

Valuing jobs

Jobs are often assessed from an individual perspective. But they can also affect the earnings, productivity, and well-being of others—positively or negatively. These spillovers should be assessed too.

The most important impact of jobs is on the people who hold them. Jobs provide earnings, can give access to benefits and insurance, and are often a source of broader life satisfaction. Development, in large part, consists of increasing these direct effects of jobs on individuals.

Beyond the importance of jobs for those who have them, jobs matter for societies because they can affect the earnings, employment opportunities, and the productivity of others, as well as the collective capacity to manage tensions. Jobs can also contribute to shared social objectives, such as poverty reduction, environmental protection, and fairness. Often, the individual and social values of jobs are similar; but these two perspectives may differ. For instance, Vietnam's poverty rate declined with unprecedented speed in the 1990s when land was redistributed to farmers and agricultural commercialization was liberalized.¹ Albeit increasing individual incomes, farming jobs involved difficult working conditions, substantial variability in earnings, and no formal social protection. But they made a major contribution to the development of Vietnam. Bloated public utilities, on the other hand, often offer a range of privileges to their employees even when the utilities themselves provide only limited coverage of the population and unreliable

services, and are obstacles to economic growth and poverty reduction. Such jobs may look appealing from an individual perspective—but less so from a social perspective. Good jobs for development are those that make the greatest contribution to society, taking into account the value they have to the people who hold them, but also their potential spillovers on others—positive or negative.

Recognizing the multiple effects of jobs is important for understanding the possible tradeoffs they entail. Some jobs greatly contribute to productivity growth but do not lead to poverty reduction in the short run. In other cases, jobs are urgently needed to avoid an unraveling of social cohesion, but the job creation that can be immediately supported using public funds is unlikely to result in rapid productivity growth. An understanding of the various effects of jobs on aggregate well-being, both direct and indirect, may help identify when a virtuous circle of jobs along all three transformations may arise, and when a vicious circle looms.

The value of a job for the person who holds it is a primary indication of its development payoff. But assessing the broader value the job has to society also requires information on the spillovers the job may have on the living standards of others, on aggregate productivity, or on social

cohesion. Data from household, plant-level, and values surveys, as well as qualitative assessments, can be used to determine the existence of relevant spillovers. Although quantifying all the gaps between the individual and social values of jobs may not be possible, identifying where these gaps lie can help make policy tradeoffs transparent. The analytical tools to do so can be borrowed from several disciplines in economics and the social sciences. These disciplines often focus on spillovers from jobs, without necessarily calling them that.

While some jobs may contribute more to development than their individual values suggest, some forms of work are likely bad from any point of view. All countries have subscribed to a set of universal rights. Most governments, as well as international organizations and others, have ratified or endorsed standards seeking to eliminate forced labor, harmful forms of child labor, discrimination, and the suppression of voice among workers. Thus, some work activities are widely viewed as unacceptable and should not be treated as jobs.

Rights as the foundation

While jobs can be transformational, some forms of work are harmful. Those that exploit workers, expose them to dangerous environments, or threaten their physical and mental well-being are bad for individuals and societies. Their negative effects can be surprisingly long-lasting. An extreme example is the impact of the Atlantic slave trade on West Africa. A study found that individuals whose ancestors had been threatened by slavery were less likely to trust relatives, neighbors, and local governments even more than 100 years after the end of the slave trade.² Today, international norms of human rights and labor standards reject forced labor, harmful forms of child labor, discrimination, and the suppression of voice among workers. Yet close to 21 million people globally are estimated to be victims of bonded labor, slavery, forced prostitution, and other forms of involuntary work.³ In 2008, 115 million children between the ages of 5 and 17 were involved in hazardous work (box 5.1).⁴

BOX 5.1 *Children do perilous work in artisanal gold mines in Mali*

Much artisanal gold mining in Mali is village based and focused on alluvial deposits that require panning for separation. Although child labor tends to be relatively controlled in Mali, an estimated 20,000 to 40,000 children, some as young as age 6, work in artisanal gold mining.^a Human Rights Watch has documented the perilous nature of this work:

“They dig shafts and work underground, pull up, carry and crush the ore, and pan it for gold. Many children suffer serious pain in their heads, necks, arms, or backs, and risk long-term spinal injury from carrying heavy weights and from enduring repetitive motion. Children have sustained injuries from falling rocks and sharp tools, and have fallen into shafts. In addition, they risk grave injury when working in unstable shafts, which sometimes collapse.”^b

The work is toxic because miners use mercury to separate the gold from the rock. Mercury poisoning can cause serious neurological disorders, vision impairment, headaches, memory loss, and problems with concentration. Often, the children themselves are aware of the dangers:

“It’s my stepmother who makes me work there. I don’t want to. My real mother left. My stepmother takes all the money they pay me. . . . I don’t get any money from the work. . . . Our work starts at 8 a.m. and continues the whole day. . . . I take the minerals [ore] and pan them. I work with mercury, and touch it. . . . He said mercury was a poison and we shouldn’t swallow it, but he didn’t say anything else about the mercury. . . . I don’t want to work in the mines. I want to stay in school. I got malaria, and I am very tired when I work there [at the mine].”

—Mariam D., estimated age 11, Worognan, Sikasso Region, April 8, 2011^c

“It’s dangerous—there are often collapses. People are injured. Three died in a cave-in. The little children don’t come down into the hole. . . . I have had problems since working there—my back hurts and I have problems urinating. No one says anything to me about safety.”

—Ibrahim K., age 15^d

Source: World Development Report 2013 team based on Human Rights Watch 2011.

a. The Government of Mali has taken steps to protect children’s rights, including banning hazardous child labor in artisanal mines and adopting a National Action Plan for the Elimination of Child Labor in Mali in June 2011.

b. Human Rights Watch 2011, 6.

c. Human Rights Watch 2011, 29.

d. Human Rights Watch 2011, 31.

At the international level, the United Nation's Universal Declaration of Human Rights of 1948 establishes that "everyone has the right to work, to free choice of employment, to just and favorable conditions of work and to protection against unemployment." These rights are further elaborated in international conventions and regional frameworks and are translated into domestic laws.⁵ The global agenda for workers' rights became focused on four fundamental principles and rights in the workplace in 1998. Back then, a vast majority of members of the International Labour Organization (ILO) signed a declaration covering a core set of labor standards on the elimination of forced and compulsory labor, the abolition of child labor, the elimination of discrimination in employment and occupation, and freedom of association and collective bargaining.⁶ Other ILO conventions cover a range of related subjects including working time, social security, occupational safety and health, and labor inspections.⁷

International law requires that countries bring their domestic laws into compliance with the international legal instruments the countries have ratified. The core labor standards have a special status among ILO conventions because the 1998 declaration requires all ILO member states to "respect, promote, and realize" the standards, regardless of whether they ratify specific conventions.⁸ The standards influence other instruments for protecting workers' rights through references in national and regional legislation, the texts of many bilateral free trade agreements, the procedures of international organizations, and corporate codes of conduct.⁹ International legal frameworks arguably do not cover some fundamental rights. The core labor standards, for example, do not directly address working conditions including safety and health.¹⁰

Gaps remain between rights on paper and implementation in practice (box 5.2). Even in countries that have ratified the core labor standards and have laws on the books, children work in harmful conditions, discrimination happens in access to jobs and in pay, forced labor persists, and freedom of association is limited. Commitments in treaties, conventions, and laws may not change the institutions, practices, and behaviors that affect workers' rights on their own. A key factor driving these gaps is the fact that many workers are not covered by laws. For example:

- Many labor laws and regulations cover only workers in formal employment relationships, limiting the extent to which workers can appeal to legal mechanisms. The growing involvement of agencies in hiring workers complicates legal accountability because temporary workers often have contracts with employment agencies, which, in turn, enter into the contracts with the actual employers. Often, such workers would not count against legal minimum employment levels at which labor rights become binding.¹¹
- Some labor laws deliberately exclude domestic workers, family workers, or workers in small enterprises.¹² Exclusions can also apply in export zones and other areas where regulation is suspended to attract investment. Unpaid family workers in agriculture and enterprises, including children on family farms, may also be excluded. Many women perform non-remunerated work of this sort.¹³
- Tensions may also exist between labor rights defined in national and international contexts and customary, religious, and indigenous laws. Many countries are characterized by legal pluralism, whereby multiple legal systems exist side by side. Overlapping jurisdictions are most common in the case of family law relating to marriage, divorce, and inheritance.¹⁴

Gaps between rights on paper and those in practice underscore a substantial agenda to eliminate unacceptable forms of work. Nonstate actors, including private employers and civil society organizations, are increasingly involved in efforts to improve compliance with labor rights and standards. Multinational corporations and industry associations often adopt codes of conduct, voluntary standards, and monitoring and auditing strategies.¹⁵ Nongovernmental organizations monitor factories and firms, provide training and education to workers, and coordinate domestic and global campaigns. While this heightened involvement in rights and standards does not guarantee that implementation will improve, it provides potential channels and partnerships for increasing accountability for rights at work.

BOX 5.2 Compliance with core labor standards is partial

The number of countries that have adopted the eight core labor standards included in the International Labour Organization's 1998 Declaration of the Fundamental Principles and Rights at Work is steadily increasing. But compliance gaps with the four principles—child labor, forced labor, discrimination, and freedom of association and collective bargaining—are still apparent.^a

Child labor. ILO conventions 138 and 182 require countries to develop and monitor action plans regulating work by children under age 18. Convention 182, covering the most harmful forms of child labor, has been ratified by 175 countries. The largest numbers of children in hazardous work are in East Asia and the Pacific, but across regions there is evidence that progress is being made.^b Brazil and India are among the countries showing improvements. In Brazil, between 1992 and 2008, employment among 7–15 year olds fell over 10 percentage points, from 18 percent to 7 percent. At the same time, school attendance rose from 85 percent to 97 percent. In India, children's employment fell from 8 percent to nearly 4 percent, and school attendance rose 14 percentage points (from 72 percent to 86 percent).^c

Forced labor. More countries have ratified conventions 29 and 105, the core standards on forced labor, than the other core standards. An estimated two-thirds of forced labor takes the form of economic exploitation; one-fifth is linked to forced labor imposed by the state or the military; and the remainder involves commercial sexual exploitation. This last form disproportionately affects women and girls.^d The long-term effects on individuals, families, and communities can be severe. Nongovernmental organizations that rescue victims of forced labor, particularly forced commercial prostitution, find that post-traumatic stress, social stigma, and disease can cripple reentry into society.^e

Discrimination. Conventions 100 and 111 refer to discrimination by gender, ethnicity, disability, or other status as a source of disparities in access to jobs, segregation within the labor market, pay gaps, and harassment or violence at work. From a legal perspective, discrimination can be understood as inequality before the law within either the formal legal system or customary law. It results from unequal treatment on the grounds of race, gender, religion, political opinion, national extraction, or social origin; or the unequal impact of policies, practices, or rules. Employment outcomes are affected by each of these layers of discrimination.^f Although progress has been made in removing legal obstacles that affect women's access to jobs, barriers remain.^g Labor laws in 44 countries restrict the hours that women may work,^h and 71 countries impose legal limits on the industries in which women may work. Such restrictions have often

deprived women of equal access to jobs. Inequality in laws relating to marriage, inheritance, and property ownership, as well as traditional and customary laws, also affect the access of women to productive assets and business opportunities.

Discrimination in employment may be the outcome of policies not dealing directly with labor issues. For example, in some countries of Central and Eastern Europe, Roma children are often tracked into schools intended for children with special needs, which provide limited opportunities for further advancement in education and subsequent employment. Roma graduates of special schools in the Czech Republic were twice as likely as non-Roma graduates to be out of the labor force.ⁱ A study of Roma in the Czech Republic found that 19 percent of Roma ages 10–19 had attended a special needs school, while the share in the non-Roma population was 7 percent. The figures in the Slovak Republic were 12 and 8 percent respectively.^j A 2007 court case involving Roma students in the Czech Republic noted that they were more likely to be placed in schools for the mentally challenged than non-Roma children. The European Court of Human Rights ruled that this overrepresentation violated nondiscrimination protections in the European Convention on Human Rights.^k

Freedom of association and collective bargaining (FACB). Although conventions 87 and 98 are among the oldest of the core standards, they have been ratified by fewer countries than the others. These conventions cover the right to establish and join organizations and call for mechanisms for negotiations between employers and worker organizations. FACB are “enabling rights” in that they give workers voice to advocate for other aspects of working conditions, including safety and health.^l

FACB is curtailed in countries where unions and other associations are banned, where associations face restrictions on their activity, or where members are threatened by violence or repression. FACB rights of both workers and employers are monitored by the ILO Governing Body's Committee on Freedom of Association (CFA), a universal monitoring mechanism that functions in addition to the ILO's regular supervisory mechanisms for monitoring ratified conventions. The CFA handles complaints related to civil liberties, including murder, abductions, disappearances, threats, arrests, and detentions of trade union leaders and members, as well as other acts of antiunion harassment and intimidation and violations of freedom of assembly and freedom of expression.^m Convention 87 protects the rights of all workers, including the self-employed. In practice, however, implementation of FACB is limited because many workers are employed outside traditional employer-employee relationships or do not work in occupations or sectors that are covered by formal unions.

Source: World Development Report 2013 team.

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| a. ILO 1998; ILO 2012a. | h. World Bank and IFC 2011. |
| b. Diallo and others 2010. | i. World Bank 2008a. |
| c. UCW 2010. | j. World Bank 2012b. |
| d. ILO 2009. | k. European Court of Human Rights 2007. |
| e. Farley 2003. | l. Levi and others 2012 for the World Development Report 2013. |
| f. Fredman 2011. | m. ITUC 2011. |
| g. World Bank 2011d. | |

The value of jobs to individuals and society

The most obvious outcome of a job is the earnings it provides to the worker. These earnings can be in cash or in kind and may include a range of associated benefits. The earnings the job provides, as well as the output it generates, typically increase with the skills of the worker. Improving skills is thus one of the most direct channels to enhance the value jobs have to individuals and society (question 5). Other characteristics of the job may also matter from the point of view of individual well-being. Stability, voice, and fulfillment at work all play a role in overall job satisfaction, as do any detrimental impacts of jobs on mental and physical health through stress and anxiety.¹⁶

Several of these dimensions of jobs have been combined into the concept of decent work introduced by the ILO in 1999 (box 5.3). Since then, many governments have used it to articulate their policy agendas on jobs. The concept of decent work has also been embraced by the United Nations and several international organizations and endorsed by numerous global forums.

A job may also matter for others, beyond its holder. When asked about their most preferred jobs, survey respondents from four diverse countries provide different answers from those they offer when asked about the most important jobs to society (figure 5.1). They frequently mention working in the civil service or as a shop owner as the jobs they would prefer for themselves, while identifying teachers and doctors as the most important jobs for societies. China is the only country where a job in civil service is seen as more important for society than for the individual. In the Arab Republic of Egypt, a job as a teacher is more valued individually than socially. And in Sierra Leone, being a farmer is appreciated both individually and socially, while in the other countries it is recognized as socially valuable but is not a preferred job.

This intuition can be developed into a more structured analysis of the reasons why some jobs may be more or less valuable to society than they are to those who hold them. Those reasons can be grouped under three main headings, each corresponding to one of the three development transformations. Individual jobs can improve the living standards of others in society, or they

BOX 5.3 *The concept of Decent Work and the Decent Work Agenda*

Decent Work is defined as “opportunities for women and men to obtain decent and productive work in conditions of freedom, equity, security and human dignity.”^a This definition is based on a broad concept of work as encompassing all forms of economic activity.^b The International Labour Organization has made Decent Work for all the organizing principle for its activities and has set an agenda for incorporating the goal of Decent Work for all into national strategic planning objectives.^c The ILO’s Decent Work Agenda is a policy approach based on four strategic objectives: fundamental principles and rights at work and international labor standards, productive and freely chosen employment, social protection, and social dialogue.

At the global level, the ILO has defined Decent Work indicators to measure the different dimensions of the concept and to track progress over time. In 2010, the United Nations (UN) Summit on the Millennium Development Goals (MDGs) included a new target under Goal 1 (eradicate extreme poverty and hunger): “achieve full and productive employment and Decent Work for all, including women and young people.”^d The Decent Work indicators are being

used to help countries measure progress and establish priorities. A limited set are used to monitor progress toward the MDG target.^e

The ILO’s Decent Work Agenda includes a threshold below which no job should fall. The threshold has four components: productive employment (not simply any job), basic social protection according to national conditions, opportunity for voice and organization, and rights at work. As an incremental agenda, Decent Work indicators can change, depending on the economic, social, and institutional progress of countries.

This ILO agenda has gained considerable traction and international political buy-in over the past decade. First formulated at the International Labour Conference in 1999, it is now part of the ILO constitution and has been endorsed by heads of state at the UN General Assembly, the Group of 20, and regional authorities such as the European Union, the African Union, the Organization of American States, the Association of South East Asian Nations, and the Southern Cone Common Market (Mercosur). Many countries use the Decent Work concept to define development targets, identify policy priorities, and measure progress toward meeting specified goals.

Source: World Development Report 2013 team.

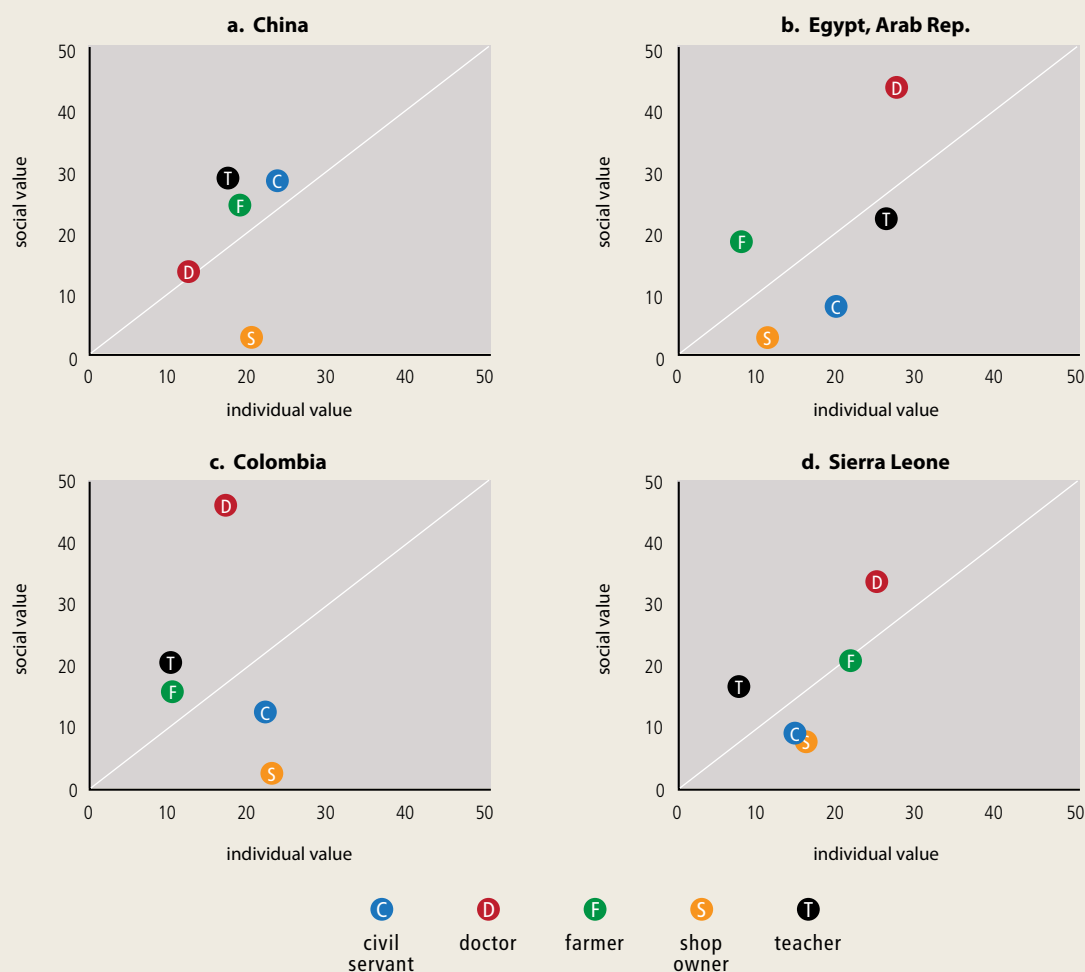
a. ILO 2002.

b. Anker 2003; Ghai 2003; UNECE 2010.

c. “Decent Work Agenda,” ILO, Geneva, <http://www.ilo.org/global/about-the-ilo/decent-work-agenda/lang--en/index.htm>.

d. UN 2011.

e. “Measuring Decent Work,” ILO, Geneva, <http://www.ilo.org/integration/themes/mdw/lang--en/index.htm>.

FIGURE 5.1 Views on preferred jobs and most important jobs differ

Source: Bjørkhaug and others 2012; Hatløy and others 2012; Kebede and others 2012; and Zhang and others 2012; all for the World Development Report 2013.

Note: The figure shows the share of respondents who would want the job for themselves (individual value) and those who think the job is good for society (social value).

can adversely affect their earnings and employment opportunities. They can help raise the productivity of others, or they can harm them through their environmental impacts. And they can support more peaceful collective decision making, or, alternatively, increase social tensions when they are based on privilege.

Spillovers from jobs

Good jobs for development are those with the highest payoff to society. As a first approximation, the value of the job for the person who

holds it provides a good measure of the value of the job to society. But some jobs also have spillovers on the living standards of others, on aggregate productivity, or on social cohesion. When spillovers are positive, the job has a greater value to society than it has to the person who holds it, and the opposite is true when the spillovers are negative. In principle, the spillovers can also be negligible, in which case there is no real distinction between the individual and the social perspective. Nonetheless, the idea that jobs can have sizable spillovers is at the core of several disciplines in the social sciences and has greatly influenced recent development thinking (box 5.4).

BOX 5.4 Economics and the social sciences deal with spillovers from jobs, under different names

Several disciplines in economics and in the social sciences focus on the channels through which spillovers from jobs occur, even if they may not articulate it that way. One core focus of *labor economics* is to assess earnings differentials and their causes, including discrimination, uneven bargaining power, regulation, and taxation. The *public finance* literature also evaluates the impact on employment, capital intensity, and earnings of taxes and subsidies, including those used to finance social insurance contributions. *Gender studies* examine the economic, social, and cultural determinants of gender discrimination and their relationships to employment. *Poverty analyses* study the poverty and inequality impact of job distributions and different growth patterns. *Economic geography* uncovers the productivity impact of spatial concentration of jobs. *International economics* analyzes the resource allocation and innovation impetus provided by employment in export sectors and foreign-owned companies. *Environmental economics* measures and values the negative (and positive) impacts of employment in different sectors, or using different techniques, on the natural resource base. *Identity economics* researches how behaviors and norms are influenced by the relationship between people and their peer groups, including through their jobs. The field of *equity analysis* has started to examine

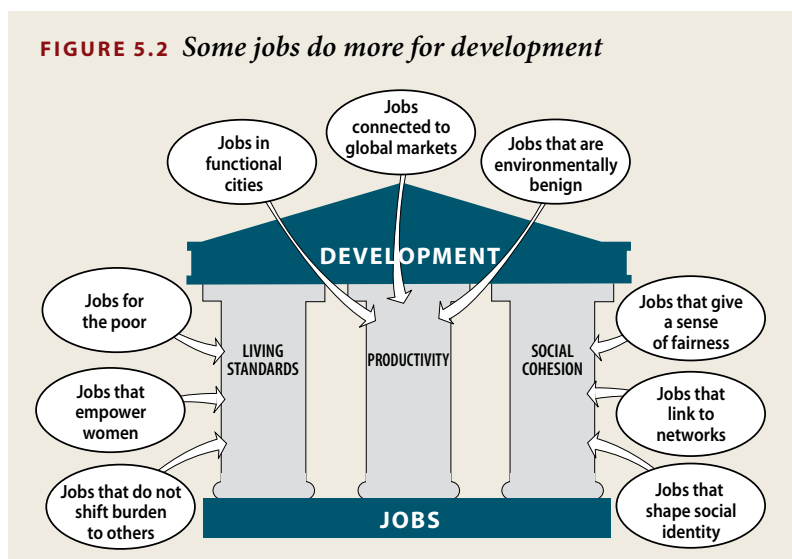
the degree to which job outcomes are shaped by the circumstances in which individuals are born, as opposed to their ability or effort. Finally, *conflict studies* aim to identify the societal conditions that underlie tension not being managed constructively and peacefully, including access to jobs and fairness in their allocation.

These disciplines bring analytical rigor to the assessment of the gaps between the individual and social values of jobs, hence to the identification of good jobs for development.^a

Although they may not be explicitly articulated around jobs, these disciplines have shaped recent development thinking. The *World Development Report 2007: Development and the Next Generation*⁹ shows that opening job opportunities for young people is catalytic for future economic and social development. The *World Development Report 2009: Reshaping Economic Geography* discusses reaping the benefits of agglomeration, which happens through jobs, as a source of economic growth. The *World Development Report 2011: Conflict, Security, and Development* makes the point that jobs are a key element for stabilization in post-conflict societies. And the *World Development Report 2012: Gender Equality and Development* provides evidence that jobs are a medium to promote gender equity and transform it into social and economic progress.

Source: World Development Report 2013 team.

a. As an example, recent World Development Reports on youth (World Bank 2006); geography (World Bank 2009c); conflict (World Bank 2011c); and gender (World Bank 2011d) look at spillovers from jobs in different contexts.



Source: World Development Report 2013 team.

Fully valuing the contribution jobs make to development requires identifying the channels through which the spillovers may occur. Nine of them have received attention as critical for development (figure 5.2):

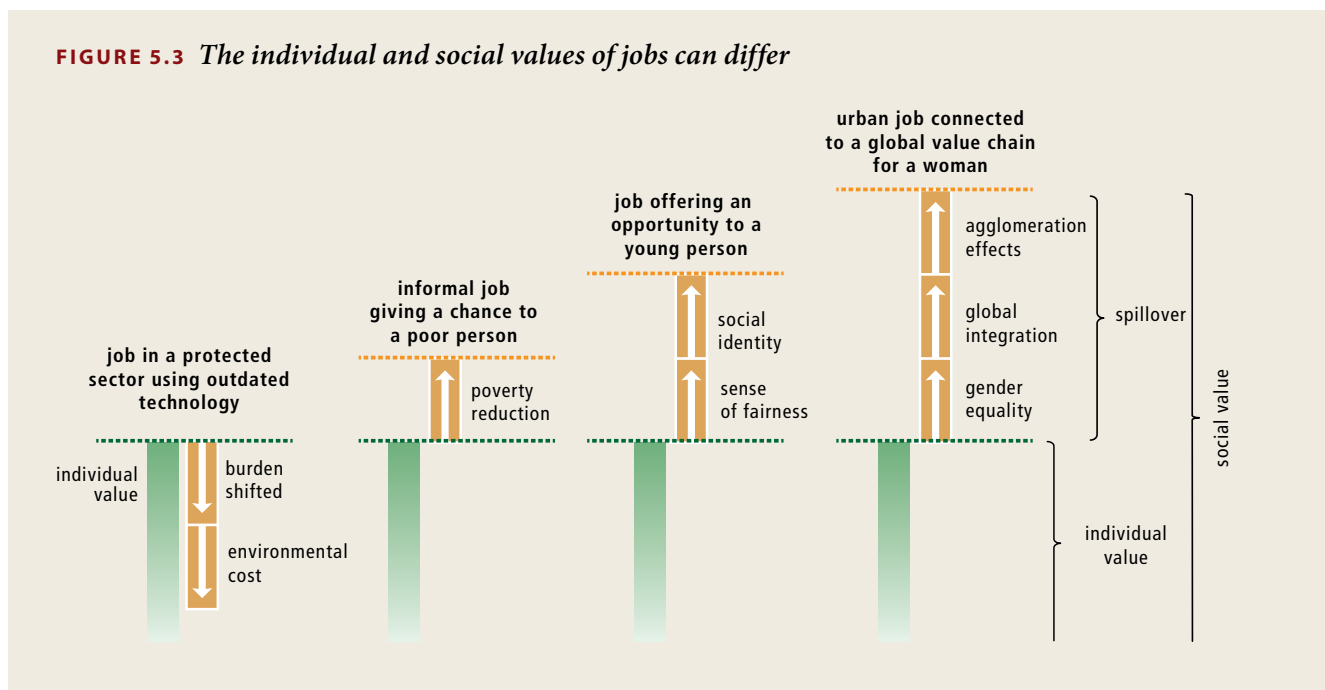
- *Earnings of others.* Uneven bargaining power or inadequate regulation may result in labor earnings that are either too low or too high relative to the output generated by jobs. This distortion affects the earnings of the employer and the job opportunities of other workers. Taxpayers may also be affected when jobs are supported through transfers. Jobs that do not tax others, literally or figuratively, do more for development.
- *Household allocations.* Having a job and contributing resources to a household's budget can change the status of the jobholder and increase his or her say on how the budget is allocated. If the jobholder is a woman, spending on food and on children may increase, which may result in greater well-being for the children. Jobs that empower women have the potential to generate such positive spillovers.
- *Poverty reduction.* The well-being of others may be affected if they are altruistic and value poverty reduction in general, even when their own earnings do not change. Since jobs are the main avenue out of poverty, there is

social value in the availability of jobs that take others out of poverty. Employment opportunities tilted in favor of the poor do more for development.

- *Agglomeration effects.* Productivity depends not only on the internal efficiency of economic units but also on their environment. Learning and imitation through labor turnover and interaction with suppliers, as well as a better matching of skills across a bigger pool of workers, can increase productivity. Hence, jobs in functional cities tend to be good jobs for development. Conversely, negative effects can arise in overcrowded and congested cities.
- *Global integration.* Knowledge spillovers also occur through international trade and participation in global value chains. Firms that engage in export markets tend to become more productive and, in doing so, they push other, less productive firms out of business. Knowledge spillovers from foreign direct investment (FDI) increase aggregate productivity. Jobs that connect to global markets are thus good jobs for development.
- *Environmental effects.* Jobs have negative impacts on aggregate productivity when they damage the environment or lead to an overuse of scarce resources. But they can also have positive effects on the environment, as in the case of jobs to manage forests and other common resources. The social value of a job cannot be assessed without taking into account its environmental impact.
- *Social identity.* Jobs can impact the well-being of others by influencing the values and behavior of those who hold them in ways that affect society at large. Jobs can shape the norms that influence how the jobholder interacts with others, starting with basics such as reliability, punctuality, and courtesy. Depending on their characteristics, jobs can foster civic engagement and result in greater trust.
- *Networks.* Jobs connect people to each other. They convey information among coworkers and society more broadly. They impact the integration of rural migrants in new urban settings. Jobs may also contribute to tolerance when they increase interactions with people from different social and ethnic backgrounds.
- *Sense of fairness.* A perceived absence of fairness in the overall access to job opportunities, beyond one's own job, can undermine the sense of belonging. Job allocations at odds with the idea of equality of opportunity may lead to disengagement from collective decision-making processes. Jobs that live up to standards of transparency and merit contribute to the sense of fairness in society.

Because a job can affect the well-being of others and not only the well-being of the jobholder, two jobs that may appear identical from an individual perspective could still be different from a social perspective. In a society that values poverty reduction, an informal job that takes a household out of poverty should be seen as more valuable to society. A job in a protected industry that needs support through transfers (either by taxpayers or by consumers) is less valuable to society, and even less valuable if the need for protection is associated with the use of outdated technology that results in high environmental costs. The opposite holds for a job in an export industry that contributes to the acquisition of new technical and managerial knowledge from abroad and spreads it through interactions with suppliers; this job is even more valuable to society when the jobholder is a woman and her work status empowers her. And the same is true for a job that gives a young person a sense of belonging in society and conveys to others a sense of opportunity (figure 5.3).

The contribution jobs make to development varies, depending on the circumstances. In low- and middle-income countries, poverty reduction carries significant weight. Productivity effects vary: heavily urbanized and highly connected countries such as Singapore have internalized a large part of these effects already, while urbanizing countries such as Bangladesh and Guatemala are still able to reap significant benefits. Jobs in illegal mining can cause environmental damage, and their net contribution to productivity growth is limited as a result. Jobs in Turkey's wind energy parks, in contrast, likely contribute to all three transformations in a positive way: they offer earnings and job satisfaction to workers; they position Turkey at the forefront of technological developments in new energy; and they often contribute to social cohesion by creating new livelihood opportunities for villages.

FIGURE 5.3 *The individual and social values of jobs can differ*

Source: World Development Report 2013 team.

More often than not, however, jobs entail tradeoffs. A specific job can entail positive and negative spillovers simultaneously. Take, for example, a job that requires relatively low-skills but that uses outdated technology and hence causes environmental damage. From a social point of view, such a job has a positive spillover because it leads to poverty reduction, but it also exhibits a negative spillover through its environmental effect. Similar tradeoffs can exist for a job that connects the domestic economy globally but that has been obtained through connections, thereby decreasing the sense that the job market is fair.

Such tradeoffs can take strategic dimensions: in China, the nature and location of investments in roads have different implications for jobs. The investments yield their highest growth returns in the eastern and central regions of China, where the most productive jobs are. But their contribution to poverty reduction is greatest in the western regions, where living standards are lower.¹⁷ In such situations, societal choices are necessary. Assessing and mapping spillovers is an important first step toward informed decision making.

Can the development payoffs from jobs be quantified?

Earnings from labor provide the first and most direct measure of the contribution jobs make to development. But transformations in living standards, productivity, and social cohesion happen at a faster pace when jobs lead to investments in children, give people the possibility to acquire new skills through their work, or engage them more in society. Because these transformational aspects are seldom reflected in labor earnings, good jobs for development may not be as attractive to individuals as they are important to society. This is why, even in a context of full employment, there may not be enough jobs for women in many developing countries, or enough jobs connected to world markets, or enough jobs for idle young men. Spillovers are thus especially relevant in countries where gender equality is far from assured, urbanization and global integration are incipient, and conflict is still a possibility.

Fully valuing the development payoffs from jobs entails assessing the earnings they provide, as well as their possible spillovers. In practice,

BOX 5.5 *Several data sources can be used to quantify the development payoffs from jobs*

Household surveys such as those used for poverty analysis are a critically important input for assessing the contribution jobs make to society. Regular up-to-date, high-quality data on activity, employment, and earnings can be used to understand employment dynamics. Many countries around the world collect household data through living standards surveys and labor force surveys. Social security administrations in countries with a high coverage rate of social programs record information about their contributors. Unfortunately, few countries trace employment histories. Such histories (including employment transitions) are vital to achieving an understanding of how long young jobseekers are unemployed, whether unemployment scars the middle-aged, or how internal migration supports rural families.

Plant-level surveys are another standard input to understand the dynamics of job creation and destruction and their implications for aggregate productivity. Many countries conduct such surveys out of a sampling frame supposed to capture all units in manufacturing; in some cases, the coverage extends to units in other sectors, such as trade. Other countries collect data on production and employment through administrative records; the information is less

detailed on inputs and therefore has limited potential in the estimation of changes in productivity, but it gives a more comprehensive picture of how firms are born, grow, decline and die and how employment evolves as a result. Unfortunately, only a few countries collect information on the myriad microenterprises in the informal sector. This information is vital to understanding where job creation occurs in the economy and where it contributes most to aggregate productivity.

Special household surveys inquiring about values and attitudes, together with qualitative assessments, are important instruments for assessing links between jobs on the one hand and beliefs and behaviors on the other. These surveys often provide information on trust in others and civic participation, and on the characteristics of respondents and their jobs. Information from these surveys can be combined with living standards and labor force surveys to identify population groups at risk, and analyze how jobs are associated with peaceful collective decision making. Observing individual or cohort groups over time allows for an exploration of possible causal links among jobs, trust, behaviors, and attitudes.

Source: World Development Report 2013 team.

this amounts to identifying the gaps between the individual and the social values of jobs (if any) that are relevant in a particular country context. Such an evaluation requires data, some of which many countries are now collecting on a more or less regular basis (box 5.5). Using data to measure the full social value of a job calls for rigorous analysis too. Patterns in the data may result from spurious correlations, and the related conclusions may be tainted if individuals and firms with fundamentally different characteristics selected themselves into specific jobs or activities. Labor economics, productivity studies, and other social sciences have developed analytical tools for the analyses required. Sociological and anthropological methods can provide texture and context missing in quantitative data. In some cases, randomized trials or natural experiments can shed light on the mechanisms at play. But methodological pitfalls abound, so the safest approach is to triangulate the available evidence.

Living standards

Three types of spillovers can enhance or undermine the direct contribution jobs make to liv-

ing standards: jobs can impact the earnings of others, they can alter the allocation of resources within households in a substantial way, and they can contribute to shared social goals such as poverty reduction.

Earnings of others. Jobs in subsidized firms and in bloated public sector agencies have an impact on the earnings of others, as they lead to an excessive tax burden and a reduction of earnings (or the disappearance of jobs) elsewhere in the economy. Jobs characterized by uneven bargaining power between employers and employees, or discrimination against women or ethnic minority groups, have earnings that are too high or too low relative to the output generated by the job.

The tools of public finance can be used to assess gaps between the individual and the social values of jobs in the case of jobs supported through transfers. Taxation and government spending affect earnings and modify incentives and thus have an impact on resource allocations, including employment. Analyses of the tax burden applying to capital and labor, assessments of cross-subsidization between individuals or firms, or evaluations of the impacts of payroll

taxation can identify a gap between the individual value and the social value of a job.

A tax wedge does not necessarily imply that the individual and the social value of a job differ, or that employment effects are large. The methodological pitfall to avoid in this case is to assume that individuals attach no value to the taxes or contributions they pay. If workers value social security contributions as an entitlement to deferred benefits, their net burden is lower than the contribution rate suggests. If they value the contribution in full, there would be no misallocation of resources. In some systems, contributions and benefits are closely linked; in others, the link is looser and redistribution stronger. But even when benefits are low compared to taxes, the effects on employment depend on how much of the taxes employers can pass on to employees through lower wages. In the extreme case, when the number of workers seeking wage employment is fixed, the entire tax is paid by workers, and employment is the same then as without a tax.¹⁸ In Turkey, a reduction in social security taxes would result in higher net wages and lower total labor cost only partially, thereby moderating the change in employment. The effect is somewhat higher, though, for lower-skilled workers earning around the minimum wage.¹⁹

The tools of labor economics can be used to measure the gaps between the actual earnings of specific groups of workers and the earnings they would have in the absence of uneven bargaining power or discrimination. Earnings functions (a standard tool of labor economics) can provide an estimate of the magnitude of those gaps. Actual earnings are lower than they otherwise would be in the case of women, ethnic minorities, and people working in the agricultural sector; they tend to be higher in the case of union members. Some gaps diminish with economic development, others persist (figure 5.4). On the surface at least, the gender and occupational gaps show no sign of disappearing.

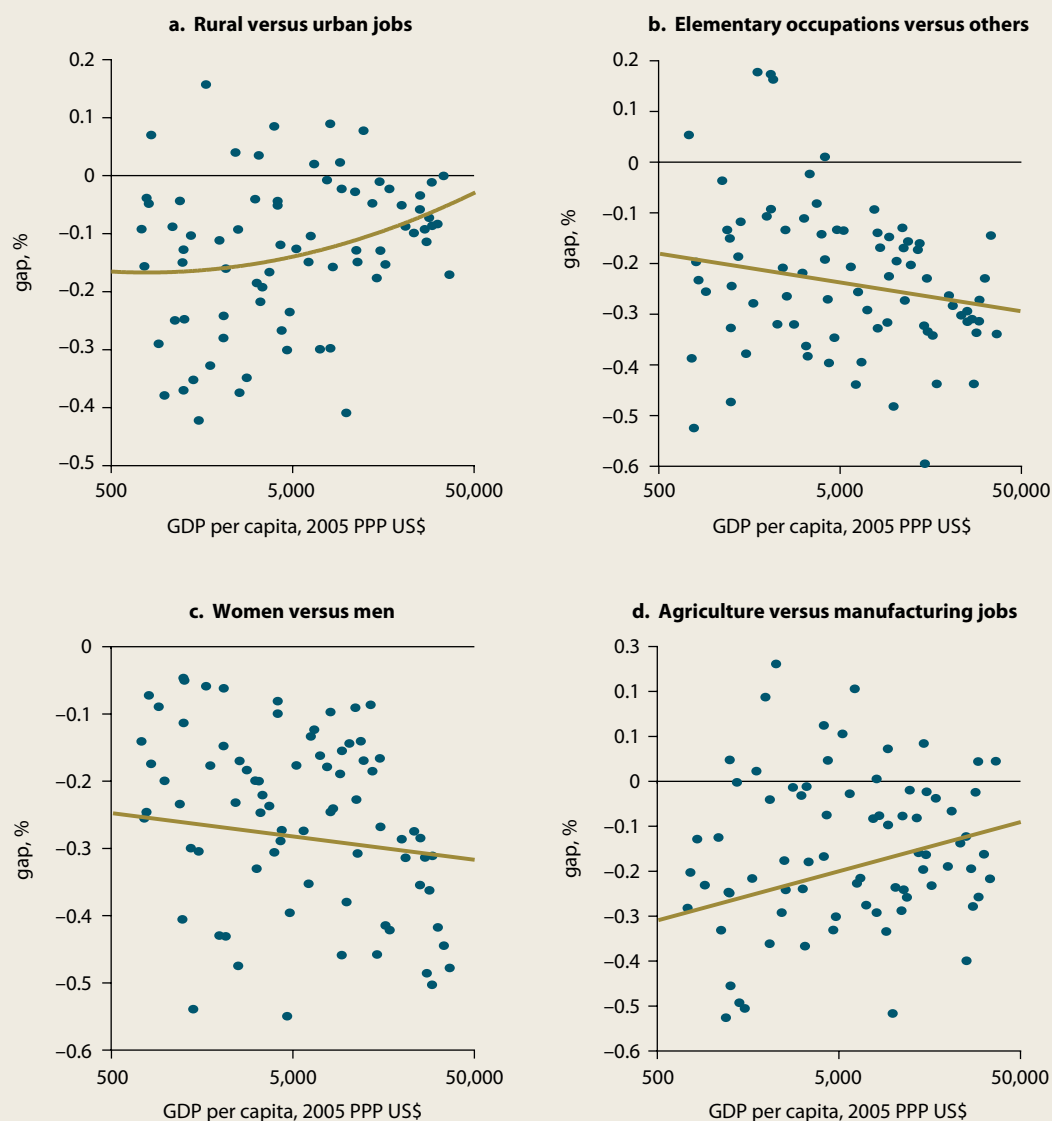
While these exercises are informative, earnings gaps may result from differences in the characteristics of jobs or workers not accounted for in the analysis. Gender gaps can stem from discrimination but also from choices about the work-life balance. Union gaps may signal strong bargaining power but could also reflect higher productivity of organized workers. Rural pay deficits may be affected by unobservable dif-

ferences between the workers who migrated to the cities and those who stayed behind. So, even when the gaps are rigorously measured, disentangling the reasons behind them is an important step before policy conclusions can be drawn.

Household allocations. Who holds a job can matter for how household earnings evolve and are spent. Job opportunities for youth are particularly important. A difficult transition from school to work can lead to scarring—a negative impact on long-term earnings prospects, hence of future household expenditures. The risk of unemployment later in life is higher for those with difficult school-to-work transitions.²⁰ Jobs that go to women might also benefit other members of society as well as the woman holding the job. Women generally have lower labor force participation rates than men and typically earn less than their male counterparts, but employment outside the household often empowers them.²¹ A body of evidence has found that spending decisions depend on the share of household income contributed by different members of the household. Women's control over household resources leads to more spending on food and children's schooling.

The impact women's employment has on household allocations can be quantified using standard tools in poverty and gender analyses. In Mexico, for example, higher women's income shares were associated with more food and children's clothing and less alcohol.²² Similar results were observed in Bangladesh, Côte d'Ivoire, and South Africa.²³ In the Republic of Congo, a higher female share in total household income was associated with significantly higher expenditures on food and significantly lower expenditure on clothing for adults and entertainment (figure 5.5).²⁴ However, it should not be assumed that impacts are the same everywhere. Providing cash transfers in Burkina Faso boosted routine preventive care for children, regardless of which parent received the money.²⁵ And evaluations in Ghana and Sri Lanka show that microcredit was invested to a larger extent into a business by men than by women.²⁶

Another approach looks directly at the impacts of women's employment on human development outcomes, such as children's educational attainment and health. In a rural setting in southern India, an increase in annual female in-

FIGURE 5.4 Some earnings gaps decrease with the level of development; some do not

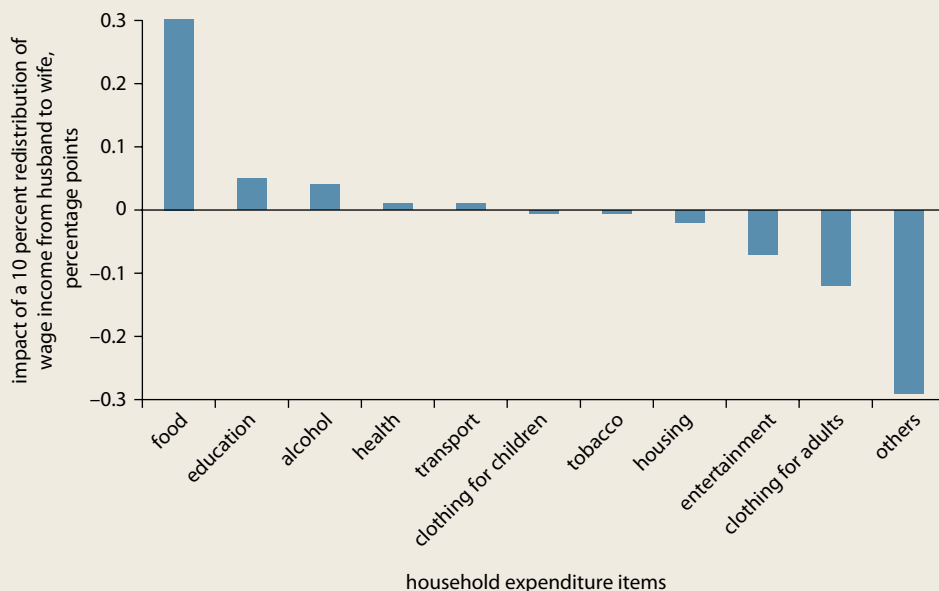
Source: World Development Report 2013 team estimates based on Montenegro and Patrinos 2012 for the World Development Report 2013.

Note: GDP = gross domestic product; PPP = purchasing power parity. Elementary occupations involve simple and routine tasks often requiring considerable physical effort. The vertical axis indicates the difference in earnings between the two groups depicted in each quadrant, controlling for the characteristics of people in the two groups. The *gap measure* is based on country-specific regressions of the logarithms of monthly earnings on years of education, potential years of experience (and its square), and controls for industry, occupation, urban/rural sector, ethnicity, and gender. Each dot represents a country.

come of US\$90 increased schooling by 1.6 years for disadvantaged castes.²⁷ In Mexico, a 10 percent increase in labor demand for adult women raised the chance of having a daughter in good health by 10 percent.²⁸ In addition, the children of women who found work in export manufacturing thanks to the opening of new factories closer to home were significantly taller.²⁹

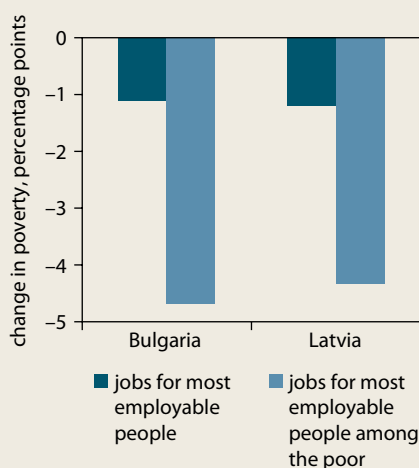
Poverty reduction. Job opportunities and employment transitions are major determinants of changes in both individual living standards and overall poverty in a country. If societies value poverty reduction, a job lifting an individual or a household out of poverty increases the well-being of others. A spillover exists then, as aggregate welfare increases beyond the increase in

FIGURE 5.5 *A higher women’s share of household income raises food expenditures in the Republic of Congo*



Source: Backiny-Yetna and Wodon 2011.

FIGURE 5.6 *Who gets the jobs matters for poverty reduction in Bulgaria and Latvia*



Source: World Development Report 2013 team.

Note: Figure is based on microsimulations using data from household surveys. In each country, the employment rate was exogenously increased by 3 percentage points. The baseline scenario allocated the new jobs to those who had the highest likelihood of being employed. Earnings were imputed on the basis of individual characteristics. The alternative scenario brought into jobs all those who had the highest employment likelihood among the poor.

the well-being of the individual or household escaping poverty.

The way new job opportunities are distributed is of major importance for poverty reduction. Poverty profiles, revealing the characteristics of the poor, help identify which types jobs—and in which locations—would make the biggest difference to them. Microsimulations using household survey data allow estimating the impact of changes in employment on poverty rates. For instance, increasing the employment rate is of highest priority in Bulgaria and Latvia, two aging countries. Consider the poverty alleviation effects of raising the employment rate by 3 percentage points depending on who, among those currently not working, gets the additional jobs. If the jobs went to the people whose individual characteristics make them more easily employable, poverty would fall by 1.1 percentage points in Bulgaria and by 1.2 percentage points in Latvia. If new employment opportunities instead went to the most employable among the poor, poverty would fall by 4.7 percentage points in Bulgaria and by 4.1 percentage points in Latvia (figure 5.6).

Productivity

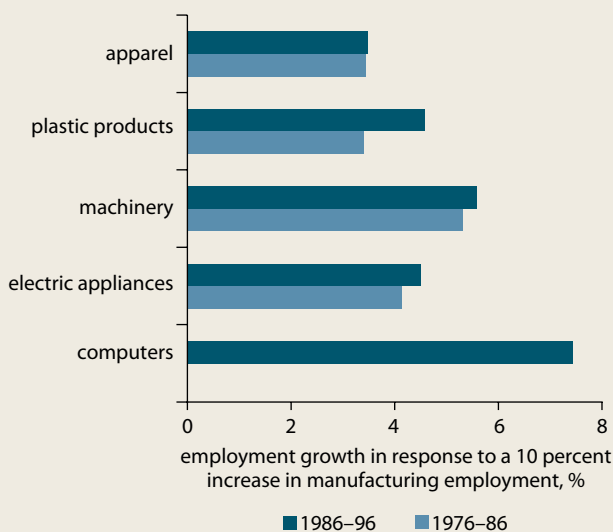
Spillovers from jobs on the productivity of other jobs can happen through three main channels. Jobs in functional cities lead to greater specialization and mutual learning. Jobs connected to global markets allow for the acquisition of more advanced technological and managerial knowledge. And through the production process in which they are embedded, jobs can have negative—or positive—effects on the environment.

Agglomeration effects. The spatial concentration of activity is a strong driver of productivity growth in developing countries. Effects can materialize within sectors (localization economies) or between sectors (urbanization economies). The sharing of inputs, better labor matching, and knowledge spillovers are the main forces behind the geographical concentration of industries and economic activity in urban environments. The sharing of inputs facilitates the emergence of specialized producers of intermediate goods and services. Proximity allows firms to more easily find workers to fill positions. Knowledge spillovers allow firms to learn about new technologies, products, and practices from other firms operating in the vicinity. These agglomeration effects signal a difference between the private and social values of jobs.

The tools of urban economics can be used to assess the potential gains from agglomeration. In industrial countries, as city employment increases by 10 percent, wages and firm productivity in the city grow by 0.2 to 1.0 percent.³⁰ To give a sense of the magnitudes implied, if wages and productivity were to increase by 0.3 percent, workers moving from a city with 5,000 inhabitants to a metropolis of 5 million would see their earnings increase by 23 percent.³¹ Nonetheless, not all workers benefit equally from living and working together in cities, nor do they contribute equally to productivity growth. Workers with better cognitive and social skills tend to benefit more.³² Workers also enjoy higher wages when they are surrounded by a more educated labor force.³³

The association between urban scale and productivity has also been documented in many developing economies, including Brazil, China, India, Indonesia, the Republic of Korea, and Turkey.³⁴ In Taiwan, China, a 10 percent increase in total manufacturing employment in a locality

FIGURE 5.7 *Agglomeration effects vary across industrial sectors in Taiwan, China*



Source: Sonobe and Otsuka 2006b.

Note: The figure shows the increase in the employment of a specific sector in a specific locality when total employment in manufacturing in that locality increases by 10 percent, controlling for other relevant factors.

causes employment in specific industrial sectors to increase between 3.0 and 7.5 percent (figure 5.7).³⁵ Enterprise surveys also show that firms grow faster in large cities.³⁶ In many developing countries, however, the poor functionality of cities undermines the potential gains from proximity. Inefficiencies in labor, land, and housing markets may cause poor functionality in cities. Poor functionality may also result from deficits in transportation and communication infrastructure, especially for smaller cities where market access is critical.³⁷

But agglomeration can also come with higher costs, from more expensive land to worse congestion and pollution in cities with 1 million to 3 million people. In the United States, between 1980 and 2000, the number of annual hours per person lost to traffic delays increased from 4 to 22.³⁸ Traffic in central London moves at only 11 miles an hour.³⁹ In Mexico City, the annual cost of traffic delays amounts to US\$580 a person, or 3 percent of annual per capita income.⁴⁰ Congestion and pollution limit agglomeration effects.⁴¹ In California, a reduction in ozone

concentrations of 10 parts per billion would increase worker productivity by 4.2 percent.⁴²

Analytical tools from the management literature can be used to assess the impact of industrial clusters on productivity.⁴³ In many low-income countries, industrial clusters account for a large share of manufacturing employment, including self-employment.⁴⁴ Clustering is more common in light manufacturing industries intensive in unskilled labor, such as garments, footwear, furniture, and metalworking. The formation of a cluster often starts with a pioneer, typically a former trader or engineer who is able to identify a new, profitable business. Success leads to imitation, and a large number of relatively small and similar enterprises emerges in the vicinity. The management literature can help identify dynamic clusters, where jobs have positive spillovers.

Global integration. The fragmentation of production across borders is one of the most notable features of the global economy.⁴⁵ Value chains connect firms and jobs across borders, be it

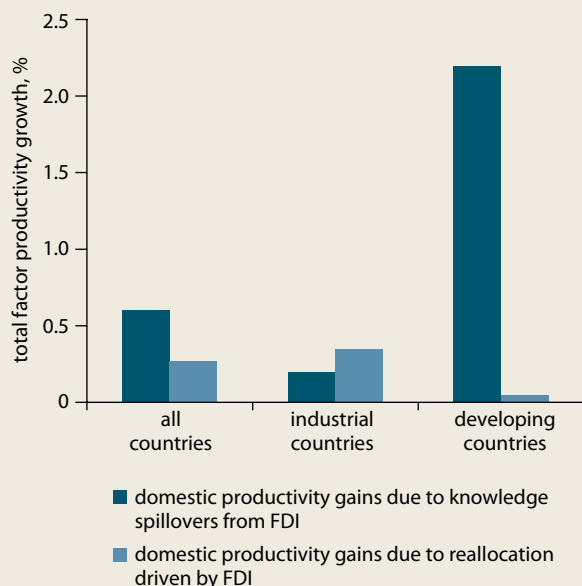
through arms-length trade or through intrafirm transactions. Global integration improves domestic resource allocation because it puts greater pressure on firms to be competitive. Exporting allows the most productive firms to grow. But in doing so, they also exert pressure on the least productive ones to contract or exit. Global integration also generates knowledge spillovers. These arise through exposure to new technologies embodied in traded goods or through new management practices in companies receiving FDI. Knowledge spillovers take place horizontally, between competitors, and vertically, through buyer-supplier relationships.

International economics has devoted considerable efforts to quantifying the productivity impacts of global integration. In Colombia, productivity increased faster at the plant level during the trade liberalization period than during the import substitution period.⁴⁶ In India, industry restructuring immediately following the trade reforms of 1991, including the entry and exit of firms, contributed significantly to productivity increases.⁴⁷ In Brazil, Côte d'Ivoire, and Turkey, the lowering of trade barriers led to a reduction of markups—a sign of intensified competition.⁴⁸ Productivity-enhancing effects of exports have been found in China; Indonesia; Korea; Slovenia; and Taiwan, China, as well as at the regional level in East Asia and Sub-Saharan Africa.⁴⁹

A specialized literature focuses on the knowledge spillovers and productivity impacts of multinationals and FDI. In Indonesia, when a plant switched from domestic to foreign ownership, its total factor productivity increased by 13.5 percent within three years. In Brazil, wages of incumbent workers in domestic firms were positively affected by the share of workers who previously worked with multinationals. In Ghana, firms whose owners worked for multinationals in the same industry were more productive than other domestic firms.⁵⁰ In developing countries, the knowledge spillovers from FDI may be more important than their impact on resource allocation (figure 5.8).⁵¹

Research can help assess whether the knowledge spillovers from global integration trickle down to small informal enterprises through value chains. Larger enterprises are more likely to become suppliers to foreign companies or to be directly acquired by multinationals. But they tend to contract out noncore businesses

FIGURE 5.8 *Knowledge spillovers from foreign direct investment increase domestic productivity*



Source: Alfaro and Chen 2011.

Note: FDI = foreign direct investment. The figure shows the increase in domestic productivity for different country groups when the probability of entry by new multinational firms doubles. The estimates are based on data from 60 countries.

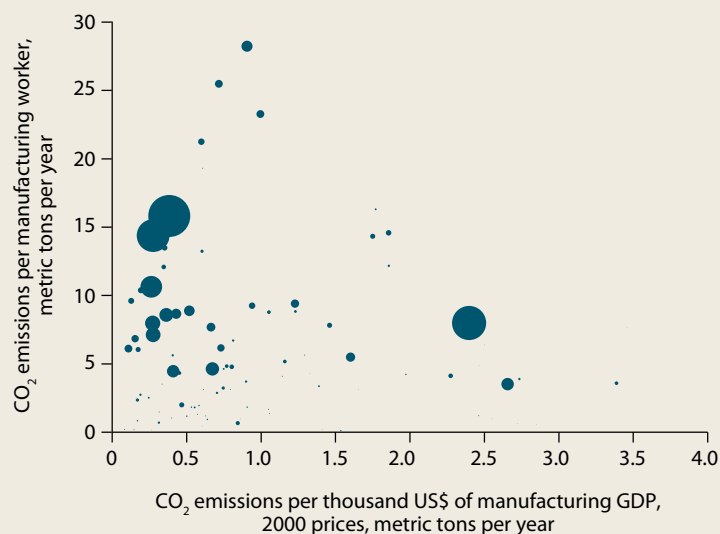
for cost efficiency, bringing smaller local companies into the value chain. Contracting out provides opportunities for small and microenterprises to also reap the benefits of knowledge spillovers.⁵²

Research can also shed light on the obstacles preventing the productivity spillovers from globally integrated jobs from materializing. Cross-country analysis shows that the degree of labor market flexibility, barriers to firm entry, and infrastructure development substantially influence the impact of openness on growth.⁵³ Knowledge spillovers hinge on the ability of the local economy to absorb them—human capital and research and development capacity are important. Local firms need a certain level of production and technological capabilities to be selected as suppliers by foreign companies. When technology gaps between local firms and foreign companies are large, productivity spillovers are less likely to occur.⁵⁴

Environmental impacts. Jobs that overuse natural resources or damage the environment are less productive than their direct output might suggest. The environmental damage they create imposes a negative spillover on others, resulting in a lower net contribution to aggregate output. Natural resources such as the atmosphere, water, forests, and soil provide services useful for economic activities and necessary for human life, but they are often overused because their cost from a private point of view falls short of their true social cost.⁵⁵ The emission of greenhouse gases is an example of a negative spillover.

The tools of environmental economics can be used to quantify the cost of emissions associated with jobs. Worldwide, industry is responsible for over one-fifth of carbon emission.⁵⁶ Globally, the average cost from fuel combustion in manufacturing is in the order of US\$82 per job per year.⁵⁷ However, this average hides an enormous diversity in the emission cost of production across countries, industries, and technologies. Across countries, a negative relation can be observed between the annual emission cost per job and the emission efficiency of production. Richer countries tend to have higher environmental costs associated with one job, but, in parallel, these jobs have a high productivity so that the emission intensity per unit of manufacturing output tends to be relatively low (figure 5.9).

FIGURE 5.9 *High emissions per worker can go hand in hand with low emissions per unit of output*



Sources: World Development Report 2013 team estimates based on IEA 2011, International Income Distribution Database (I2D2), and the ILO's Labor Statistics.

Note: CO₂ = carbon dioxide; GDP = gross domestic product. Estimates are based on data from the International Energy Agency and methods and emission factors from the revised 1996 Intergovernmental Panel on Climate Change guidelines for National Greenhouse Gas Inventories. The figure considers only CO₂ emissions from fuel combustion associated with productive activities in the manufacturing and construction sectors. Bubbles represent countries. The size of the bubbles represents the comparable size of manufacturing GDP in constant prices.

Policies to contain carbon emissions and reduce environmental damage rely on price and quantity instruments aimed at transferring the cost to producers. These policies should increase net output per job, accounted for in green terms. However, in the short term, they could result in fewer jobs if natural resources and labor are complements in production.

Policies also try to promote job creation in more environmentally friendly industries. Jobs in enterprises that produce wind mills for electricity generation, construct water and soil conservation systems, and plant and manage trees fall in this category. These are often called green jobs, with different definitions attached to the term. Industries matching the most common definitions of green jobs tend to be relatively small in many developing countries, with Brazil and China notable exceptions (box 5.6).⁵⁸

Pending a precise quantification of environmental spillovers from jobs, it is likely that the activities with the greatest potential to mitigate adverse environmental damage in develop-

BOX 5.6 *International definitions of green jobs can be too narrow for developing countries*

While the concept of green growth is well developed, there is less consensus on the concept of green jobs.^a The Organisation for Economic Co-operation and Development (OECD) uses this label for jobs linked to environmental industries.^b The European Commission focuses on employment in industries whose products are deemed beneficial to the environment.^c Examples include jobs in renewable energy sectors and low-carbon manufacturing. Several national governments are developing their own definitions of green jobs, both for statistical purposes as well as to inform policy making.

The United Nations Environment Programme defines green jobs as “positions in agriculture, manufacturing, construction, installation, and maintenance, as well as scientific and technical, administrative, and service-related activities that contribute substantially to preserving or restoring environmental quality.”^d For the United Nations Environment Programme and the International Labour Organization, these jobs must also qualify as Decent Work.

But these definitions can be too narrow. In developing countries, some jobs associated with green growth that have prospects for substantial expansion, such as biofuel and biomass production, may not qualify as Decent Work.^e Moreover, the focus on renewable energy and low-carbon manufacturing may shift attention away from activities with positive environmental impacts that also provide higher earnings to the poor.

Consider efforts toward reduced forest degradation and sustainable management of trees.^f Tree resources outside of closed forests are becoming increasingly important to satisfy the demand for charcoal, firewood, timber, and nonwood forest products. Locally managed reforestation and regeneration of degraded landscapes may generate income opportunities for poor people as well as positive environmental impacts. Trees with the capacity to fix nitrogen have been used to improve soil fertility and provide fodder, wood, and fuel. Such enhanced tree management has helped increase sorghum yields by as much as 85 percent in some areas and millet yields by as much as 50 percent.

Source: World Development Report 2013 team.

a. For a detailed discussion, see Bowen 2012.

b. OECD 1999.

c. UNEP and others 2008.

d. UNEP and others 2008, 35–36.

e. Upadhyay and Pahuja 2010.

f. Sander and Dewees 2012 for the World Bank Development Report 2013.

ing countries lie outside the modern sector, in areas such as agriculture and forestry management. Agriculture and deforestation account for nearly 30 percent of the greenhouse gas emissions in the world.⁵⁹ Low-productivity agriculture leads to deforestation as cultivated areas are expanded.⁶⁰ As such, efforts to reduce the environmental spillovers from jobs in developing countries are bound to concern rural areas, affecting farming and rural livelihoods.⁶¹ For example, they may involve community participation in the management of commons such as forests and natural habitats.

Social cohesion

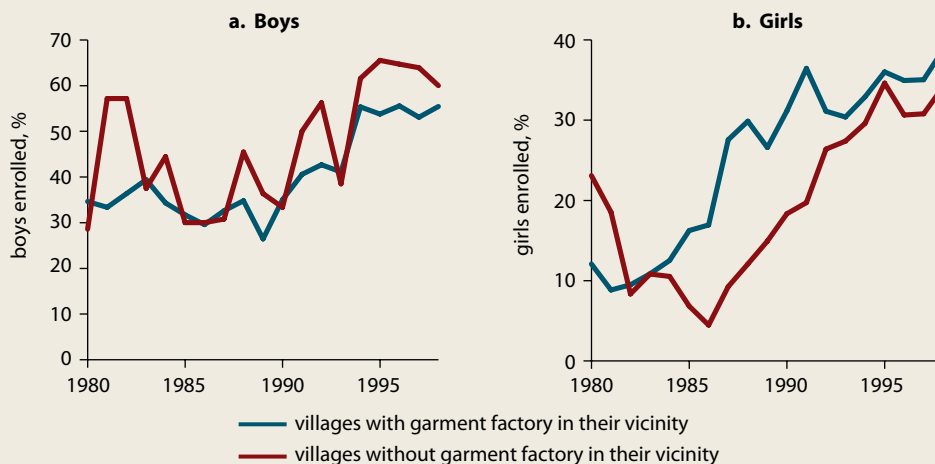
If jobs change values, behaviors, and attitudes of people, they can influence how societies function, specifically, how groups in society are able to resolve tensions and engage in peaceful collective decision making. Three such spillovers from jobs to social cohesion are social identity, networks, and a sense of fairness. The effect of jobs on social identity can be particularly im-

portant for youth. Jobs can contribute to socialization and the process of acquiring values and behaviors for the workplace and society.⁶²

Social identity. A job can influence the social groups that individuals associate with, their behaviors, and the norms that shape those behaviors.⁶³ The degree to which a job, or its characteristics, shapes the way individuals perceive themselves in their community and society varies with traditions, culture, and the level of economic development. But when the relationship is significant, a spillover from jobs to social cohesion exists.

Quantifying spillovers from jobs on social cohesion is bound to be more difficult than for living standards or productivity. However, a rough assessment is possible using household surveys as well as qualitative studies. For instance, about half of respondents in China judge their jobs to be somewhat or absolutely meaningful, but in Sierra Leone the share is 90 percent, potentially signaling the social importance of jobs in a low-income and post-conflict setting.

FIGURE 5.10 Proximity of garment factories stimulates schooling among young girls in Bangladesh



Source: Heath and Mobarak 2011.

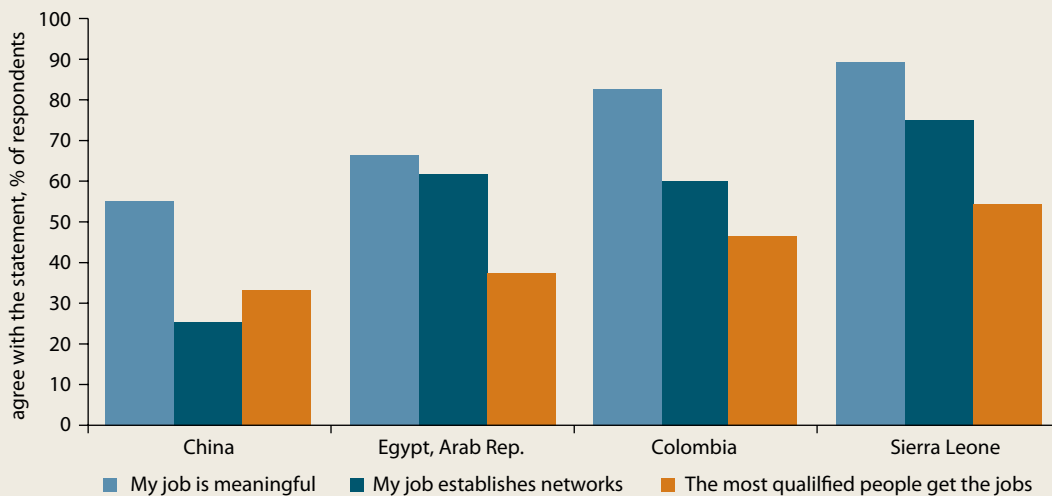
Behaviors and norms can also be changed by perceptions about access to jobs—by raising peoples' expectations and aspirations for the future—and in some cases these changes in perceptions can be gauged as well. For instance, school enrollments in Bangladesh increased among girls after garment factories opened within commuting distance of their villages.⁶⁴ No such effect was observed among boys, while some older girls dropped out of school to take up the new job opportunity (figure 5.10). As jobs in the factories became available to women, it is likely that parents saw more employment opportunities for their daughters and realized the importance of education. The women working in these garment factories thus set an example for other women and girls.

Program evaluations are another source of information on the spillovers from jobs on social cohesion. For instance, the Programa Juventud y Empleo (Youth and Employment Program) in the Dominican Republic reaches young people who have not finished secondary school, are unemployed, and are living in poor households. Participants receive a combination of vocational training and training in life skills, including self-esteem, teamwork, and communication skills, followed by internships at private sector

firms.⁶⁵ The program has led to a decrease in involvement in gangs, violence, and other risky behavior, including drug use and unprotected sex. Participants described the positive impact on their self-esteem and behaviors.

Networks. Jobs can create new contacts and be a vehicle to transmit information. On the negative side, they can also have an exclusionary effect, moving the individual further from the wider society. Positive network effects can give people a stake in their community or society; negative effects can increase social distance.

Again, surveys can inquire about these dynamics as a first entry to gauge whether a spillover exists. In four countries, participants in a survey were asked whether their job was useful or not in establishing contacts with other people, providing information about societal matters or other jobs, or helping with news about good deals (on food, for example). Only a quarter of respondents in China, but fully three-quarters of those in Sierra Leone judged these network effects to be at least somewhat important (figure 5.11). While comparisons across countries need to be interpreted with caution, comparisons across individuals in the same country may be informative.

FIGURE 5.11 *Not all jobs provide social identity, networks, or a sense of fairness*

Source: World Development Report 2013 team estimates based on Bjørkhaug and others 2012; Hatløy and others 2012; Kebede and others 2012; and Zhang and others 2012; all for the World Development Report 2013.

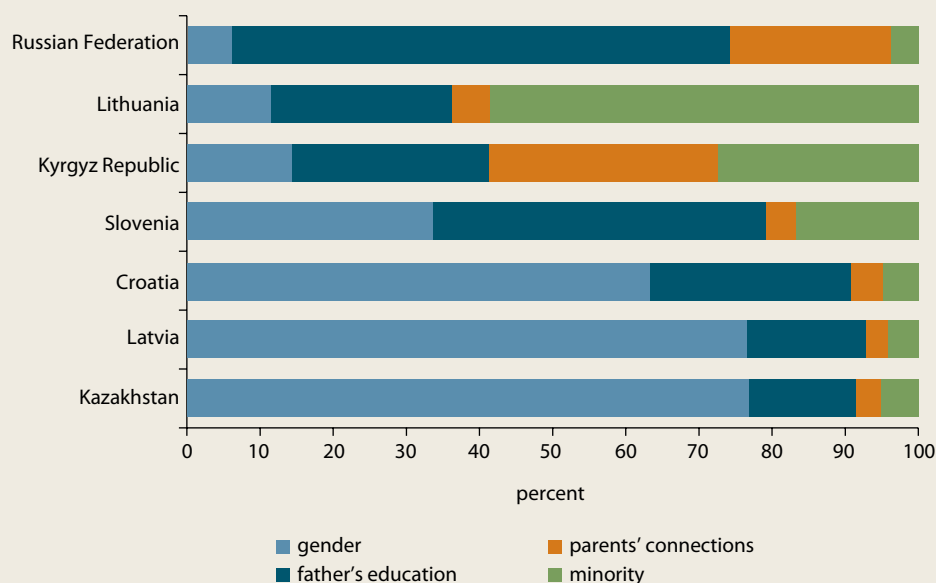
Quantitative methods are necessary to contextualize network effects. Surveys in Bosnia and Herzegovina and the former Yugoslav Republic of Macedonia have found that the number of people willing to work or do business with someone of a different ethnicity was greater than the number of people in favor of interethnic cooperation in schools or neighborhoods.⁶⁶ Focus groups in Bosnia and Herzegovina in the late 1990s found that the workplace was “the area in which there is the greatest support for ethnic cooperation.”⁶⁷ Business people working in print and packaging, food and beverages, construction, and retail in Trinidad and Tobago have reported that interactions through work with others of different ethnicities have positively influenced their social life.⁶⁸

Sense of fairness. Whether access to jobs is fair naturally depends on a subjective evaluation. Opinion surveys can provide an assessment of how fair the job market is judged to be, and tracking such evaluations over time can be of guidance to policy makers. About 30 percent of Chinese respondents feel that the most-qualified people get jobs—an indication that rel-

atively few people judge jobs to be distributed on the basis of merit. In Colombia as well as Sierra Leone, the percentages were significantly higher.

Beyond these subjective assessments, fairness in access to jobs can actually be measured rigorously, building on the emerging literature on inequality of opportunity. This literature explores to what degree factors beyond talent and effort matter in accessing jobs. These factors include the circumstances in which a person is born: location, family background, gender, ethnicity, and language.⁶⁹ A society that offers equal opportunities would record little influence of these circumstances on job trajectories much later in the life. In some countries, however, the share of inequality that arises from such birth circumstances is large. In this case, the existence of deeply rooted inequities determines the life chances from early on and becomes apparent later on through the access to jobs and the related rewards.⁷⁰ The approach can also be used to assess the importance of different factors that contribute to inequality in employment opportunities. Among several countries in Eastern and Central Europe, father’s education is a driver for inequity in access to jobs, especially in the Rus-

FIGURE 5.12 Gender and father's education account for a large share of inequality of opportunity in access to jobs



Source: Abras and others 2012 for the World Development Report 2013.

Notes: The figure shows the contribution of each circumstance to an inequity measure, the D-index. The *D-index* is the share of available opportunities that would have to be reallocated to achieve the same coverage rate of opportunity across all groups. *Opportunity* is defined as having a job with 20 or more hours per week. *Parents' connections* refers to parents who were affiliated with the Communist Party. *Father's education* is measured in years of completed schooling.

sian Federation and Slovenia, while gender is predominant in Latvia, Kazakhstan, and Croatia (figure 5.12).

* * *

The assessment of the social value of jobs is important for the identification of what good jobs for development are in a particular country context. Such assessments can be pursued

with a variety of means. Some of them allow for an actual quantification, some others for a qualitative treatment of the difference between the individual value and the social value of jobs. Assessing the social value of different types of jobs can inform policy discussions about trade-offs and priorities for developmental policies. The relevant spillovers are bound to be different in countries at different levels of development and with different characteristics, thus leading to diverse jobs agendas.

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.

Notes

1. Glewwe 2004; World Bank 2008b.
2. Nunn and Wantchekon 2011.
3. ILO 2012b.
4. ILO 2010a.
5. United Nations, 1948, The Universal Declaration of Human Rights, United Nations, New York, <http://www.un.org/en/documents/udhr/>, article 23 (1). Complementing the declaration, international conventions aim to protect the rights of women, children, the disabled, migrants, and others—among these the Convention on the Elimination of All Forms of Discrimination against Women (1979), the Convention on the Rights of the Child (1989), the International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families (1990), and the Convention on the Rights of Persons with Disabilities (2006). Regional mechanisms that protect labor rights include the European Convention on Human Rights, the European Social Charter, and the Inter-American Convention on Human Rights. Each of these provides explicit protections for a range of labor rights. At the national level, countries include workers' rights in constitutions, national laws, and regulations. National laws clarify details on specific interpretations and applications of international rights and standards.
6. The core international labor standards are the subject of eight conventions covering the four areas: Convention 87 (1948), the Freedom of Association and Protection of the Right to Organize Convention; Convention 98 (1949), the Right to Organize and Collective Bargaining Convention; Convention 29 (1930), the Forced Labor Convention; Convention 105 (1957), the Abolition of Forced Labor Convention; Convention 100 (1951), the Equal Remuneration Convention; Convention 111 (1958), the Discrimination (Employment and Occupation) Convention; Convention 138 (1973), the Minimum Age Convention; and Convention 182 (1999), the Worst Forms of Child Labor Convention. See “Conventions,” NORMLEX (Information System on International Labour Standards) database, International Labour Organization, Geneva, <http://www.ilo.org/dyn/normlex/en/>.
7. For example, Convention 122 covers employment policy, Conventions 81 and 129 address labour inspections (129 for agriculture), and Convention 144 involves tripartite consultations.
8. ILO 1998.
9. Hassel 2008. For example, the safeguard policies of the International Finance Corporation (IFC) are aligned with the core labor standards. See IFC 2012.
10. In theory, freedom of association provides a channel for workers to demand better working conditions. Safety and health are covered by ILO conventions, national laws, and regulations and an increasing number of voluntary private sector codes of conduct.
11. Fredman 2012 for the World Development Report 2013.
12. Family workers hold self-employment positions in market-oriented establishments operated by relatives living in the same households. See ILO 2011a.
13. Sankaran 2007.
14. Fredman 2012 for the World Development Report 2013.
15. Levi and others 2012 for the World Development Report 2013; Newitt 2012 for the World Development Report 2013. These initiatives are supported by international standards and guidelines such as the Performance Standard 2 of the IFC, the Equator Principles for Financial Institutions, and the United Nations Guiding Principles on Business and Human Rights.
16. Clark 2005; Helliwell and Putnam 2004.
17. Fan and Chan-Kang 2008.
18. Summers 1989.
19. World Bank 2009a.
20. Bell and Blanchflower 2010; Bell and Blanchflower 2011.
21. Beegle, Goldstein, and Rosas 2011.
22. Attanasio and Lechene 2002.
23. Hoddinott and Haddad 1995; Quisumbing and Maluccio 2003.
24. Backiny-Yetna and Wodon 2011.
25. Akresh, de Walque, and Kazianga 2012.
26. de Mel, McKenzie, and Woodruff 2009; Fafchamps and others 2011.
27. Luke and Munshi 2011.
28. Kaveh 2012.
29. Atkin 2009.
30. Duranton 2012 for the World Development Report 2013.
31. This example is an illustration of the magnitudes at stake, not a welfare pronouncement. Cities have pecuniary costs, such as higher prices for housing, and nonpecuniary costs, such as worse pollution and more crime. Costs of living also increase with city size. Emerging evidence from industrial countries also shows a wage growth effect, and not only a level effect, in larger cities. See Freedman 2008; Holmlund and Storrie 2002; Wheeler 2006.

32. Bacolod, Blum, and Strange 2009; Glaeser and Resseger 2010; Wheeler 2001.
33. Duranton 2006; Moretti 2004a. Early findings in the literature were generated from U.S. data, but they have been confirmed for most large, developed economies. For transition and developing countries, these findings have been replicated for Chile (Saito and Gopinath 2011), China (Liu 2007), Malaysia (Conley, Flyer, and Tsiang 2003), and the Russian Federation (Muravyev 2008).
34. Duranton 2008; Henderson 2005; Overman and Venables 2005.
35. Sonobe and Otsuka 2006b.
36. IFC, forthcoming.
37. Duranton 2008; Henderson 2005; Overman and Venables 2005; World Bank 2009c.
38. Glaeser and Kohlhase 2004.
39. Santos and Shaffer 2004.
40. Parry and Timilsina 2010.
41. Rappaport 2008. For evidence from the Netherlands, see Broersma and Oosterhaven (2009).
42. Zivin and Neidell 2011.
43. Henderson, Kuncoro, and Turner 1995; Henderson, Lee, and Lee 2001.
44. Long and Zhang 2011; Mano and others, forthcoming; McCormick 1999; Schmitz and Nadvi 1999; Sonobe and Otsuka 2006a.
45. Feenstra 1998; Hummels, Ishii, and Yi 2001; Yeats 2001; Yi 2003.
46. Fernandes 2007.
47. Harrison, Martin, and Nataraj 2011.
48. Harrison 1994; Levinsohn 1993; Muendler 2004.
49. Aw, Chung, and Roberts 2000; Aw, Roberts, and Winston 2007; Blalock and Gertler 2004; De Loecker 2007; Fernandes and Isgut 2007; Hallward-Driemeier, Larossi, and Sokoloff 2002; Lileeva 2004; Matthias Arnold and Javorcik 2009; Park and others 2010; Van Biesebroeck 2005.
50. Aitken, Hanson, and Harrison 1997; Görg and Strobl 2005; Javorcik 2012 for the World Development Report 2013; Kee 2010; Poole, forthcoming.
51. Alfaro and Chen 2011.
52. Unni and Rani 2008.
53. Bolaky and Freund 2004; Chang, Kaltani, and Loayza 2009; DeJong and Ripoll 2006.
54. Blalock and Gertler 2005; Borensztein, De Gregorio, and Lee 1998; Glass and Saggi 2002; Kinoshita 2000; Kokko, Tansini, and Zejan 1996; Javorcik 2012 for the World Development Report 2013.
55. Hallegatte and others 2011.
56. UNEP 2011.
57. This estimate is based on a social cost of a metric ton of carbon of US\$20 in 1995 (Fankhauser 1994), converted to 2009 prices using the U.S. GDP deflator. For sources on estimation methodology, see the note for figure 5.9.
58. In contrast, in Europe, the discussion on green growth often focuses on the use of renewable energy and low-carbon manufacturing (GHK 2009; Oral, Santos, and Zhang 2011).
59. IPCC 2007.
60. Stevenson and others 2011.
61. Otsuka and Place 2001; Pingali, Bigot, and Binswanger and Mkhize 1987; Yamano, Otsuka, and Place 2011.
62. Norton and de Haan 2012 for the World Development Report 2013.
63. Akerlof and Kranton 2010.
64. Heath and Mobarak 2011.
65. Ibarraran and others 2012.
66. UNDP 2003a; UNDP 2003b.
67. Dani and others 1999, 3.
68. Kilroy 2011.
69. The circumstances are assumed to be independent of abilities of children at birth.
70. Abras and others 2012 for the World Development Report 2013.
71. Hanushek and Woessmann 2008. Lee and Newhouse (2012, for the World Development Report 2013) extend the analysis by Hanushek and Woessmann (2008) by conducting a cohort analysis, matching achievement test scores to employment outcomes.
72. Lee and Newhouse 2012 for the World Development Report 2013.
73. Gennaioli and others 2011.
74. Welzel 2012 for the World Development Report 2013.
75. World Development Report 2013 team calculations based on national household surveys. Employed are considered overqualified if their education (years of schooling) is one standard deviation above the mean observed for the respective occupation; they are considered underqualified if their education is one standard deviation below the mean observed per occupation. The two-digit ILO definition of occupations is used.
76. This is a comparison of relative constraints. For each country, the percentage of firms that rate skills to be a severe or very severe constraint is divided by the average of such rating for all other obstacles. This allows for a cross-country comparison independent of the level of the subjective answers.
77. Estimating the conditional correlation between the relative skill constraint and a number of variables using the World Bank's enterprise surveys for 105 countries, one finds a significant correlation with firm size (positive), age (negative), exporting activity (positive), innovative

- activity (positive), and manufacturing sector (positive).
78. For country examples in Georgia, the former Yugoslav Republic of Macedonia, Poland, and Ukraine, see Rutkowski (2008); Rutkowski (2010); World Bank (2009b); and World Bank (2011a).
 79. Di Gropello, Kruse, and Tandon 2011; Di Gropello, Tan, and Tandon 2010.
 80. Almeida and Filho 2012.
 81. Specialized investment climate surveys of unregistered firms, conducted by the IFC in Afghanistan, Angola, Botswana, Burkina Faso, Cameroon, Cape Verde, the Democratic Republic of Congo, the Arab Republic of Egypt, Mali, and Nepal. Firm owners are asked to single out the most important obstacle to operating their business, with the number of obstacles varying by survey. The highest percentage is recorded in Egypt, where 6 percent of firm owners chose skills as the most important obstacle of a total of 21 choices; the lowest was in Afghanistan, where 5 percent of firm owners named skills among 12 obstacles. Rural investment climate assessments were made in Benin, Burkina Faso, Ethiopia, Indonesia, Mozambique, Nigeria, Tanzania, Sri Lanka, and the Republic of Yemen and returned similar results as to the importance of skills (Sawada 2011).
 82. Training funds, set up in many countries and often financed through payroll taxation, as in Brazil, Chile, Mexico, or Singapore, provide financing for training. Almeida, Behrman, and Robalino, 2012.
 83. In Latin America, 10 percent of small firms report that this is their major reason for not intensifying in-house training. World Development Report 2013 team calculations based on enterprise surveys of Latin American countries (excluding Brazil).
 84. Assaad 1997.
 85. See examples for Mediterranean countries in Biavaschi and others (2012 for the World Development Report 2013).
 86. Almeida, Behrman, and Robalino 2012.
 87. Estimates from studies for specific years. India (2004 data), Pakistan (2004 data), and Sri Lanka (2002 data): Riboud, Savchenko, and Tan (2007); Indonesia (1993, 1997, 2000, 2007 data): Newhouse and Suryadarma (2011); Rwanda (1999–2001 data): Lassibille and Tan (2005); and Thailand (1989–95 data): Moenjak and Worswick (2012).
 88. No golden rule exists about how many secondary students should be in the vocational branch. Most advanced countries, with stronger demands—and rewards—for specific technical skills, have between 40 and 50 percent of their students in the vocational track. In the developing world, the average is about 33 percent based on UNESCO statistics (<http://www.uis.unesco.org/Pages/default.aspx>).
 89. See Tan and Nam (2012). For advanced countries, on average, the employability of students graduating from TVE is similar to that of students' graduating from general tracks, but they earn somewhat lower incomes.
 90. Indian Planning Commission 2008.
 91. Blom and Saeki 2011.
 92. World Bank 2012a.
 93. World Bank 2011b.
 94. WDR 2013 team estimates based on Mincer regressions for 545 household surveys, which include years of education as well as potential work experience (Montenegro and Patrinos 2012, for the World Development Report 2013).
 95. McKinsey & Company 2012. Managers were given four choices from which to choose the biggest bottleneck to hiring: education (a school-leaving certificate or degree); technical skills (for instance, welding or accounting) not necessarily taught at school; social skills (for instance, attitude, workplace behavior, arriving on time, trustworthiness); or work experience.
 96. ILO 2011b; Nübler 2008. The ILO has also conducted a significant number of school-to-work transition surveys that provide insights into the constraints and options for young people entering the labor market. See, for instance, Matsu-moto and Elder (2010).
 97. Biavaschi and others 2012 for the World Development Report 2013. Interestingly, for Germany, the initial transition does not hinge on finding employment in the training firm. Even though training and on-the-job learning takes place in a specific firm, skills learned appear to be transferable (Winkelmann 1996).
 98. For a literature review, see Biavaschi and others (2012 for the World Development Report 2013).
 99. See Biavaschi and others 2012, for the World Development Report 2013.
 100. Cunha, Heckman, and Schennach 2010; Heineck and Anger 2010. In the Dominican Republic, early results from a life skills training for poor youths (16 and 29 years of age who had not completed secondary school) show significant results. For young female participants, pregnancy rates are down and employment chances up. For both women and men, job satisfaction and aspirations improved markedly (Ibarraran and others 2012).
 101. Glaeser and Mare 2001; Kimura 2011; Mas and Moretti 2009; Peri 2002. Iranzo and Peri (2009) find that in the United States, sizable spill-

overs exist through jobs whose holders have a higher education degree (which is a proxy for advanced skills). One additional year of college education per worker is associated with a spillover—in addition to the effect on the student's income and employment chances—of increasing the respective state's productivity growth by 6 to 9 percent. See also Ciccone and Peri 2006; Moretti 2004a; Moretti 2004b; Moretti 2004c; and Rosenthal and Strange 2008.

102. Foster and Rosenzweig 1996.
103. Yamauchi 2007. See also for Ghana, Conley and Udry 2010.
104. Almeida, Behrman, and Robalino 2012.
105. Lin and Lim 2011; Tan and Nam 2012.
106. World Bank and MIGA 2006.
107. World Development Indicators (database), World Bank, Washington, DC. <http://data.worldbank.org/data-catalog/world-development-indicators>.
108. Jensen 2010.
109. Jensen, forthcoming.
110. For a discussion on low-skill, low-productivity traps, see Acemoglu (1997); Almeida, Behrman, and Robalino (2012); Amjad (2005); Atal and others (2010); Munshi (2011); and Snower (1994). See also, on the relationship between human capital accumulation, product diversification, and attraction of FDI in Central America, Bashir, Gindling, and Oviedo (2012 for the World Development Report 2013).

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