

The World Bank

Skills Employers Seek

Results of the Armenia STEP Employer Skills Survey

Jan Rutkowski
12/19/2013

Armenia

Skills Employers Seek

Unemployment is high in Armenia, including among young well educated workers. At the same time employers complain that they cannot find workers with the right skills. Apparently, there is skills shortage despite high unemployment. This means that many jobseekers lack skills demanded by the labor market. This Note examines this puzzle. It presents evidence of a skills shortage in Armenia, and then it identifies the skills that are demanded by employers, and skills that are missing among job applicants. The skills shortage manifest itself in many ways. Employers find it difficult to hire workers with the required skills, and see workforce skills as a major obstacle to the activity of their firms. Many claim that the education system does not meet their needs: it does not produce skills that are practical and up-to-date, and it does not produce the level and kind of skills that are needed. Modern firms suffer from the skills shortage more than traditional ones. Adequate job-related skills are critical for employability, whereas personality traits (such as conscientiousness, openness to experience, or agreeableness) matter less. Still, conscientiousness is highly valued by the Armenian employers. Occupation specific technical skills are the most important among job-related skills, but numeracy and literacy, teamwork and communication, and problem solving skills are also highly relevant. Foreign languages, critical thinking, problem solving, leadership and the ability to work independently are the skills that young workers most often lack. Not all of them are key for employability. Among those that are key young workers most often lack adequate occupation-specific technical skills. Box 1 summarizes the main results of the analysis. It shows the core employability skills that college and high school graduates lack most often. The development of these skills among students represents the main challenge for the education system in Armenia and is critical for addressing the skills gap.¹

Box 1. Core employability skills that are most often missing among young Armenian workers

The table below shows the core employability skills that young workers lack most often. It lists the skills that are reported as frequently missing among young workers by at least 25 percent of firms. These are the skills that need to be developed among students in order to address the skills gap.

College graduates	High school graduates
Occupation specific technical skills Problem solving Teamwork Communication	Occupation specific technical skills Time management Ability to work independently Teamwork

Source: World Bank Employer STEP survey, 2012; Bank staff analysis.

The Note presents the results of the STEP Employer Skills Survey. The survey was implemented in early 2013 using a stratified sample of 354 firms. The firms were stratified by activity and firm size, with a

¹ In this Note we use the terms “skills shortage” and “skills gap” interchangeably.

booster sample of large firms.² Post-stratification weights were used to make the results representative of firm size. The structure of the sample by activity, size and some other characteristics is presented in Annex 1. The small sample size implies that the estimates are subject to a wide margin of error. This problem is mitigated by the fact it is qualitative rather than quantitative results that are of primary interest.³ One should bear in mind that the survey's results represent subjective perceptions, and as such should be taken with a grain of salt (for example, the employers may express exaggerated views). There are some additional limitations resulting from the survey's design. It uses a pre-determined list of skills, which may or may not correspond with the skills that employers themselves are concerned about. Moreover, the skills are generic in nature, and not occupation specific.⁴ Skills are divided into groups (see below), and it is not possible to compare the importance of specific skills between groups (only within groups).⁵ Finally, the survey looks at skills of only two types of workers, highly skilled college graduates, and less skilled high school graduates (see below). These two groups are very heterogeneous, with a substantial variation in the skill set demanded from workers within a group.⁶ The upshot is that the survey's results are very general in nature and as such are meant to highlight the importance of the skills gap problem, rather than to examine skill gaps specific to different types of workers and occupations. Put differently, the results are intended to inform the public debate on skills and education policy, rather than to identify specific skills-related problems.

The Survey looks at three groups of skills: job-related skills, personality traits, and personal characteristics. This typology is different from the more common one, which categorizes skills as cognitive, socio-behavioral, and technical (World Bank 2011). For example, the group of job-related skills includes all three categories, cognitive, socio-behavioral, and technical skills. Personality traits (openness to experience, conscientiousness, extraversion, agreeableness and emotional stability) represent a sub-set of socio-behavioral skills. Personal characteristics (age, sex, appearance, etc.) influence hiring decisions, but are not skills in the strict sense. The relationship between both typologies of skills is shown in Annex 2.

The survey distinguishes between two worker types: Type A and Type B workers (see Box 2). Type A workers are highly skilled workers: managers, professionals and technicians (associate professionals) and as a rule have higher or secondary technical education. Type B workers are middle- and low-skilled workers, such as clerks, sales and service worker, craftsmen, machine operators, and laborers.

² Larger firms are more likely to hire workers than small ones and thus have a better understanding of the skills supply and demand.

³ For example, what matters is that a vast majority of employers claim that the VET system in Armenia does not produce practical skills, rather than the exact percentage. Whether the actual proportion of employers is a few percentage points lower or higher than the estimated one seems of secondary importance.

⁴ For example, the survey does not allow one to determine the most important occupation-specific skills of an ICT specialist, a civil engineer, a nurse, or electro-mechanical technician.

⁵ For example, one cannot determine, which is more important: conscientiousness (a personality trait), or problem solving skills (a job-related skill).

⁶ For example, different skills may be required from a civil engineer than from a medical doctor (Type A workers), or from a welder than from a hairdresser (Type B workers).

Box 2. Type A and Type B workers

The STEP employer survey distinguished between two types of workers: Type A and Type B.

Type A workers are highly skilled white collar workers, usually with tertiary education. The group comprises three occupational categories: managers, professionals and technicians (lower grade professionals).

Type B workers are middle- and low skilled workers, both blue and white collar, usually with secondary education, or less. The group comprises the following occupational categories: clerks, service and sales workers, craftsmen, machine operators and assemblers, and elementary occupations.

The note is structured as follows. Section I provides background information on the skill structure of employment, and presents evidence on a skills shortage in Armenia. Section II is central. It examines the demand for skills and the skills gap. It identifies skills that determine the employers hiring decisions, and skills that young job applicants most frequently lack. Section III focuses on firm organized training as a way of coping with a skills shortage. Section IV concludes and discusses policy implications of the analysis.

Skills structure of employment and skills shortage

This section provides background information on the skill structure of employment in Armenia and motivates the ensuing analysis of the demand for skills by providing evidence on skills shortage. It shows that it is difficult for Armenian employers to hire workers with the required skills, and that they are critical of workforce skills and of the quality of education. The skills shortage is a particularly severe obstacle for modern firms, those which have international business contacts or introduced new technology. Box 3 provides background information on the labor supply and demand conditions in Armenia.

Box 3. Labor supply substantially exceeds labor demand in Armenia

Data presented in Table A show that there is high unemployment in Armenia, including among young, highly educated urban workers. There is a substantial excess supply of labor at all education levels, including tertiary education. This implies that if employers find it difficult to recruit workers, this is *not* because of a labor shortage. The reason must be different. This Note shows that indeed Armenian employers find it difficult to recruit workers, and argues that the main reason for this is that jobseekers, including young ones, lack the skills required by employers. There is a skills shortage despite high unemployment.

Table A. Unemployment rate by location, age, and educational attainment, 2012.*Percent*

		Unemployment rate
Total		17.3
<i>Location</i>		
Urban		25.5
Rural		17.3
<i>Age - young workers</i>		
15-19		37.9
20-24		34.8
25-29		23.1
<i>Educational attainment</i>		
Tertiary		18.1
Secondary technical		18.4
Secondary general		16.4
Vocational		24.9
Primary		15.6

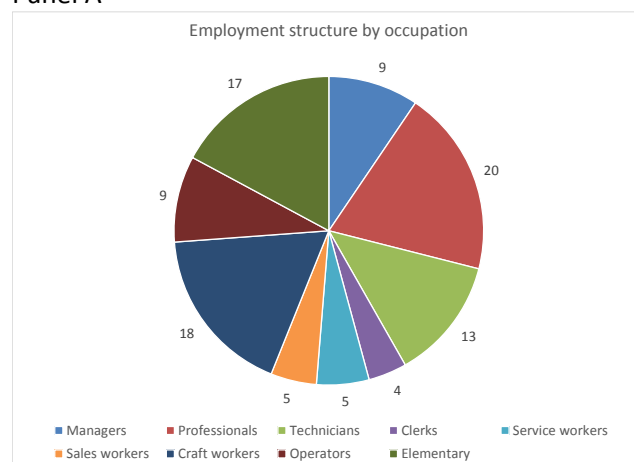
Note: the unemployment rate is estimated using household survey data (ILCS) according to the ILO methodology.

Source: Social Snapshot and Poverty in Armenia, 2013, Armstat.

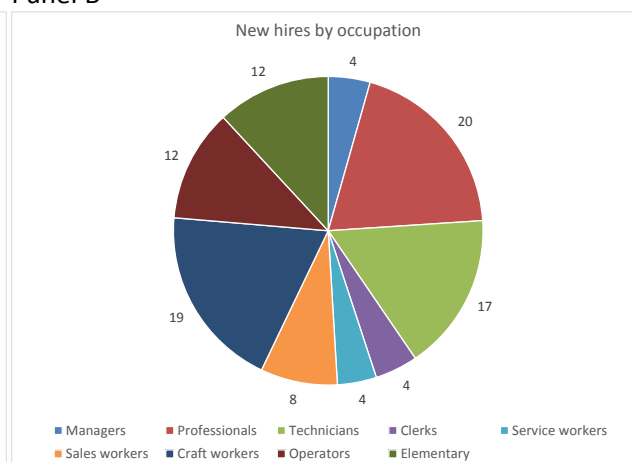
The educational structure of employment and hiring in Armenia indicates that employers demand a wide range of skills, ranging from high professional skills to middle-level white- and blue-collar skills, to elementary ones. The largest group among new hires (over 40 percent) are highly skilled white collar workers (managers, professionals and technicians). The second largest group are skilled and semi-skilled blue collar workers (craftsmen, machine operators and assemblers), who account for slightly over 30 percent of new hires. Middle-skilled workers (clerks, sales and service workers) represent about 16 percent of new hires, and unskilled workers represent the remaining 12 percent (Figure 1, Panel B). There is thus demand for both Type A and Type B labor, using the categorization applied by the STEP survey.

Figure 1. Armenian firms hire both highly-skilled professionals, and less skilled white and blue-collar workers

Panel A



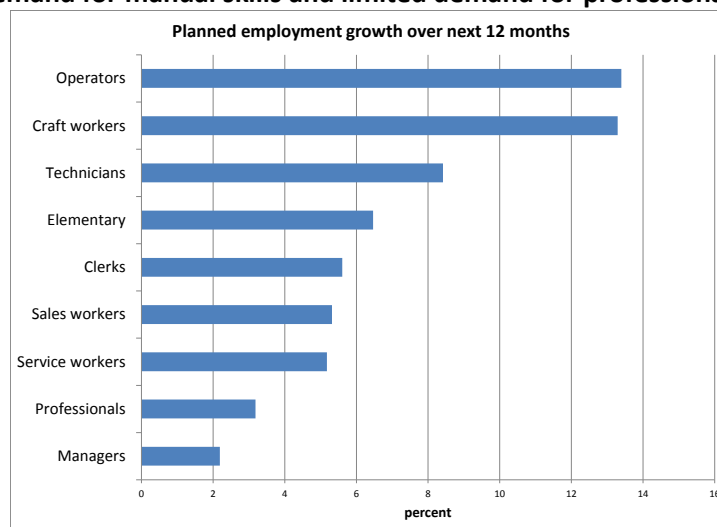
Panel B



Source: World Bank Armenia Employer STEP Survey 2013; Bank staff calculations.

In the nearest future Armenian employers are planning to increase employment mainly in blue-collar occupations. Employment is expected to grow the fastest among operators, assemblers and craft workers, and also (although at a slower pace) among technicians (Figure 2). In contrast, the demand for professional workers seems saturated, with little planned growth in employment. Employers look primarily for middle-level manual skills.⁷

Figure 2. Growing demand for manual skills and limited demand for professional skills



Source: World Bank Armenia Employer STEP Survey 2013; Bank staff calculations.

Examining the occupational structure of employment is one way of approximating the demand for skills in an economy. A different, complementary way is to look at the actual skills that are required in different type of jobs. **Box 4 zooms in on this issue by showing some basic skills that Type A and Type**

⁷ This refers to the skill profile of the demand by *existing* firms, which may underestimate the demand for professional skills because *newly created* firms are likely to demand high professional skills.

B workers use in their jobs. The picture that emerges is very basic because the list of skills is short and confined to elementary skills. Still, it gives some impression of skill involved in performing highly-skilled and less-skilled jobs in Armenia.

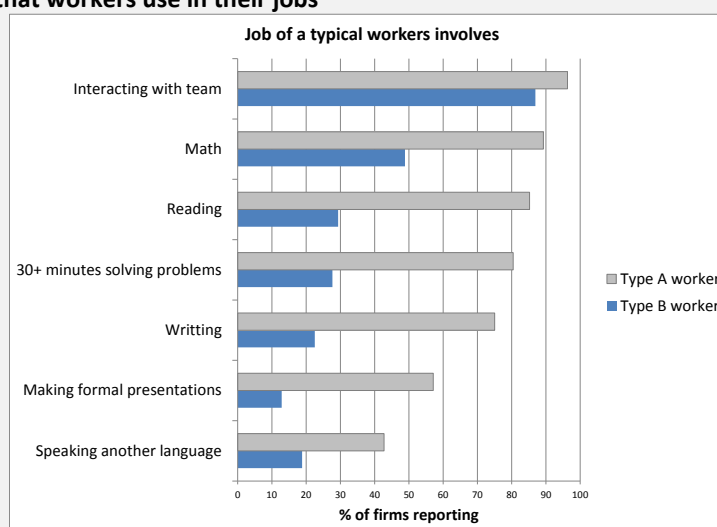
Box 4. Social skills are critical in the job place regardless of skill level; higher-order cognitive skills are essential for highly skilled jobs

Figure A shows that the vast majority of jobs in Armenia, both white and blue collar, highly skilled and less-skilled involve interacting with a team of co-workers, which points to the importance of social (interpersonal) skills. Highly skilled (Type A) jobs as a rule involve solving complex problems (in 80 percent of firms), making presentations (in nearly 60 percent of firms) and speaking foreign language (in over 40 percent of firms). Rather obviously, the bulk of highly skilled jobs involve the use of literacy and numeracy skills. Higher order cognitive skills are thus essential for the majority of Type A jobs.

Less skilled (Type B) jobs much less frequently involve the use of cognitive skills. Only one firm in two requires less skilled workers to use math skills, and still fewer require them to use reading and writing skills. Still nearly 30 percent of Armenian firms expect Type B workers to be able to solve relatively complex problems.

The implication of the above results is that in order to equip Armenian workers for a modern workplace the education system needs to provide them with a wide range of skills, which include not only job-specific technical skills, but also critical social skills, as well as cognitive skills, including the ability to solve complex problems.

Figure A. Main skills that workers use in their jobs



Source: World Bank Armenia Employer STEP Survey 2013; Bank staff calculations.

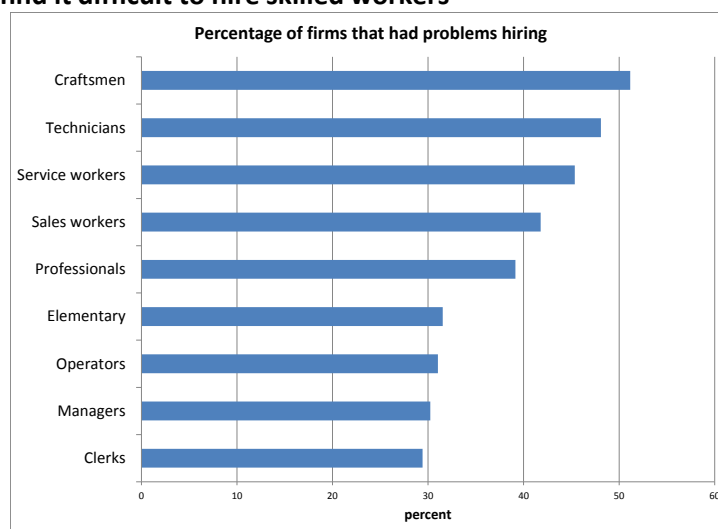
Filling job vacancies often proves difficult for the Armenian employers. This especially refers to hiring skilled blue-collar workers and technicians, but also service workers. For illustration, around 50 percent of firms claim that it is hard to hire a craftsmen or a technician (Figure 3). For comparison, about 40 percent of Armenian firms say that it is difficult to hire a professional and less than 30 percent to hire a clerk (vacancies for clerks are the easiest to fill). These results may seem surprising given high unemployment among workers with technical and vocational education (see Box 3). Apparently, the unemployed lack skills sought after by employers. Further analysis confirms that this is indeed the case.

The lack of required skills is the predominant reason why hiring workers proves difficult. Roughly, nine firms out of ten that had problems with hiring professionals, technicians, craft or service workers

reported the lack of required skills as the main reason. This proportion was lower in the case of hiring salespersons, where the lack of skills was quoted by “only” one firm in six.⁸

Job applicants lack not only occupation specific technical skills but apparently also other, presumably soft, skills. This is evident when one looks at hiring workers in elementary occupations. By definition, these are unskilled occupations, which do not require any job-specific technical skills. Nonetheless, one firm in three had problems hiring laborers, and almost half of them were reporting the lack of required skills as the main reason. This apparent paradox can be solved when one takes into account that employers look not only for technical and cognitive skills, but also for social and behavioral skills. Hiring laborers is difficult because they apparently lack adequate socio-behavioral skills (such as conscientiousness, ability to work in teams, and to work independently, etc.). This result suggests that employability skills include a wide range of skills, and are not limited, as it is often assumed, to occupation-specific technical skills. This issue is explored in the next section.

Figure 3. Employers find it difficult to hire skilled workers



Source: World Bank Armenia Employer STEP Survey 2013; Bank staff calculations.

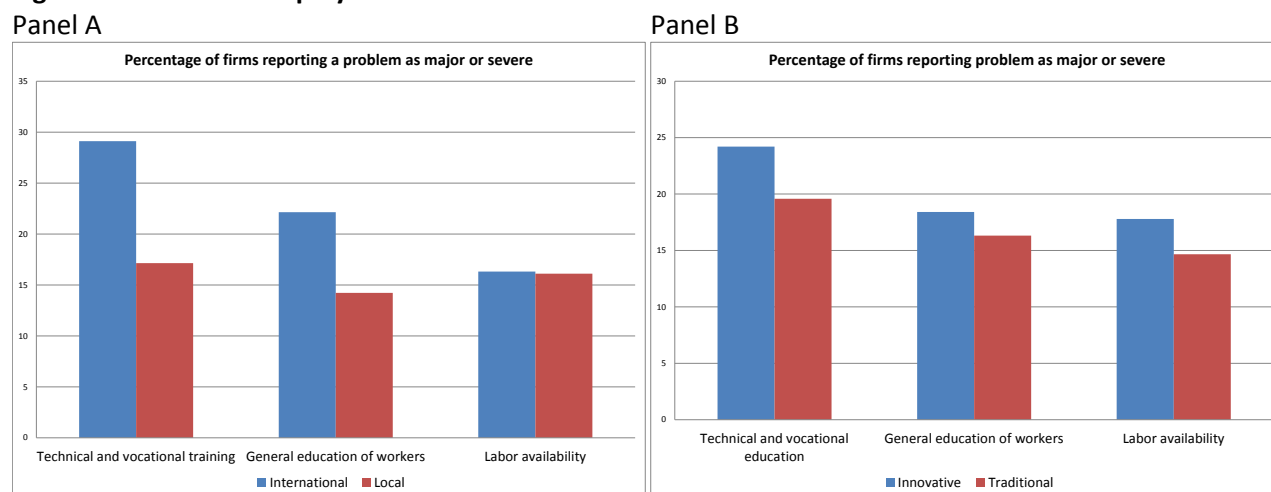
Armenian employers are quite critical of the quality of workforce skills.⁹ This is not surprising given the difficulties they face when hiring workers. Importantly, modern firms (those which have international business contacts, or introduced a new technology) are more likely to see workforce education as a major or severe problem than traditional firms. For example, nearly 30 percent of global (international) firms see technical and vocational education as a major or severe problem, compared with less than 20 percent of local firms (Figure 4, Panel A). Firms are more critical of the quality of technical and vocational education than of general education, which is not surprising given their

⁸ In the case of sales workers hiring was difficult also because the job applicants did not like the working conditions, and demanded wages higher than offered; sometimes there were no applicants. These three reasons were rarely mentioned in the case of occupations requiring more advanced skills.

⁹ However, the quality of workforce education is not the most important labor related problem faced by Armenian firms. While 22 percent of firms consider technical and vocational education as a major problem, still more see as a major problem finding workers with previous work experience (over 40 percent), and high job turnover (over 30 percent). But while the government can do little to reduce job turnover or provide workers with experience, it can do a lot to improve the quality of education.

demand for the appropriate technical skills. These results imply that an improvement in the quality of education, in particular technical and vocations, is essential for the modernization of the Armenian economy.

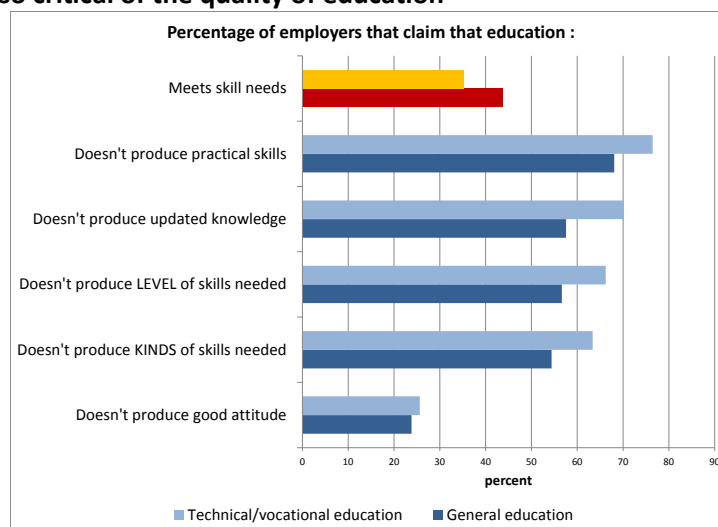
Figure 4. Armenian employers are critical of workforce skills



Source: World Bank Armenia Employer STEP Survey 2013; Bank staff calculations.

A majority of Armenian employers are dissatisfied with the quality of education. Roughly, two firms out of three say that technical and vocational education does not meet their skill needs (Figure 5). Specifically, they claim that the technical and vocational education does not produce practical skills (76 percent of firms), does not produce updated knowledge (70 percent) and does not produce the level and kinds of skills needed (around 65 percent). Apparently in the eyes of the employers there is disconnect between the world of education and the world of work. This is worrisome. Even if the criticism is exaggerated, it is clear the education system in Armenia does not respond to labor market needs. There seems to be ample room to bring these two currently separate worlds – that of education and that of work --closer to each other.

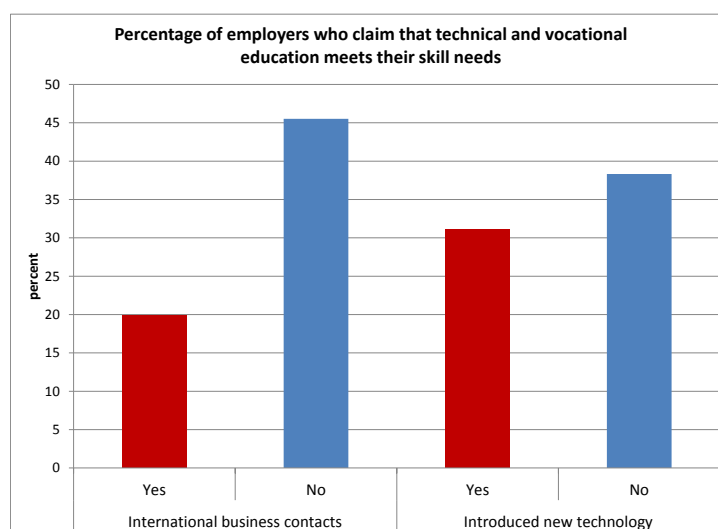
Figure 5. They are also critical of the quality of education



Source: World Bank Armenia Employer STEP Survey 2013; Bank staff calculations.

Modern firms are particularly critical of the quality of education. For example, only 20 percent of firms that have international business contacts say that technical and vocational education meets their needs, compared with 46 percent of firms, which do not have such contacts (Figure 6). This reflects the fact that modern firms demand higher skills than traditional firms. This reinforces the earlier conclusion that the modernization of the Armenian economy hinges on the improvement in the quality of education, especially technical and vocational education.

Figure 6. Modern firms are more likely to be discontented with the quality of education than traditional ones



Source: World Bank Armenia Employer STEP Survey 2013; Bank staff calculations.

II. Skills employers look for

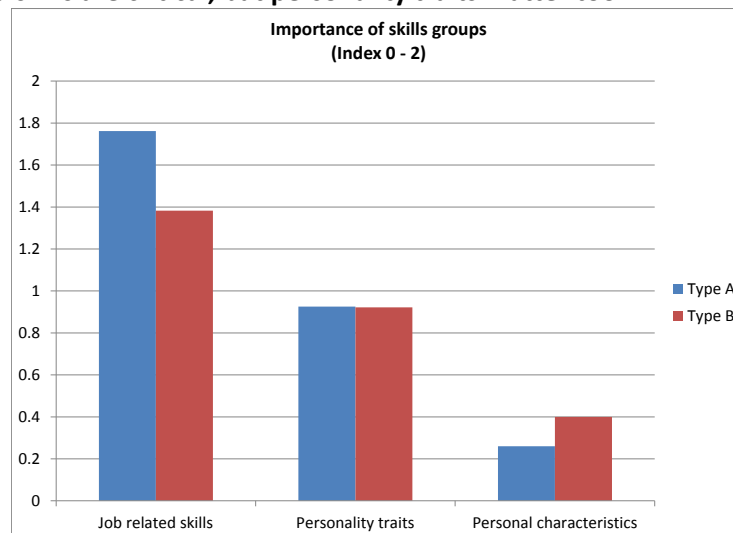
This section focuses on the value of different skill in the labor market. Employers were asked about the most important skills that influence their decision whether or not to hire a worker. They had to compare the importance of the three skill groups (job-related skills, personality traits and personal characteristics) and then to rank the skills within each group. Job-related skills are considered the most important by a vast majority of employers. Within this group occupation-specific technical skills are valued the most. Personality traits are the second most important skill group, and conscientiousness is mentioned as the most important among them by virtually all employers. Personal characteristics matter least for employability, but age and sex do influences hiring decisions. Table 1 summarizes the main results of the analysis.

Table 1. The most important employability skills

	Type A workers	Type B workers
Job-related skills	Technical skills Numeracy and literacy Teamwork Problem solving	Technical skills Communication Teamwork Ability to work independently Time management
Personality traits	Conscientiousness Openness to experience	Conscientiousness Emotional stability
Personal characteristics	Age	Age Sex

Job-related skills are the most important determinant of hiring decisions for a vast majority of Armenian employers. Personality traits do matter, but their importance is much less than that of job-related skills. Personal characteristics are even less important, but in some cases do influence hiring decisions (Figure 7). Job-related skills are somewhat more important for highly skilled workers (Type A) than for less skilled workers (Type B). The reverse is true in the case of personality traits and personal characteristics. Personality traits and personal characteristics are likely to play an important role among less-skilled workers who have direct contacts with customers (e.g. sales and service workers). And, unlike in the case of job-related skills, deficiencies in these skills cannot be usually compensated by training.

Figure 7. Job related skills are critical, but personality traits matter too



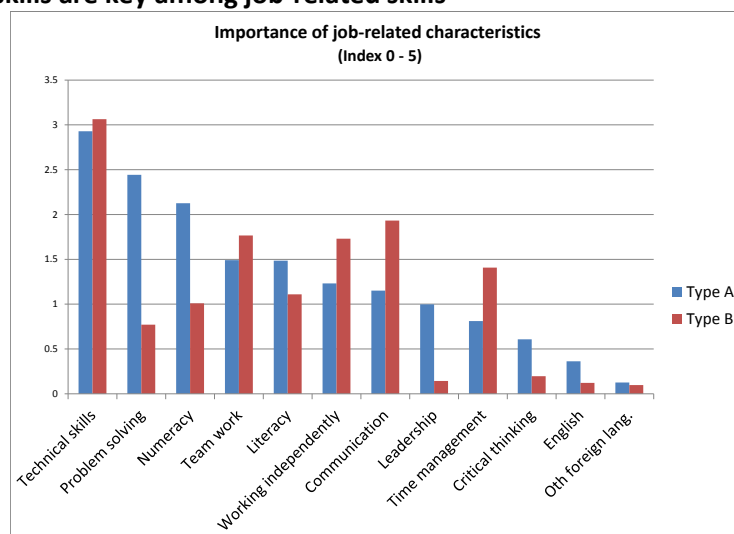
Note: Index = 2 if all employers point to the given skill as the most important, and the index = 0 if no employer pointed to the skill as important.

Source: World Bank Armenia Employer STEP Survey 2013; Bank staff calculations.

Occupation specific technical skills are the most important among the job-related skills. This pertains to both highly-skilled (Type A) and less-skilled (Type B) workers. Highly skilled workers are also supposed to have adequate numeracy and literacy skills, work effectively in teams, and be able to solve complex problems. Less skilled workers are required to possess adequate communication skills, work

effectively in teams but also be able to work independently and manage their time. More generally, in addition to “hard” technical skills, Armenian workers are expected to have “soft” socio-behavioral skills, and in the case of highly-skilled jobs also adequate cognitive skills.

Figure 8. Technical skills are key among job-related skills



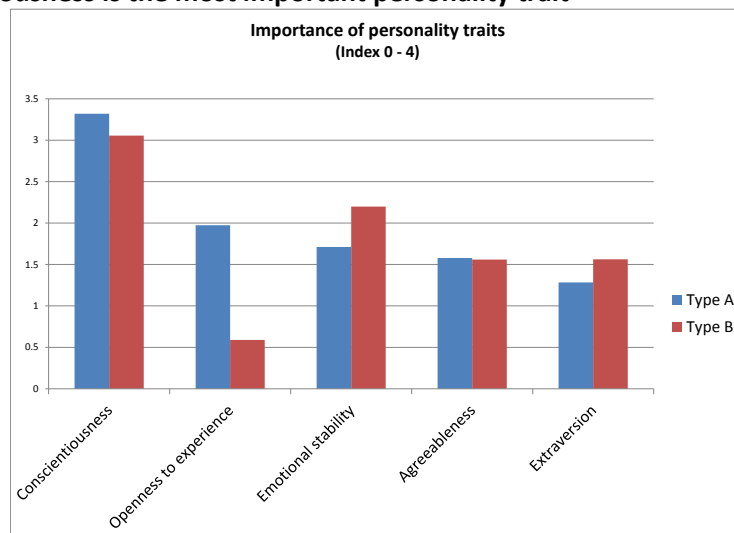
Note: Index = 5 if all employers point to a given skill as the most important, and the index = 0 if no employer pointed to the skill as important.

Source: World Bank Armenia Employer STEP Survey 2013; Bank staff calculations.

Conscientiousness is the most important personality trait.¹⁰ Conscientiousness (also known as work ethics) involves motivation, hard work, dutifulness, reliability, and other similar characteristics. It is valued extremely high by employers, both in the case of Type A and Type B workers (slightly more in the latter case). Highly skilled workers are also expected to be open to experience (Figure 9). Less skilled workers are supposed to exhibit emotional stability. Other personality traits (agreeableness, extraversion) are of secondary importance in Armenia.

¹⁰ Conscientiousness or work ethics ranks very high in most skills surveys (Mourshed et al. 2012).

Figure 9. Conscientiousness is the most important personality trait

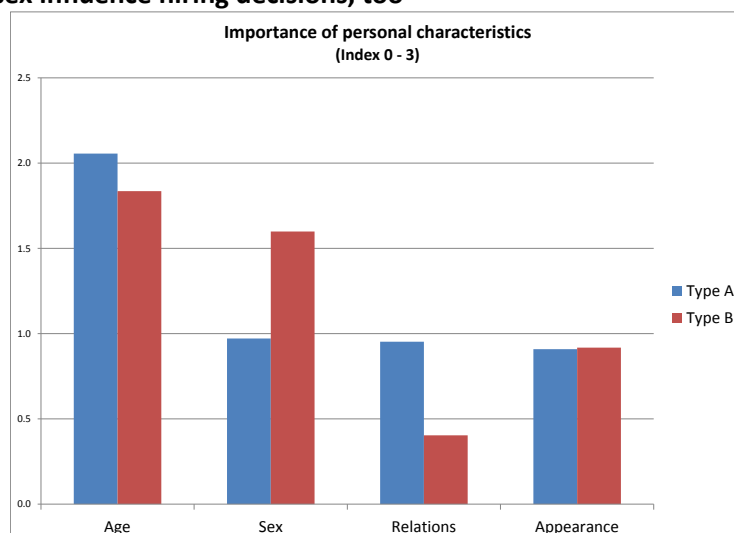


The index = 4 if all employers point to a given skill as the most important, and the index = 0 if no employer pointed to the skill as important.

Source: World Bank Armenia Employer STEP Survey 2013; Bank staff calculations.

Personal characteristics, especially age and sex also influence employers hiring decision. Obviously, personal characteristics are not skills but nonetheless matter in the labor market. Age is an important factor for both highly- and less-skilled workers. Gender plays an important role for less-skilled workers, which reflects the fact some jobs are considered male (e.g. blue-collar jobs in construction, such as a welder) and others female (e.g. pink-collar jobs in the service sector, such as a beautician).

Figure 10. Age and sex influence hiring decisions, too



The index = 3 if all employers point to a given skill as the most important, and the index = 0 if no employer pointed to the skill as important.

Source: World Bank Armenia Employer STEP Survey 2013; Bank staff calculations.

There are differences in skills demand between the modern and traditional firms. Not surprisingly, modern firms value language skills more than traditional ones. They also attach a higher value to higher-order cognitive skills, such as problem solving and critical thinking, and to the ability to work independently. In the case of professionals, modern firms also demand better technical skills and more often expect workers to be open to experience. In the case of less-skilled workers, modern firms more often see conscientiousness as a critical personality trait. The differences in skills demand between modern and traditional firms are summarized in Table 2.

Table 2. Skills that modern firms value more than traditional ones

	Type A workers	Type B workers
Job-related skills	English <u>and</u> other foreign languages Problem solving Technical skills Numeracy Ability to work independently	English <u>and</u> other foreign languages Critical thinking & creativity Ability to work independently Problem solving
Personality traits	Openness to experience Extraversion	Conscientiousness

Note: Modern firms = firms that have international business contacts or introduced innovations

Employers seek from jobseekers not only occupation-specific technical skills, but also cognitive and socio-behavioral skills. Core employability skills include conscientiousness, openness to experience, teamwork and communication skills, as well as problem solving, and literacy and numeracy skills. These findings have important implications for the education system. It is commonly assumed that it is primarily technical and vocational education system that prepare students for the labor market. The results of our analysis prove that this is not true. Employability skills are being developed through the whole education cycle, starting with early childhood education. Accordingly, the quality of general education, which provides generic (or transferable) skills, is as important for labor market success as the quality of technical and vocational education, which provides workers with occupation-specific technical skills. To prepare students for the labor market, the education system needs to focus on the development of socio-behavioral and cognitive skills to the same extent if focuses on the development of technical skills.

III. Skills young workers lack

What are the skills that young Armenians lack most often? When asked, employers usually mention language skills, higher order cognitive skills (problem solving, critical and creative thinking), and socio-behavioral skills such as leadership and openness to experience. Table 3 summarizes the results and lists skills that are most often missing among Type A and Type B young (up to 30 years of age) workers.

Table 3. Skills that young workers most often lack

	Type A workers	Type B workers
Job-related skills	English Problem solving Critical and creative thinking Leadership Technical skills	English and other foreign languages Leadership Critical and creative thinking Problem solving
Personality traits	Openness to experience	Openness to experience

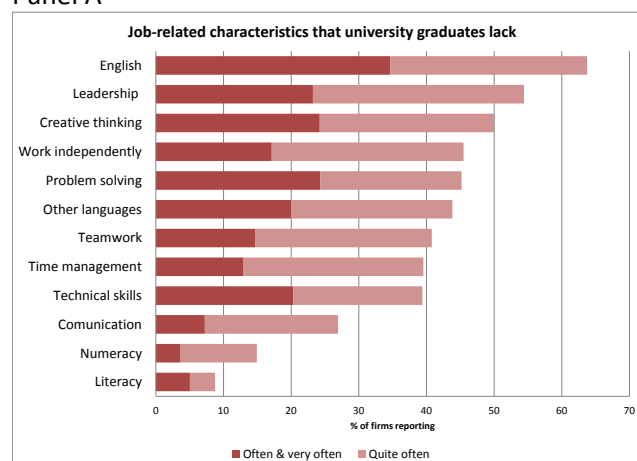
Note: The table lists skills that at least 20 percent of firms indicated as often or very often lacking among young (up to 30) workers. Skills are listed in order of frequency of reporting.

English, leadership, and creative thinking are the top three skills that young workers lack most often.

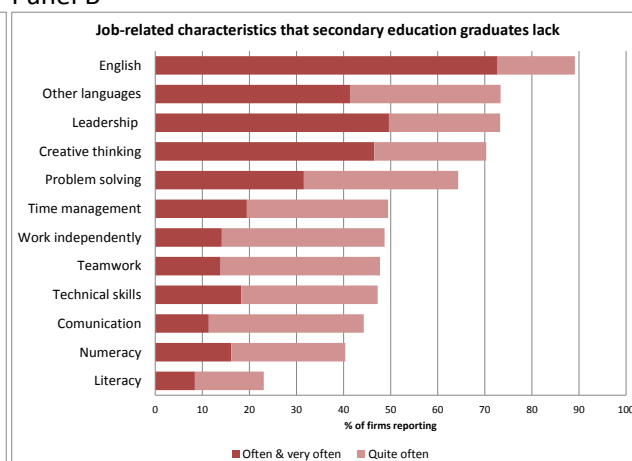
This refers to both highly- and less-educated young persons. For example, as regards highly educated young workers, over 60 percent of employers say that they often do not know English, and around 50 percent say they often lack leadership, ability to work independently, creative thinking and problem solving skills (Figure 11, Panel A). As to less-educated young workers, they often don't know English according to about 90 percent of employers, and lack leadership and creative thinking skills according to around 70 percent of them (Figure 11, Panel B). Less firms mention technical skills as missing among young workers. However, given their critical importance, the fact that around 40 percent of employers claim that young workers often lack adequate technical skills is still of serious concern (see below).

Figure 11. Young workers lack English, leadership and higher-order cognitive skills

Panel A



Panel B

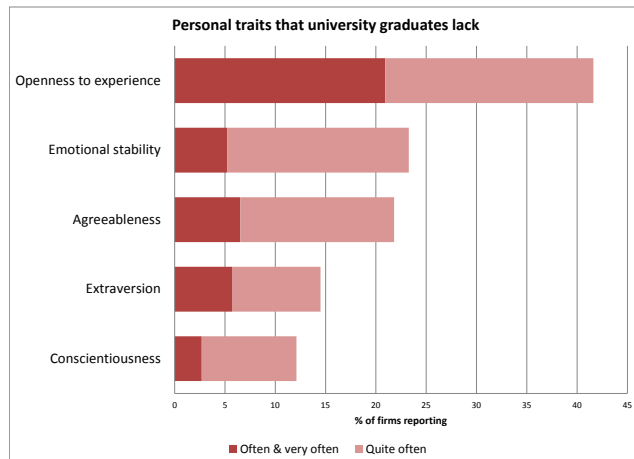


Source: World Bank Armenia Employer STEP Survey 2013; Bank staff calculations.

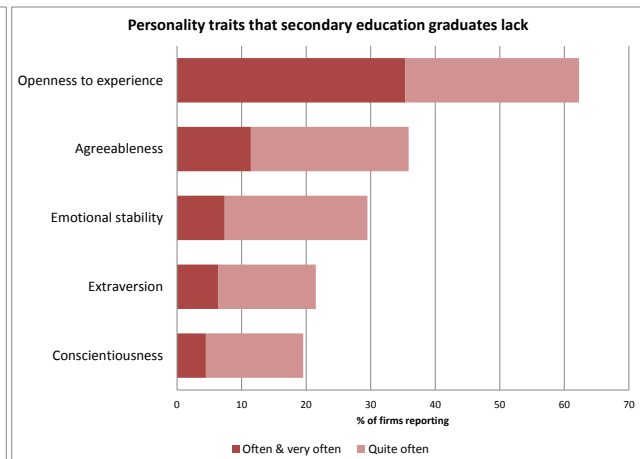
Many young Armenian workers are not open to experience, according to employers. Highly-educated workers are not open to experience according to over 40 percent of employers, and less-educated ones according to over 60 percent (Figure 12). Even if this pessimistic perception is somewhat exaggerated, there are still reasons for concern. It is young workers who are supposed to be intellectually curious, creative and innovative. Recent research results show a strong, positive relationship between mean national scores of Openness to Experience and national innovation scores (Steel et al, 2012). Accordingly, if many young workers lack these traits, this may hamper the growth of the innovative sector of the Armenian economy.

Figure 12. Young workers are often not open to experience

Panel A



Panel B

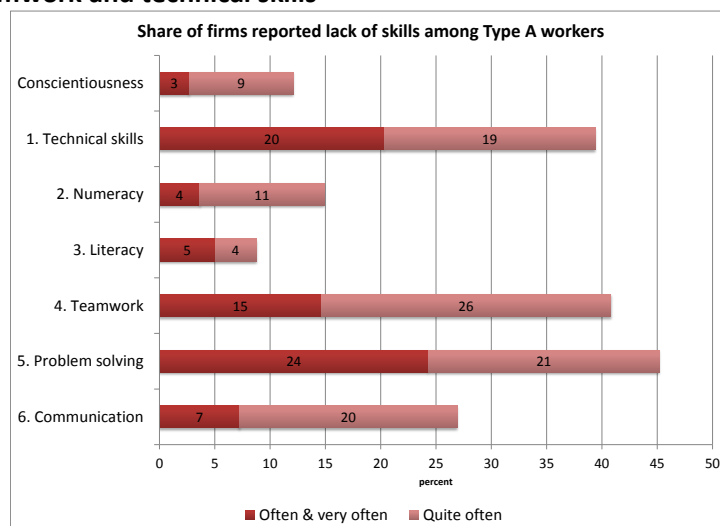


Source: World Bank Armenia Employer STEP Survey 2013; Bank staff calculations.

Not all skills that young workers lack are crucial for employability. For example, English is the most often missing skill, however most Armenian employers do not require job applicants to know foreign languages. Hence, the lack of language skills does not necessarily affects one's employment chances. The question is then, what are the core employability skills that young workers lack. To answer this question we selected the top six most important job-related skills and the most important personality trait, and then looked at the percentage of employers who claim that these skills are often missing among young workers. The results are presented in Figure 13 (for highly-educated workers), and in Figure 14 (for less-educated workers).

The top 3 core employability skills that highly-educated young workers lack most often are problem solving, occupation specific technical skills, and teamwork. Problem-solving skills are reported as often missing by 45 percent of firms, whereas teamwork skills and technical skills by about 30 percent (Figure 13). However, the technical skills gap is the most severe. First, it is the most important employability skills. Second, the percentage of firms claiming that technical skills are *often or very often* (as opposed to *quite often*) missing among young college graduates is higher than that complaining about teamwork skills. These results suggest in order to respond to labor market demand, tertiary education in Armenia needs to enhance the development of occupation specific technical skills and higher order cognitive skills (problem solving). It also needs to build on socio-behavioral skills (in particular teamwork skills) developed at the earlier stages of education.

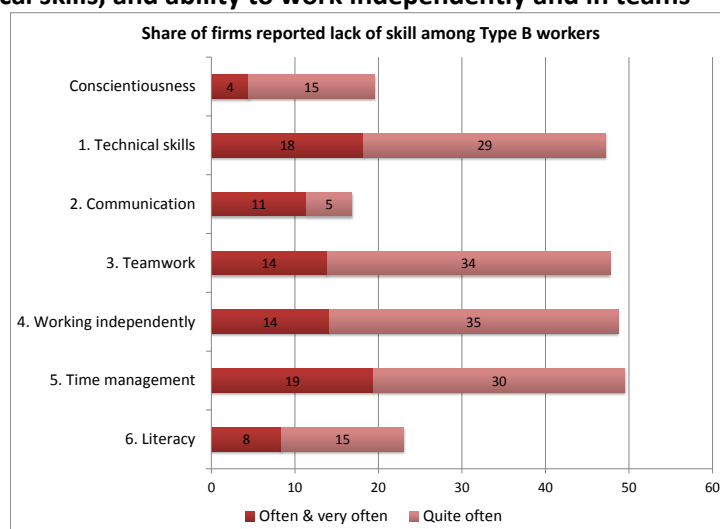
Figure 13. Top employability skills s highly educated young worker jobs most often lack include problem solving, teamwork and technical skills



Source: World Bank Armenia Employer STEP Survey 2013; Bank staff calculations.

Four important skills stand out as frequently missing among high-school graduates workers: time management, ability to work independently and in teams, and technical skills. Each of these skills is reported as often missing by nearly 50 percent of firms (Figure 14). The technical skills gap points to the failings of the technical and vocational education system (consistent with employers' negative assessment of that system documented above). The socio-behavioral skills gap points to weaknesses in the general education system. However, socio-behavioral skills are also shaped within family, and the family background plays an important role. Students coming from disadvantaged backgrounds tend to have poorer socio-behavioral skills. An important role of the general education system, starting with early childhood development, is to compensate, to the extent possible, for disadvantages due to an unfavorable social and cultural background.

Figure 14. Top employability skills s less- educated young worker jobs most often lack include time management, technical skills, and ability to work independently and in teams



Source: World Bank Armenia Employer STEP Survey 2013; Bank staff calculations.

To conclude, young Armenians lack some core employability skills. There is a skills gap, which encompasses the whole range of skills: occupation-specific technical skills, social and behavioral skills, and higher-order cognitive skills. This poses a considerable challenge for the education system. The skills gap needs to be addressed in order to equip workers with skills that employers seek, and thus to support the growth and modernization of the Armenian economy.

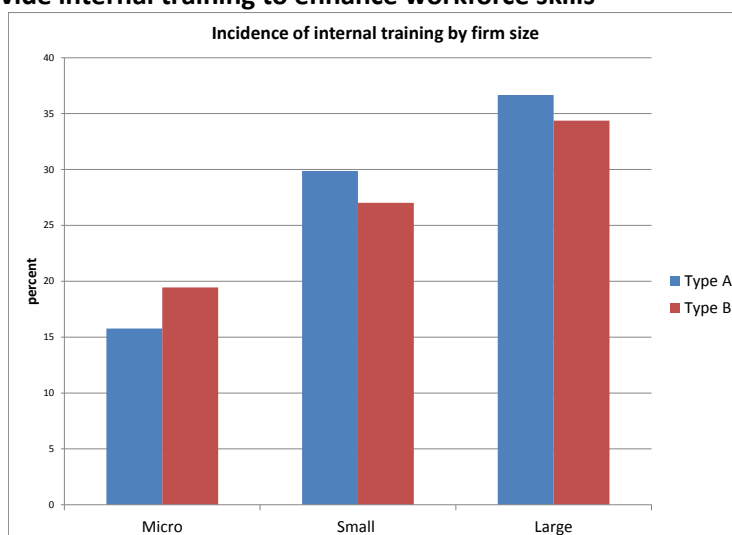
IV. Training

Relatively few Armenian firms provided training to address the skills gap. Those which do usually provide internal short term orientation on-the-job training given by the firm's manager. External training is given predominantly to highly-educated white collar workers.

Some Armenian firms provide training to their workforce in order to address the skills gap. But such firms are in minority. Only one firm out of four provided internal (i.e. on the firm's premises) training to Type A, and to Type B workers. Type A workers are as likely to receive internal training as Type B workers.¹¹ Internal training is usually provided by the firm's manager and on average lasts from 18 days for Type A workers to 24 days for Type B workers (median duration). This suggests that internal training is usually an orientation on-the-job training.

The incidence of firm provided training increases with firm size. This is a pattern observed in virtually all countries, and Armenia is not an example (Figure 15). Larger firms have more resources to provide training, and inasmuch they use more advanced technology than small firms, they also have greater training needs. Around 35 percent of large firms (more than 50 employees) provide internal training, compared with 15-20 percent of micro firms (no more than 10 employees). But it is micro and small firms that are predominant in Armenia, which partly accounts for the overall low incidence of firm provide training.

Figure 15. Firms provide internal training to enhance workforce skills



Source: World Bank Armenia Employer STEP Survey 2013; Bank staff calculations.

¹¹ This is an interesting contrast to the pattern observed in Georgia, where firms more often provide internal training to Type B than to Type A workers (Rutkowski, 2013).

Externally provided training is given mostly to highly educated workers and rarely to less-educated ones. About 30 percent of firms financed externally provided training to manager and professionals, and only 7 percent to less-skilled workers. External training typically lasts 7 days (in the case of both Type A and Type B workers). External training is presumably meant to provide more advanced skills than internal training. Inasmuch as this is the case, the fact that highly-educated Armenian workers are more likely to receive training than less-educated ones is consistent with the complementarity between education and training observed in most countries. That is, training incidence is higher among individuals with more education (Brunello 2001). As famously put by James Heckman, “learning begets learning”, and “skills beget skills”.

V. Conclusions and policy implications

This section summarizes the evidence on a skills gap in Armenia, briefly examines its causes and consequences, and finally presents policy challenges. It argues that improvements in three areas are necessary to address the skills gap. First, the quality of education needs to be improved and the education system needs to become more responsive to the labor market needs. Second, the quality and scope of labor market information needs to be enhanced in order to inform education, training and employment policies, as well as guide career choices of students and jobseekers. Finally, the modern sector of the Armenian economy needs to expand and new more productive jobs need to be created in order to strengthen incentives for workers to invest in skills.

Skills gap: Evidence

The evidence presented in this Note points to the existence of a skills gap in Armenia. Three related factors lead to this conclusion. First, workforce skills are seen by many Armenian employers as a major obstacle to the growth of their firms. This perception is particularly pronounced among modern firms, which suffer from skill shortages more than traditional firms.

Second, hiring new workers often proves difficult. The main reason is that job applicants lack the required skills.

Third, employers claim that young workers lack a range of skills, encompassing technical skills, higher order cognitive skills, and socio-behavioral skills. Among them, they often lack core employability skills: occupation specific technical skills, problem solving skills, teamwork skills and the ability to work independently. Few young workers know foreign languages. In addition, many young workers are not open to experience.

Skills gap: Causes

Inadequate education, not responding to labor market needs, is the main factor behind the skills mismatch in Armenia. Armenian employers claim that the education system – in particular technical and vocational education -- does not meet their skill needs. It produces knowledge that is often obsolete, and it does not produce the level and kinds of skills needed in the labor market. But the problem seems even deeper rooted. Many young workers lack adequate cognitive skills and socio-behavioral skills, which suggests failings at the earlier stages of education, including early childhood education. Social background plays an important role in the development of these skills and an important role of the education system is to help students from disadvantaged social background

overcome their initial disadvantage. This is major challenge but if the education system fails to meet it then it produces graduates who lack key employability skills, and thus face poor employment prospects.

Technological change and enterprise restructuring is another factor. However, this factor is not specific to Armenia, but instead common to every growing and restructuring economy. Some degree of a skill mismatch is inevitable because in a restructuring economy the skill content of new jobs that are being created differs from that of the old jobs that are being destroyed. As a rule new jobs are technologically more advanced than old jobs and accordingly require higher skills. They may also require different skills if new jobs are created in different sectors (e.g. services) than the old jobs (e.g. in industry). In order to reduce the skills mismatch the education system needs to respond to the shifts in the skill composition labor demand. However, some degree of inertia on the part of the education system is probably unavoidable. The challenge is to reduce inertia inherent in the education system and enhance its flexibility.

Skills gap: Consequences

A persistent skills shortage adversely affects productivity growth and job creation. If workforce with required skills is not available, firms do not create new jobs. A skill shortage may also hamper the introduction of new technologies, requiring more advanced skills, with a negative impact on productivity. And if workers are under-skilled, they are less productive. As we saw, many Armenian firms, especially modern ones, see workforce skills as a major obstacle to the operation and growth of their firms. This implies that skills gap, if not addressed, may slow down the rate of economic growth, and to impede the modernization of the Armenian economy. Employers may create fewer new jobs, especially in the modern sector, than they would have if there were no skills shortage. The perception that workers do not have adequate skills may also deter investment (including FDI).

A skills gap also means higher unemployment. Many people are jobless because they lack the skills required in the new jobs. Those who are employed but under-skilled are less productive and earn lower income. In short, inadequate human capital has an adverse effect on the current welfare of the population and on future growth prospects.

Skills gap: Policy challenges

There are three main challenges facing Armenia with respect to the skills gap. First, to make the education system more responsive to the changing labor market needs. Second, to improve the quality of labor market information and analysis in order to inform education and employment policies. Third, to foster the creation of high productivity jobs in the modern sector of the economy in order to strengthen incentives to invest in skills.

Our analysis indicates that making the education system in Armenia more responsive to labor market needs entails improvements in three related areas: (a) the overall quality of education, (b) the formation of higher order cognitive skills and socio-behavioral skills, and (c) the development of occupation specific technical skills.

Making the education system more responsive to labor market needs

Overall quality of education. To find productive employment, the graduates of secondary and tertiary education institutions need to have actual skills, not only diplomas. And diplomas need to certify actual competences and qualifications. It is worrisome that despite high unemployment among the college educated workers employers find it hard to hire professionals who possess the right skills. Addressing

this problem is of paramount importance from the perspective of the modernization of the Georgian economy.

Formation of higher –order cognitive and socio-behavioral skills. Many young workers lack these skills which hampers their employment chances as well as the performance of the Armenian firms. Accordingly the education system needs to put more emphasis on the development of these skills. This specifically refers to problem solving skills, teamwork and communication skills, ability to work independently, and openness to experience. Improvement in this area is critical for the development of the modern sector of the Armenian economy.

Development of technical skills. The shortage of appropriate occupation specific technical skills is the top concern of the Armenian employers. Productivity growth and the competitiveness of Armenian firms hinges on improvement in this area. The relevance of technical education to labor market demands can be enhanced by through an institutionalized partnership between education institutions and employers, including employers' involvement in curricula design. At the tertiary level, the technical dimension of education can be strengthened by developing professionally-oriented higher education in addition to the academic stream, which is presently a route pursued by a number of European countries.

Improving labor market information

Better labor market information is necessary to inform education, training and employment policies, and to guide career choices of students. By facilitating rational choices of different labor market actors, better information alleviate a skills mismatch. This particularly refers to information on the supply of and demand for different occupations and skills. The stakeholders need to know the demand for which occupations and skills is growing and for which it is falling in order to make informed choices. The information on occupational trends can be either quantitative or qualitative. Quantitative information comes from regular labor market monitoring and shows trends (past and projected) in employment, unemployment, job vacancies and wages by occupation. Qualitative information comes from focus group discussions with employers and staff of employment agencies (public and private) and shows their expectations concerning changes in the demand for different occupations and skills in relation to the current supply. Both approaches allow one to determine occupations in short supply, and those in excess supply. Compared with quantitative methods, qualitative methods provide a better insight into the specific skills that employers demand.¹² Additional information on career prospects associated with a choice of different types of schools and fields of study comes from *graduate tracer studies*, which have recently gained in popularity in a number of European countries (Puettmann and Arnhold 2013). This type of information enables prospective students to make informed career choices and as such can contribute to reducing a skills mismatch.

The Government plays a critical role in generating (directly or indirectly) and disseminating information on labor market conditions. *Labor Market Observatories* are institutions established in many countries in order to improve the quality and scope of available labor market information and to analyze labor market developments. Their analysis is tailored to the diverse needs of various users (government agencies including public employment services, education and training institutions, investors, etc.). But is also critical that the relevant labor market information reaches students and job

¹² An example of a qualitative approach to determining the supply of and demand for different skills is the so called *Occupational Barometer* developed by the Finnish Public Employment Services. This approach is also used by some Public Employment Offices in Poland.

seekers so that they can make informed career choices. This function of turning information into knowledge is played by career development centers as well as by public employment services.

Fostering job creation

Armenia needs to foster the creation of high-productivity jobs in order to strengthen incentives for workers to invest in skills. Currently, job opportunities for highly-skilled workers are limited, which curtails the incentives to invest in skills development (see Box 3). If such conditions persist, they may lead to a bad equilibrium: workers do not invest in skills because of the low return to their investment, and employers do not create high productivity jobs because they cannot find workers with the required skills. The symptoms of such situation are already present. To get out of this vicious circle, job opportunities (employment probability and earnings) for highly skilled workers need to improve. This requires investments in new technology in the existing firms, but first and foremost, entry of new, more productive firm (World Bank 2005). International evidence shows that it is new, young firms that create the most productive jobs (World Bank 2014). A favorable investment climate is crucial for fostering firm entry and growth. Armenia has made significant strides in improving the business environment and currently ranks 32 in terms of the ease of doing business (World Bank 2013). However, the challenge of developing a modern sector of the economy, providing high-value added jobs to the well-educated young Armenian workers, lies still ahead.

References

- Arias, Omar S. and Carolina Sanchez-Paramo (2014), *Back to Work. Growing with Jobs in Europe and Central Asia*, Washington, DC.
- Brunello, Giorgio (2001), “On the Complementarity between Education and Training in Europe”, IZA Discussion Paper No. 309.
- Mourshed, Mona, Diana Farell and Dominic Barton (2012), *Education to Employment: Designing a System that Works*, McKinsey Center for Government.
- Puettmann, Vitus and Nina Arnhold(2013), Graduate Tracking in Europe, unpublished draft, World Bank, Washington, DC.
- Rutkowski, Jan (2013), Georgia. Workforce skills in the eyes of the employers, unpublished draft, World Bank, Washington, DC.
- Sondergaard, Lars and Mamta Murthi (2011), *Skills, Not Just Diplomas. Managing Education for Results in Eastern Europe and Central Asia*, World Bank, Washington, DC.
- Steel, Daniel G, Tiffany Rinne and John Fairweather (2012). Personality, nations, and innovation: Relationships between personality traits and national innovation scores. *Cross-Cultural Research: The Journal of Comparative Social Science*, vol. 46, no. 1, pp. 3–30.
- World Bank (2012), Armenia. Promoting Productive Employment, Washington, DC.

ANNEXES

Annex 1. Sample structure

Table A1. Sample structure by main firm characteristics, 2013

Percentage distribution

	Original sample structure	Weighted structure
<i>Economic activity</i>		
Trade	26.7	30.9
Manufacturing	26.4	22.7
Construction	12.1	9.5
Health care	6.4	7.0
ICT	6.0	6.5
R&D	3.8	5.0
Finance	3.5	2.3
Other activities	84.9	83.9
<i>Firm size (employment)</i>		
Micro (1 – 10)	31.4	37.6
Small (11 – 50)	42.7	43.9
Large (51+)	26.0	18.6
<i>International business contacts</i>		
Yes	39.9	39.2
No	60.1	60.8
<i>Introduced new technology</i>		
Yes	46.2	42.1
No	53.8	58.0

N = 354

Source: World Bank Employer STEP survey 2012; Bank staff calculations.

Annex 2. Typology of skills: STEP vs. World Bank (2011)

STEP	World Bank (2011)
Job-related skills	
Job-specific technical skills Foreign language	Technical skills
Literacy Numeracy Creative & critical thinking Problem solving	Cognitive skills
Communication Team-work Leadership Ability to work independently Time management	Social and behavioral skills
Personality traits	
Openness Extraversion Conscientiousness Agreeableness Emotional stability (neuroticism)	
Personal characteristics	
Age Appearance Sex Family connections/personal ties	