The shift away from agriculture seen since the đổi mới reforms has changed the type of work that Vietnamese people do and the skills they need to do their jobs. Jobs can be thought of as a series of activities, such as harvesting rice, sewing clothes, checking the temperature of a patient, calculating profits, and presenting analysis. A worker conducting a job needs to make overarching decisions on what tasks and activities to do next, through prioritization and recognizing trade-offs. Making these choices and conducting these activities require a set of skills for the person to perform them well, from physical strength and manual dexterity to numerical skills and the self-confidence to put forward new ideas. Vietnam is gradually moving away from the type of jobs that consist mainly of manual and repetitive activities and is moving toward jobs that require workers to solve problems and to use more modern technology.

Although the shift in the demand for skills in Vietnam has been gradual, it has been transformative. The change in the type of jobs that Vietnamese people do over time has implications for the skills that the education system needs to build. A young urban labor market entrant in Vietnam faces not only a more diversified choice of career paths than ever before, but also a more demanding set of employers. Rural households that were previously focused on agricultural activities have moved in large numbers into nonfarm enterprise activities that require choosing products and suppliers, interacting with customers, setting prices, and calculating profits. Although this book focuses on data from urban areas, the rise in nonagricultural activity in rural areas implies that similar, if not as fast-paced, transitions are under way there. These changes to what people across rural and urban Vietnam do on a daily basis imply that the way that they use their education has changed over time.

Both employers and employees in urban areas report that the education system does not provide all the skills needed in the current Vietnamese labor market. The skill shortages are reported to be greatest for businesses with international links and among employees expected to do complex tasks. Although education has improved over the last 30 years, employers and employees recognize that the education system today does not provide
graduates with all the needed skills for their enterprises, workplaces, and career aspirations. Reports from employers suggest that the economy suffers from a skills shortage and that the shortage is a substantial obstacle to the operation and growth of their businesses. “International” firms—foreign direct investment (FDI) firms, firms that are engaged in international trade, and firms that have international links—are affected by the skills shortage more than “local” businesses. This means that the skills shortage, if not addressed, may become a binding constraint to the modernization and growth of the Vietnamese economy. Workers of all education levels report that their literacy and information technology (IT) skills are a constraint to their career growth.

Although technical skills are in high demand, employers value a broader skill set. There is a strong return to education in urban Vietnam, and the return to education has increased over time (Coxhead and Phan 2012). One reason that people with upper secondary or university education earn more than those with primary education is that they have better technical, cognitive, social, and behavioral skills. Employers value and pay for cognitive and technical skills, such as being able to solve problems and think critically. Employers also value social and behavioral skills, such as being able to communicate well, work in teams, and have positive job attitudes. This chapter discusses the type of skills that employers in urban Vietnam demand and examines the importance of skills in Vietnam’s economy. It shows that to serve the emerging needs of the labor market, it is necessary to look beyond educational attainment to focus on the underlying skills that are produced by the education system.

**Shifting the Dialogue: From Education to Skills**

Vietnam has made impressive strides in raising education levels and in reducing inequalities in education access over the past two decades. Among young adults between 20 and 24 years of age, 90 percent had completed primary education in 2010 compared to 85 percent in 2004 (figure 2.1, panel a). The rise in primary school completion among this age cohort has been dominated by poorer households, and primary completion rates among the rural and urban population are nearly identical among individuals transitioning into the labor market in 2010. More important, these gains in education and narrowing disparities across income groups are also seen at lower and upper secondary levels. The share of 20- to 24-year-olds who have completed at least lower secondary education has increased across all expenditure quintiles, most notably among the poorest households (figure 2.1, panel b). In urban Vietnam, 6 in 10 workers have attained a higher level of education than their parents, and the youngest cohort of labor market participants is more likely to have graduated from tertiary education than older workers. Enrollment rates reported by the United Nations Educational, Scientific, and Cultural Organization’s (UNESCO) Institute for Statistics reveal a rapid increase in tertiary enrollment from 10 percent in 2000 to 24 percent in 2011 (UNESCO 2013).
Despite the impressive rise in education acquisition, many Vietnamese businesses report a shortage of workers with adequate skills as a significant obstacle to their activity. A majority of employers surveyed under the Skills Toward Employment and Productivity (STEP) employer survey (see box 2.1) report that hiring new workers is difficult either because of inadequate skills of job applicants (a skills gap) or because of a scarcity of workers in some occupations (skills shortage) (see box 2.2 for a definition of these terms). ²STEP evidence suggests that worker skills and availability are more binding concerns for employers than labor market regulations and taxes. Over 60 percent of international firms view the shortage of labor with the right skills as an obstacle to their activity, and nearly half of these firms view it as a major obstacle (figure 2.2). Nearly 40 percent of international firms see the general education of workers as an obstacle, and 46 percent see vocational education as an obstacle. Employers from international firms estimate that approximately 14 percent of their employees are not fully qualified to do their jobs, which suggests that despite expanding attainment, the educational system does not respond to labor market needs and that improving the quality of education will remove an important barrier to productivity and growth of Vietnamese firms.

Vietnamese employers are highly critical of the quality of the education system. Almost half of the employers in the STEP survey complain that graduates do not have the level of skills needed in their workplace. International firms complain about the quality of education more often than local businesses do. Two-thirds of all international firms claim that both the general and vocational education systems do not meet the skill needs of their workplace. In the eyes of

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**Figure 2.1 Educational Achievement of the Population Aged 20–24 Years, 2004–10**

<table>
<thead>
<tr>
<th>a. Percentage of the population who have completed primary, lower secondary, upper secondary, or above</th>
</tr>
</thead>
<tbody>
<tr>
<td>b. Percentage of the population who have completed lower secondary or above, by expenditure quintile</td>
</tr>
</tbody>
</table>

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*Note:* VHLSS = Vietnam Household Living Standards Survey.
The STEP Skills Measurement Project collected information on the supply and demand side for skills in multiple countries across the world, including in a first round Vietnam (urban), Yunnan Province, China (urban), the Lao People’s Democratic Republic (urban and rural), Sri Lanka (urban and rural), and Bolivia (urban). The Vietnam STEP data, collected in 2011 and 2012, consist of two surveys, a household and employer survey, aimed at collecting information on the supply and demand for skills in the population of Ho Chi Minh City (HCMC) and Hanoi.

The STEP household survey collected detailed information on education, skills, work history, family background, and labor market outcomes for 3,405 individuals of working age (between 15 and 64). The survey includes four modules to capture different types of skills: (a) a core literacy assessment that asks eight easier literacy questions to determine basic literacy skills; (b) an extended and more advanced literacy assessment that measures the level of competence of the individual to access, identify, integrate, interpret, and evaluate information; (c) a battery of self-reported information on personality and behavior; and (d) a series of questions on task-specific skills that the respondent possesses or uses in his or her work. The same questions were asked in all countries participating in the survey, thereby allowing for international comparisons of skills and skill development.

The literacy assessment in the STEP household survey and the Survey of Adult Skills (a product of the Programme for the International Assessment of Adult Competencies, or PIAAC) conducted by the Organisation for Economic Co-operation and Development (OECD) in 24 OECD and partner countries (OECD 2013) were linked and their results can be placed on the same scale. Comparisons should be interpreted with caution given differences in the surveys’ target population, assessment areas, and technical standards. More detail on this can be found in annex 2A.

The skill profile of older workers reflects a lifetime of accumulation at work and school, while the skill profile of younger individuals reflects accumulation during earlier stages. Skills depend on innate abilities, learning at home and school during early childhood and subsequently, and on acquisition on the job. More discussion on the measurement of skills can be found in annex 2A.

The STEP employer survey was conducted in HCMC and Hanoi and immediately surrounding provinces; it can therefore be considered to be representative of these two major urban conglomerations. The employer survey gathers information on hiring, compensation, termination, and training practices as well as enterprise productivity. The survey includes questions to identify: (a) employers’ skill needs and utilization; (b) the types of skills that are considered of most value; and (c) the tools used to screen prospective job applicants.

Throughout the text, “international firms” are defined as businesses that have international business contacts with entities in other countries. International firms are considered as modern firms, while businesses that do not have international business contacts are considered as traditional firms. International firms represent 35 percent of all firms, but account for 93 percent of total employment in the survey. International firms are therefore much larger than local.
Box 2.1 Skills Toward Employment and Productivity (STEP) Household and Employer Surveys (continued)
businesses: on average they employ 490 workers compared with 29 workers employed by local businesses. International firms are more likely to report good economic performance than local firms and more frequently introduce innovations. The share of blue-collar occupations is significantly higher in international firms, while the share of white-collar occupations (including professionals and technicians) is lower. There are no significant locational differences between international and local firms.

The employer and household surveys use the same skills concepts and definitions, which enables the analysis of skills constraints from demand- and supply-side perspectives. On the person or worker side, the household survey measures the human capital stock of skills—the skill supply. On the employer side, the employer survey captures the types of skills demanded and potential shortages—the demand for skills. The simultaneous measurement of skills stocks and demands allows an in-depth analysis of skill needs and the skill profile of the population of HCMC and Hanoi.

Box 2.2 Defining Skill Gaps and Occupational Skill Shortages

Businesses report that hiring workers is difficult. Although the explanation for this difficulty varies by occupation, two explanations stand out. First, applicants lack required skills—a skills gap. Second, there are no or few applicants—an occupational skills shortage. Other reasons, such as excessive wage expectations or unsatisfactory working conditions (meaning that the applicants turn down the job offer), are usually secondary.

An occupational shortage occurs when, given the prevailing wage level, the demand for workers with certain technical skills exceeds their supply. When businesses are not able to fill vacancies in a certain occupation because there are too few applicants, this is an indication of an occupational shortage. For example, when the job vacancy rate for electricians is high, it indicates a shortage of electricians. An occupational shortage tends to be associated with a growth in relative wages for the workers in the occupation that is in short supply. In a competitive labor market, the growing relative wages induce an increase in the supply of workers in the given occupation; this eventually leads to an equilibrium whereby demand and supply match.

A skills gap occurs when workers lack the skills required by employers. They may lack technical skills, cognitive skills, or social and behavioral skills (or some combination of them). An indication of a skills gap is employers finding it difficult to hire workers with the required skills despite the fact that there are numerous job applicants. For example, there are many applicants for a position of an office clerk, but employers are not satisfied with the applicants’ skills. A skills gap points to weaknesses in the educational system in the sense that it does not equip workers with the skills demanded by employers. Accordingly, a skills gap should be addressed by reforms to the education and training systems.
the employers, school leavers are equipped neither with the appropriate skills acquired through the school and university system nor with the appropriate vocational skills.

Concern about missing skills is particularly pronounced among white-collar workers, such as professionals and technicians. A lack of required skills among job

Box 2.2 Defining Skill Gaps and Occupational Skill Shortages (continued)

Figure B2.2.1 illustrates the difference between these two concepts. If there is an occupational shortage, job vacancies are difficult to fill because there are few applicants. Craftsmen are the case in point. Many employers found it hard to hire craftsmen because there were no or few applicants, meaning that the supply of craftsmen fell short of the demand, which may point to an underdeveloped vocational education and training system. This is in sharp contrast to the case of technicians (as well as professionals) where it is the lack of adequate skills among the job applicants, rather than the lack of applicants, that is the main problem. This is a clear case of a skills gap. Workers have the diplomas (formal qualifications) required for the jobs that they apply for, but they lack the actual skills they need to do their jobs, which may indicate that the quality of tertiary education does not keep up with employers’ expectations.

Figure B2.2.1 Problems Businesses Encountered When Trying to Hire

Source: World Bank staff estimates using STEP employer survey data.
Note: STEP = Skills Toward Employment and Productivity. Employers were asked if they had tried to hire workers for various positions during the previous 12 months and what problems they encountered. The data cover reports from 132 businesses that hired craftsmen and 34 businesses that hired technicians. Because the number related to technicians is small, care should be taken in interpreting this figure. The displayed differences between technicians and craftsmen are statistically significant at a 5 percent level for two responses: applicants lacking required skills and too few applicants.
applicants is cited by approximately 80 percent of employers who were trying to hire professionals and technicians. By comparison, a lack of required skills is cited by only 40 percent of employers who were hiring craftsmen. The severity of the skills gap among blue-collar workers should not, however, be underestimated. The percentage of employers who complain that blue-collar workers lack required skills is substantial: 25 percent of businesses claim that workers applying for a position as a machine operator lack the required skills (figure 2.3). There is substantial room to improve the skills of blue-collar workers in order to match the job requirements.

Employers’ concerns on skill constraints are mirrored by workers’ views that their skills limit their ability to advance in the workplace. Although workers value their education, they report that their skills constrain their workplace development. Approximately half of workers report that their education was either moderately or very useful for their current work. More highly educated workers and those working in skilled occupations are more likely to report this to be the case. The majority of workers, however, report that their writing and reading skills—core analytical skills—are a constraint to their career advancement (figure 2.4). Highly educated workers and those who are required to read and write lengthy documents as part of their work are the most likely to report that they do not have all the literacy skills needed to advance. Although these workers have strong basic literacy skills—they score very well on the literacy assessment and have the highest self-reported literacy and writing skills—they may not have the full set of written analytical skills and argument foundation skills they need for their workplace development. Similarly, these individuals report that their IT skills are not as advanced as they would need for their careers.
Figure 2.3 Percentage of Employers Claiming that Job Applicants Lacked Skills Required for the Job

Source: World Bank staff estimates using STEP employer survey data.
Note: STEP = Skills Toward Employment and Productivity. Employers were asked if they had tried to hire workers in various positions during the last 12 months and if the applicants for the positions lacked the required skills. The data came from 350 firms that were asked about hiring. The figure covers the following number of employers hiring a given position: managers, 36 businesses; professionals, 18; technicians, 34; clerks, 98; service and sales workers, 114; craftsmen, 132; machine operators, 87; and laborers, 78.

Figure 2.4 Percentage of Individuals Reporting that the Lack of Literacy or Computer Skills Has Prevented Obtaining a Job or Advancement

Source: World Bank staff estimates using STEP household survey data.
Note: N = 3,316. The data displayed reflect responses to the question: “Has a lack of reading or writing skills in Vietnamese ever kept you from getting a job, a promotion, a pay rise, or held you back from advancing your career?” A similar question was repeated for business/own activity. G = general education; ISCED = International Standard Classification of Education; STEP = Skills Toward Employment and Productivity; V = vocational education.
What Do We Mean by Skills?

This book focuses on three domains of skills: cognitive skills, social and behavioral skills, and technical skills. These domains cover the technical skills that are directly applicable to particular occupations, the various personality traits that are crucial to labor market outcomes, and the cognitive ability generally believed to underpin human capital. Figure 2.5 puts forward the definition of skills used in this book. Annex 2A, “What Are Cognitive, Social and Behavioral, and Technical Skills and How Are They Measured?” explains in greater detail what these skill domains capture and how they are measured in the STEP surveys.

Basic cognitive skills are separated from more advanced cognitive skills. Cognitive skills include the use of logical, intuitive, and creative thinking as well as problem solving using acquired knowledge. They include literacy and numerical ability as basic or foundational cognitive skills and extend to the ability to understand complex ideas, learn from experience, and analyze problems using logical processes.

The fast expansion of education in Vietnam has meant that basic cognitive skills are widespread in urban areas. The STEP household survey conducted in Hanoi and Ho Chi Minh City (HCMC) in 2012 tested the literacy skills of working-age individuals (see annex 2A). This survey revealed solid achievement by urban Vietnamese in important basic literacy ability. Figure 2.6 presents the percentage of individuals who passed a “core” literacy assessment in the five countries in which the STEP household survey was administered—Bolivia, the Lao People’s Democratic Republic, Sri Lanka, Yunnan province of China, and Vietnam. The core literacy assessment assesses basic literacy skills.

Figure 2.5 Skills Measured in the STEP Survey

- **Cognitive**
  - Involving the use of logical, intuitive, and creative thinking
  - Raw problem-solving ability versus knowledge to solve problems
  - Verbal ability, numeracy, problem solving, memory (working and long-term), and mental speed

- **Social and behavioral**
  - Soft skills, social skills, life skills, personality traits
  - Openness to experience, conscientiousness, extraversion, agreeability, emotional stability
  - Self-regulation, perseverance, decision making, interpersonal skills

- **Technical**
  - Involving manual dexterity and the use of methods, materials, tools, and instruments
  - Technical skills developed through vocational schooling or acquired on the job
  - Skills related to a specific occupation (e.g., engineer, economist, IT specialist, etc.)

Note: IT = information technology; STEP = Skills Toward Employment and Productivity.
and sorts the most literate from those with lower levels of literacy skills. Vietnam came second to Yunnan in the share of respondents who passed the literacy assessment. Nearly two-thirds of the sample obtained full marks on the test, suggesting strong average basic literacy skills among the Vietnamese urban population.

Although Vietnamese workers are well equipped with basic literacy skills, the urban workforce is lacking more advanced skills. The literacy proficiency of urban Vietnamese lies below the levels seen in many Organisation for Economic Co-operation and Development (OECD) countries. The extended literacy module in the STEP household survey and the Programme for the International Assessment of Adult Competencies (PIAAC) literacy proficiency test conducted in multiple OECD countries were linked and results can be placed on the same scale (see annex 2A for further details). As figure 2.7 shows, the literacy proficiency of Vietnam’s urban workforce lies below the proficiency level seen among urban and rural workforces in the countries in which the PIAAC literacy assessment has been conducted.

More urban Vietnamese workers than urban and rural workers in wealthier OECD countries perform at the lowest competency level, but Vietnam also has a relatively high share of urban workers at the highest competency level. More than a quarter of workers in urban Vietnam fall into the two lowest competency levels (figure 2.8). Such individuals are able to locate basic information in simple texts but do not have the literacy proficiency to deal with more

Figure 2.6 Percentage of Individuals, by Literacy Assessment Score

Source: World Bank staff calculations using STEP household survey data.
Note: N = 3,328. STEP = Skills Toward Employment and Productivity. All country samples are restricted to urban only for comparison reasons. The scores reflect performance of individuals on a reading literacy test; individuals who score 3 or higher on the test are considered sufficiently skilled to be able to continue on to the next level of the test, and those who score below 3 are considered to have failed the test of basic literacy skills. Greater information on the measurement of literacy skills is given in annex 2A.
Despite the substantial number of individuals who fall into the lowest categories, urban Vietnam also has a similar share of individuals in the top three competency levels as Spain has.

Although the literacy skills of older urban workers in Vietnam lie below those seen in many OECD countries, the skills of younger urban adults are complex texts (see annex 2A for further details on the proficiency levels).
comparable to their urban and rural peers in many wealthier countries. Figure 2.9 presents the literacy proficiency scores of 16- to 24-year-olds in urban Vietnam and other PIAAC countries. Younger respondents score better on the literacy assessments overall in Vietnam. The same is true in most countries where the PIAAC has been administered, which might be
attributable to younger respondents’ higher levels of education. But even after taking into account their higher education levels, younger respondents perform better than older respondents. The literacy levels of younger adults in urban Vietnam are comparable to the levels of their peers in many richer OECD countries and have similar literacy levels to those in Austria, Canada, Denmark, France, Germany, and Norway.

The difference between the literacy skills of older and younger workers in urban Vietnam is substantial. Figure 2.10 shows the difference in the average literacy score between 55- to 64- and 16- to 24-year-olds. The difference in scores in urban Vietnam is substantial, and second only to Korea in size. This suggests that the education system has done an impressive job in imparting key literacy skills to the young urban workforce, taking Vietnamese worker skills from below those seen in OECD countries for the oldest generation to levels on a par with wealthier OECD countries.

Although basic and midlevel cognitive skills are widely used in urban Vietnam, more advanced skills are less likely to be used. Figure 2.11 shows the use of numeracy skills in urban Vietnam, where numerical tasks are split by the complexity of operations conducted. Approximately 90 percent of individuals conduct at least basic numerical operations, such as estimating weights and distances or calculating prices or costs. Moving to the next level of complexity, three-quarters of the population do more complicated operations such as using decimals, percentages, multiplication, or division. Similarly, although over 80 percent of the urban working-age population reports reading or writing either at home or at work, the majority of workers make only basic use of their literacy and writing skills.

Figure 2.10 Difference between Literacy Proficiency of Older and Younger Adults

Sources: Vietnam estimates from World Bank staff analysis using STEP household survey data. Literacy scores from other countries were measured as part of PIAAC (Programme for the International Assessment of Adult Competencies) and are taken from table A3.1 (L) in OECD 2013. Older adults are defined as aged 55 to 64 years and younger workers as aged 16 to 24 years.

Note: STEP = Skills Toward Employment and Productivity.
Social and behavioral skills refer to the social ability and personality traits that have been found to be strongly linked to success in life, including doing well in school and at work. These skills are captured in the STEP household survey using the “Big Five” taxonomy of personality traits, which are viewed as high-order proxies of behaviors or actions that are a manifestation of personality and that are associated with a myriad of socioemotional skills. The measures include whether individuals are open to new experiences; whether they can be considered to be conscientious, to have perseverance, and to be motivated (conscientiousness); whether they are socially energetic (extraversion); whether they are agreeable toward others (agreeableness); and whether they are self-regulating or broadly secure and comfortable in themselves (emotional stability or neuroticism). These traits, and the behaviors and actions that they are associated with, are described in greater detail in table 2.1.

Technical skills reflect knowledge and technical know-how that is often built through in-depth training or experience. Technical skills range from manual dexterity for using complex tools and instruments to occupation-specific technical know-how (for example, engineering, economics, or medicine). Because technical skills are often discipline- or domain-specific, they are harder to capture using a survey instrument aimed at the general population. The technical skills that are measured in the STEP skill survey therefore reflect specialized abilities that are relevant to perform tasks that can be found in multiple jobs.
What Skills Are in Demand and Used in the Urban Labor Market?

Employers in urban Vietnam place the heaviest emphasis on job-related skills, including technical skills and the ability to solve problems and think critically. Employers were asked what types of skills or characteristics they considered to be most important when deciding to keep an employee after a probation period. Figure 2.12 shows the relative importance placed on job-related skills, social and behavioral skills, and personal characteristics among employers at international and local firms. Job-related skills were valued most highly, but social and
behavioral skills are also important. In contrast, personal characteristics (such as age, sex, and appearance) have little impact on hiring decisions. The relative importance of these three broad skill groups is the same for both white- and blue-collar workers, and across international and local firms.

Among job-related skills, employers consider strong technical competencies as the most important attribute a worker can have. Employers were asked to define which job-related skills were most important in determining whether an employee on probation should be retained. Job-specific technical skills were ranked highest by employers among both blue- and white-collar workers (figure 2.13). International firms value job-specific technical skills more than local businesses do. They also attach a somewhat higher value to the ability to work independently, to whether workers are open to new experiences, and to teamwork skills. Local businesses value leadership and communication skills more than international firms do. The reason may lie in the different production profiles of both types of businesses or it may be that local businesses find it more difficult to attract workers with these skills, perhaps because they offer lower remuneration. Employers value employees who are able to think critically and creatively and who are able to solve problems. These employee attributes are typically associated with having advanced cognitive skills. Being able to solve problems and think creatively and critically were highly valued.
attributes for both blue- and white-collar workers—they were considered the third and fourth most valuable job-related skills for white-collar workers, while problem solving was ranked third most important for blue-collar workers. Creative and critical thinking was, however, not viewed by employers as an important skill for blue-collar workers.

Employers value workers who display strong leadership abilities, are able to work in teams as well as independently, are able to manage their time, and communicate well. Employers valued employees who displayed leadership competencies as the second most valuable trait among white-collar workers, while being able to communicate well and work in a team were among the most valued attributes for blue-collar workers. These workplace skills draw upon workers’
social and behavioral abilities. For example, conscientious workers are more likely to push forward on work independently and manage their time.

Employee reports of what they are asked to do in their jobs often mirror employer demands for certain skills. Managers, professionals, and technicians are more likely than other workers to be asked to solve problems and to think in a creative and critical way. The STEP household survey complemented the STEP employer survey by asking workers what they do in their jobs. This question allows a comparison of the skills that employers demand with the skills that are actually used by employees. Workers were asked to report how often they need to find a solution to a challenging situation at work through thinking for at least half an hour. Approximately three-quarters of managers, professionals, technicians, and clerical workers reported having to solve problems as part of their work (figure 2.14). The intensity with which these skills are used is also high—nearly one in two of these workers report having to problem solve at least once a week.

Although employers indicate that they value problem-solving skills in all their workers, craftsmen, machine operators, and manual workers are much less likely than professional and technical workers to report having to solve problems as part of their jobs. Craftsmen and machine operators also report a lower intensity of

![Figure 2.14 Percentage of Wagemakers in Different Occupations Who Report Having to Problem Solve at Work, by Frequency](image)

**Figure 2.14 Percentage of Wagemakers in Different Occupations Who Report Having to Problem Solve at Work, by Frequency**

*Source:* World Bank staff estimates using STEP household survey data.

*Note:* STEP = Skills Toward Employment and Productivity. The figure shows responses to the following question: “Some tasks are pretty easy and can be done right away or after getting a little help from others. Other tasks require more thinking to figure out how they should be done. As part of this work as [occupation], how often do you have to undertake tasks that require at least 30 minutes of thinking (examples: mechanic figuring out a car problem, budgeting for a business, teacher making a lesson plan, restaurant owner creating a new menu/dish for restaurant, dressmaker designing a new dress).” Respondents were asked to indicate how often they conducted a task of this kind. The sample includes only wage employees (n = 1,313).
problem solving. Approximately 45 percent of craftsmen and 30 percent of machine operators report having to solve problems in their work, although half of these workers report using these skills less than once a month. Worker reports of problem solving contrast with the importance and value placed on these skills by employers—as shown in figure 2.13, employers place almost as much value on these skills for white-collar workers as they do for blue-collar workers. The discrepancies between these reports may reflect a shortage of problem-solving skills among certain types of workers.

Nearly all wageworkers report that their job requires them to be adaptive to changes in their work environment since they are continuously learning on the job. Learning new skills requires workers to have strong core cognitive skills to build off. Workers were asked how often their work involved learning new things (figure 2.15). Nine in ten managers, professionals, and technicians report continuous learning as part of their work, and of these, more than half report learning every day. The incidence of learning among craftsmen and machine operators is also high and relatively intensive—70 percent of craftsmen report learning on the job, and 26 percent of them report having to learn new things every day. Workers who carry out manual tasks are the only category of workers for whom learning does not appear to be an important component.

Among social and behavioral skills, employers value conscientiousness most highly for all types of workers, while openness to experience is highly valued for

Figure 2.15 Percentage of Wageworkers in Different Occupations Who Report Having to Learn New Things, by Frequency

Source: World Bank staff estimates using STEP household survey data.
Note: STEP = Skills Toward Employment and Productivity. The figure shows responses to the following question: “How often does (did) this work involve learning new things?” Respondents were asked to indicate how often they conducted a task of this kind. The sample includes only wage employees (n = 1,313).
white-collar workers. Conscientiousness emerges as a key employability skill in virtually all countries where the demand for skills has been studied (for example, the former Yugoslav Republic of Macedonia, Poland, the Russian Federation, and the United Kingdom). Conscientiousness includes elements such as responsibility, self-discipline, carefulness, thoroughness, self-organization, and the need for achievement (motivation). Workers who do a thorough job are hard-working and do things efficiently, and they are more likely to be hired and retained than workers who lack these traits. In addition, employers deem openness to new experiences to be important traits for managers, professionals, and technicians, while being emotionally stable is considered to be important for blue-collar workers (figure 2.16).

The high value placed on workers who are conscientious and open to experience is mirrored in earnings: workers with these types of skills earn more. There are, however, substantial differences across jobs in the types of social and behavioral skills that are most valued, likely reflecting differences in the types of tasks conducted in different jobs (figure 2.17). Among managers, professionals, and technicians, people who display higher levels of openness

**Figure 2.16 Importance of Social and Behavioral Skills for White- and Blue-Collar Workers**

- Conscientiousness
- Openness
- Emotional stability
- Extraversion
- Agreeableness

*Source:* World Bank staff estimates using STEP employer survey data.
*Note:* STEP = Skills Toward Employment and Productivity. Employers were asked to indicate which was the first most to fourth most important personality trait when deciding which new employees should be retained. \( N = 330. \) White-collar workers refers to managers, professionals, and technicians, and blue-collar workers refers to workers in all other occupations, notably clerks, sales and service workers, craftsmen, machine operators, and manual laborers. Differences in emotional stability, agreeableness, and openness to new experiences are statistically significant at a 5 percent level. Among white-collar workers, conscientiousness and openness to new experiences are statistically different from zero at a 5 percent level; among blue-collar workers, emotional stability is statistically different from zero at a 5 percent level, and conscientiousness and agreeableness are statistically different from zero at a 10 percent level.

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and conscientiousness earn more. Those who are more agreeable actually earn less—this is a finding that reflects patterns in the international literature. More disagreeable people have been found in multiple contexts to have higher incomes and wages (Diaz, Arias, and Tudela 2012; Seibert and Kraimer 2001). Among pink- and blue-collar workers, social and behavioral skills appear to play a greater role in wage setting. Workers who are more open and conscientious again earn more (figure 2.17, blue bars). Among these workers more emotionally stable workers earn more.

Wageworkers need strong social and behavioral skills because they are often required to persuade others of their ideas and work with and supervise others. Workers in multiple occupations report needing to be persuasive through providing information to clients or having to convince colleagues of their point of view (figure 2.18). These attributes are most needed in occupations that require direct contact with workers outside of their enterprises—70 percent of sales and service sector workers report that they regularly have to sell ideas, inform others, or persuade others of their opinion. Tasks that involve interaction with others and persuasion require workers with strong social and behavioral skills such as self-esteem and agreeableness—these workers will be required to pick up on social cues to change their strategies according to the personality of the person with whom they are interacting.

Figure 2.17 Returns to Social and Behavioral Skills, by Occupation Type

Source: World Bank staff estimates of returns to monthly incomes among white-collar (managers, professionals, and technicians) and blue-collar (clerical, service and sales, craftsmen, machine operators, and elementary) wageworkers, STEP household survey data (n = 1,244).

Note: The reported results are from a Mincerian earnings regression that controls for demographics, cognitive skills, and education. Reported standard errors are jackknifed bootstrapped, and outliers are eliminated using a robust regression technique based on Cook’s distance measure. Significance level: * = 10 percent, ** = 5 percent, *** = 1 percent.
Skills are not a formal sector phenomenon: strong social skills are most highly valued in the informal sector. The earnings premium to being more open to new experiences and conscientious is higher for self-employed people than for wageworkers (figure 2.19). This may reflect the observation that more educated workers cluster into wage employment and that openness to experience and conscientiousness are both highly associated with education. In studies in other countries, entrepreneurs have been found to be more conscientious and open to experience than managers (Zhao and Seibert 2006). There is, however, no clear evidence in Vietnam that the average self-employed person is more open or conscientious than the average wageworker or manager.

One reason that openness and conscientiousness are more highly rewarded in self-employment is that the work of entrepreneurs—engaging with clients, needing to be self-motivated—is more intensive in the use of these skills. Entrepreneurs are more likely to report doing interactive tasks, such as talking to and assisting individuals outside of their business. In addition, they are more likely to have to supervise others or make formal presentations. Their work is less likely to involve technology such as computers, more likely to afford a higher level of freedom, and more likely to be nonroutine and manual in nature, implying that their work involves readjustment. Although self-employed work is less analytical than the work reported by wageworkers, many self-employed workers report needing to think for at least 30 minutes on a regular basis.

Source: World Bank staff estimates using STEP household survey data.
Note: STEP = Skills Toward Employment and Productivity. The figure shows responses to the following questions: (a) "As part of this work, do you (did you) have to make formal presentations to clients or colleagues to provide information or persuade them of your point of view?" (b) "As a normal part of this work do you direct and check the work of other workers (supervise)?" (c) "As part of this work, do you (did you) have any contact with people other than coworkers, for example, with customers, clients, students, or the public?" The sample includes only wage employees (n = 1,313).
Summary and Conclusion

Vietnam’s education system is producing strong basic cognitive skills, an important asset that enhances the country’s competitiveness in the global economy. There are, however, signals that the education system is not building all the skills needed by employers and the workforce. The STEP household survey data suggest that the education system is producing workers with strong basic cognitive skills. Higher-level cognitive skills are highly valued by employers but are less likely to be used in the workforce. Employers are concerned that the education system is not providing all the skills they need of their workers, and these concerns are mirrored among workers. The good news for Vietnam is that it will be investing in the missing skills from a strong base—the urban workforce has strong basic literacy and numeracy skills, a necessary requirement for building more advanced cognitive and job-relevant skills.

The diversity of skills used in the urban labor market has implications for the education system, which is expected by employers to develop the whole range of employability skills in addition to technical skills. The need to have strong cognitive, technical, and social and behavioral skills is not a formal sector phenomenon or limited to certain professional or technical occupations. Cognitive, behavioral, and technical skills are required in all types of wage employment and are strongly predictive of labor market outcomes and enterprise success.
The informal and enterprise sector appears to use a different but overlapping skill set to the skills used in wage employment. In rural areas, over 30 percent of households engage in self-employment activities in the nonfarm sector. Therefore, recognizing that skills go beyond the formal sector workforce is likely to raise enterprise success.

As its economy continues to grow and transition into higher value-added sectors, Vietnam needs to focus its attention on building the advanced cognitive, technical, and social and behavioral skills that are already being used in today’s urban labor market and will be increasingly used in the future. In today’s urban labor market, workers are already being asked to think on their feet, to solve problems, to learn on the job, and to interact with others on a regular basis. Demand for workers who are able to perform these tasks is likely to rise, and workers will be asked to be responsive to shifting needs and labor markets. Consequently, the skills shortage that is reported today is likely to grow as employers ask more of their workers and the transition toward modern jobs continues. To meet the current and future demands of employers, the focus needs to shift to laying a foundation for strong skills. The next chapters examine when skills are formed and puts forward a framework to understand how disconnects in the current education and training system may result in underinvestment in the skills needed for a modern industrialized Vietnam.

Annex 2A: In Depth
What Are Cognitive, Social and Behavioral, and Technical Skills and How Are They Measured?

The STEP household data focus on three domains of skills: cognitive, social and behavioral, and technical. Cognitive skills can be defined as “the ability to understand complex ideas, to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, to overcome obstacles by taking thought” (Neisser et al. 1996). The literature on intelligence has separated cognitive skills into a general intelligence factor ($g$ factor) and multiple second-order factors, which display different paths over an individual’s life cycle (Carroll 1993). Two seminal and widely discussed factors are fluid intelligence and crystallized intelligence. Fluid intelligence reflects the capacity to perceive and act upon complex problems under novel conditions, independent of acquired knowledge (Cattell 1971). In contrast, crystallized intelligence reflects learned skills and knowledge and is therefore dependent on education and the formation and learning of knowledge (Horn and Cattell 1967).

Cognitive skills are typically measured using achievement or assessment tests that capture, to different degrees, fluid and crystallized intelligence. Broadly speaking, aptitude tests are designed to measure differences in the rates at which individuals learn (fluid intelligence), whereas achievement tests are designed to measure acquired knowledge (crystallized intelligence). The relative weight of fluid versus crystallized intelligence captured by a test depends on the amount of prior knowledge or experience that is required to perform well on the test.
In the STEP household survey, cognitive skills are measured in two ways. First, respondents are asked to report whether and how often they read, write, and do numerical tasks both at work and at home. The questions were designed to capture both overall use of reading, writing, and numeracy skills as well as the intensity of their use. These measures are likely to capture a combination of the person’s actual ability to conduct tasks involving these skills and their motivation/opportunity to do so. In this case, they may represent a lower-bound estimate of these skills in the population. For example, an individual may be able to write long documents but have no recourse to do so in his or her work or home life. On the other hand, individuals may claim to read on a regular basis but may actually not be able to do so. This miscategorization would result in overestimates of the skill stock. The survey asks respondents the following questions on the three skill categories:

Self-reported reading: “Do you read anything [in daily life/at this work], including very short notes or instructions that are only a few sentences long?” “Among the things that you normally read [in daily life/at this work], what is the size of the longest document that you read?”

Self-reported writing: “Do you ever have to write anything (else) [in daily life/at work], including very short notes, lists, or instructions that are only a few sentences long?” “Thinking about all the things you normally write (wrote) [in daily life/at work], what is the longest document that you write (wrote)?”

Self-reported numeracy: “[As a normal part of this work/in daily life], do you do any of the following . . . ?”

A second measure of cognitive ability captures an individual’s literacy by testing their reading competency. The STEP literacy assessment is aligned with and draws from other large-scale international surveys, which have included the International Adult Literacy Survey (IALS), Adult Literacy and Life Skills Survey (ALL), and the PIAAC. STEP is based on the same conception of literacy used in other large-scale assessments, notably “understanding, evaluating, using and engaging with written texts to participate in society, to achieve one’s goals, and to develop one’s knowledge and potential” (PIAAC Literacy Framework).

The STEP household survey restricts the target population to all urban adults aged 15–64, while in the PIAAC survey the target population includes all rural and urban adults aged 16–65. Both surveys define the target population to include all residents, regardless of citizenship, nationality, or language, and to exclude all individuals living in institutions (e.g., prisons, hospitals, nursing homes). STEP’s target population excludes adults living at school in a student group quarter, but PIAAC includes this group. The sampling frames in both surveys require at least 95 percent of the target population to be included.

As urban populations tend to be better educated and belong to higher socio-economic groups than rural residents and are also more likely to hold jobs requiring advanced skills, they are expected to perform better on the reading literacy assessment when compared to the rest of the population. The STEP household survey in Vietnam focused on Hanoi and HCMC. Both cities account for close to 35 percent of the country’s urban population and close to 16 percent of the
overall population. Results from the STEP survey should not be interpreted as providing an estimate of the reading proficiency of Vietnam’s adult population as a whole. Rather, they provide an estimate of the proficiency of a specifically defined subgroup of that population (adults in Hanoi and HCMC) whose reading proficiency may differ considerably from that of the 15- to 64-year-old population as a whole.

The STEP survey concentrates narrowly on the measurement of reading literacy, whereas PIAAC measures reading literacy, numeracy, and problem solving in technology-rich environments. The design for the STEP literacy assessment has two primary goals: to provide items that target the lower end of the literacy scales and to link results to the literacy scale used in PIAAC. The selection of items for any assessment requires meeting certain constraints. To meet the psychometric linking requirements, the pool of items used in STEP is limited to items used in PIAAC as well as some items from the Adult Literacy and Life Skills Survey.

The literacy items selected for STEP were all developed based on the same literacy frameworks developed for PIAAC. The assessment design for STEP specifies a Core block with the easiest items, a reading components block, and four additional blocks of literacy items. Respondents who pass the Core are administered two of the four booklets of literacy items at random. Findings from PIAAC included in this report all refer to its reading literacy assessment section.

The sample size requirement for STEP usually ranges between 2,400 and 3,000 observations per reporting language using a paper-and-pencil approach. In PIAAC, which assesses four different cognitive areas and uses both paper-and-pencil and computer-based instruments, the sample size requires at least 5,000 observations per reporting language.

Although the translation and adaptation of the survey instruments follow the same methodology in both surveys, STEP’s field test requirements call for testing in-depth about 20–30 cases. In the case of PIAAC, however, field test requirements require about 1,500 cases to test all items and in all of its administration modalities.

Although STEP and PIAAC field team composition and size differ slightly due to smaller sample sizes in STEP, training requirements and supervision standards during data collection are very similar. Finally, the weighting process is different, as PIAAC uses replicate weights and STEP uses probability weights. Whenever reliable data were available, STEP weights were adjusted using benchmark variables for age and gender.

The literacy proficiency score for urban Vietnam that was generated can be separated into six different proficiency levels (taken from OECD 2013, pages 68 and 69):

- **Proficiency at Level 5 (scores equal to or higher than 376 points)**
  Level 5 is the highest proficiency level on the literacy scale. Adults reaching this level can perform, among others, tasks that involve searching for and
integrating information across multiple, dense texts; constructing syntheses of similar and contrasting ideas or points of view, or evaluating evidence and arguments.

- **Proficiency at Level 4 (scores from 326 points to less than 376 points)**
  At Level 4, adults can perform multiple-step operations to integrate, interpret, or synthesize information from complex or lengthy continuous, noncontinuous, mixed, or multiple-type texts that involve conditional and/or competing information.

- **Proficiency at Level 3 (scores from 276 points to less than 326 points)**
  Adults performing at Level 3 can understand and respond appropriately to dense or lengthy texts, including continuous, noncontinuous, mixed, or multiple pages. They understand text structures and rhetorical devices and can identify, interpret, or evaluate one or more pieces of information and make appropriate inferences.

- **Proficiency at Level 2 (scores from 226 points to less than 276 points)**
  At Level 2, adults can integrate two or more pieces of information based on criteria, compare and contrast or reason about information, and make low-level inferences.

- **Proficiency at Level 1 (scores from 176 points to less than 226 points)**
  At Level 1, adults can read relatively short continuous, noncontinuous, or mixed texts to locate a single piece of information, which is identical to or synonymous with the information given in the question or directive. They can complete simple forms, understand basic vocabulary, and read texts with a degree of fluency.

- **Proficiency below Level 1 (scores below 176 points)**
  Individuals at this level can read brief texts on familiar topics and locate a single piece of specific information identical in form to information in the question or directive. They are not required to understand the structure of sentences or paragraphs and only basic vocabulary knowledge is required.

The literacy items cover a range of areas, notably:

- Material types, focusing on non-school-based materials in adult contexts (example 1);
- Task types, including tasks that require respondents to access and identify information (in both text-based and nonprose materials such as tables, graphs, and forms), to integrate and interpret information, and to evaluate information by assessing the relevance, credibility, or appropriateness of the material for a particular task (example 2); and
- Difficulty, with tasks ranging from locating a single piece of information in a very short advertisement to summarizing reasons for using generic drugs as presented in a newspaper article. Tasks are reported along a scale divided into five levels, with Level 1 characterized by the least demanding tasks and Level 5 the most demanding.
The self-reported reading, writing, and numeracy questions capture a concept of cognitive skills different from the literacy assessment. The literacy assessment captures an objective assessment of an individual’s literacy that can be compared to the literacy of others in the survey. In comparison, the self-reported questions capture the use of reading and writing skills; because these measures are self-reported, they may well differ from an individual’s actual ability to read or write. Figure 2A.1 displays the fraction of correct responses in

**Figure 2A.1** Self-Reported Reading Length and Fraction of Correct Responses in Literacy Assessment

*Source:* World Bank staff estimates using STEP household survey data.  
*Note:* STEP = Skills Toward Employment and Productivity. The literacy scores reflect performance of individuals on a literacy assessment, and the self-reported reading length reflects how much the person reports reading.
the literacy assessment by self-reported reading category. The average number of correct responses increases as self-reported reading intensity rises—among those who read more than 25 pages, 75 percent got over 95 percent of the questions correct on sections A and B of the reading assessment compared to approximately 40 percent correct by those who read less than a page. However, nearly 33 percent of those who do not read anything on a regular basis also scored in the highest category. It is therefore clear that although self-reported skills are related to reading ability as captured in the literacy assessment, they do not fully capture a person’s actual skills.

Technical skills reflect learned knowledge in particular domains and are therefore more likely to reflect crystallized intelligence than fluid intelligence. As such, technical skills can be strengthened later in life, but are likely to be most responsive to investment earlier in life. Because technical skills are often discipline specific, they are harder to capture using a survey instrument aimed at the general population. The technical skills that are measured in the STEP skill survey reflect specialized types of skills that are relevant to perform tasks that are specific to multiple jobs.

Behavioral skills refer to academically or occupationally relevant skills and traits that are not directly related to intelligence but are otherwise associated with personality or motivational traits. These skills include self-regulation, perseverance, motivation, and effort (Borghans et al. 2008). The measures used to capture behavioral attributes are less well established than those used to capture cognitive skills, a reflection in part that there is less consensus regarding the structure and evolution of personality. The most common and widely accepted taxonomy for capturing personality traits is the Big Five. The Big Five includes conscientiousness, openness to experience, extraversion, agreeableness, and emotional stability, and within each of these five factors lie lower-order facets (John and Srivastava 1999). This taxonomy has been found to be replicable across cultures and can capture the evolution of personality over the life course (John and Srivastava 1999).

**Gender and Skills in Vietnam**

There are few differences between men and women in terms of their measured cognitive skills. Men and women performed equally well on the literacy assessment, suggesting that no gender gaps in basic literacy skills exist in Vietnam. Women, however, are slightly less likely to report reading or writing and do so in a lower intensity. The differences between men and women are substantially reduced once education is considered, suggesting that these differences are likely to reflect gender gaps in education. Gender differences in cognitive skills are smaller for the population under 40, for whom gender gaps in educational investment are less marked. The exception to this is the fraction reporting conducting complex numerical tasks, which is higher for men than for women even among the population under the age of 40.

Several gender differences can be found in social and behavioral skills, mirroring patterns seen internationally. Women in the sample are more risk averse, are
less open to new experiences, and have lower levels of self-esteem, but similar levels of other social and behavioral traits, such as extraversion, agreeableness, and grit (figure 2A.2). Studies in OECD countries have found that female students have higher levels of social and behavioral skills, which has contributed to women performing relatively well at school (Cornwell, Mustard, and Van Parys 2013; Jacob 2002). There is little evidence of this finding in urban Vietnam—no differences in social and behavioral skills can be seen between male and female students at upper secondary or tertiary levels.

Gender gaps in education access at primary, lower secondary, and upper secondary levels appear to be reversing over time. Girls are slightly more likely than boys to be enrolled in lower and upper secondary school (see figure 2A.3, panel a). The growth in women’s enrollment at a tertiary level has been remarkable and substantially higher than men’s enrollment growth: women’s enrollment has nearly tripled over time, and women’s gross enrollment has overtaken that of men (see figure 5.3). The differences in the education profile of men and women at a postsecondary level are substantial, as are the differences in their chosen fields of study (figure 2A.3, panel b). Women are more likely than men to study business and education and are less likely to be studying technical fields such as IT, engineering, science, and craftsmanship. These gender differences in the choice of field of study are also seen among current students—68 percent of urban women engaged in postsecondary education report studying business, compared to approximately 30 percent of men. In comparison, 45 percent of men are engaged in studies in IT, science, or craftsmanship, compared to only 7 percent of women.

Figure 2A.2 Gender Differences in Social and Behavioral Skills and Openness to Experience, after Accounting for Education and Age

Source: World Bank staff estimates using STEP household survey data.
Note: STEP = Skills Toward Employment and Productivity. \( n = 3,405 \). *** = statistically significant difference between female and male at a 1 percent level.
Figure 2A.3 Gender Gaps in Enrollment in Secondary Education and Choice of Fields of Study

a. Total net enrollment, by education level and gender

b. Percentage of the urban workforce with a specified field of study, by type and gender

Sources: Panel a: World Bank staff estimates using VHLSS data; panel b: World Bank staff estimates using STEP household survey data.

Note: F = female; M = male; STEP = Skills Toward Employment and Productivity; VHLSS = Vietnam Household Living Standards Survey. N = 3,405 of which 1,493 have studied in a specified field at upper secondary level or above. Of the 1,493, 683 are male and 810 are female. The higher number of females does not reflect a greater propensity for females to have studied a specific field of study, but is instead reflective of a greater number of female respondents in the STEP survey (60 percent).
Although there is little evidence of gender differences in cognitive skills in the workforce, there are substantial differences in the types of work that men and women do in urban Vietnam and the payment they receive for their work. Women are less likely than men to be working in the labor market—they are more likely to be inactive than men, but no more likely to be unemployed. Once in the labor market, women are less likely to be working for wages and are slightly, but not statistically significantly, more likely to be self-employed. Among the men and women conducting wage work, women earn substantially less per month than men in both wage and self-employment. Differences in monthly earnings are primarily attributable to lower hourly wages/earnings rather than any marked gender differences in hours worked. The majority of the gender difference in wages is attributable to gender differences in the returns to education, experience, and occupational premium.

**Comparing Skills in Ho Chi Minh City and Hanoi**

The STEP household data suggest that both measures of cognitive skills—self-reported and the literacy assessment—are slightly lower in HCMC than in Hanoi. The fraction of the population conducting any tasks that involve reading, writing, or numerical abilities is lower in HCMC than in Hanoi (figure 2A.4, panel a), although the differences are not statistically significant at the 10 percent level for numeracy skills. Differences between the two cities show up in the intensity of skills used: complex skills usage is more prevalent in Hanoi than in HCMC, and these differences are statistically significant across

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**Figure 2A.4  Cognitive Skills: Hanoi versus Ho Chi Minh City**

- **a. Percentage using reading, writing, and numeracy skills, by complexity**
- **b. Literacy test scores by education level**

**Source:** World Bank staff estimates using STEP household survey data.

**Note:** HCMC = Ho Chi Minh City; STEP = Skills Toward Employment and Productivity. Panel a, n = 3,405. Panel b, n = 3,328.
all three skill categories. A similar pattern emerges from the scores on the literacy assessment (figure 2A.4, panel b). The fraction of the population attaining full marks is lower in HCMC overall, and in particular among students aged 15–29. To ensure that these differences are not driven just by differences between the two cities’ education levels, we examine whether there are differences in test scores among individuals who have completed the same level of education. We find statistically significant differences in the fraction obtaining full marks among those who have completed lower secondary or tertiary education, although no difference is found for those with upper secondary education (figure 2A.4).

Hanoi and HCMC also differ on a number of social and behavioral skill scales. For example, residents of Hanoi tend to score lower on the agreeableness, openness to experience, and extraversion scales (figure 2A.5). Hanoi residents are more risk averse than residents of HCMC, less conscientious, and display lower levels of grit, which captures perseverance for long-term goals. Higher levels of grit have been found to be positively associated with labor market outcomes and educational performance (Duckworth et al. 2007).

Finally, the use of technology is higher in Hanoi than in HCMC. For example, 78 percent of residents in Hanoi reported using technology compared to only 73 percent of residents in HCMC (figure 2A.6). HCMC residents were also less

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**Figure 2A.5 Social and Behavioral Skills: Hanoi versus Ho Chi Minh City**

Source: World Bank staff estimates using STEP household survey data.
Note: HCMC = Ho Chi Minh City; STEP = Skills Toward Employment and Productivity. N = 3,405. Index varies between 0 and 4. Higher values imply a lower level of the social and behavioral skill. Significance level: * = 10 percent, ** = 5 percent, *** = 1 percent.
likely to be in repetitive jobs and more likely to be operating or repairing vehicles. No statistically significant difference in interpersonal interaction, use or repair of machinery, or manual and physical tasks were found.

**Social and Behavioral Skills in Vietnam**

Social and behavioral skills are linked to good educational and labor market outcomes. Personality traits such as self-esteem, self-control, emotional stability, and other social and behavioral characteristics have been shown to be linked to labor market outcomes including earnings, type of employment, and experience (Duckworth et al. 2007; Heckman, Stixrud, and Urzua 2006; Mueller and Plug 2006; Nyhus and Pons 2005; Salgado 1997; Urzua 2008). Social and behavioral skills such as self-control and grit have been linked to better performance in school as well as to a number of other consequential life outcomes. For example, self-control at age 10 has been found to be correlated to income, savings behavior, financial security, occupational prestige, health, and other outcomes later in life among 1,000 students tracked in New Zealand (Moffitt et al. 2011). Self-discipline among a population of adolescents was found to be as statistically significant a predictor of correlates of academic success and diligence, such as final grades achieved and the number of hours spent doing homework (Duckworth and Seligman 2005). Some studies suggest that social and behavioral skills are actually more important than cognitive skills for determining labor market outcomes (Bowles, Gintis, and Osborne 2001; Goff and Ackerman 1992; Segal 2008, 2012).
Social and behavioral skills, such as conscientiousness and openness, vary with education. Figure 2A.7 shows differences in openness to experience by age and across two different education levels. Panels a and b show openness to experience and conscientiousness for individuals who have completed primary- and university-level education, after taking into account age and sex. Individuals educated at a higher level of education are more open to new experiences and are more conscientious. The lowest levels of both openness and conscientiousness are found among those who have completed only primary school (those who have six years of education). Among those who have completed primary school or less, both conscientiousness and openness to experience decline systematically with education. These patterns resemble those seen in other countries, where higher educated individuals display

**Figure 2A.7** Index of Openness to Experience and Conscientiousness, by Education Level and Age

- **a. Openness, by education**
  - Openness is measured using the Big Five taxonomy of questions, and is plotted net of age effects using a third-order polynomial and sex.

- **b. Conscientiousness, by education**
  - Conscientiousness is measured using the Big Five taxonomy of questions, and is plotted net of age effects using a third-order polynomial and sex.

- **c. Openness, by age**
  - Openness is measured using the Big Five taxonomy of questions, and is plotted net of schooling and sex.

- **d. Conscientiousness, by age**
  - Conscientiousness is measured using the Big Five taxonomy of questions, and is plotted net of schooling and sex.

Source: World Bank staff estimates using the STEP (Skills Toward Employment and Productivity) household survey data.
higher levels of grit, openness, and conscientiousness, but lower levels of extraversion and agreeableness.

Personality traits evolve with age in Vietnam (see figure 2A.7, panels c and d), mirroring patterns found across the world but with notable differences. Personality traits respond to changes in a person’s environment but also evolve with age due to biological processes. For example, attitudes toward risk have commonly been found to be highest among adolescents and fall in people in their early twenties (Paulsen et al. 2012; Spear 2000). This observation has been linked to development changes in the prefrontal cortex and limbic regions of the brain among adolescents, which include an apparent shift in the balance between mesocortical and mesolimbic dopamine systems (Spear 2000). Older people in other countries have been found to be more socially dominant, conscientious, and emotionally stable (Roberts, Walton, and Viechtbauer 2006), while openness to experience rises early in life and falls with old age. The Vietnamese data corroborate these patterns for social dominance, conscientiousness, and emotional stability, but suggest that openness to experience is lowest for middle-aged individuals and higher for teenagers and older people. Unlike in the United States, individuals appear to become less risk averse, less socially dominant, and less emotionally stable after age 55.

Notes

1. The constraints are reported to be greater among workers with higher levels of education, suggesting that skill constraints may be most present among those workers who have jobs in which more complex tasks are conducted.

2. It should be noted that these reports of skill obstacles reflect perceived skills shortages by employers. Skills shortages are perceived by employers in many countries with education systems of all standards (World Bank 2012), suggesting that employers’ concerns about skills may be more pervasive than flaws in the education system in any given country. These reports can, however, be viewed as informative as a reflection of perceived concerns about growth constraints.

3. Craftsmen are the single largest occupational group in the sample.

4. It should be noted that self-reported constraints reflect a combination of the actual individual’s skill profile and the job or career path that he or she is placed in and expects to follow. Therefore, higher reports of constraints among more educated workers are likely to reflect the observation that they are in jobs in which greater analytical and literacy skills are required. Indeed, 40 percent of workers with higher education report having to do tasks involving at least 30 minutes of thinking at least once a week compared to 18 percent of workers with upper secondary education and only 6 percent of workers with primary education. A similar issue may be raised for workers reporting that their education is useful for their work.

5. Cognitive ability is a key measure of human capital and skills. Human capital is the stock of knowledge, skills, or characteristics of a worker that contribute to his or her productivity (Acemoglu and Autor, forthcoming). Although education has been found to raise long-term rates of economic growth, the effect of education on economic growth has been found to be largely driven by the cognitive skills acquired through the education process (Barro 2001; Hanushek and Woessmann 2008, 2012).
The evidence suggests that expanding educational enrollment without ensuring improvements in cognitive skills may not result in economic growth (Hanushek and Woessmann 2008). This evidence does not imply that social and behavioral skills are unimportant for economic growth, as cognitive skills are likely to be closely related to social and behavioral skills. Therefore, the effect of cognitive skills on economic growth may indeed reflect a combination of cognitive and social and behavioral skills.

6. The test covers foundational reading skills, including word meaning, sentence processing, and passage comprehension. More information on the measurement of literacy skills can be found in annex 2A.

7. It should be noted that factors other than differences in education quality could also explain a decline in score with age among individuals with similar levels of education, such as differences in the use of their literacy skills, differences in motivation to learn across age cohorts (regardless of the quality of schooling offered), and a decline in mental faculties.

8. Although the literacy assessment is the preferred measure of cognitive skills, the test captured only basic literacy skills; therefore, we turn to examining self-reported skills to look at more advanced skills.

9. Data on wages paid by international firms versus local businesses in Vietnam are not available. Evidence from the Vietnam Household Living Standards Survey (VHLSS) suggests that there is a substantial wage premium for working in foreign firms compared to domestic businesses for workers with similar characteristics.

10. It should be noted that the return to emotional stability is not statistically significant at a 10 percent level among self-employed individuals.

11. Dominant models of personality assume a hierarchical taxonomy similar to that used to model intelligence, but without the prevalence of a single factor equivalent to g (Almlund et al. 2011).

12. These differences continue to be found after accounting for age and education differences within the sample studied.

References


