is overwhelmed, and progress is held back by the lack of strong buy-in from the most important players: parents, teachers, training institutes, and firms. Perhaps the most valuable lesson from East Asian countries is that skills-development systems need to grow organically from below while being coordinated and fostered from above.

Source: World Development Report 2013 team.

a. Kim 2002.

b. Richards 1994.

c. Kim 2002.

d. Lee and others 2008.

e. Nam 2011.

f. ILO 2010b. See also DFID 2010; Gill, Fluitman, and Dar 2000.

dual system is credited with fast and structured employment integration.⁹⁸ But the dual system requires more than the right economic incentives—it is based on a social contract between employers (to offer places and invest in the future career of apprentice as a common good), trade unions (to accept below minimum wage payment for trainees), and government (to fund vocational schools and provide quality control).⁹⁹ Private sector commitment, including financing of training and continuation even in times of economic downturns, is fundamental. Given such high institutional requirements, attempts to transplant the dual model in its entirety have seen little success.

Building skills on the job is promising, because skills continue to develop and accumulate after formal schooling ends, in teenage years and during working life.¹⁰⁰ Jobs—especially early

experiences—can also shape behaviors and attitudes, including the willingness to contribute to society at large.

Importantly, jobs also support the transmission of knowledge through interactions with other people. Knowledge spillovers underlie the agglomeration effects observed in cities and in production clusters.¹⁰¹ But knowledge spillovers from jobs also occur in rural areas. During the Green Revolution in India, farmers with experienced neighbors made larger profits than those with inexperienced ones.¹⁰² Benefits from social learning at the village level were substantial.¹⁰³

Jobs can also ignite skills building by putting people in contact with the outside world. Working in foreign-owned companies, or in firms integrated in international value chains, allows the acquisition of new technical and managerial skills. This learning then spurs imi-

tation and can have cascading ripple effects.¹⁰⁴ In Singapore, India's Tata group was the first international company to partner with the Economic Development Board in 1972 to establish a company-owned training center for precision engineers. This partnership model was successfully replicated in subsequent years with other foreign companies, eventually leading to the consolidation of various institutions in 1993 to form Singapore's Nanyang Polytechnic. Today, the polytechnic has become a source of international expertise on industry-led training.¹⁰⁵ Intel's decision to establish its semiconductor assembly and test plant in Costa Rica has equally contributed significantly to that country's prospects and skill building system.¹⁰⁶

Jobs need skills, pull skills, and build skills

Some skills are necessary for productive employment to emerge in the first place. And they cannot be acquired on the job. Without numeracy and literacy skills, the prospects of improving employment opportunities and earnings, whether in agriculture or in urban settings, are thin. Today, more than one-tenth of 15-to-24-year-olds worldwide are functionally illiterate, and that does not bode well for their future.¹⁰⁷ Also, social skills assume an ever more important role as complements to basic cognitive skills. Given that skill building is cumulative, securing the foundation on which much of the later path of skill acquisition follows remains an absolute priority. Many countries are not there yet.

With this foundation in place, jobs can pull skills. Employment opportunities increase the demand for education, which systems then have

to meet. The role of policy here is to ensure that signals are adequately transmitted, providing incentives to continue skill accumulation by the young and those of working age alike. In the Dominican Republic, providing students with information about the actual returns to secondary school education led to substantially higher school attendance.¹⁰⁸ In India, informing rural women about job opportunities led to increased schooling for girls and delayed marriage and childbearing for women.¹⁰⁹ On the other hand, privilege in access to jobs distorts the signals. It hurts and discourages, rather than encourages, the building of skills.

Jobs themselves can build skills, especially at entry into the labor market. Given the negative long-term effects of troubled school-to-work transitions, placing emphasis on supporting first-time job-seekers should have significant payoffs.

But jobs may neither pull nor build skills to a significant degree, even if the foundational cognitive skills are in place. This occurs in situations where the benefits from agglomeration and global integration are present but not adequately exploited. Countries undergoing rapid urbanization often have sizable knowledge spillovers to reap but may fail to move up the value-added ladder. If so, they can be caught in traps of low productivity and low skills.¹¹⁰ Such traps arise when skills are insufficient to spur innovation and the demand for skills is too low to encourage their acquisition. In those cases, more relevant schooling and skill building at the secondary, technical, and likely higher levels are needed as a prerequisite for the creation of good jobs for development.