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Skills Gaps and the Path to Successful Skills Development

Emerging Findings from Skills Measurement Surveys in Armenia, Georgia, FYR Macedonia, and Ukraine

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Abbreviations

ALMPs	Active Labor Market Programs
CVET	Continuing Vocational Education and Training
ECA	Europe and Central Asia
ECD	Early Childhood Development
IVET	Initial Education and Training
OECD	Organisation for Economic Cooperation and Development
PIAAC	Programme for the International Assessment of Adult Competencies
PISA	Programme for the International Student Assessment
SABER	Systems Approach for Better Education Results
STEP	Skills towards Employment and Productivity
WfD	Workforce Development

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Executive Summary

Relevant skills for the job market—the ability to do well a job that is also in demand—are becoming an important bottleneck to private sector growth in many countries in the former Eastern Europe and Central Asia (ECA) region. Economic reforms together with structural and technological change are bringing about new business opportunities and with them demand for new skills. A new take on skills development is needed to help increase productivity, job creation, and wages. The different stakeholders—policy makers that coordinate the strategy around skills and education, workers, the jobless, students and their families who make decisions to invest in training, and firms—need to coordinate around the skills agenda.

To make informed decisions, timely and relevant input on the supply and demand for skills is needed. Are there skills gaps in the sense there are skills in demand that are not available in the population? If so, what do they look like? What are the consequences of such skills gaps—for workers, for students, for the economy, for firms? What could be done to narrow the gaps? In addressing these questions, this report brings together evidence on the availability of skills from STEP (Skills Towards employment and Productivity) surveys: household level surveys that measure generic skills of the working age population and track the evolution of skills over cohorts for Armenia, Georgia, Macedonia and Ukraine; and firm level surveys that identify demand for skills, for Armenia, Georgia and Ukraine. The framework underlying these surveys adopts a broad view to skills sets, incorporating both general cognitive skills, including foundational skills like literacy and numeracy, as well as general problem solving skills; socio-emotional skills, such as the ability to work independently, focus on results, or communicate and collaborate with co-workers and business contacts; and technical skills, pertaining to specific occupations. The objective of the report is to use these questions to stimulate discussion as to how to measure and track skills gaps and subsequently identify a policy agenda to narrow the gaps.

The main messages of the report are:

There is strong evidence of a skills gap, both viewed from the employer and from the workers' side.

Is there a skills gap? Yes: a significant share of firms report that they do want to hire, but have difficulties in finding workers with the adequate level of skills. The skills constraint is evident both for professional, managerial and technical positions ("white collar" occupations), and occupations within clerical support, sales and services, crafts and trades, plant and machine operators, and elementary workers ("blue collar" occupations).

Workers also perceive an important but different kind of mismatch. Many of those employed (some 30 percent of workers in Armenia, Georgia and Ukraine, and some 20 percent of those in Macedonia) consider that the level of education necessary for doing their job is lower than the level of education they hold. Perceived over-education relative to job requirements is a much more significant problem than under-education in these four countries compared to most OECD countries.

Employers look for a mix of job-specific and generic cognitive and socio-emotional skills, but the young and educated generation does not have enough of these skills.

Employers identify, quite consistently across countries, a set of job relevant skills they need from their workers. For white collar occupations, employers value technical skills as well as foundational skills like literacy and numeracy (in Armenia and Georgia), but also the ability to work in teams as well as independently, the ability to communicate, and general problem solving skills. But these highly appreciated skills make up a skills gap only if they are also in short supply. Matching what employers say they want, and what they say they cannot find among young graduates from secondary and tertiary education, shows that the most significant gaps relate to job specific skills, together with general problem solving skills, and socio-emotional skills like team work, communication, and openness to new experience.

Skills gaps carry costs for workers, firms, and the overall economy: workers with lower skills earn less; and more dynamic firms with a higher potential to create productive jobs are more constrained by skills gaps than traditional firms; therefore, these skills gaps risk the future economic development of countries.

The skills gaps are affecting workers, firms, and the economy. First, not having skills worsens labor market prospects. Skills—in particular information processing skills like reading, writing, numeracy computer use but also socio-emotional skills such as problem solving, team work, ability to work independently—are positively correlated with individual worker earnings. Second, many important skills are still lacking. On the one end of the skills spectrum, foundational skills like literacy still show a significant gap to OECD countries. On the other end, "new economy skills" are particularly absent, suggesting that if economies advance on their structural reforms, skills constraints will become even more significant. And third, the potentially more dynamic firms—those that innovate, have international contacts, or have grown more rapidly in recent years—tend to experience more significant problems in hiring skilled workers. As a result, skills gap could affect future economic growth, job creation and productivity.

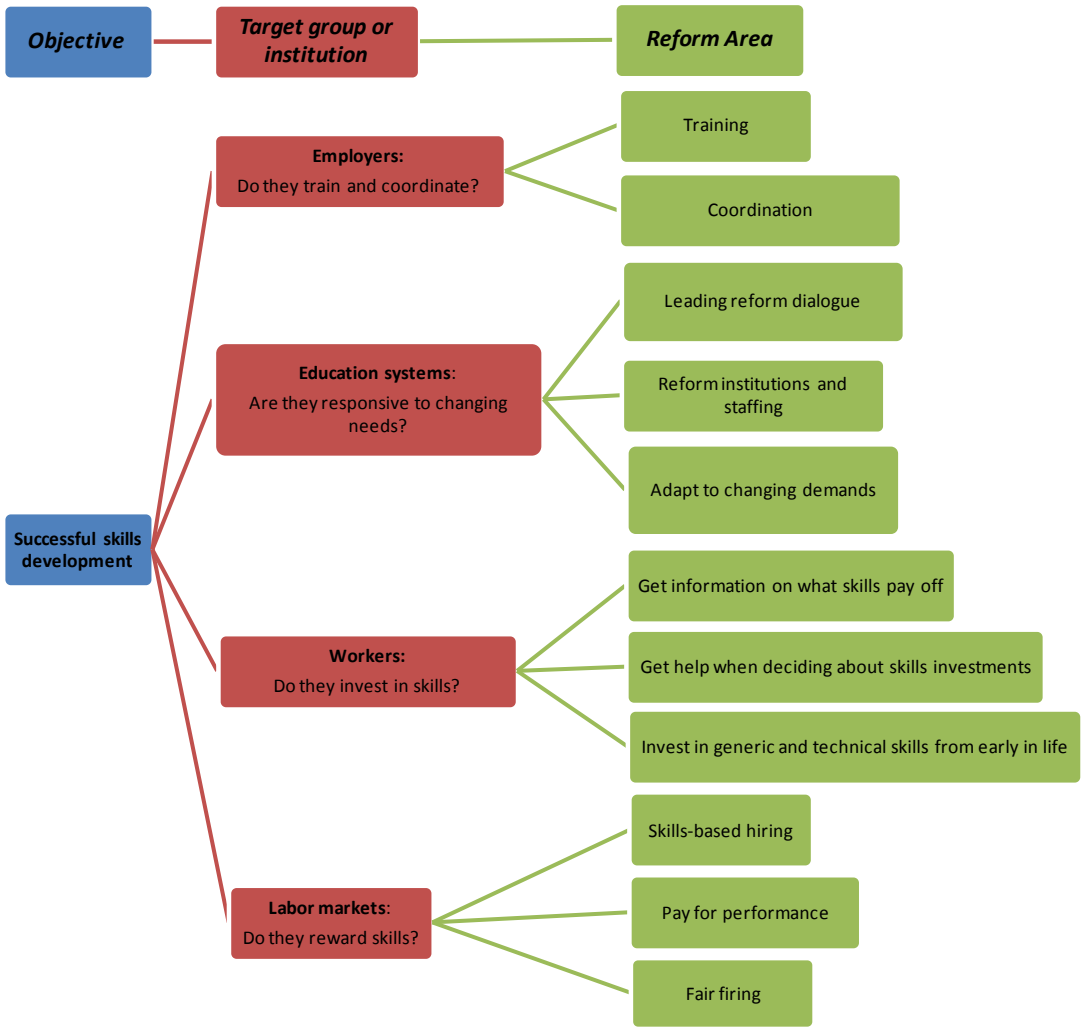
Education systems are not equipping graduates with the skills needed to make a successful transition from school to jobs, and firms are not providing training to continue skills development throughout adult life.

The education sector, together with families, is primarily responsible for skills formation during early childhood all the way to early adulthood; employers provide continuous training, both on the job and in class rooms, during adulthood. But both sides are underperforming. Both employer and household survey data show that neither firms nor workers are satisfied with the quality of either general education and vocational training systems. But these problems are also compounded by low incidence of training among firms, and the fact that education systems and the enterprise sectors appear to have little interaction, especially on strategic issues such as curriculum development and quality assurance. These bottlenecks hold back the development of a skilled, flexible work force.

The path to successful skills development goes through reforms that facilitate collaboration around a strategic vision for skills development, involving employers, education systems, individuals, and labor markets institutions.

Given the skills gaps, and the need for more productive jobs, what can be done? Figure A below shows a list of reform areas and actions for each of the different actors and institutions that are affected by and can contribute to improving skills. The figure indicates reforms that help (i) employers provide more training to their staff and coordinate between themselves, and with other stakeholders, around skills development; (ii) education systems become more responsive to changing needs of labor markets; (iii) workers, students, and their families make informed decisions around careers and jobs; and (iv) labor markets reward skills adequately and facilitate the intermediation of skilled workers to firms.

Figure A: The path to successful skills development



Underlying these reforms is a continued need for more and better information on the availability of skills, the skills needed in labor markets, and the reward to skills. More efforts to measure skills in consistent and comparable ways to facilitate benchmarking and provide timely input to labor market and skills policies are needed.

1. Introduction

Countries in Europe and Central Asia (ECA) need to create more and better job opportunities: jobs that offer working conditions and earnings that can help reduce poverty and inequality and more broadly ensure the wellbeing of populations in the region. Adults in the ECA region are presently less likely to be in a job than those living in Latin America, East Asia, or OECD countries (Arias, et al., 2014). Poor job outcomes reflect a combination of slow recovery after the global financial crisis and weaknesses in the overall investment climate, which hold back business opportunities in more productive sectors and with them demand for more workers in productive jobs. Rapidly aging populations also imply that the share of older people who need to be provided for by working age adults is increasing. More productive jobs are clearly needed in order even to maintain living standards over time.

In this context, job-market relevant skills—the ability to do well a job that is also in demand by firms—are becoming an important bottleneck to private sector growth in ECA countries, especially those who have advanced more on economic reforms and where basic business conditions therefore are in place (Arias, et al., 2014). Once political and economic stability, functional financial systems, rule of law and other fundamental conditions are in place, there are openings for new business opportunities. Workers need to be able to benefit from these openings, foremost by ensuring that they have the skills necessary to take up the jobs that modern, competitive firms could offer (World Bank, 2012).

Globally, the types of skills in demand are changing and nowhere is this more relevant than in ECA countries, which are transitioning from one set of production, job, and education and training opportunities to another. At the same time, changes in technology and organization are transforming jobs and the skills needed to do them. Globally, significant structural change has led to a decline in routine, manual skills and an increased use in "new economy skills" (Autor, Levy, & Murnane, 2003). The process is also seen in ECA countries, especially among younger cohorts, and among countries more advanced on the reform agenda (Arias, et al., 2014). Emphasis is increasing on tasks that require abstract thought processes, decision making, team work, leadership; and on manual tasks requiring the ability to adapt and react to changing circumstances using tools and manual dexterity, but also social interaction. Structured and repetitive tasks, on the other hand, which can be more easily automated tend to lose in importance (Arias, et al., 2014). As a consequence, workers need to be prepared with multiple generic skills that form the basis for acquiring job specific skills and that help them adapt to changes in tasks over time.

It takes time to transform the composition and level of skills, however, especially when reforms are needed from early childhood development and up throughout tertiary levels and beyond. The time lag involved in building skills means that even countries less advanced on the reform agenda should consider addressing skills inadequacies long before they become the only or most important constraint. Policymakers, workers, the jobless, students, schools, and firms, need to work together to further the development of this broad skills set. To inform policy, more information is needed on where the most urgent skills gap arise and what the nature of the skills gap is, what, what children and adults are most in need of increasing skills.

The purpose of this report is to close some of the information gaps on skills development and propose a policy agenda. The report is intended to encourage discussion around how to measure and track skills gaps and proposes a framework to identify policy proprieties based on the analytical findings. The report is directed at those interested in the analytical underpinnings for skills development policies, including those working at a technical level in ministries of education and labor, researchers, and development specialists supporting different policy initiatives.

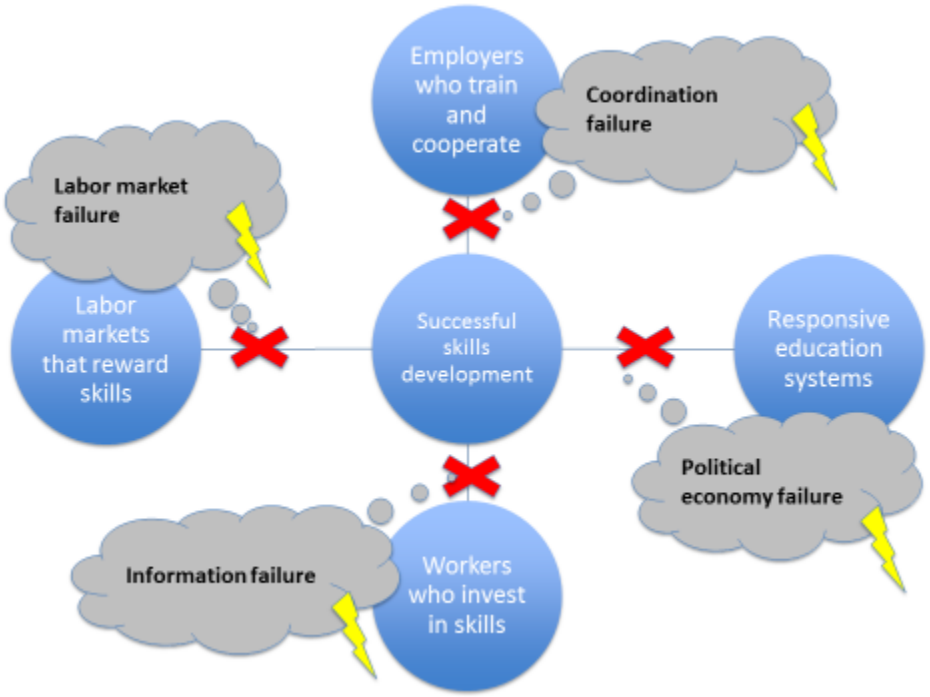
First, the report introduces a framework that should aid policymakers and academics to help think through the key ingredients that are necessary to arrive at successful skills development—and the potential barriers that are in the way of achieving this. Second, the report tries to answer some key questions for skills development in ECA: Is there a skills gap, and if so, what is its nature? What are the consequences of skills gaps? And what are some of the ways to overcome the skills gap? In doing so, the report draws from skills measurement surveys implemented in Armenia, Georgia, the Former Yugoslav Republic of Macedonia (Macedonia), and Ukraine. Third, the report closes by laying out an agenda for further research that should help policy makers and academics to open some of the emerging "black boxes" on how to successfully overcome skills gaps in ECA countries.

1.1 A framework for successful skills development

Skills formation begins in early childhood and is ideally nurtured throughout education systems that provide a basis for the development of foundational skills, such as literacy and numeracy, general problem solving and analytical skills, socio-emotional skills, including those valued highly in the job market such as discipline, tenacity, and team work skills, and specific technical skills pertaining to different occupations. Workers' skills are then honed during the working life to allow for adaptation and development of skills profiles to changing demands in the work place (Heckman et al., 2006; World Bank, 2010).

A well-functioning skills development system requires timely coordination and collaboration across the key stakeholders. Figure 1.1firms that train their workers and are able to articulate to the education system which skills they need; workers, in particular youth and their parents, who choose vocations and education paths that are rewarded in the labor market; education systems that listen to employers and students and provide education and training that is relevant to both as well as leadership in reforming skills development; and labor markets that reward skills and allow employers to find and hire the best talent, try them out, reward those who do well but also fire those who do not well. Each of these sets of players faces incentives and constraints that shape their choices and hence overall skills outcomes in the economy (Almeida, Behrman, & Robalino, 2012; Rodrik, 1996).

Figure 1.1: A framework for successful skills development (and the dark clouds preventing success)



Source: Authors

On the *employer side*, successful skills development requires employers who train their own workers, but who can also articulate to the education system what types of skills they need and actively participate in the development of educational and occupational standards and curricula. In doing so, employers face two challenges. First, employers have to weigh the costs of investing in training of workers against the risk of losing them to other firms. To the extent that firms do not internalize the benefits of training they provide, externalities related to "poaching" are created, leading to under-provisioning of training. Second, employers need to weigh the benefits of organizing themselves against the significant costs of doing so. Employer organizations are needed to build capacity for skills development, coordinate with stakeholders and provide timely input to the education sector on what skills are needed, jointly develop training and education curricula, qualification frameworks, and occupational standards. All of these tasks require considerable time and resources and a high level of coordination among employers. To the extent that firms fail to effectively coordinate on these issues, employers will be unable to develop industry-specific training systems and education systems will be unable to properly respond to skills needs of employers ("coordination failure").[1]

On the *worker side*, successful skills development requires young people and their parents, but also adult workers, to make well informed choices regarding their investments in human capital. Workers invest in career paths, in education and in training based on (i) financial constraints; (ii) the information available on labor market outcomes and job satisfaction (Fryer, 2013; Jensen, 2011; Nguyen, 2008); and (iii) aspirations (Bernard et al., 2014) and values inherently given to different skills and diplomas for

[1] For a general discussion of coordination failures, see Hoff and Stiglitz (2001).

different vocations. However, this information may be incomplete or biased, if monitoring and evaluation of workforce development systems and their impact on labor market outcomes is lacking or limited ("information failure" that increases search costs and may lead to lower investment in skills by workers and firms).[2] Moreover, if incentives are skewed such that labor market outcomes do not necessarily depend on skills and merit, but depend on other factors—like, for example, personal connections, access to networks, corruption, and diplomas, whether they reflect skills or not—the benefits of these investments to the individual are not likely to be high.

On the *education system* side, successful skills development requires teaching to be dispensed with high quality standards as well as responsiveness to the needs of employers and students and flexibility to adjust to new requirements. Often, education systems face a number of constraints related to capacity to set strategy, organize skills development systems, develop educational and occupational standards and curricula, engage with employers and labor market institutions, and so on. Yet, not all is to blame on the education system: in order to be successful, the full cooperation from all stakeholders is necessary, in particular employers. If employers are not able to organize themselves and provide input on what skills are needed and how to develop standards and curricula, the education system cannot respond properly; if students chose fields of study that are not relevant for today's labor markets (partially because the information provided by labor market institutions are insufficient), education systems cannot be blamed for producing students who are not fit for work; and if labor markets do not reward the best students—possessing the most up-to-date skills—with the best jobs and the highest pay, then education systems cannot be blamed for not achieving higher education outcomes. Nevertheless, the educational sector place a key role in bringing together employers and students and leading the reform dialogue for better skills development. To the extent that the education sector resists these reforms—often because of political economy challenges related to closing schools and firing teachers in some sectors that have lost relevance—it cannot play this role of leading the change process ("political economy failure"). For example, Kingdon et al. (2014) find that in developing countries, teachers have great political power because of their ability to influence electoral outcomes. This in combination with rent-seeking behavior often results in reforms that focus on expanding capacities and infrastructure rather than addressing existing inefficiencies.

On *labor markets*, finally, successful skills development requires institutions and regulations that ensure that skills are rewarded in the labor market. A variety of mechanisms need to work well in the labor market so that skills are rewarded. For example, hiring practices need to be based on transparency, not on personal networks and corruption. New technologies that allow skills testing at hiring can help in this regard. Labor regulations and collective bargaining agreements should allow to pay better-performing workers a higher wage and allow for quicker promotions—and not prescribe pay and promotions based on seniority, tenure, or educational attainment. And last but not last, regulations should also allow to fire those workers who do not meet the skills requirements of their employers. To the extent that regulations, institutions, and practices in the labor market do not reflect this, skills will not be the driving force of labor market outcomes and not be rewarded ("labor market failure").

[2] See Acemoglu (1997).

1.2 Measuring skills

These stakeholders need reliable and timely information to make important decisions regarding policy (governments coordinating strategic decisions regarding education and training policy), career choices (students choosing level and direction of study), and training and hiring decisions (firms identifying and establishing training needs and policies to deal with gaps). Since labor market relevant skills contribute to raising productivity as well as improving labor market opportunities, understanding skills from the demand side (skills required by firms, presently and in the future) and supply side (potential work force) is important. However, lack of systematic information on the relevance and performance of education and training systems is a significant problem for setting an effective policy framework (Sondergaard & Murthi, 2012). Traditionally, levels of education and years of schooling have been used to approximate for skills. However, there is persuasive evidence—at least in developed countries—that these are an imperfect approximation, and that what matters for individual earnings, income distribution and economic growth are the quality of skills that are formed from early childhood, through education and training systems, and on and off the job in adult life, rather than merely education levels in the population. For these reasons, actual skills gaps between developing countries and more developed economies are actually much larger than the (already significant) gaps in education levels would suggest (Hanushek & Woessmann, 2008). Fresh evidence from the Programme for the International Assessment of Adult Competencies (PIAAC) survey in OECD countries shows that higher cognitive skills—measured across numeracy, literacy, and problem-solving domains—are related to significantly higher wages, and the effects exceed those of additional schooling (Hanushek, Schwerdt, Wiederhold, & Woessmann, 2015). ECA's education systems, while varied in quality, tend to perform worse in international student competency tests than high income OECD countries, especially in terms of higher order skills such as problem solving (Sondergaard & Murthi, 2012). For all of the above reasons, measuring access to education in order to evaluate the availability of skills, or the effect of skills on labor market outcomes, is clearly not sufficient.

It was in the context of better understanding actual skills and their role in labor markets that the STEP surveys were launched. The purpose of these surveys is to measure generic skills of the working age population and track the evolution of skills over cohorts, as well as the demand for skills among different types of firms, through surveys directed at households as well as firms (Box 1.1). The STEP surveys, unique in their kind and scale, provide extensive information on a set of skills that have been shown to matter for labor market outcomes as well as productivity. This report brings together evidence on the availability of skills from four STEP household surveys (Armenia, Georgia, Macedonia and Ukraine) and three STEP firm level surveys (Armenia, Georgia and Ukraine).[3] The report purports to highlight key policy relevant findings from these surveys and is not intended to replace or repeat analysis from country level reports or compare countries for benchmarking purposes.[4]

[3] A STEP employer survey for Macedonia is in the field (May 2015).

[4] Answers are also likely to be context specific and as such are not suited for international comparisons, and the different surveys differ in size and representativeness

Box 1.1: Skills towards Employment and Productivity—the STEP Surveys

The STEP Skills Measurement Program, launched in October 2010 by the World Bank, is the first systematic attempt to fill knowledge gaps related to skills that enhance productivity and earnings. The program is designed to provide policy relevant information on skills, much beyond basic information on education levels and literacy. Among large-scale surveys, the program is unique in measuring a broad set of skills, including not only cognitive ability, but also socio-emotional skills, and in providing firm level views on skills needs through a stand-alone employer survey.

The household survey (focusing on individuals and the supply of skills) measures:
(i) Cognitive skills, that is, analytical, logical, intuitive and creative thinking and problem solving skills are assessed directly, through a reading literacy assessment, and indirectly, through self-reported information of use of skills in daily life and work.
(ii) Socio-emotional skills and personality traits (behavioral skills soft skills, life skills, personality traits), include behavioral aspects, including openness to new experiences, conscientiousness, extraversion, agreeableness, hostile bias (the tendency to interpret others' behaviors as hostile), perseverance and focus on long term goals (grit), and attitudes and preferences with respect to decision making, time and risk.
(iii) Job-relevant skills are task related and include technical skills directly related to the specific occupation (like, for example, accounting for an accountant) and computer use, repair/maintenance of machinery, operation of machinery, but also soft skills like client contact, problem solving, learning, supervision, and so on.

Main characteristics:
(i) Target population is the urban population aged 15 to 64 years.
(ii) Year of survey is 2012 in Ukraine, and 2013 in Armenia, Georgia, FYR Macedonia.
(iii) Sample sizes were determined based on the scope of the survey and literacy rates to ensure that a sufficient number of reading literacy booklets would be completed.
(iv) Response rates ranged from 50 percent in Armenia to 67 percent in FYR Macedonia.
(v) Sample size in the final datasets is 2,992 in Armenia, 2,996 in Georgia, 4,009 in FYR Macedonia, and 2,389 in Ukraine.
(vi) The data weighting was undertaken by the STEP survey methodologist to ensure consistency across sampling strategies. Whenever recent population counts were available, the weights were adjusted against benchmark variables (such as gender and age).
(vii) Main components of the survey are strictly comparable across countries.

Country-specific information:
(i) In Ukraine, the STEP has been conducted as a module of the Ukrainian Longitudinal Monitoring Survey (ULMS). Although it complied with all STEP technical requirements, there are some important differences, for example in the occupational codes (at 2-digit ISCO-1988 in Ukraine compared to 3-digit ISCO-2008 in the other countries), classification of economic activities and the field of studies.
(ii) Macedonia conducted only the "partial literacy assessment," in which only the General Booklet (Reading Components and Core Literacy) was administered, while the other three countries administered the full literacy assessment including the Exercise Booklet.

Limitations

(i) In Armenia, Georgia, FYR Macedonia and Ukraine STEP samples are significantly more biased to female older population,. In FYR Macedonia and Ukraine samples are also biased to more educated people. And these discrepancies are eliminated with sample weights only partially.
(ii) As a result, key labor market indicators calculated on the basis of STEP household surveys differ from those based on the standard LFS data.
(iii) Rather small samples in general, and of the employed population in particular, limit the analysis of indicators at the disaggregated level, e.g. by 3-digit ISCO group or by 2-digit ISCO and 3 age groups.
(iv) A mapping of the national educational system and country-specific education levels used in the questionnaires to the International Standard Classification of Education (ISCED 1997) for the purpose of international comparisons was not always accurately done by the survey team, so the use of original variables on educational attainment is important.

The employer survey (focusing on firms) provides information on the demand from skills as expressed by potential employers. It includes questions about the skills in use by the current work force, how skills are valued when hiring new workers, and existing constraints in terms of skills. The survey mirrors the household survey in its focus on a broad set of skills, including both cognitive, socio-emotional, and job relevant technical skills. The survey asks questions separately for professional, managerial and technical support (loosely referred to as "white collar" occupations for lack of a better term) and for clerical support, sales and service workers, skilled agricultural workers, crafts and trades workers, plants and machine operators and assemblers, and elementary occupations ("blue collar").

Characteristics
(i) The target unit of observation is the workplace so that the information gathered on workers' actual skills and potential mismatches or gaps could be as precise as possible.
(ii) Year of survey is 2013 in Armenia and Georgia, and 2014 in Ukraine.
(iii) Countries were offered some flexibility regarding the scope of the survey. In some countries, specific economic sectors were selected (like, for example,. in Ukraine only four sectors are covered - agribusiness growers, agribusiness producers, renewable energy and IT), whereas others sampled a wider range of sectors but biased to some sectors (e.g. in Georgia two thirds of firms were in construction).
(iv) The STEP employer surveys use a sampling design based on firm register data.
(v) Sample size in the final datasets is 384 in Armenia, 354 in Georgia, and 702 in Ukraine.
(vi) The data weighting was undertaken either by the STEP survey methodologist (in Armenia and Georgia) or by the survey firm (in Ukraine, GfK Ukraine).

Country-specific information
(i) The procedure for choosing workers of Type A (white-collar) and Type B (blue-collar) in Georgia and Armenia used a random sticker approach. Therefore, information about skills of a typical worker of Type A or Type B depends on the detailed occupation chosen to represent a typical worker of Type A or B (like, for example, a clerk or some laborer within Type B). In Ukraine information about skills and other characteristics of Type A and Type B workers is aggregated from information about three occupations (or worker types) with major skill gaps.
(ii) Employer surveys in Armenia and Georgia used a module on the skills of young workers, whereas the survey in Ukraine asked employers about their satisfaction with the skills of the current workforce instead.
(iii) The survey in Ukraine used an extended list of job-relevant skills with two types of skills, namely "green skills" (environmental awareness) and professional behavior.

Limitations
(i) Rather small samples covering only preselected sectors make results not representative of the whole economy and make impossible the analysis at some more disaggregated level.
(ii) Different sample frames and different approaches in choosing typical workers/ occupations limit within country and cross-country comparability.
(iii) Pre-defined list of skills (often skill groups) in the questionnaire does not bring much-needed information about job-specific technical skills within occupation and sector.

Source: Authors, World Bank (2014a), and Pierre et al. (2014).

1.3 Objectives and organization of the report

This report aims to show that skills will be important, and increasingly so, in raising labor productivity and with it labor related income in Eastern Europe and Central Asia; that in order to address labor market relevant skills gaps, it is important to understand what those gaps look like and what firms and workers are mostly affected by them; and that the STEP surveys were undertaken to address some of the knowledge gaps in relation to skills and productivity, in particular with respect to employers' views on the importance and availability of different skills, and the extent to which these skills are represented in the population. It provides a framework to think thought the challenges of successful skills development, identifying the key actors and the potential failures that can prevent successful skills development. Taking these failures into account could indeed lead to skills outcomes that are poor because of decisions that are rational from the perspective of the individual person, firm, or institution, but where outcomes could be improved if actions are simultaneously taken by all stakeholders.

The analysis in the report essentially relies on descriptive statistics, but also uses multivariate regressions and policy analysis of the countries' systems of workforce development. The descriptive statistics cover many questions asking employers and individuals whether they perceive a skills mismatch. The report examines in more detail the skills that are reported as missing and for which types of workers they are missing: blue-collar or white collar. The report does not, however, rely exclusively on respondents' perceptions: it also examines the allocation of workers in the economy. In particular, given that the countries examined are in an economic transition moving away from large public sector, the report examines the distribution of skills across the public and private sectors, also comparing younger and older cohorts, as there may be more inertia among older cohorts. In addition, to understand the consequences of the skills gap, the report shows multivariate regressions, examining returns to education and skills. Lastly, to shed light on the current systems in place for workforce development, the report uses the reports presenting the Systems Approach for Better Education Results on Workforce Development (SABER WfD), a tool developed by the World Bank to benchmark workforce development against international best practice.

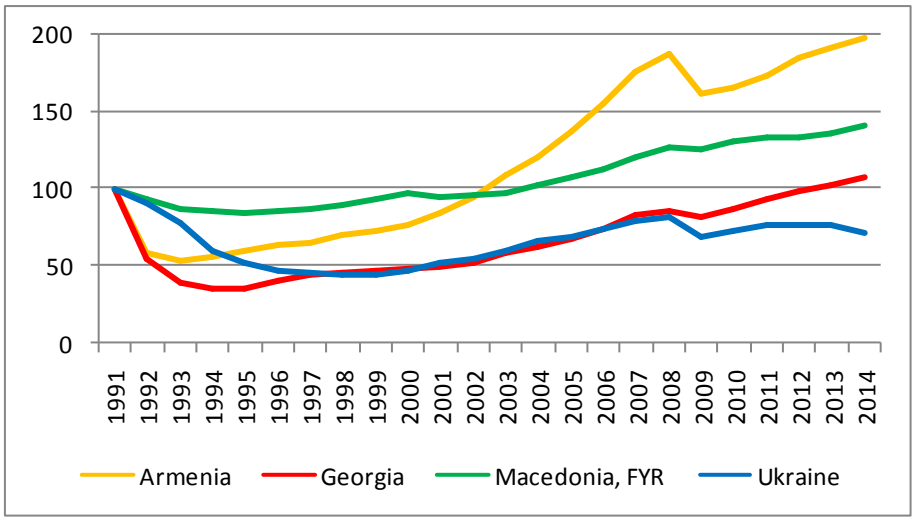
The remainder of the report addresses the main questions as outlined above. The next chapter gives a short overview on the economic development of the four countries under consideration, with an emphasis on the educational sector. The subsequent two chapters use information provided in STEP surveys to focus on the skills gap, and in particular the following questions: (i) is there a skills gap, and how does it manifest itself (Chapter 3); and (ii) what is the nature of the skills gap (Chapter 4). Chapter 5

discusses the consequences of the skills gap, in terms of labor market outcomes and firm efficiency and productivity. Chapter 6 looks at the role of the education sector, and the final chapter suggests a policy agenda and future research questions.

2. Country context

Economies in Armenia, Georgia and Macedonia experienced a rapid recovery after downturns in the early 1990s and in 2009, while the Ukrainian economic recovery is slow and highly volatile. After a dramatic decline in economic growth in the early 1990s, growth rebounded in 1994-1996 in Armenia, Georgia, and Macedonia and in 2000 in Ukraine (Figure 2.1). All countries experienced positive, albeit volatile, economic growth since then and until 2009, when the global economic and financial crisis hit the region. Then GDP growth rebounded, with an average growth rate from 0.6 percent in Ukraine to 5.5 percent in Georgia during 2010-2014. While, on average, GDP growth rate has been positive in Ukraine over the last five years, Ukraine experienced a sharp output fall in 2014, driven by a deep decline in the conflict-affected Donbass region and a more moderate recession in the rest of the country.

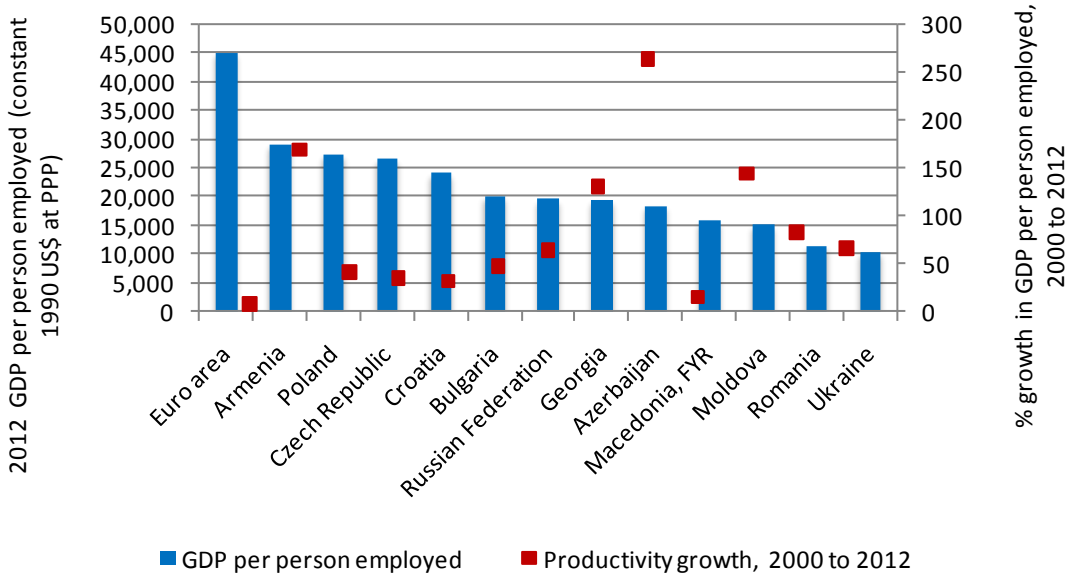
Figure 2.1: Evolution of real GDP in Armenia, Georgia, Macedonia and Ukraine (1991=100), 1991-2014



Source: Authors' calculations based on World Bank Development Indicators data (GDP growth, annual %)

While average labor productivity in the four countries is much lower than in developed European economies of the Euro area, it has grown significantly between 2000 and 2012 (Figure 2.1). The level and growth of productivity in Armenia has been higher than those in Poland, Czech Republic, Croatia, Bulgaria, Russian Federation and many other countries in the region. Ukraine and Macedonia significantly lag behind the comparator countries shown in Figure 2.1: Ukraine had the lowest GDP per worker in 2012 (10,552 constant US 1990$ at PPP), whereas Macedonia experienced the lowest growth in labor productivity between 2000 to 2012 (15.6 percent). The average annual productivity growth during 2000-2012 was 8.9 percent in Armenia, 6.3 percent in Georgia, 1.5 percent in Macedonia, and 4.9 percent in Ukraine. Pronounced productivity growth, particularly before the crisis in 2009, was mainly due to increased foreign investment, technological spillovers and modernization of the economy, resource reallocation from less to more productive sectors, and more efficient use of available resources (capital and workforce). Hence, the model of growth has been capital-intensive and almost jobless.

Figure 2.2: Labor productivity in 2012 and its growth from 2000 to 2012 in selected countries



Source: Authors' calculations based on World Bank Development Indicators data
Note: Labor productivity is defined as GDP per person employed.

The capital-intensive growth did not result in major income-generating opportunities to improve the labor market situation significantly. Despite robust economic growth and improving labor market conditions in Macedonia, key labor market indicators still lag behind, as the labor force participation rate at 55.5 percent is much lower than in Georgia, Armenia, Ukraine and many other ECA countries, and unemployment rates—29 percent for the total population and 52.2 percent for youth—are, on the contrary, very high (Table 2.1). High and long-term unemployment among young people, especially those with tertiary education, carries considerable individual and social cost, implying a loss of human capital investment and underutilization of skills.

Job quality is another serious concern for the effective use of skills. Informality and subsistence agriculture among many other forms of vulnerable employment are high and widespread in all countries. Besides, specific adjustment mechanisms of labor markets to shocks such as wage arrears, under-declared income (so called envelope wages), reduced working hours and administrative unpaid leaves are widely used, particularly in Ukraine.

Table 2.1: Labor market indicators in Armenia, Georgia, FYR Macedonia and Ukraine, 2004–13

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Labor force participation rate (% of total population ages 15+)										
Armenia	61.3	60.4	59.6	59	58.5	59.2	61.6	63.1	63	63.4
Georgia	63.8	63.6	63.5	63.4	63.5	63.8	64	64.3	64.7	65
FYR Macedonia	51.6	53	54.1	54.5	55.1	55.4	55.6	55.4	55.1	55.2
Ukraine	57.4	58	58.1	58.2	58.3	58.4	58.6	58.9	59.1	59.4
Unemployment rate (% of total labor force)										
Armenia	32.3	27.8	28.6	28.4	16.4	18.7	19	18.4	17.3	16.2
Georgia	12.6	13.8	13.6	13.3	16.5	16.9	16.3	15.1	15	14.3
FYR Macedonia	37.2	37.3	36	34.9	33.8	32.2	32	31.4	31	29
Ukraine	8.6	7.2	6.8	6.4	6.4	8.8	8.1	7.9	7.5	7.9
Youth unemployment rate (% of labor force ages 15-24)										
Armenia	47.2	55.5	55.3	58.3	36.2	40.2	38.3	38.7	35	33.1
Georgia	27.8	27.9	29.3	31	35.8	38.9	36.8	36.6	33.8	31
FYR Macedonia	65	62.8	59.7	57.7	56.5	55.2	53.7	55.4	53.8	52.2
Ukraine	15.7	15	14.6	13.7	13.8	17.8	17.4	19	17.3	17.8

Source: World Bank Development Indicators, modeled ILO estimates

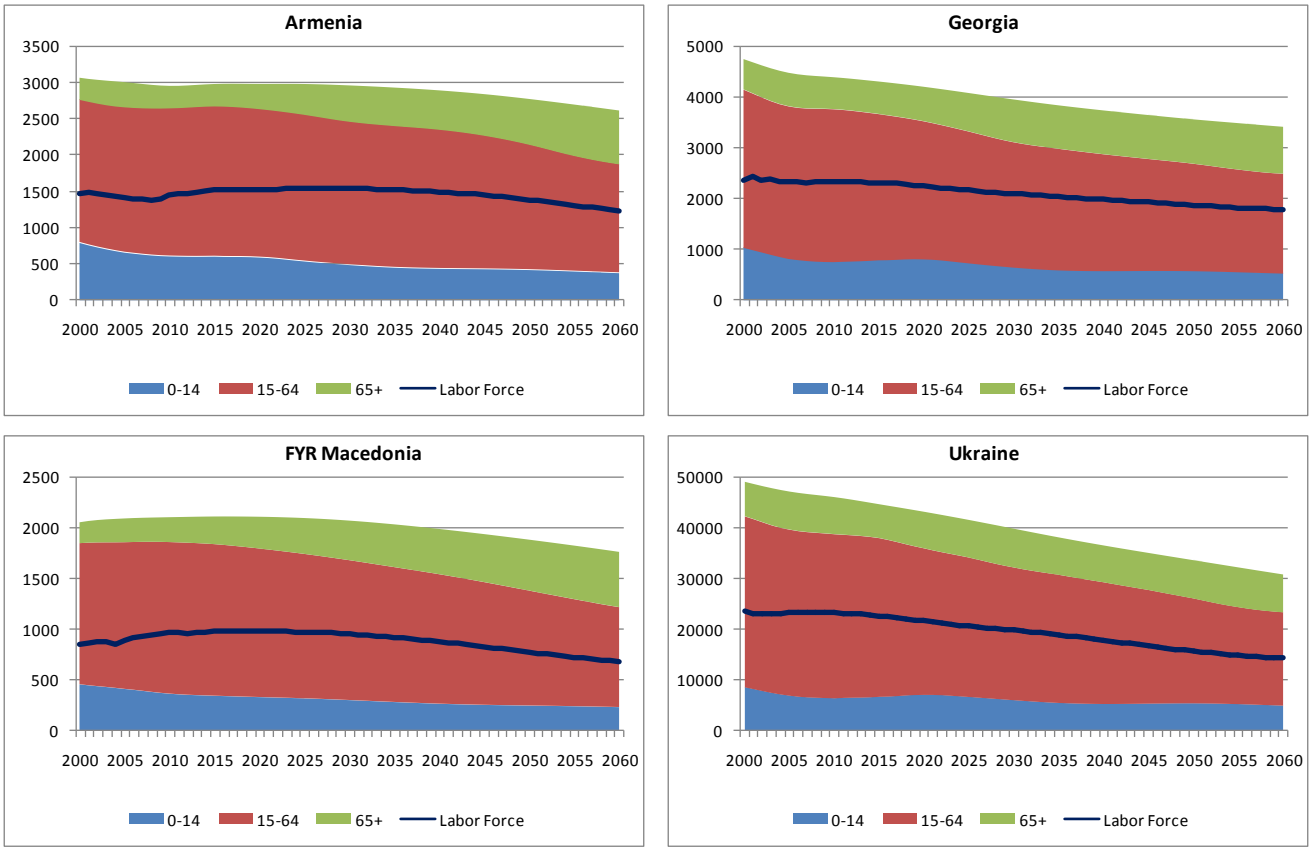
Unlike Asian countries, Armenia, Georgia, Macedonia, and Ukraine do not have demographic dividends and they will not be able to replace all older workers whose skills might be outdated by an equal number of youth equipped with better skills. Populations in Armenia, Georgia, and Ukraine are shrinking and aging, having a negative impact on the number and composition of the labor force (Figure 2.3). According to our estimations under the base scenario, assuming contact gender- and age-specific labor force participations rates from 2030 onwards, the labor force is projected to decline between 2012 to 2060 by 16.4 percent in Armenia, 23.5 percent in Georgia, 29.2 percent in Macedonia, and 37.9 percent in Ukraine. Significant temporary labor migration along with emigration of young professionals is also likely to adversely affect the stock of human capital.

Despite the economic downturn and limited public investment in education in the 1990's, these countries experienced an impressive improvement of educational attainment levels of population throughout the economic transition period.[5] For example, according to the Barro and Lee dataset, the share of population aged 25 years and over with completed secondary or tertiary education increased between 1990 and 2010 from 69 to 77.8 percent in Armenia and from 53.7 to 68 percent in Ukraine, compared with the average shares of 35 percent in 1990 and 52.5 percent in 2010 in advanced economies (Table 2.2).

[5] The following paragraphs and figures are taken from Kupets (2015). The paper, among other issues, discusses in detail reforms and recent developments in the higher education systems in Armenia, Georgia, Macedonia and Ukraine.

Figure 2.3: Countries are expected to lose from 16.4 to 37.9 percent of the 2012 labor force by 2060

Population and labor force projections (ages 15+), 2000-2060



Source: Bussolo, Koettl, and Sinnott (2015), base scenario.

Table 2.2: Highest educational attainment and average years of total schooling of the population aged 25 and over

Country/Group	Indicator	1990	1995	2000	2005	2010
Armenia	Secondary completed (%)	56.4	58.3	61.2	62.9	63.3
	Secondary total (%)	67.7	69.1	70.7	73.0	73.1
	Tertiary completed (%)	12.6	13.2	13.9	13.4	14.5
	Tertiary total (%)	18.9	19.5	20.4	19.8	21.4
	Avg. years of total schooling	10.08	10.44	10.81	10.80	10.87
Ukraine	Secondary completed (%)	39.6	39.2	34.8	39.5	40.9
	Secondary total (%)	56.7	55.6	48.5	53.5	53.6
	Tertiary completed (%)	14.1	19.2	25.1	26.0	27.1
	Tertiary total (%)	20.9	28.2	36.7	38.2	39.9
	Avg. years of total schooling	9.14	10.04	10.68	11.16	11.34
ECA (average)	Secondary completed (%)	33.2	40.1	45.9	51.2	54.5
	Secondary total (%)	50.6	59.2	64.3	69.3	70.9
	Tertiary completed (%)	8.2	9.2	11.0	12.2	14.1
	Tertiary total (%)	12.8	14.5	17.2	19.1	22.0
	Avg. years of total schooling	8.98	9.79	10.49	11.01	11.42
Advanced economies (average)	Secondary completed (%)	24.8	27.4	29.8	33.1	33.6
	Secondary total (%)	42.1	45.8	48.2	49.9	49.9
	Tertiary completed (%)	10.2	11.8	13.6	16.1	18.8
	Tertiary total (%)	16.7	19.3	22.4	26.2	30.2
	Avg. years of total schooling	9.12	9.65	10.14	10.76	11.25

Source: Barro & Lee dataset (v. 2.0, 06/14; http://www.barrolee.com) and author's calculations of the regional unweighted averages.

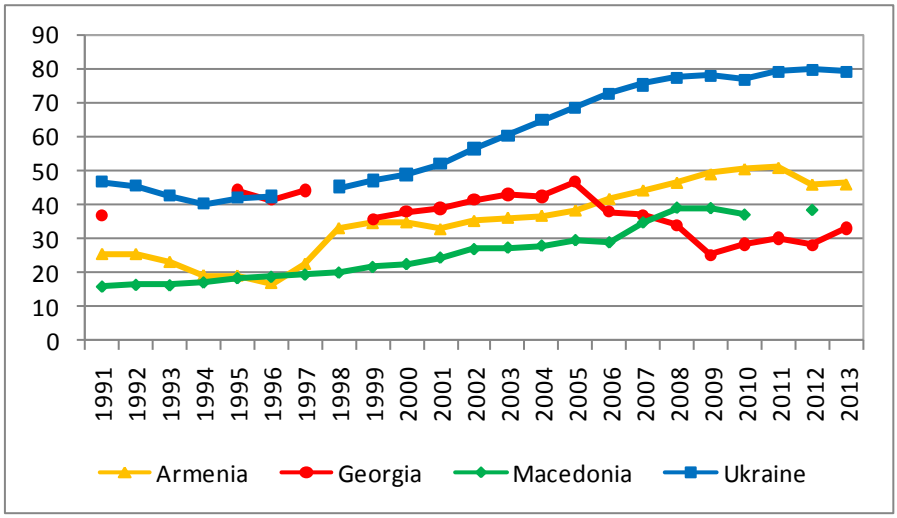
Notes: "ECA" includes 20 countries; "Advances economies" includes 23 countries (excluding Turkey) according to the Barro & Lee classification. There is no statistics on Georgia and Macedonia in the dataset.

Georgia also has a large supply of highly educated workers, with 31 percent of the labor force having completed tertiary education and only 9 percent without completed secondary education (Rutkowski, 2013b). In Macedonia, the percentage of the total working age population (15 to 79 years) and its economically active part achieving tertiary education (14.7 and 20.4 percent, respectively, in 2013) is fairly low compared to the other countries, but it has also significantly increased since 2001 (from 9.5 percent of total population and 13.5 percent of the labor force in 2001).[6] According to Mojsoska-Blazevski and Ristovska (2012), the relatively poor educational achievements of the Macedonian population can be mainly attributed to a long period of input-based educational policy and underinvestment in education in the past.

The improvement of educational attainment levels in all countries has been primarily due to the increased participation of young people in tertiary education, particularly in Ukraine, where gross enrollment ratio to tertiary education grew from 46.8 percent in 1991 to 79.7 percent in 2012 (Figure 2.4).

[6] Authors' calculations based on the annual data on working age population by economic activity, gender and educational attainment downloaded from the statistical database of the Statistical office of the Republic of Macedonia (http://makstat.stat.gov.mk/pxweb2007bazi/Database/Statistics%20by%20subject/databasetree.asp).

Figure 2.4: Gross enrollment ratio to tertiary education in Armenia, Georgia, Macedonia and Ukraine (%), 1991-2013



Source: UNESCO Institute for Statistics dataset (http://data.uis.unesco.org), series "Gross enrolment ratio by level of education, both sexes".

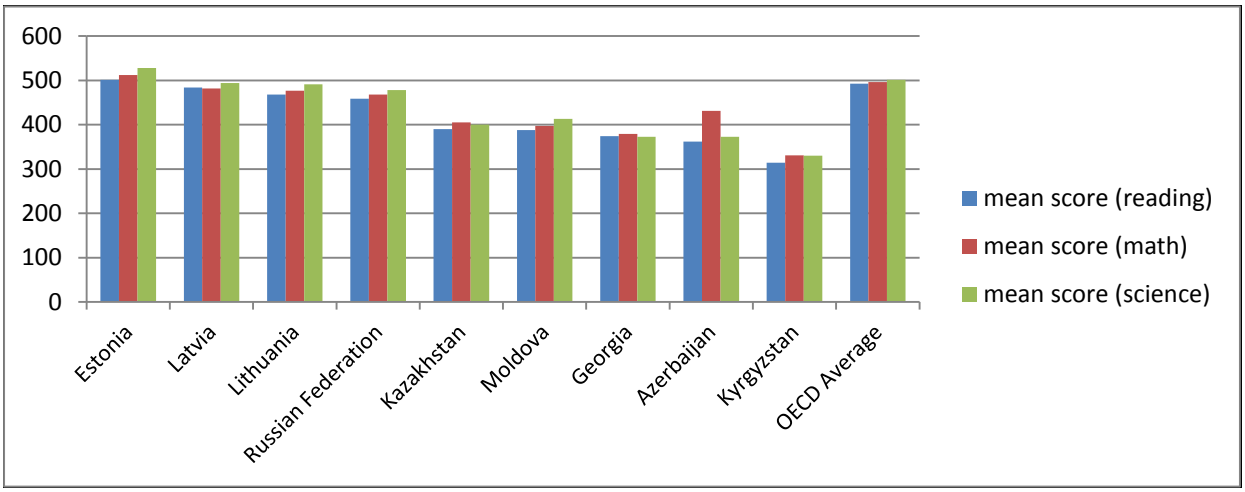
Notes: Gross enrollment ratio is defined as the number of students enrolled at a certain level of education as a percentage of the population of the age group that officially corresponds to that level. It can be above 100 percent if some enrolled students are older or younger than the age group that officially corresponds to that level of education.

Finally, regarding the quality of education, Georgia is the only country that recently—in 2009—participated in the OECD's Programme for International Student Assessment (PISA).[7] The results show that Georgian students achieved a mean score of 374 in reading, 379 in mathematics and 473 on the scientific literacy scale, significantly lower than the average of OECD countries, but also other ECA countries (Figure 2.5).[8] The performance gap in reading in relation to Estonia, Latvia, Lithuania and the Russian Federation is large, with the latest about 85 points, equivalent to more than two years of schooling. Overall, 62 percent of 15-year-olds in Georgia lack basic levels of proficiency in reading needed to participate effectively and productively in labor markets and society (Figure 2.6). These students may not be failing according to the national curriculum and tests for the competencies that a 15-year-old is expected to acquire, but their low scores t indicate serious deficiencies in their ability to use reading as a tool to acquire knowledge and skills in other areas—an important competency needed in today's global economy. Indeed, PISA Level 3 or higher is the level of proficiency frequently required in the labor market. In 2000, in Macedonia, more than half of the students have not reached Level 2; and only 13.6 percent of students reached reading proficiency level 3 or higher.

[7] Macedonia participated more than 10 years ago, in 2000. Both countries, Georgia and Macedonia, are participating in the PISA 2015 round, but its results will be released only in December 2016.

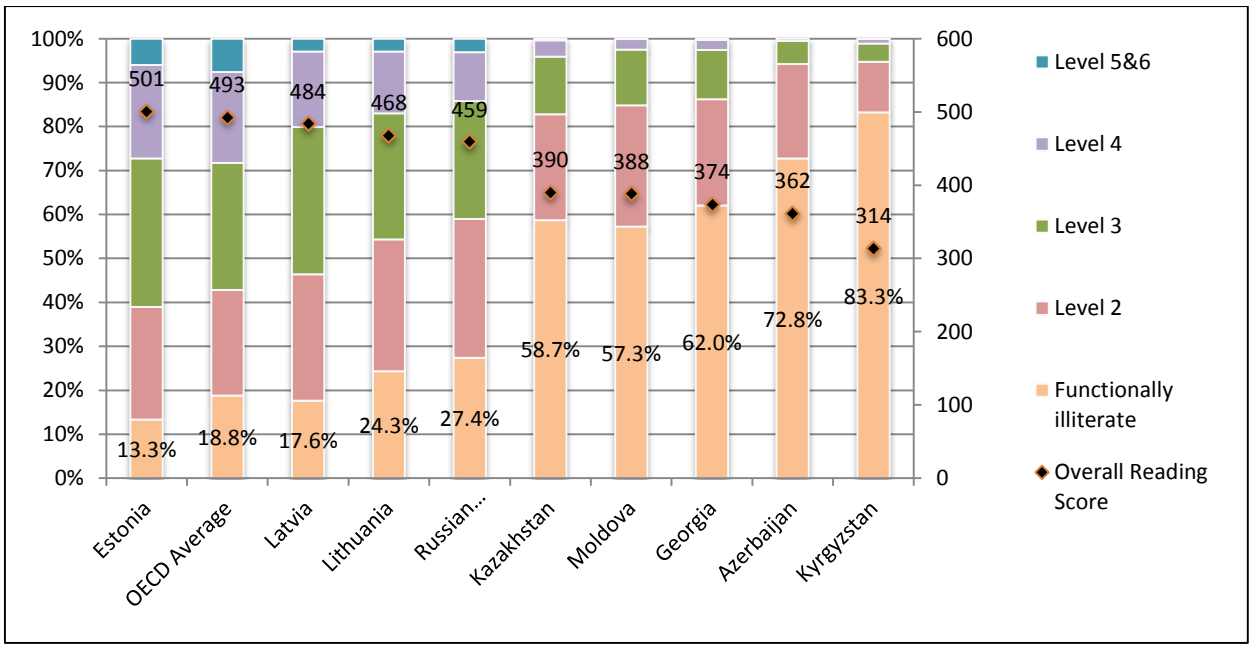
[8] The PISA scoring system has been scaled so that the average mean score among OECD countries is 500 points, with an average standard deviation of 100 points. A difference of 40 points is roughly equivalent to what can be learnt in an additional year of schooling.

Figure 2.5: PISA scores of selected ECA and OECD countries (2009)



Source: OECD (2009)

Figure 2.6: Share of students by PISA reading scores of selected ECA and OECD countries (2009)



Source: OECD (2009)

3. Is there a skills gap?

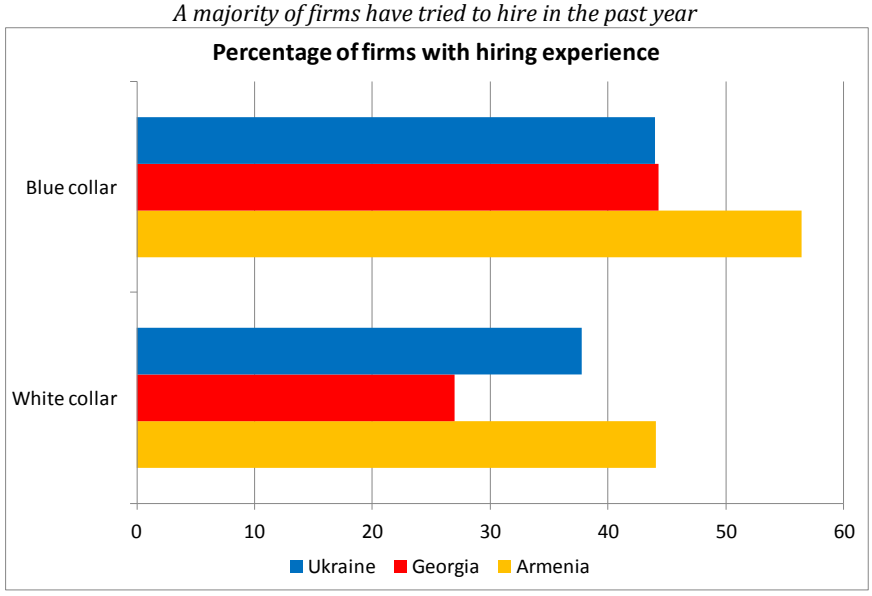
Are there skills gaps in Armenia, Georgia, Macedonia, and Ukraine—and if so, what do they look like? This section provides persuasive evidence of skills gaps, from two perspectives. Employer survey data, on the one hand, shows that firms identify lack of adequate skills as the most important obstacle to hiring workers. Household survey data, on the other hand, show that many workers also perceive a skills mismatch, in considering that their level of education is higher—or lower—than the requirement of the jobs would suggest.

To what extent are the levels and nature of skills a problem? Viewed from the employer side, the STEP surveys bring to light a significant skills gap. In fact, firms report that they experience significant problems in hiring because of low or inadequate levels of skills. The skills constraint is evident both for professional, managerial and technical positions (in what follows, loosely referred to as "white collar" occupations), and occupations within clerical support, sales and services, crafts and trades, plant and machine operators, and elementary workers ("blue collar" occupations). In the year preceding the employer survey, some 44 percent of Armenian firms had tried to hire new workers for white collar positions (Figure 3.1, left) and a majority had tried to find workers for blue collar positions. Moreover, a significant share of hiring firms—in Ukraine, as many as 3 out of 4 firms in the case of white collar workers and 1 out of 2 in the case of blue collar workers—had difficulties in hiring workers for both blue and white collar positions (Figure 3.1, right). The exception is Georgia, where there were few problems in finding blue-collar workers. Given the concentration in construction industry in the Georgian sample, this may reflect the ready availability of an unskilled work force that is hired on a daily basis. Overall, low demand for skills is thus not the only problem to hiring.

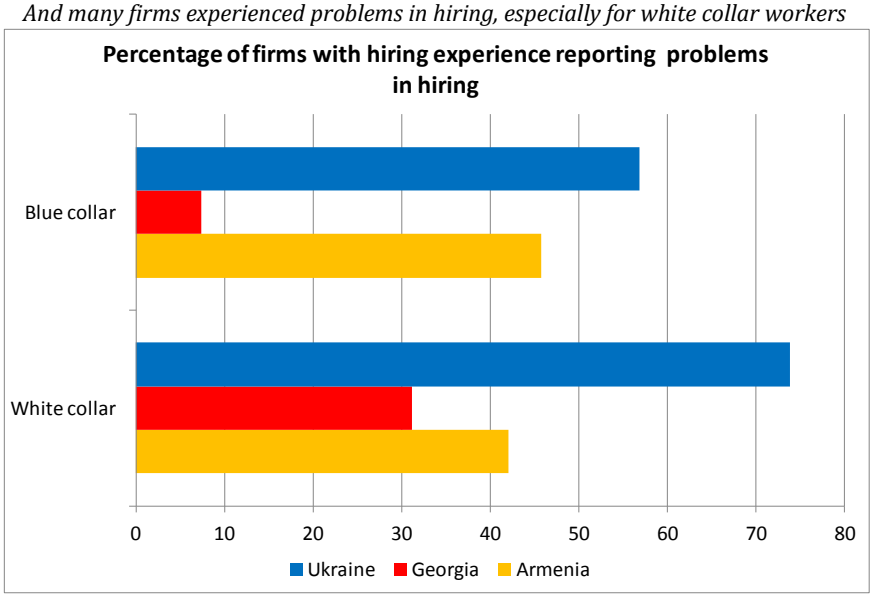
Most importantly, firms also report that the main problem in finding workers is the lack of skills among existing applicants, rather than lack of applicants *per se*. This holds both for more and less skilled occupations, but most critically for white collar workers for whom between 65 percent (Ukraine) and 90 percent (Armenia) of firms considered skills to be a key obstacle for hiring (Figure 3.2, a). Workers' expectations (reservation wages, and conditions at work) are everywhere rated secondary to the skills constraint, except for blue collar workers in Ukraine. When asked to rank the importance of skills in the context of other labor related issues, firms list labor taxes first, but lack of workers with adequate experience, as well as the general quality of education and vocational training systems, are also seen as significant obstacles to growth (Figure 3.2, b).

Figure 3.1: Firms want to, but find problems in hiring workers

A majority of firms have tried to hire in the past year



And many firms experienced problems in hiring, especially for white collar workers

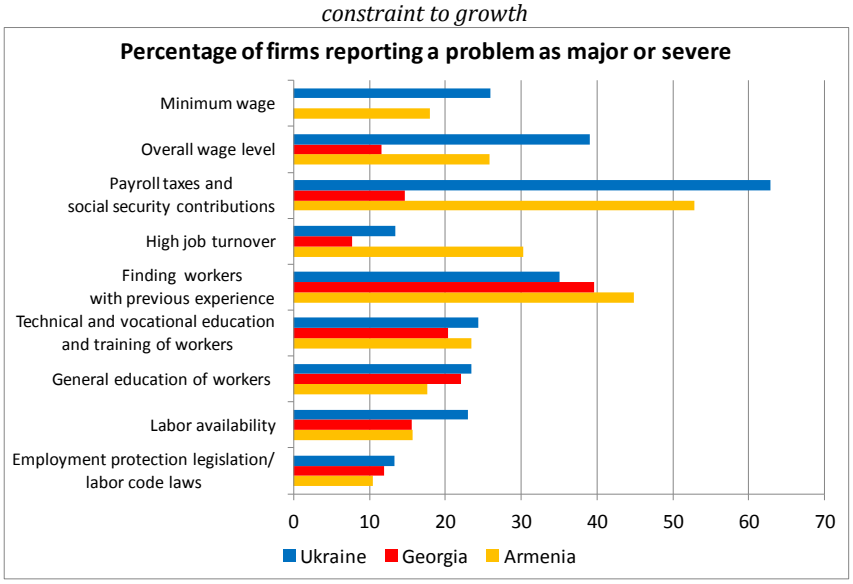


Source: Authors, based on STEP employer surveys.

Figure 3.2: Skills are an important constraint to hiring and to business growth

The main problem when hiring is skills

Among labor related issues, skills are an important (although not most important) constraint to growth



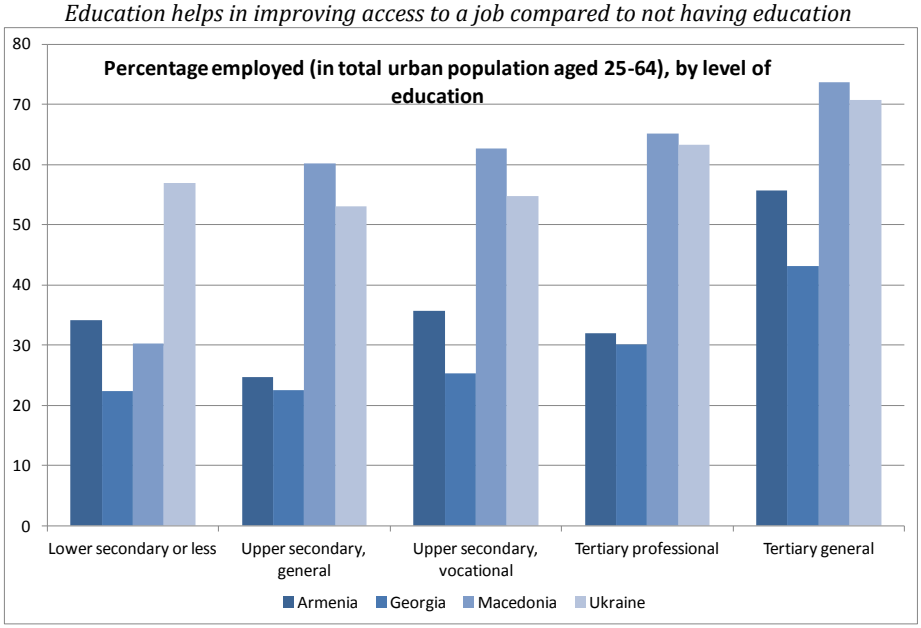
Source: Authors, based on STEP employer surveys.

The skills problem relates both to levels and quality of education. As would be expected, holding higher levels of education increases the probability of being employed (although the payoff to vocational training, whether at secondary or tertiary levels, differs across countries). At the same time, in absolute terms, employment ratios are relatively low, and unemployment rates high, even for those with tertiary education (Figure 3.3, a and b). In Armenia and Georgia in particular, vocational/professional training at post-secondary level pays off poorly in the labor market, with unemployment rates at above forty percent, suggesting problems related to labor market information (students do not know what vocation/specialization pays off) and/or quality of skills (employers do not find the necessary skills

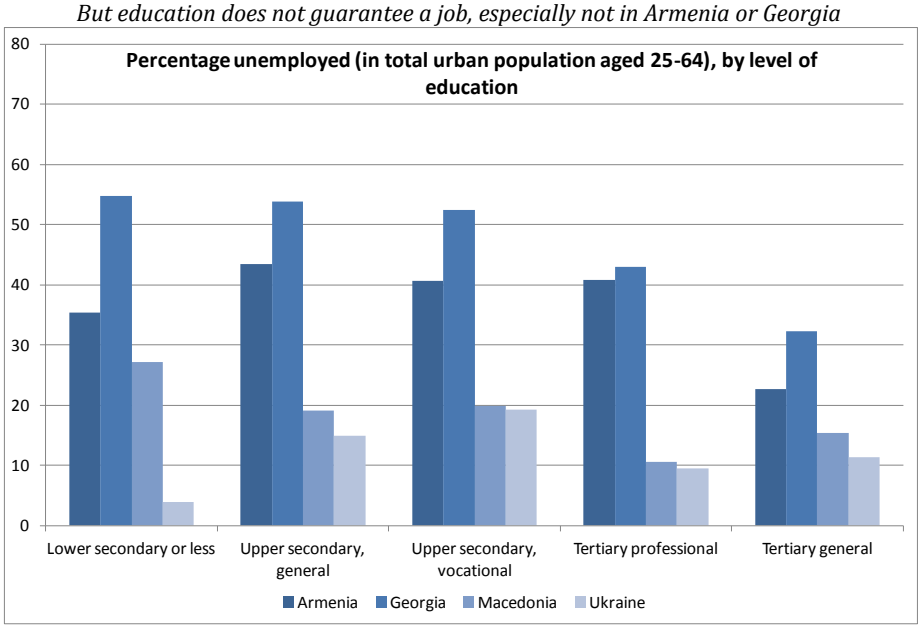
among those with specializations). Even at tertiary general level, unemployment rates in these countries are high compared to the OECD average (5.3 percent).

Figure 3.3: Insufficient education or the wrong kind of education?

Education helps in improving access to a job compared to not having education



But education does not guarantee a job, especially not in Armenia or Georgia



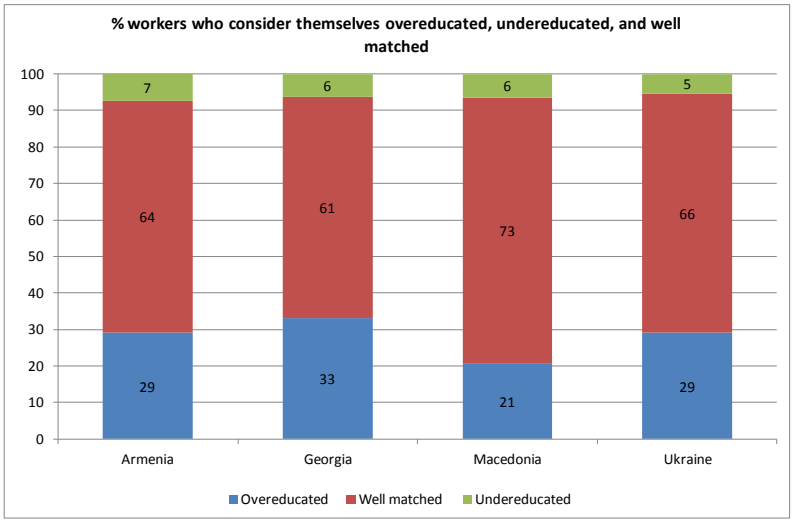
Source: Authors, based on STEP household surveys. Note: STEP surveys' unemployment rates differ from those registered in the LFS. For Armenia, Georgia and Ukraine, they are significantly higher than in the LFS, while for Macedonia, they are significantly lower.

Moreover, workers also perceive an important mismatch, as many of those employed feel overqualified or underqualified for their jobs. Some 30 percent of workers in Armenia, Georgia and Ukraine, and some 20 percent of those in Macedonia, feel that the level of education necessary for doing their job is lower

than the level of education they hold (Figure 3.4, a).[9] This is a particularly important phenomenon for those with a vocational education at tertiary level, among whom a majority consider their jobs requiring lower levels of qualification than they hold, consistent with the poor labor market outcomes above (Figure 3.4, b). Perceived over-qualification is also a more significant problem in particular sectors, notably those where unskilled jobs are more prevalent: trade and tourism compared to other economic sectors, non-wage compared to wage work, informal compared to formal employment, and private compared to public sector (Figure 3.4, c). Conversely, many of those with lower levels of education consider themselves undereducated compared to the requirements of their work (Figure 3.4, d).

Figure 3.4: There is a perceived mismatch between job requirements and education levels

While most workers feel well matched to their jobs, a significant share consider themselves overeducated



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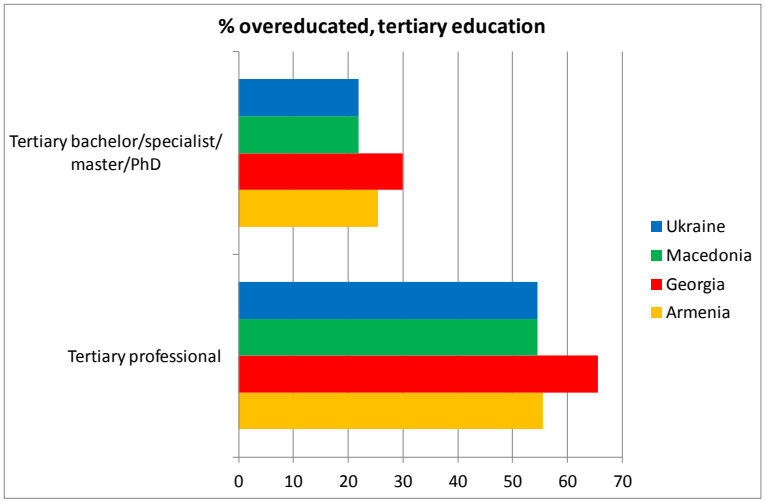
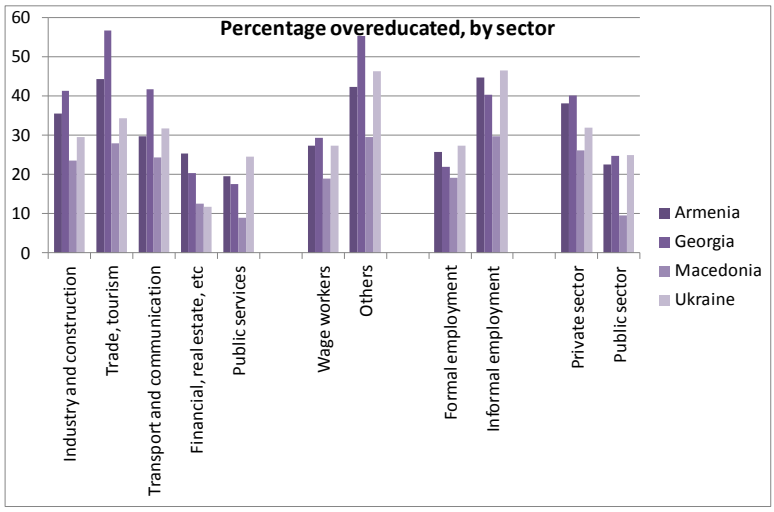
[9] Self-reported required education for one's job is defined in the STEP surveys through the question "What minimum level of formal education do you think would be required before someone would be able to carry out this work?"

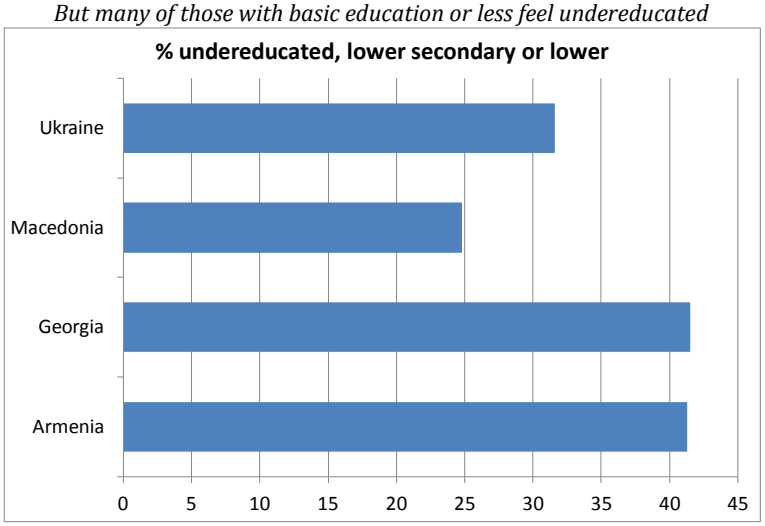
In particular those with vocational training at higher level



Mismatches are more significant in some sectors



But many of those with basic education or less feel undereducated

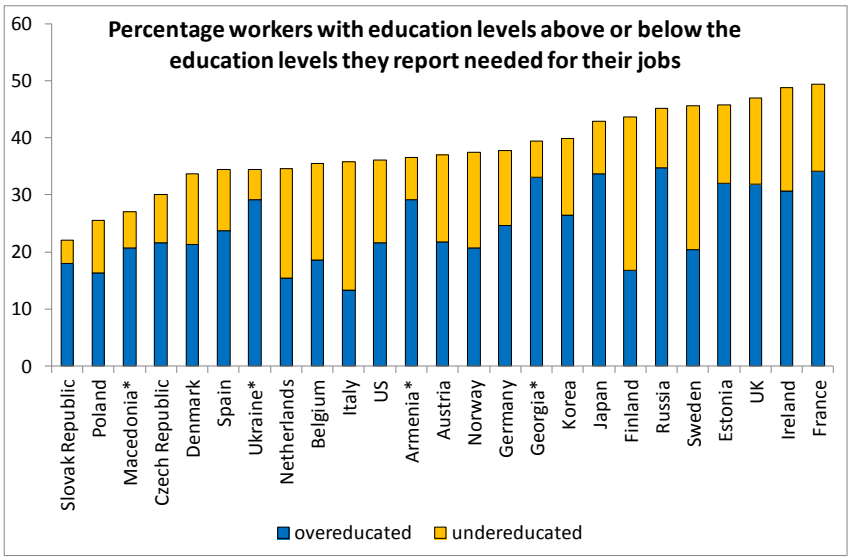


Source: Authors, based on STEP household surveys.

Perceived over-education relative to job requirements is a much more significant problem than under-education in Armenia, Georgia, Macedonia, and Ukraine than in most OECD countries, where, although the share of mismatch is as high, both over- and under-education are a problem (Figure 3.5, a). Thus, while Spain, the Netherlands, Belgium and Italy have overall levels of mismatch similar to Ukraine, the relative importance of over- versus under-education differs significantly. In fact, a comparison of the structure of employed by actual education, versus self-reported required education suggests that there is a relative oversupply of workers with a university degree in most countries, but that it is particularly significant in Armenia, Georgia, and Ukraine (Figure 3.5, b). At the same time, the share of jobs reported to be requiring tertiary levels of education in these countries is in fact higher than in most OECD countries. This suggests that employers requiring a university degree from their new employees are not only motivated by the actual task complexity of jobs, but also by credential inflation (declining signaling power of a certificate or diploma at a given level) and negative grade drift (a deterioration of educational standards and the skills imparted for a given level of education).

Figure 3.5: Incidence of over/under-education, OECD and STEP countries

Over-education is a more significant problem than under-education, compared to OECD countries



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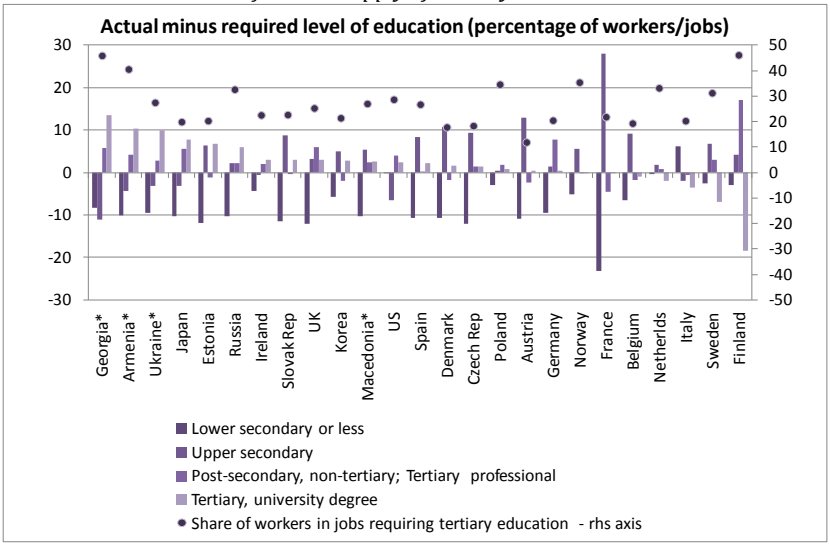
Indications of an oversupply of tertiary educated workers?



Source: For OECD countries, the PIAAC (Programme for the International Assessment of Adult Competencies) surveys, STEP household surveys.

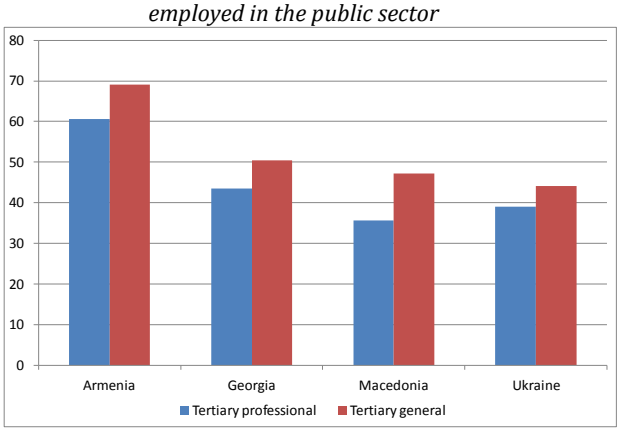
Finally, a skills gap can also be discerned from the allocation of educated workers in the economy. The private business sector also appears to be deprived of educated workers, as workers with tertiary education are less likely to be in the private than public sector. Most tertiary educated work in the public sector (Figure 3.6, a), and the share of tertiary educated is higher in public than in private wage employment (Figure 2.6, b). At the same time, the private sector complains of problems of hiring white collar workers with skills—raising the question as to whether there is crowding out, whereby the public sector can offer more attractive working conditions than the private sector, resulting in skills shortage in the latter. Partly reflecting a socialist legacy, younger cohorts are more likely to be in the private sector than older ones—but for the group aged 30 to 44, which includes some relatively recent university graduates but also more experienced workers, at least 50 percent of employed tertiary educated are working in the public sector. Whether the apparent public sector bias reflects a real shortage of educated workers for the private sector, or a dominance of less qualified jobs in private activity compared to public activity, is not given from these numbers.

While there is clear evidence of a skills gap, both the STEP surveys and broader enterprise surveys show that skills are not necessarily the most binding constraints that existing firms or potential entrepreneurs and investors face in doing business. In Armenia, 60 percent of firms consider corporate taxation—both the level of taxes and the indirect cost of burdensome administration—to be a more significant problem than any labor related issues. In Georgia and Ukraine, several areas, including electricity (Georgia) and an unstable investment climate (Ukraine) are ranked more important than any labor issues by firms (Figure 3.7). In fact, the percentage of firms considering skills a problem in the World Bank Enterprise Surveys fell between 2008 and 2013. However, this trend is less likely to reflect an absolute improvement in skills and more the effects of the global financial crisis, including both a reduced demand for skilled workers and more availability of skilled workers because of other firms' layoffs. Indeed, low ranking among obstacles does not mean that skills is not an issue: it means it is not the most pressing issue, compared to overall policy predictability, tax rates, access to finance, or other investment

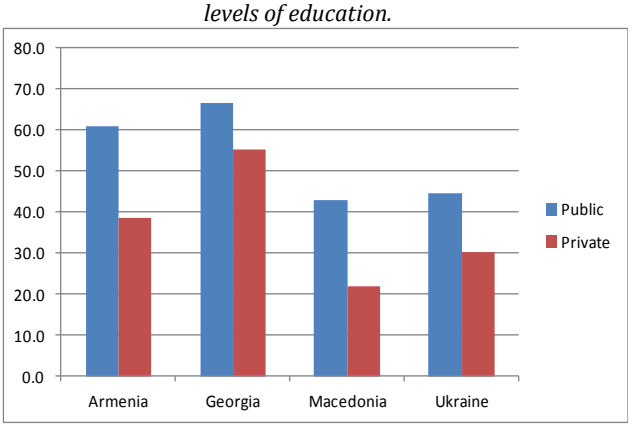
climate conditions that are fundamental to business growth. It is not a surprise that these are mentioned above skills in middle reformer countries.

Figure 3.6: Tertiary educated in the public sector.

Share of all workers with tertiary education that are employed in the public sector



Share of all private/public wage workers that have tertiary levels of education.

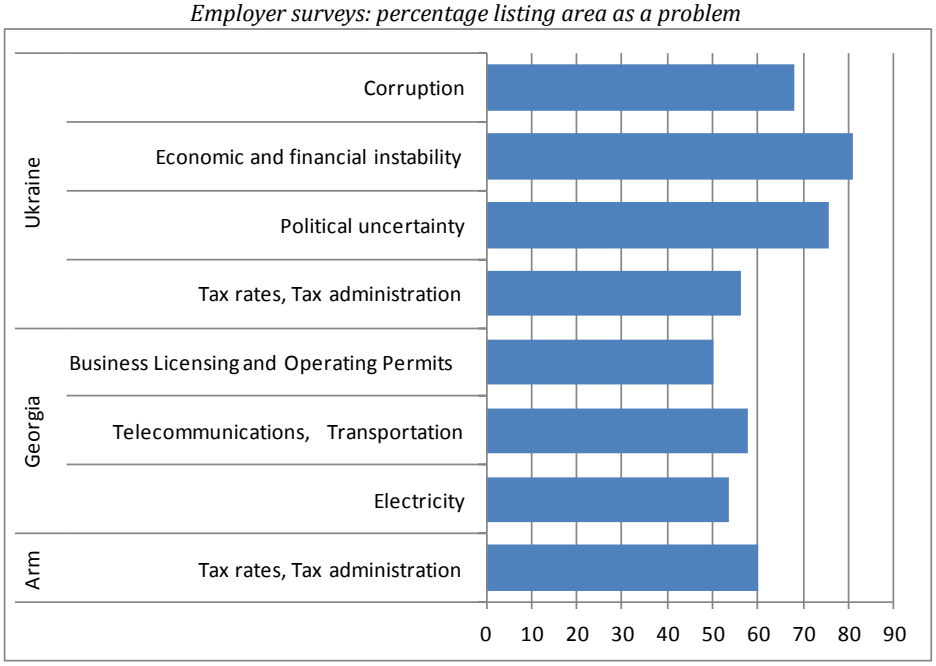


Source: Authors, based on STEP household surveys.

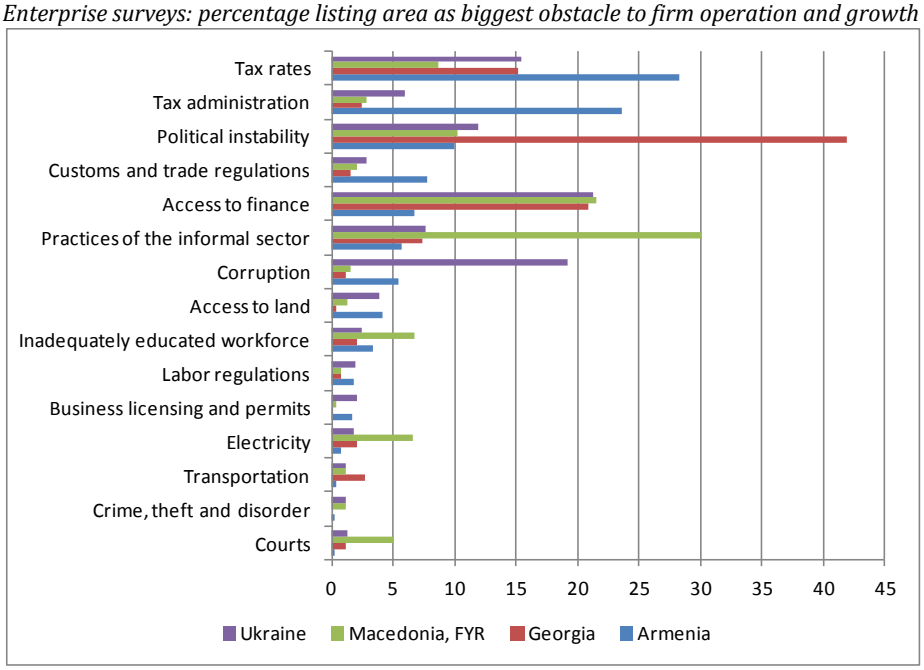
In sum, the evidence from the STEP surveys point strongly to the existence of a skills gap that is affecting firms' growth and employment expansion as well as the economy's transition to modern sectors. While poor business conditions in general hold back firm expansion, the STEP employer surveys show that firms have troubles hiring both white collar and blue collar workers, and they point mostly to lack of skills among applicants as the main cause of difficulties, rather than a lack of interest or gaps in wage and work conditions. At the same time, workers feel over-educated (in particular) for the type of jobs they are undertaking and there appears to be a relative over-supply of workers with tertiary levels of education. They feel particularly over-educated in the private sector and in fact, there is a higher proportion of tertiary educated in the public sector. The next section examines this mismatch in more detail.

Figure 3.7: Many business conditions need improvement, not only skills

Employer surveys: percentage listing area as a problem



Enterprise surveys: percentage listing area as biggest obstacle to firm operation and growth



Source: Authors, based on STEP employer surveys, World Bank Enterprise Surveys (2013).

4. What is the nature of the mismatch?

There is evidence of skills gaps—but what kind of skills are lacking? This section uses employer survey data to identify gaps as skills that are at once considered important by employers, and simultaneously seen by employers to be in short supply among new labor market entrants with relevant levels of education. Specific job technical skills emerge as a key skills constraint, but also generic problem solving abilities, as well as specific socio-emotional skills, in particular team work, and openness to new experience. While foundational skills are important to employers, they are generally not seen as lacking—and therefore not defined as a gap below. Evidence from the household survey also shows that the use of skills differs significantly across workers. In particular, not all workers use higher order skills at work—the younger generation, as well as those with more education, are likely to use more advanced skills.

4.1 What employers say they want

If skills are such a significant problem when firms want to hire, then what particular skills are lacking, in fact? Skills gap exist if two conditions hold: first, that there are particular skills and personality traits and characteristics that employers value among their employees, and second, that those skills, traits or characteristics are not available in the potential work force. The STEP employer surveys provide information on both of these (Box 4.1).

Box 4.1: STEP employer survey: what matters for hiring?

The employer survey specifically asks employers to rank personal characteristics, personality traits, and different skills in importance for retaining a new hire. Employers were asked to compare between these three groups as well as rate the skills and traits between then.

Firms that had experience from hiring young workers (under 30 years of age) were also asked to relate to what extent young tertiary level graduates and secondary level graduates possessed these different skills, in their estimation. For Armenia and Georgia, the survey also asked those firms which had hiring experience of young workers (below 30), to what extent they considered that the current education system provided these specific skills.

Personal characteristics include age, appearance, gender, and family relations or personal ties.

Personality traits include the so called Big Five:

Conscientiousness: Organized, self-disciplined, focused on achievements
Emotional stability: Impulse control, ability to avoid anger, anxiety, and vulnerability.
Agreeableness: Compassionate, cooperative, good tempered, trusting.
Extraversion: Positive emotions, assertiveness, sociability
Openness to experience: Intellectual curiosity, creativity, preference for novelty and variety.

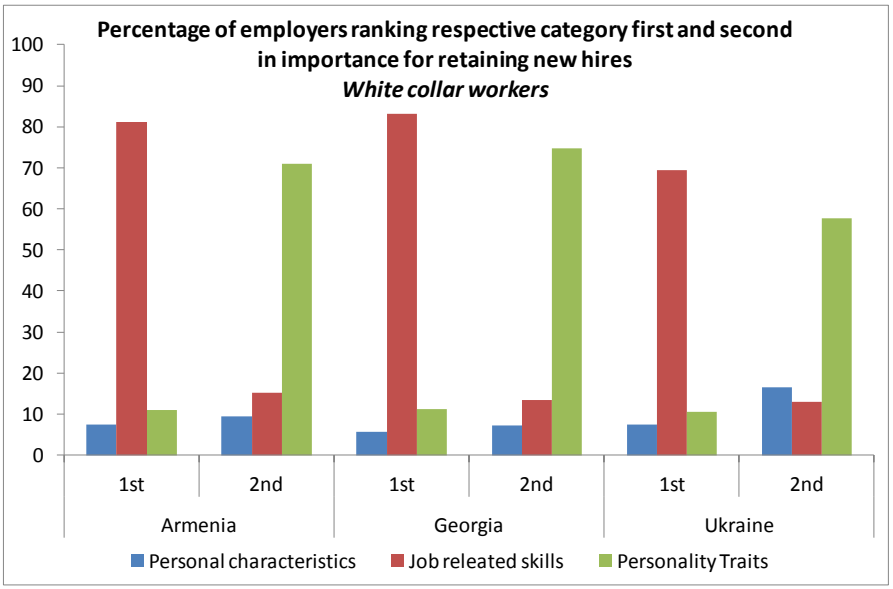
Job related skills include job-specific technical skills (like, for example, driving for a driver, accounting for an accountant), cognitive skills like literacy, numeracy, problem solving, creative and critical thinking, mastery of English and other foreign languages, and a set of soft skills including communication,

leadership, teamwork, ability to work independently, and time management. For Ukraine, firms were also asked regarding environmental ("green") skills, and professional behavior.

When asked to rank the importance of *job related skills* versus *personality traits*, or *characteristics* like age, gender and ethnicity, employers quite uniformly value job related skills above all. Personality traits are ranked second. Characteristics like age and gender are least important when deciding about whom to hire, according to employers. This holds for both white collar workers and blue collar workers.

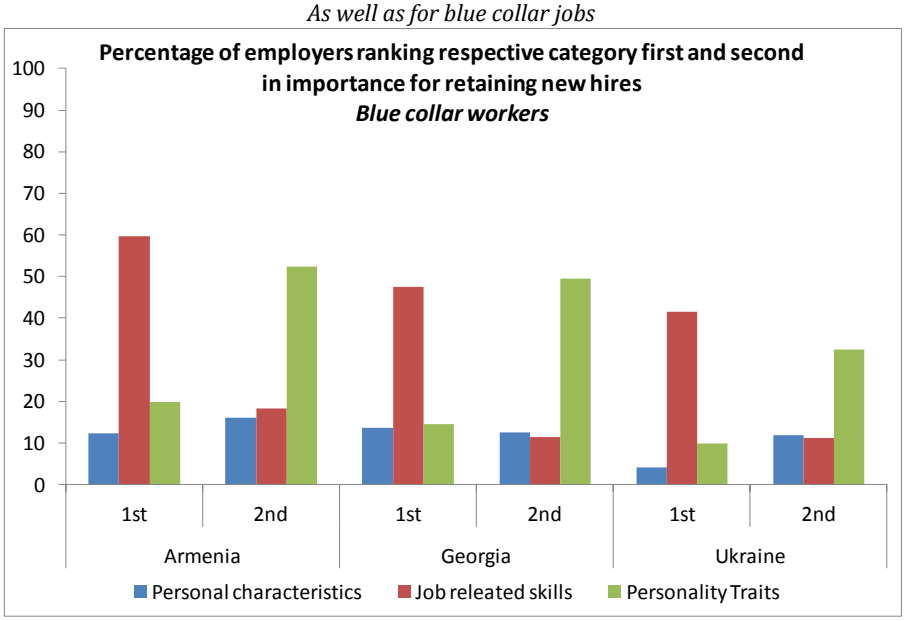
Figure 4.1: What employers say matters for hiring (job related skills, personality traits, and personal characteristics).

Job related skills, followed by personality traits, is most important for retaining hires in white collar jobs



Cont.

As well as for blue collar jobs

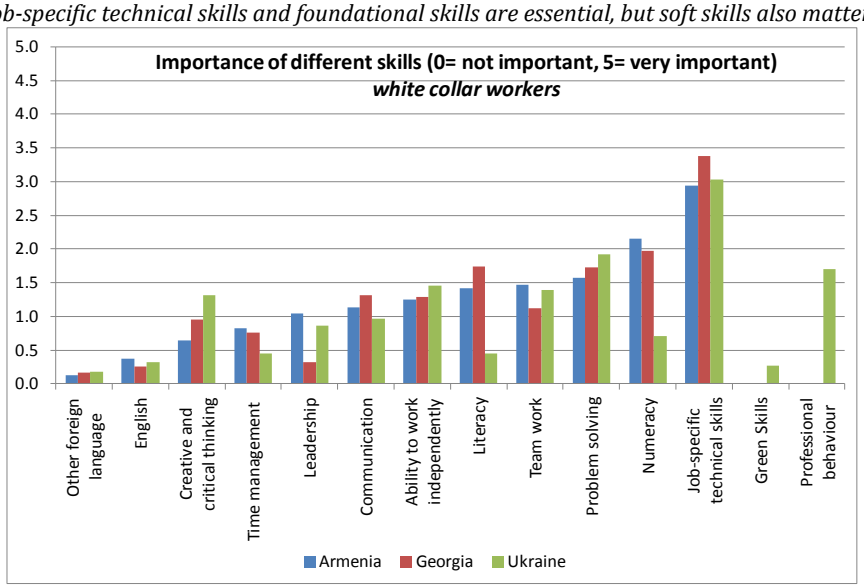


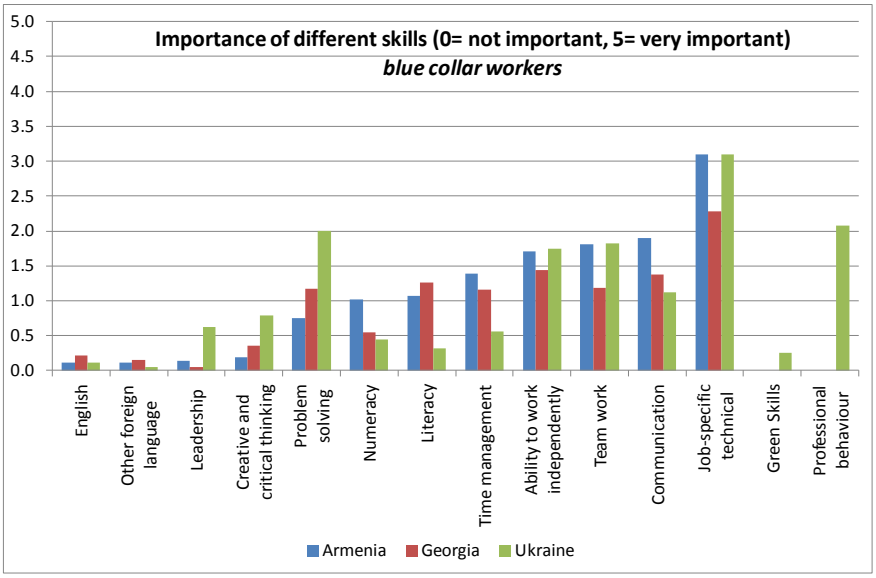
Source: Authors, based on STEP employer surveys.

Within the group of job related skills, employers value a mix of technical (specific to one occupation) and socio-emotional skills at work (Figure 4.2). For white collar occupations, employers value technical skills very highly, and in Armenia and Georgia, also foundational skills like literacy and numeracy. The different outcome in Ukraine may result from the fact that the questions only pertain to hires in occupations with major skills gaps. However, in addition to these skills that are basic to the capacity to carry out the job, employers also attach importance to soft skills: The ability to work in teams as well as independently, communication skills, and general problem solving skills, are important. For blue collar workers, employers also value job-specific technical skills as well as literacy most. Beyond the basic functional requirements, similar skills as for white collars are appreciated. However, there is a stronger emphasis on time management and the ability to work independently, as is consistent with more routine type of tasks.

Figure 4.2: What job related skills are valued by employers in retaining new hires?

Job-specific technical skills and foundational skills are essential, but soft skills also matter.



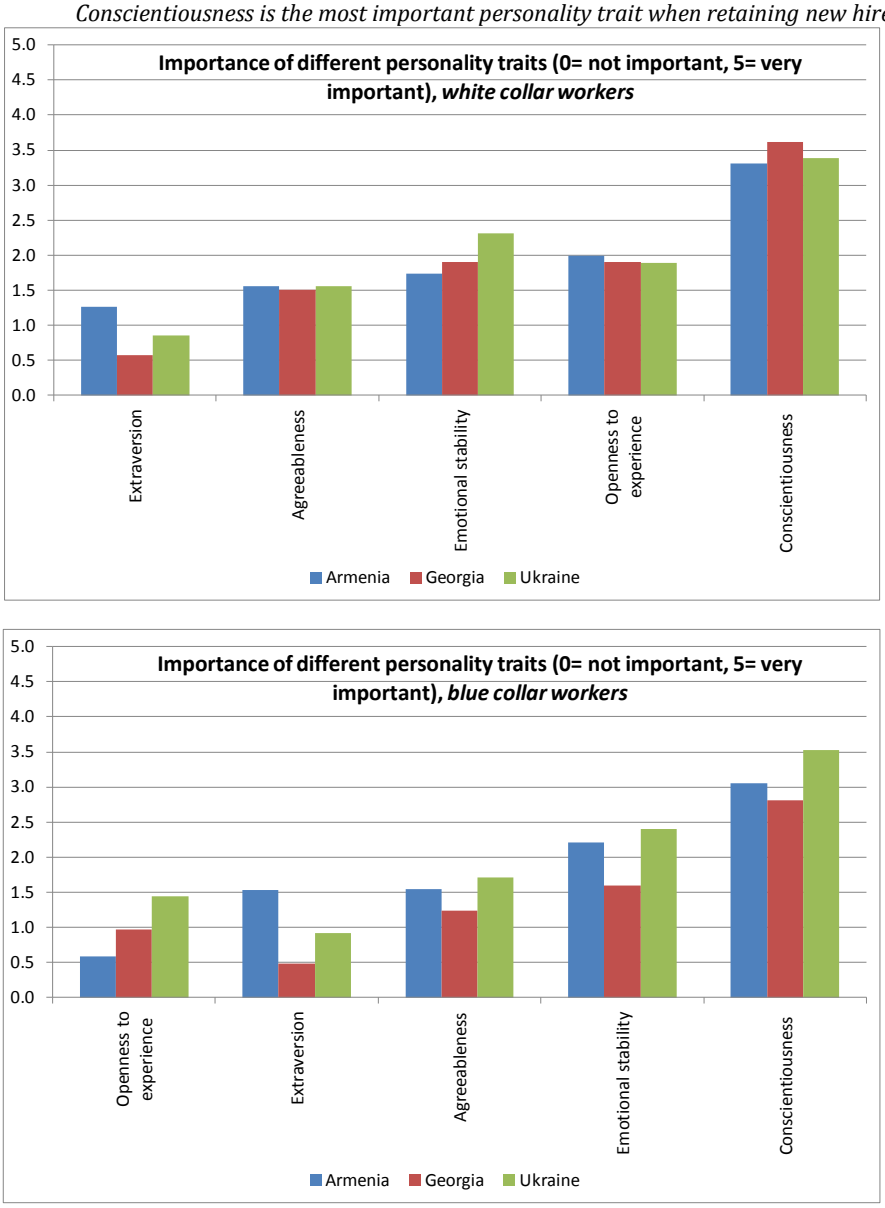


Source: Authors, based on STEP employer surveys.

Apart from the job related skills, a person who is careful and strives to do things right at work is highly appreciated by employers in all three countries (Figure 4.3). Conscientiousness is considered by far more important than whether that person is generally agreeable or extraverted, or open to new experiences. For less qualified jobs, emotional stability is also rated highly by firms.

Figure 4.3: What personality traits do employers say are important?

Conscientiousness is the most important personality trait when retaining new hires



Source: Authors, based on STEP employer surveys.

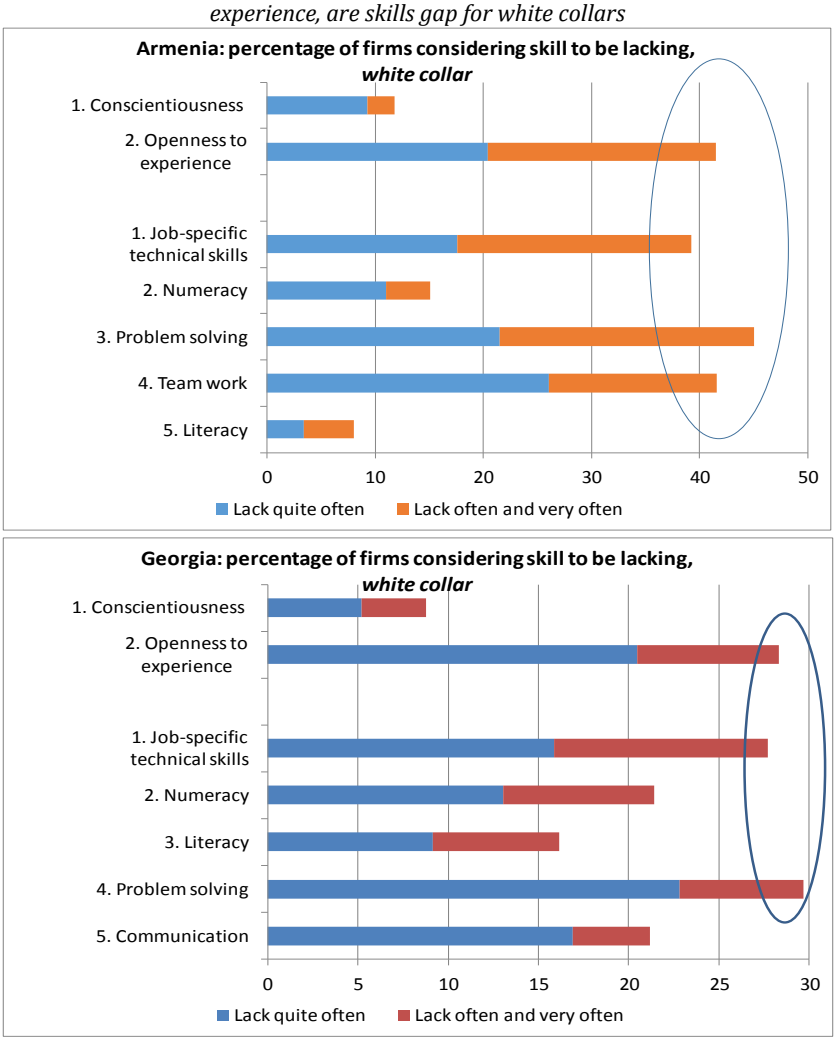
4.2 What employers say they get

Employers thus identify, quite consistently across countries, a set of job relevant skills. But these skills make up a skills gap and as such a constraint to improving labor market outcomes only to the extent that they are not readily available among young people leaving school and seeking to enter the world of work. Conversely, even if skills are lacking among such youth, they do not constitute an important skills gap unless they are also valued by employers. Key skill gaps, as defined here, as thus highly appreciated skills that are also in short supply.

Figure 4.4 combines the five most valued skills (ranked in order) and the two most valued personality traits by employer with employers' views on whether these skills are lacking among youth (tertiary graduates under 30 years for the typical "white collar" job and secondary graduates under 30 years for the typical "blue collar" job), for Armenia and Georgia. As seen, while literacy and numeracy are important skills, they are not areas of tension—graduates generally are numerate and literate. Instead job specific skills make up the most significant gaps: it is highly ranked as an asset for new hires, and between 23 (13) percent of firms in Armenia (Georgia) consider this skill to be lacking often among new graduates. Similarly, although conscientiousness is highly valued, it is not a problem among graduates. In fact, the most important characteristic actually lacking among new potential white collar workers is openness to experience, according to employers. For blue collar workers, tensions arise for soft skills—in particular the ability to work independently- together with job specific skills.

Figure 4.4: Where do the most significant skills gaps arise for white collar workers?

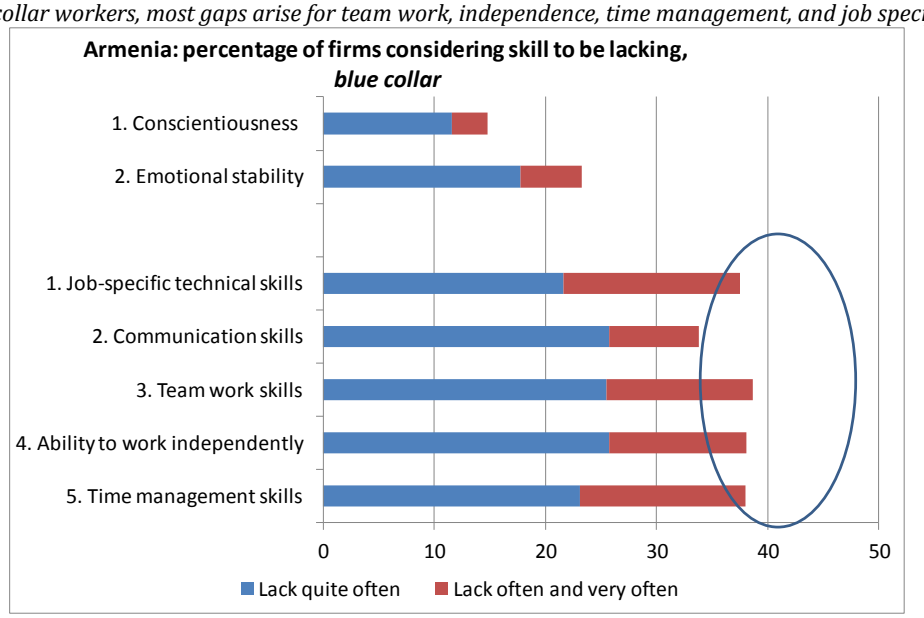
In Armenia and Georgia, job-specific skills and problem solving together with a lack of openness to experience, are skills gap for white collars

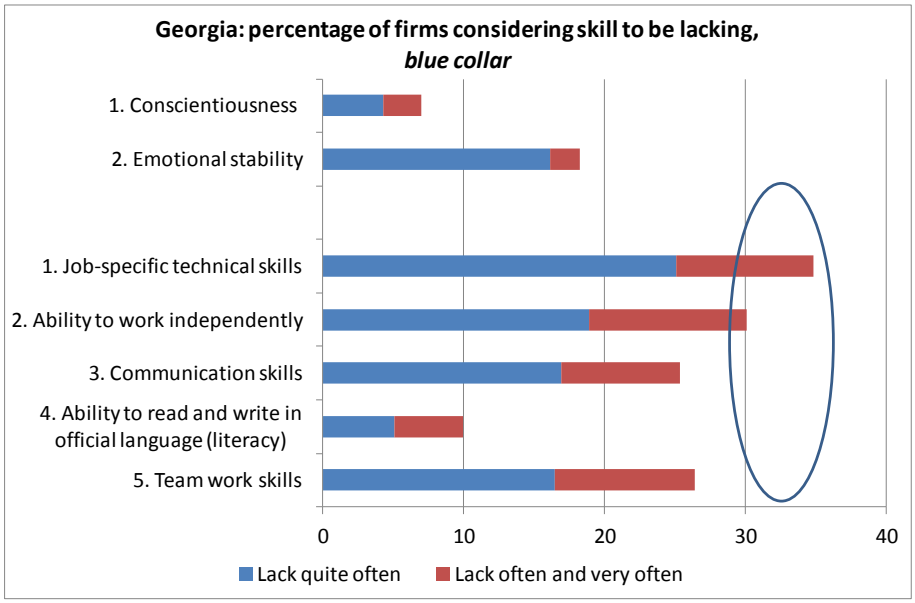


Source: Authors, based on STEP employer surveys. Methodology based on Rutkowski (2013a,b)

Figure 4.5: Where do the most significant skills gaps arise for blue collar workers?

For blue collar workers, most gaps arise for team work, independence, time management, and job specific skills



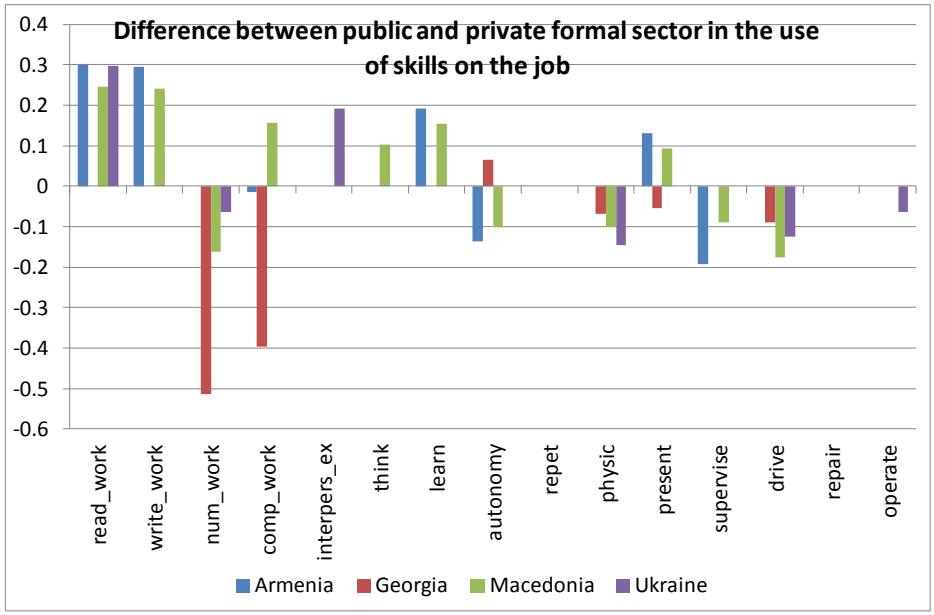


Source: Authors, based on STEP employer surveys. Methodology based on Rutkowski (2013a,b)

4.3 Skewed allocation of skills across sectors

The lack of specific skills in the private sector is also reflected in a concentration of use of skills in the public compared to private sector—even when focusing on the urban population, as is the case for STEP surveys, and when informal private sector is excluded. As shown in Figure 4.6, jobs in the private sector are less likely to involve reading and writing, reflecting the wide range of skilled and elementary occupations. However, at least for Armenia and Macedonia, the jobs are also less likely to involve some of the skills which were highlighted as important gaps by employers, notably interpersonal skills (team work, communication), and analytical skills such as solving more complex problems.

Figure 4.6: Higher order skills are used less in the private sector than in the public sector.



Source: Authors, based on STEP household surveys. Note: Difference in mean z-scores (in relation to population mean), public and private sector. Only statistically significant results (5 percent) are shown.

The use of skills also differs significantly between different types of workers.[10] Results from the household survey indicate, as expected, that white collar workers are more likely to use higher order skills and less likely to use manual skills like driving or operating machinery, or that those with more years of education use more advanced skills on the job. However, there is also evidence of generational gaps: younger workers are much more likely to be using computers on the job, reflecting a slower re-skilling process of the older cohorts (results not shown).

There is also a significant and large positive difference in the use of most higher-order skills on the job between those who have completed a tertiary general education and those with a tertiary professional/vocational education, comparable to the difference between tertiary general education and secondary general education. The poor skills content of jobs for people with up to 14 years of education raises questions as to the relevance and pay-off of these vocational programs.

In conclusion, there is a gap between what employers want from new hires and what they find. Employers value highly new hires that have the specific technical skills required for the job, together with general analytical skills and soft skills that facilitate work place productivity. However, they do not find all of these skills among young graduates. For white collar workers, foundational skills are not a problem, but employers find that job specific skills are lacking among graduates from a tertiary level education, together with analytical and team work skills. For blue collar workers, job specific skills also constitute the largest skills gap, but the ability to work independently, communicate and collaborate with others, also matter. The household survey shows that not all workers use higher order skills at work—differences arise for younger versus older age cohorts, and for those with tertiary general

[10] Testing for significance in difference in z-scores.

education compared to other forms of education. Finally, the use of higher order skills is higher in the public sector compared to the private sector, even when focusing on the urban formal sector.

The next section will explore the consequences of these skills gaps and look at questions like how they affect workers, firms, and the economy.

5. Consequences of the skills gap

The skills gaps are affecting workers, firms, and the economy. First, not having skills lowers labor market prospects. Using the household survey, a decomposition of the contribution of different factors to explaining variation in earnings shows that skills—in particular information processing skills like reading, writing, numeracy computer use but also generic work place hard and soft skills such as problem solving, team work, ability to work independently—are positively correlated with earnings. Second, the employer surveys show that what could be identified as "new economy skills"—non-routine problem solving, foreign languages, soft skills, that are more important to sustain productivity and competitiveness in modern economies—are lacking, even in the young generation. Moreover, potentially more dynamic firms—those that innovate, have international contacts, or have grown more rapidly in recent years—tend to experience more significant problems in hiring skilled workers, underscoring the fact that skills gaps are likely to affect economic growth and job creation in the aggregate.

5.1 Skills impact wages—to some extent

Workers with low skills are disadvantaged, because skills matters for wages. Skills are an important correlate of workers' earnings capacity. However, they are not the most important determinant of wages—other factors, in particular job characteristics, but also demographic factors and education, are also, if not more important. This suggests that skills, despite being thought-after by employers, are maybe not properly rewarded in the labor market.

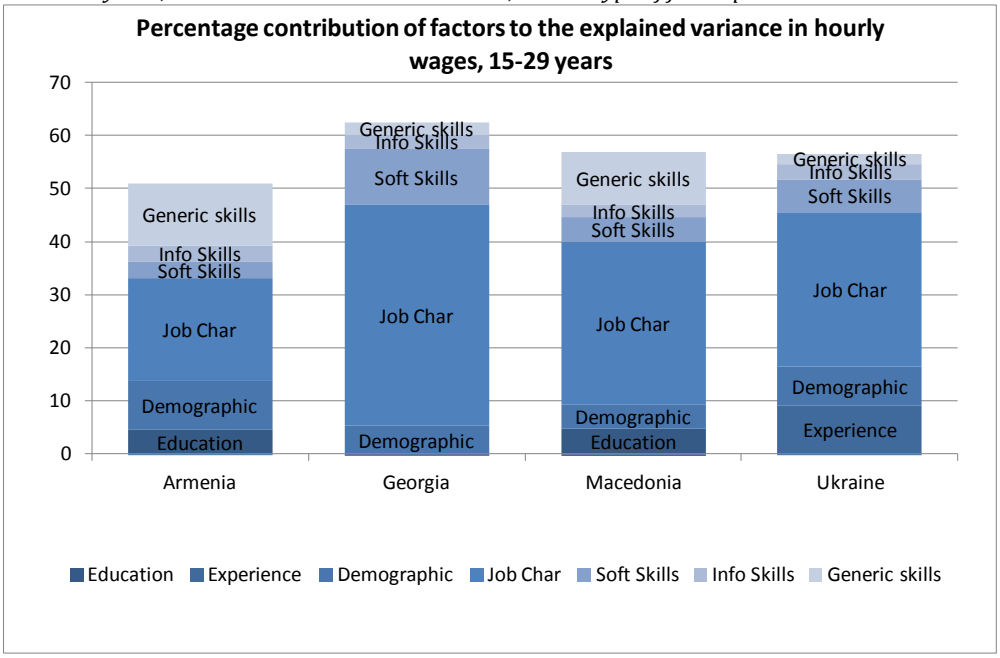
A decomposition of the contribution of different groups of factors, including both demographic characteristics, skills, and years of education, show that skills are positively associated with earnings. Figure 5.1 groups skills into socio-emotional skills/traits (openness to new experience, conscientiousness, extraversion, agreeableness, emotional stability, grit, hostile aversion and decision making), information processing skills (reading, writing, numeracy and computer use), and generic job skills (interpersonal skills, problem solving, learning, and working independently), showing that in particular information processing skills, but also generic job skills and soft skills are positively associated with earnings. Importantly, for both youth and prime age workers the use of skills is more important than education, except in Macedonia. In terms of earnings, the signaling or sorting power of education, compared to the actual skills used, is thus less significant. Nevertheless, by far the most important factor is jobs characteristics, and together with education, demographic characteristics, and/or experience explain most of wage variation. It is worth emphasizing that although personal characteristics (age, gender) are not considered to matter to employers when hiring workers, they do in fact appear to play a role in determining labor market outcomes as reflected in earnings, even when skills and education are accounted for.

For the younger generation, aged 15 to 26, soft and generic skills at work are more important than information processing skills, partly reflecting that youth active on the labor market have lower levels of education (many of their peers are still in school) and work in occupations with lower qualifications. For prime age workers, the role of soft and generic skills loses importance in favor of information processing

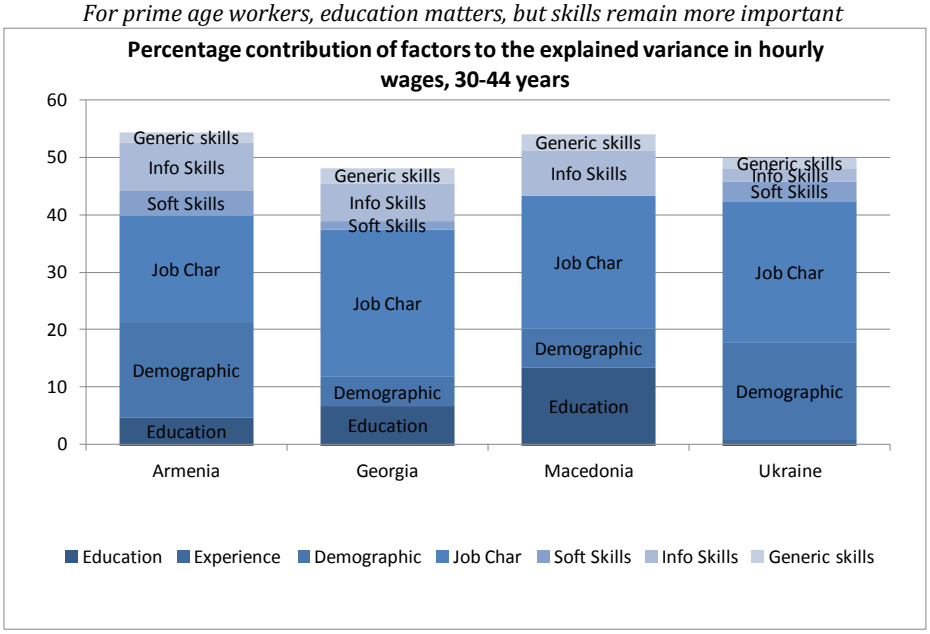
skills. Compared with a similar exercise undertaken for OECD countries (OECD, 2014), and with many caveats on comparability, experience is much less important for explaining wages of youth in ECA countries, except in Ukraine. Overall, however, the characteristics of the job itself (occupation, sector, private/public, permanent versus temporary, and location in the capital or not) take precedence over all other factors.

Figure 5.1: Skills matter for wages—to some extent

For youth, skills matter more than education, but the type of job acquired matters most



For prime age workers, education matters, but skills remain more important



Source: Authors, based on STEP household surveys.

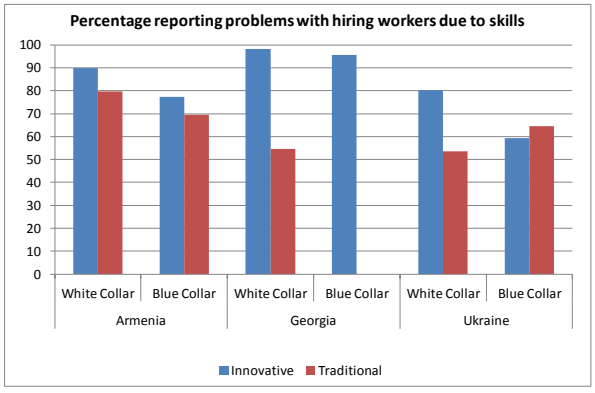
Note: Results obtained using regression-based decomposition according to the Field's approach (Fields, 2004) where the dependent variable is the log of hourly wages. The height of each bar represents the total R-squared for that regression. The sub-components of each bar show the contribution of each factor (or set of regressors) to the R-squared. Education = Years of education, Demographic = Demographic Characteristics, Job Char = Job characteristics, Info skills = Use of information-processing skills at work, Generic skills = Generic skills at work

5.2 Skills gaps affect more dynamic firms more severely

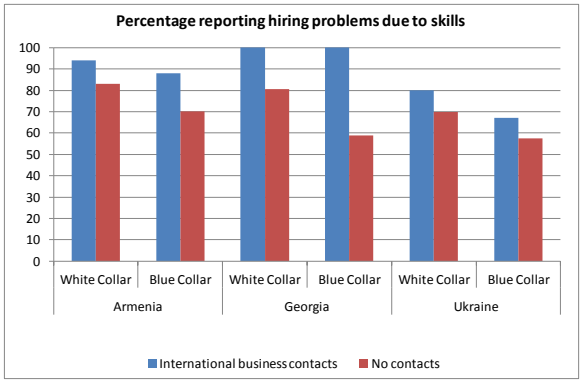
On the side of employers, as would be expected, the skills gap is not affecting the business sector uniformly. A comparison of skills ratings shows that potentially more dynamic firms are not necessarily rating the importance of skills differently from less dynamic firms, but they are more severely affected by the gaps. For example, innovative firms—here defined as firms that introduced a new technology, process, products or services in the past 3 years—are more skills constrained than more traditional firms. Firms requiring interaction with entities in other countries and firms that are foreign owned are more affected than domestically based and oriented firms. For firms creating many new jobs ("gazelles"), the patterns are less clear, but this may be reflecting the fact that they can expand because they are not skill constrained. Overall, firms that are exposed to international competition and those in more dynamic sectors tend to require higher and more flexible skills and as a result are more seriously affected by skills gaps than others.

Figure 5.2: Firms that could provide "better jobs" are constrained by skills

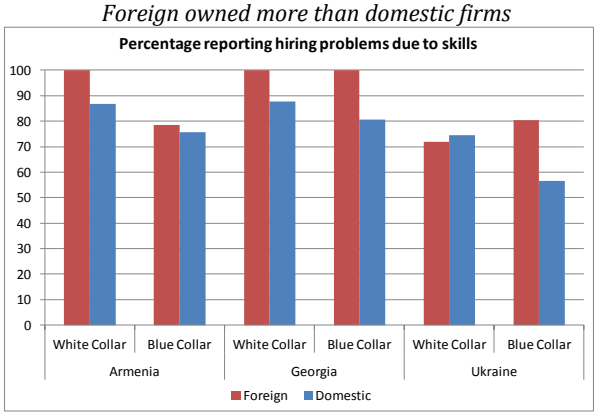
Innovative firms more than traditional firms



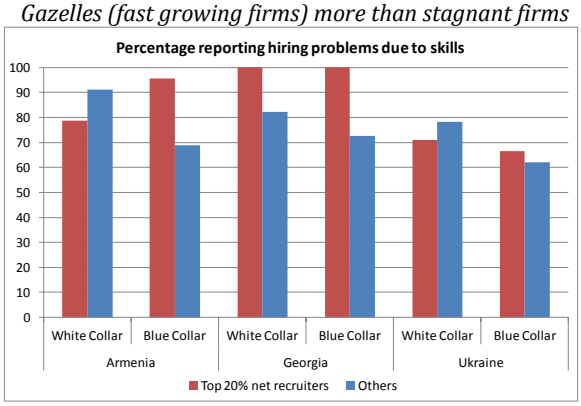
Firms with international business contacts more than those without an international network



Foreign owned more than domestic firms



Gazelles (fast growing firms) more than stagnant firms



Source: Authors, based on STEP employer surveys

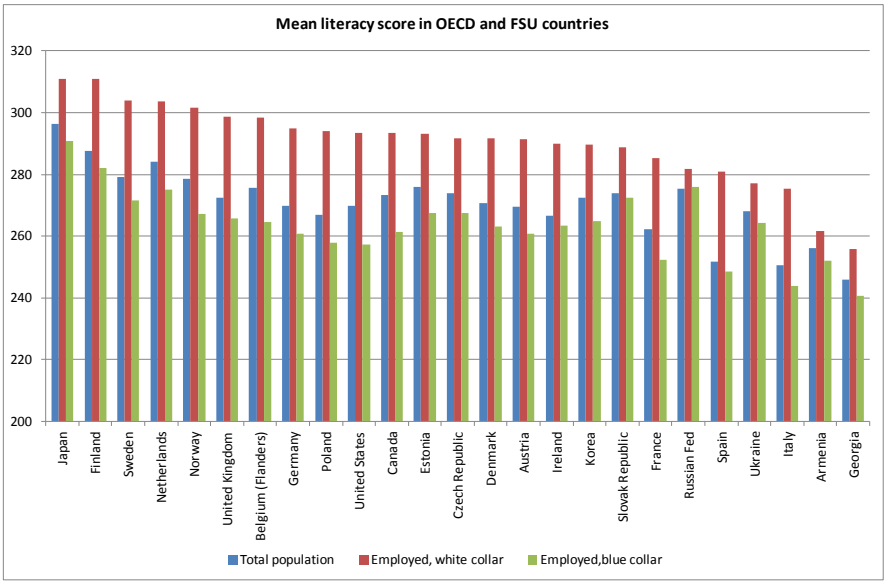
The skills gaps clearly carry important implications. From the perspective of workers, lack of skills lowers the potential for better labor market outcomes, in the form of lower wages. From the firm side, expansion and productivity are held back. From an aggregate economy perspective, the most dynamic

firms are more seriously affected by lack of skills. As a result, skills gaps are slowing down a restructuring of the economy towards more productive employment in more dynamic firms.

5.3 Today's skills gaps could affect future economic development

The skills gaps also manifest themselves in lower levels of skills than can be optimal. First, even for foundational skills such as literacy there are issues. Basic literacy is high in ECA countries, including the STEP survey countries,[11] except in very vulnerable groups. And as seen above, employers are in general not dissatisfied with basic literacy (or numeracy) of recent graduates. However, the ability to read and write at a level which is necessary to succeed in a modern and technology intense environment, is not at par with OECD countries. Armenia, Georgia, and Ukraine are performing less well on reading scores than OECD countries in general; the mean score for a white collar worker in Georgia is 80 percent of that of Finland. This suggests that while, nominally, education levels are relatively high in these countries, the quality of education is insufficient even at basic levels, which could have important implications for the future economic development of these countries.

Figure 5.3: Levels of functional literacy are lower in Armenia, Georgia and Ukraine than in OECD countries



Source: Authors, based on PIAAC for OECD countries, STEP household surveys for others.

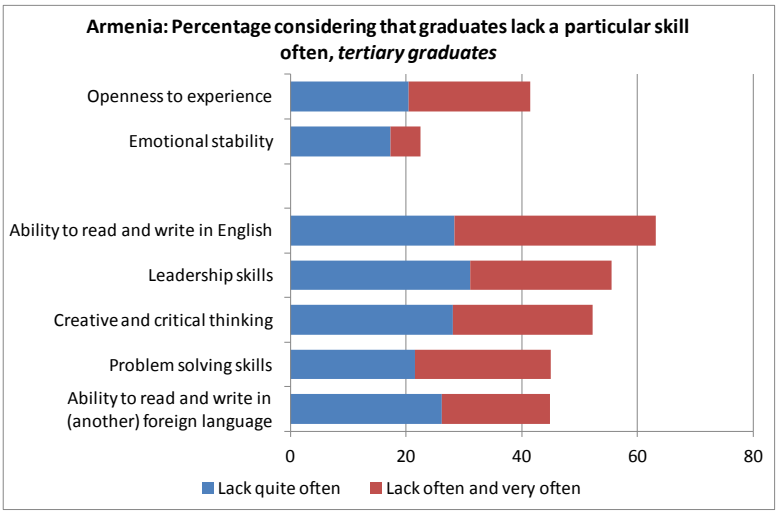
In particular, skills that are likely to become more important in a modern economy appear also to be lacking. While employers are not identifying all of these capacities as key constraints, skills shortages may arise as economies modernize. More dynamic firms are likely to feel these shortages more keenly than more traditional types of firms.

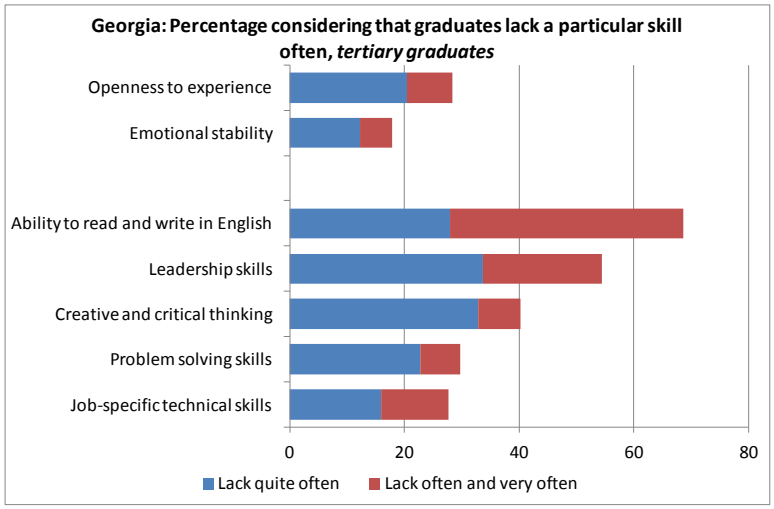
The skills reportedly lacking in graduates are surprisingly consistent across countries (Georgia and Armenia) and education levels. Young graduates, whether with tertiary or secondary education lack,

[11] For example, UNESCO reports next to universal literacy rates for both adults and youth.

most often: English and foreign language skills in general; leadership skills, and the ability for creative and critical thinking; they also lack openness to experience (Figure 5.4 and Figure 5.5). None of these are valued particularly highly by employers today compared to the skills listed in Figure 4.4 above. However, these skills are likely to become much more important when economies move from more traditional production of goods and services to "new economy" tasks, requiring non-routine cognitive and soft skills. Not developing these skills now could jeopardize a successful transition to the "new economy" in these countries.

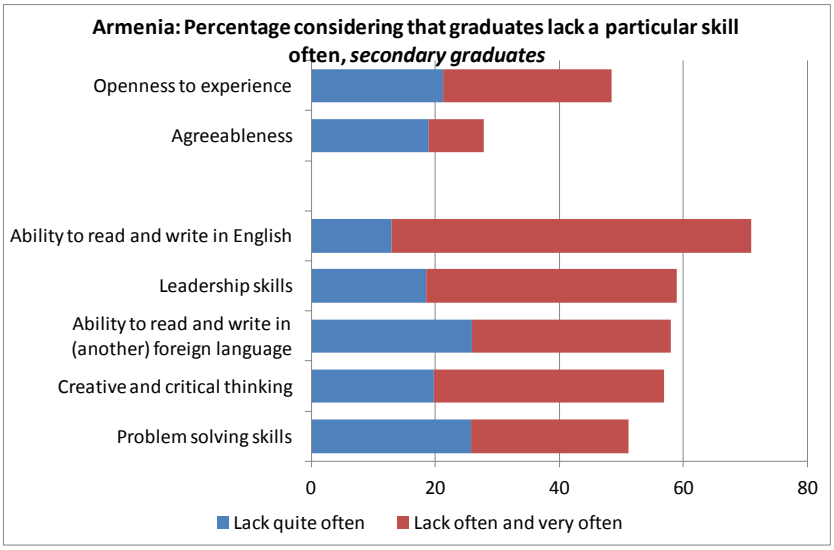
Figure 5.4: New economy skills are lacking in white collar workers

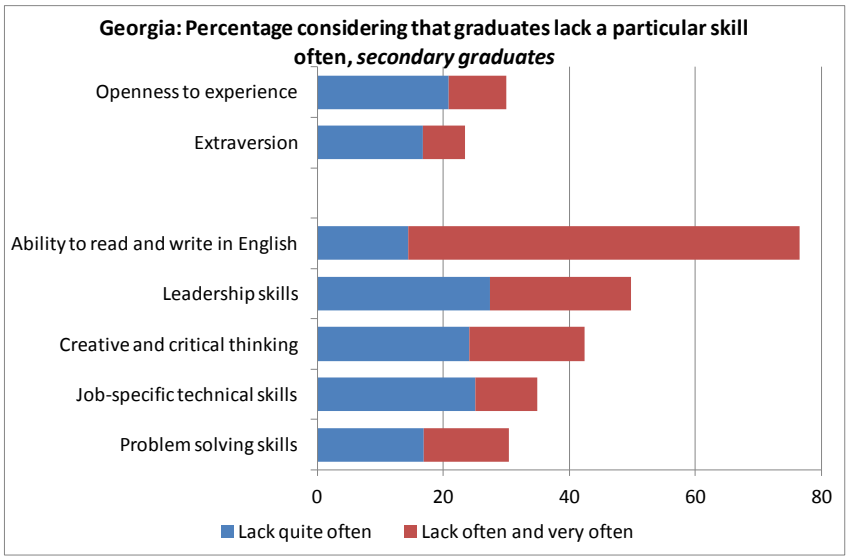




Source: Authors, based on STEP employer surveys. Note: Skills that are mostly lacking (five most lacking), and personality traits that are mostly lacking (two most lacking).

Figure 5.5: New economy skills are lacking in blue collar workers





Source: Authors, based on STEP employer surveys. Note: Skills that are mostly lacking (five most lacking), and personality traits that are mostly lacking (two most lacking).

In conclusion, more innovative and dynamic firms and those with global connections are more affected by the skills gap than more traditional firms. Yet, it is exactly these firms who are expected to hire most new workers and drive the transition of these countries to the all-important "new economy" sectors. Nevertheless, wages are only to a limited driven by skills, suggesting that these much thought-after skills are not fully rewarded in the labor market. As a consequence, many graduates lack these crucial "new economy" skills.

6. The role of the education sector and employers

The two key actors who provide education and training—and therefore, play the most important role in developing skills—are arguably the education sector and employers: the education sector as the prime provider of skills during early childhood all the way to early adulthood; and employers as the provider of training, both on the job and in class rooms, during adulthood. The latter also has a responsibility in developing training institutions on a sectoral and economy-wide level, together with other employers, but also responsibility to cooperate with the education sector to articulate needed skills, update curricula, develop new vocations and field of studies, qualification frameworks, occupational standards, and so on.

This section has a closer look how these two key players perform in Armenia, Georgia, Macedonia, and Ukraine. Both employer and household survey data show that firms as well as workers, respectively, are dissatisfied with the quality of both general education and vocational training systems. But these problems are also compounded by low incidence of training among firms, and the fact that education systems and the enterprise sectors appear to have little interaction, especially on strategic issues such as curriculum development and quality assurance.

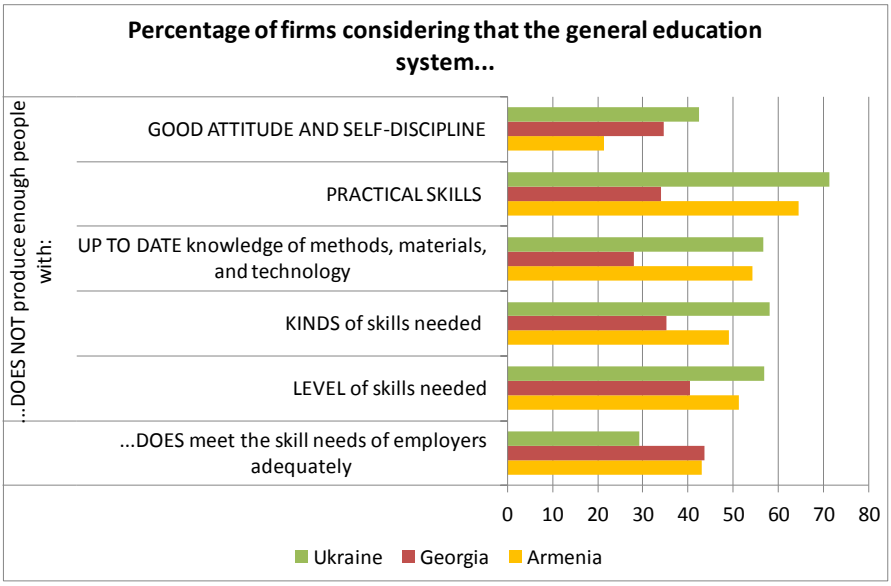
6.1 Dissatisfaction with the education sector

Low skills are a consequence of too little education and training (including early childhood development, ECD), of the poor quality and adequacy of education and training, or both. Following the framework presented in Chapter 1, this outcome is the result from coordination and information failures among firms, potential workers and educational institutes in bringing about an effective system for life-long learning. Underperforming education and training systems, lack of coordination between business and training institutes, low incentives for firms to provide training, lack of information regarding prospective career paths and the value of skills, together with labor markets that do not sufficiently reward investment in skills, all contribute to holding back skills development.

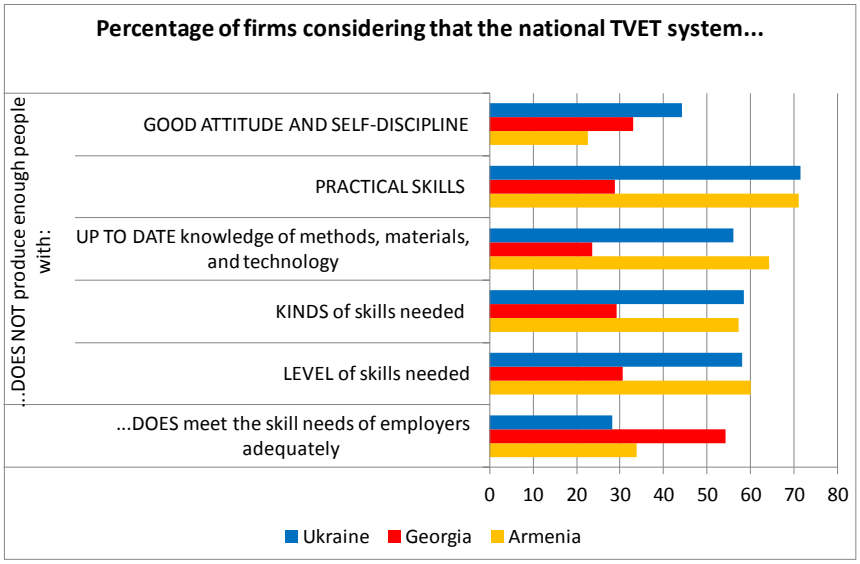
Currently, in the view of employers, education systems are underperforming in their role in setting the basis for further skills development. From the STEP surveys, there is evidence that a majority of firms do not consider the general education system or technical and vocational education and training (TVET) system to be meeting the skills needs of employers (Figure 6.1). The problem is widespread, according to employers—neither the kinds, nor the level of skills necessary is deemed sufficient, and there is a lack of updated knowledge coming out of training systems. In Georgia, firms (in the construction sector) are generally more content with education and training systems but between thirty and forty percent of firms still find the general education system failing in many different aspects.

Figure 6.1: Employers view education and training systems as failing in providing necessary skills

Dissatisfaction with the general education system



And with the TVET system



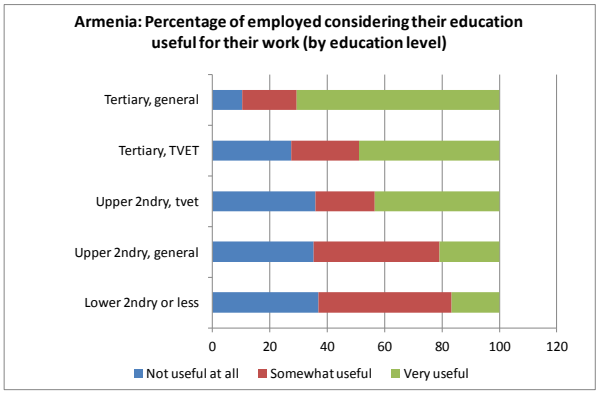
Source: Authors, based on STEP employer surveys

The unfavorable views of education and training systems are largely shared by workers, inasmuch as they consider the impact and use of education for their job to be relatively limited (Figure 6.2). Only for tertiary general education do more than half of workers consider education very useful for their jobs. In particular, technical and vocational education and training at tertiary level is considered decidedly less useful than general tertiary education, in all countries. It is a witness to problems in the vocational sector that higher levels of training explicitly focused on providing the basis for some profession/vocation, should be considered less useful than general education in the labor market. In all

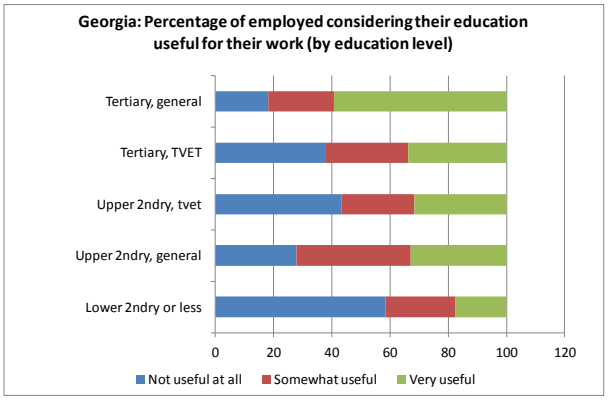
countries except Georgia, vocational training at secondary level is more highly appreciated than secondary general education, however.

Figure 6.2: Workers are also dissatisfied with the relevance of education and vocational training systems

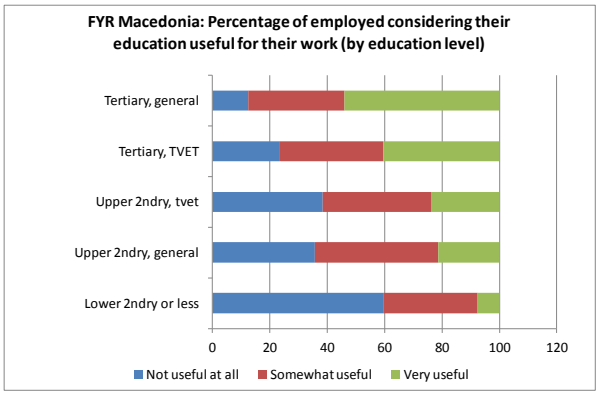
In Armenia, those with low education are unhappy with education systems.



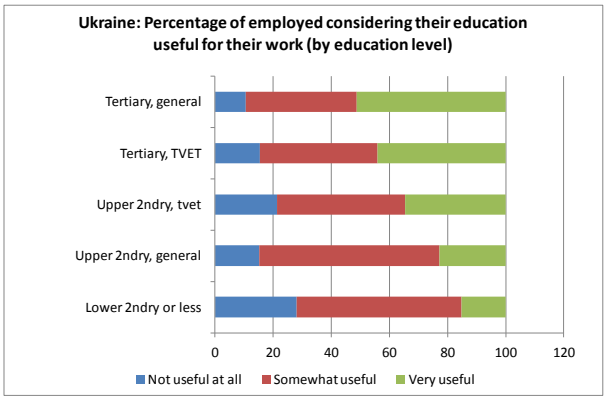
In Georgia, only tertiary education is considered very useful by a majority



In Macedonia, there is great dissatisfaction at lower levels of education



Also in Ukraine, only half of the employed with tertiary education consider their background very useful.

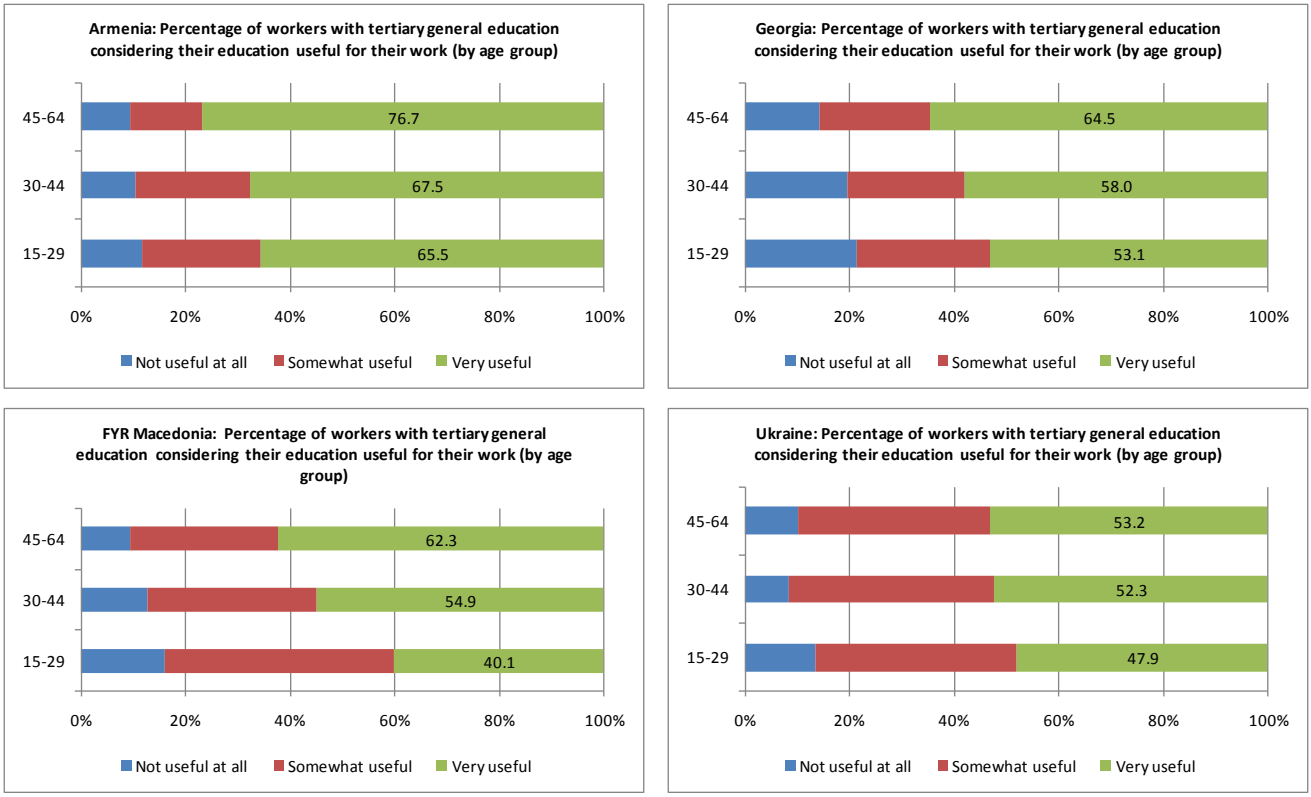


Source: Authors, based on STEP household surveys.
Note: Workers (or employed) include here all currently and previously employed (within the past 12 months) individuals who responded to the question.

Besides, there are important differences between young and mature workers in their assessment of the relevance of education for their work, particularly in the case of tertiary general education. In all four countries, there are significantly higher shares of young workers (15-29 years) who find their education not useful and significantly lower shares of those who consider education being very useful for their jobs, as compared to prime-age and older workers (Figure 6.3). In Ukraine and Macedonia, the share of dissatisfied young workers is over 50 percent. This may be due to the irrelevant content of education and ensuing skills mismatch—that is, a mismatch between the skills learned in universities and those required in the labor market. Yet, it can also be associated with a qualification mismatch—that is, a discrepancy between a worker's education level and/or field of studies and the education requirement in his or her occupation. As we have seen before (Figure 3.4), over 20 percent of workers with tertiary

general education are overeducated in all four countries, and young workers are more likely to be overeducated than their older counterparts in Macedonia and Ukraine (Kupets, 2015).

Figure 6.3: Younger workers are more dissatisfied with the relevance of education, particularly of tertiary general



Source: World Bank staff, based on STEP household surveys.
Note: Workers include here all currently and previously employed (within the past 12 months) individuals who responded to the question.

Overall, the existence of a skills gap from the employers' point of view and the dissatisfaction with education systems among both firms and workers, emphasize that the problem is one of poor quality of education rather than over-education of workers. In other words, the key problem is not that skill levels are too high for a relatively less sophisticated production structure (in which case there would not be a skills gap for non-manual, non-routine jobs), but rather that higher levels of education do not translate into higher levels of skills.

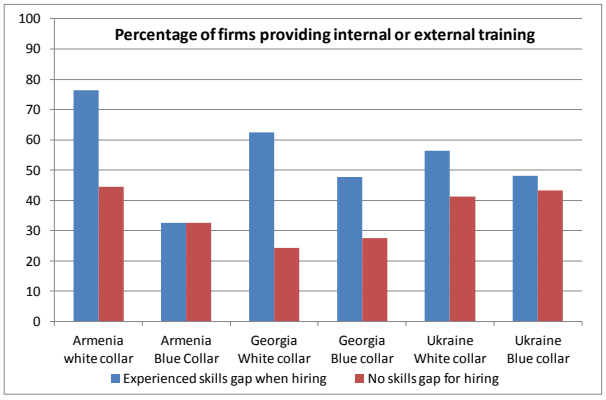
6.2 Employers who do not train

Moreover, continued learning and skills upgrading is hampered by the fact that firms are not providing training to any great extent. Firms are not well equipped to replace basic education systems in helping workers improve foundational skills—those that need to be in place to facilitate further learning—but can provide job specific training and skills upgrading to meet changing demands. In Armenia, Georgia and Ukraine respectively 22, 7 and 20 percent of firms provided training to their white collar workers, with much lower shares for blue collar workers, showing that a vast majority of firms did not, in fact,

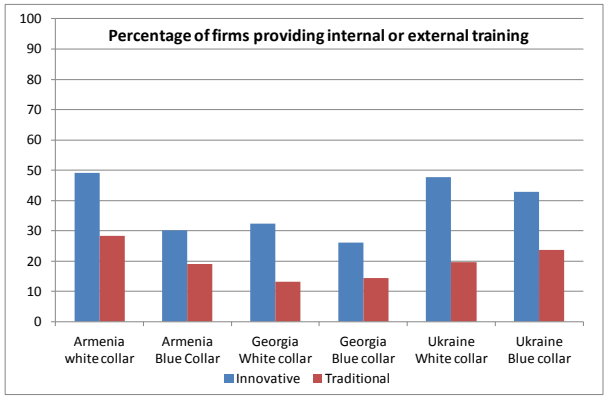
provide any training opportunities beyond on-the-job training. The propensity to offer training differs, with more modern and skill constrained firms generally much more likely to train their own staff: firms that experienced difficulties in hiring workers due to lack of skills, innovative firms, and internationally oriented firms train more than other types of firms (Figure 6.4). Firm based training should not be interpreted as compensation for inadequate education and vocational training, but is more likely to reflect the fact that these firms are more skills intensive and as such depend on continuously developing skills of workers.

Figure 6.4: What firms provide training?

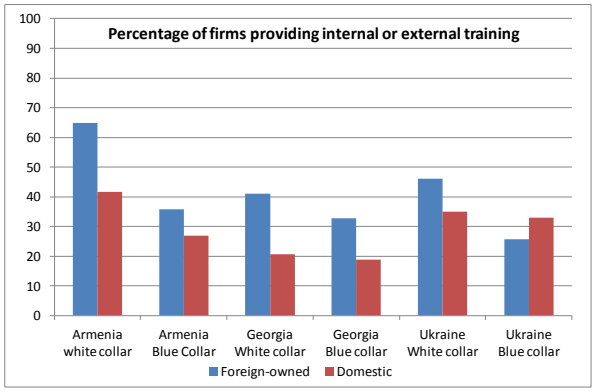
Firms that experienced problems in hiring due to skills also train more than others



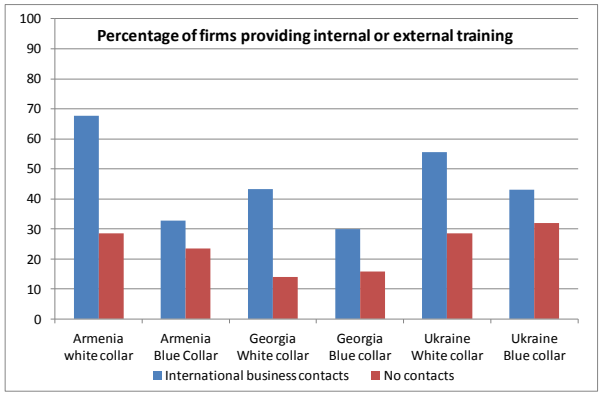
So do more innovative firms...



... Foreign owned firms...



... And firms with international networks



Source: Authors, based on STEP employer surveys

Household survey data show that firm based training is limited and concentrated to a set of workers, emphasizing that training during working life is complementary to education. Regular training opportunities outside the formal education and training system are in general lacking, implying that life-long learning opportunities are limited for the population at large, and training is concentrated in those who already hold a certain level of skills. Among white collar employees, around one in four employees in Armenia, Georgia and Macedonia, and one in twenty in Ukraine, received some form of training (internal or external) in the past year. The share of workers receiving training is lower than the share of firms providing training (even though larger firms also are more likely than smaller firms to provide training, and even though public wage employees are included), implying that access to training is very

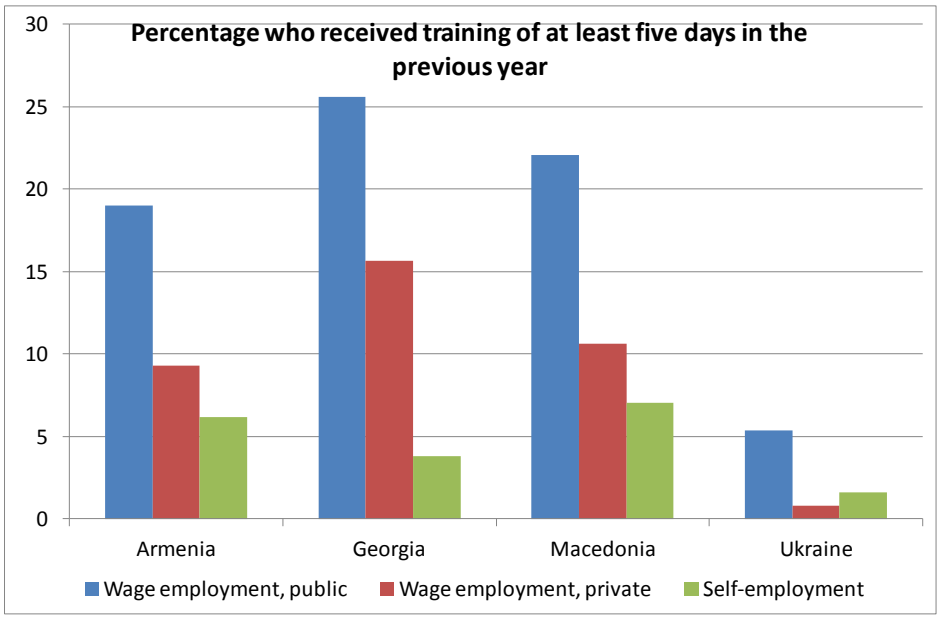
uneven. Education is hence cumulative: basic education is needed to get access to further levels of education; those that are trained are also more likely to be able to benefit from further training. A result of the concentration of training is skills path dependence from early on—those that are not able to secure a sufficient level of education, get a job in a firm that provides training, and ensure that they are the ones invested in that particular firm, will not be continuously developing skills.

From this perspective, public sector employees are at an advantage compared to those working in the private sector. The incidence of training among public sector employees is everywhere higher than in the private wage sector. The self-employed have the lowest incidence of training of all. A possible explanation is that self-employment is more concentrated in low skill activities and that in addition, time and credit constraints together with lack of adequate courses and information failures on training needs as well as the benefits of training, reduces incentives to seek further skills development.

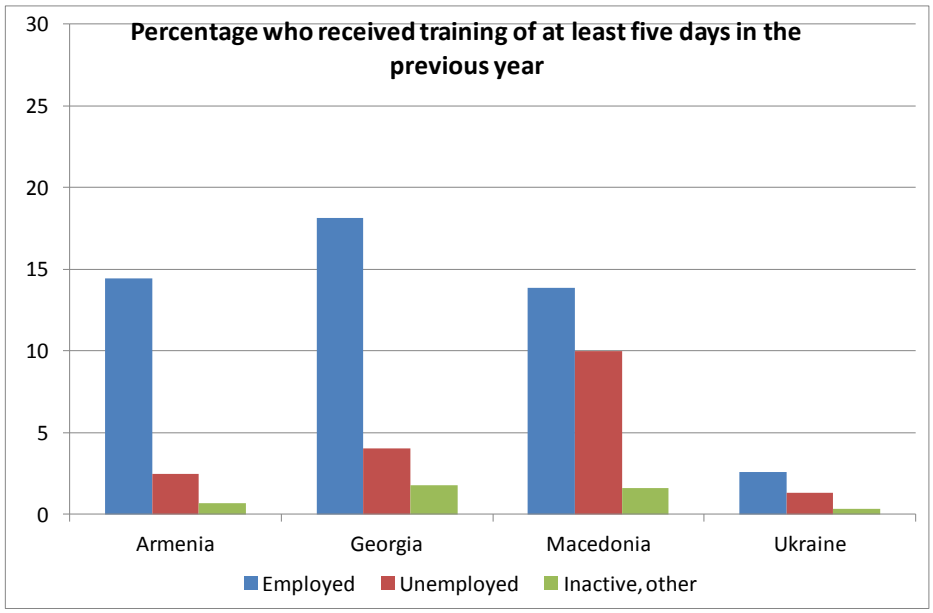
The path dependence of skills development is further cemented for those who are unemployed or inactive. With the exception of Macedonia, the unemployed have virtually no access to training. The implication is that once employed, there are some chances of on-the-job training and other forms of skills development. For the unemployed, opportunities for training provided by the state or through their own means, are very limited.

Figure 6.5: Training is cumulative: those with higher levels of education also receive more training

Public wage workers enjoy more training



Those out of jobs have no access to further training



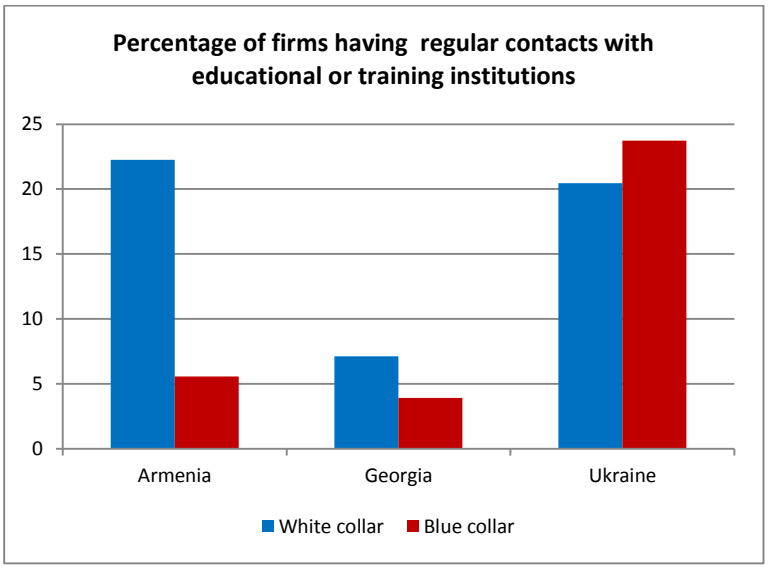
Source: Authors, based on STEP household surveys

6.3 Employers and education systems not collaborating

Finally, to achieve successful skills development it is essential that employers cooperate with the education sector, to articulate what kind of skills they need and to give feedback on the quality of education. Yet, as data from Armenia, Georgia, and Ukraine shows, only few firms have contacts with the education sector. Figure 6.6 shows that as few as 4 to 6 percent of firms in Georgia have regular contact, with as much as 20 percent in Armenia (for white collar jobs) and Ukraine. Most of these

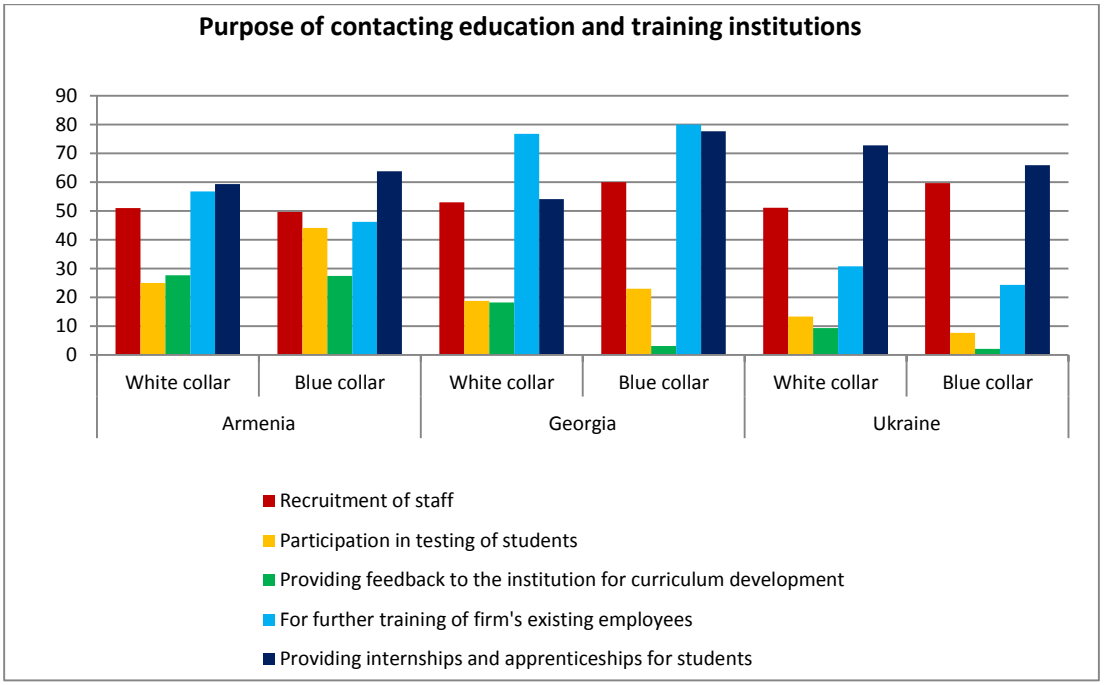
contacts, though, are about recruitment or further training of their own employees as well as internships (Figure 6.7)—which is of course laudable, but only very few firms seem to actually give feedback on the quality of education or to contribute to curriculum development. Hence, the education sector might to some extent lack the crucial information to respond to changing needs in the labor market—for which the cooperation of employers is essential.

Figure 6.6: Few firms are in regular contact with the education sector



Source: Authors, based on STEP employer surveys

Figure 6.7: Few contacts between employers and the education sector are about feedback or curriculum development



Source: Authors, based on STEP employer surveys

Unsurprisingly, innovative firms are more likely to have contacted training institutes than traditional ones, and the same holds for foreign owned, internationally oriented firms, and fast growing firms (in terms of net recruitment).

In conclusion, the evidence suggest that both employers and workers are fairly dissatisfied with the education sector in terms of the skills that employers see in young graduates and the quality of education that workers received. Yet, it might not be a fair to entirely blame the education sector for this: Also, employer are not providing training to their workers. Importantly, only few employers are actually cooperating with the education sector to give feedback on the quality of education and to develop new curricula or update existing curricula. The final section will elaborate on these findings and map out a policy agenda to overcome skills gaps and identify areas where more knowledge is needed to arrive at successful skills development.

7. Overcoming the skills gap

In spite of comparatively high levels of education, workers with the right skills are difficult to find in ECA countries. Education and training systems do not appear to deliver the right skills, at least not to the general work force, as evidenced in the insufficient levels of foundational skills and lack of confidence in the vocational and general education systems with respect to job relevant knowledge. While some firms provide training—notably more modern, productive and internationally competitive firms—relatively few workers seem to benefit and training is not, and could not be, compensating for poor education quality. At the same time, across ECA countries, demand is increasing for generic skills, including socio-emotional skills that allow for flexibility and constant adaptation to new and changing tasks. In a rapidly changing economic environment, predicting future demands for specific occupations is likely to be difficult and risky. Instead, providing future workers with the general problem solving and socio-emotional skills that can be tailored to new needs is likely to be much more important.

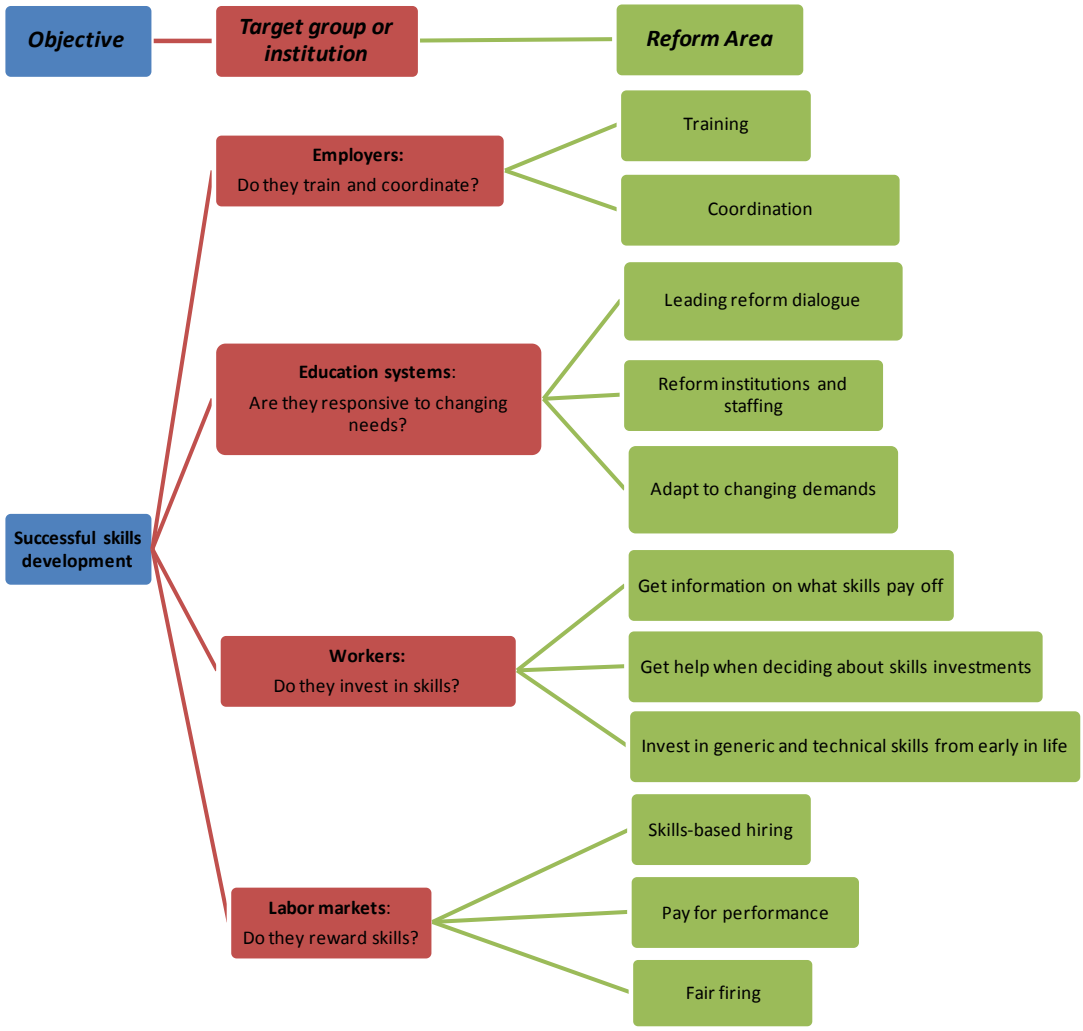
The final question is then how policy can improve skills development. Which path can policy makers take to arrive at successful skills development? Whereas the report cannot provide a complete answer to this question, it offers an organizing framework on how to approach this important question, identify some preliminary priorities, and most importantly, set an agenda on where further knowledge is necessary. In doing so, it will be useful to return to the framework for successful skills development presented at the beginning of the report (Figure 1.1).

The framework outlined in the introduction lists four key ingredients to arrive at successful skills development: (i) employers who train and cooperate; (ii) an education system that is responsive to changing demands; (iii) workers who invest in skills; and (iv) labor markets that reward skills. Currently, however, Armenia, Georgia, Macedonia and Ukraine are stuck in a low-value equilibrium, where actions is simultaneously needed from government, public and private education systems, firms, workers, and prospective students to improve the situation for all involved. Coordination failures on the employers' side, information failures on the workers' side, political economy failures in the education sector, and labor market failures together foster underperforming education and training systems, leave workers and prospective students with a lack of direction, and keep the private sector—prospective employers—outside the purview of strategic direction and decision making. At the same time, firms lack incentives to provide a coordinated response, to organize among themselves around skills development, and champion the need for relevance and flexibility in skills development systems.

To improve outcomes, then, actions are needed simultaneously: education systems need to take leadership and respond to the needs of firms and students, including making difficult decisions to reduce or close certain fields of studies and schools while investing in new ones; students and their parents will need to find the right information about which vocations and fields of studies pay off in the labor market and which skills are sought after by employers; employers need to come together and jointly develop sector and economy-wide training institutions and effectively articulate their needs to the education system; and labor market institutions and regulations need to adapt to ensure that skills that are sought-after by employers are also rewarded by higher wages. Governments have to play a role in all of these areas, from reforming education systems to supporting employer associations, subsidizing training, improved labor market information systems and matching.

Figure 7.1 offers a tentative—and by no means complete—list of reform areas and actions to give some general guidance to policy makers on how to improve skills development. In most of these areas more research and knowledge is necessary to arrive at firm policy conclusions, especially on *how to* achieve change.

Figure 7.1: The path to successful skills development



Source: Authors.

In the following, the report will elaborate reform areas for each of the four target groups or institutions. In doing so, the report tries to identify further policy actions for each reform area and also potential tools on how to implement those policy actions. The latter, though, are largely "black boxes" that need to be unraveled through further research to find best practice examples.

7.1 Employers who train their workers and collaborate around training

The low incidence of training among firms, whether internal or external, has several potential causes including limited knowledge among firms for identifying training needs and/or deliver training to their staff (appropriate training content and methods), fear of lost investments due to poaching and worker

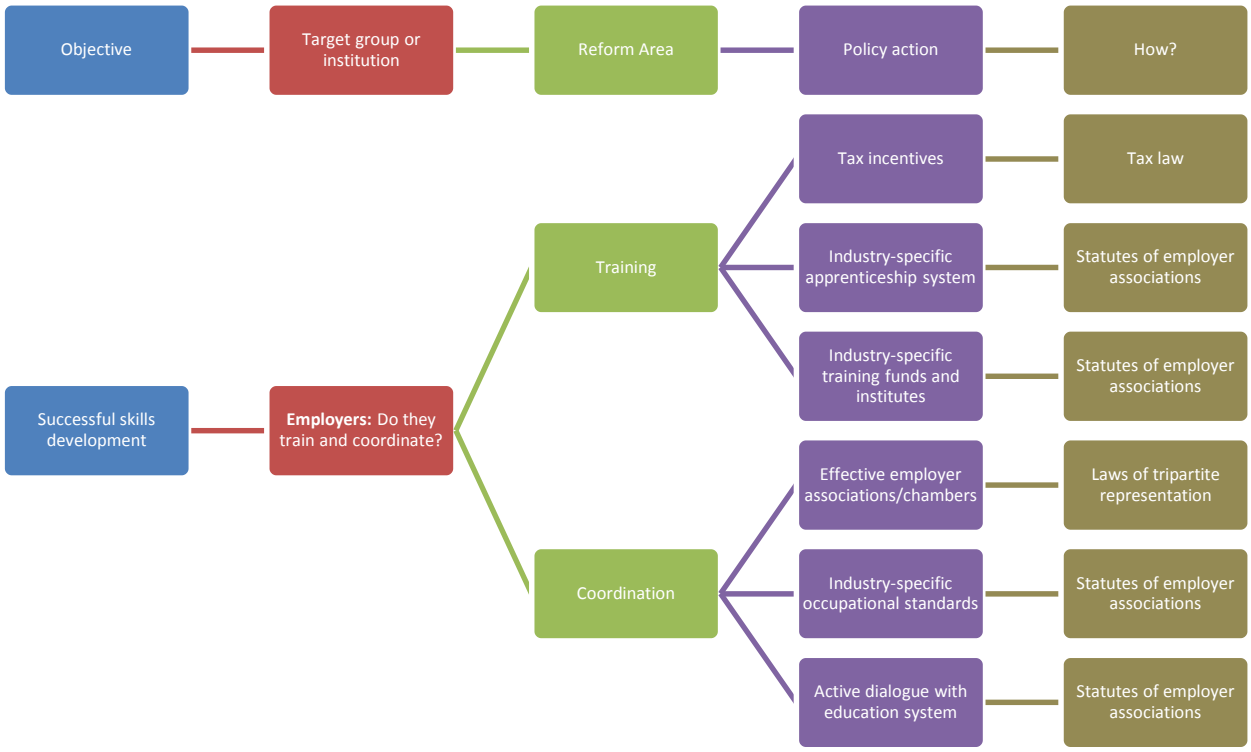
turnover more generally—a specific problem when knowledge is not firm specific and thus portable across industries—and the cost of providing training and of coordination among firms that may be competitors. Several policy interventions can address the risks and costs associated with training. However, where the key reason is low overall skills level in production techniques, or low skill levels of workers such that training is not likely to increase productivity, public interventions to increase firm training are not going to be helpful.

To address risks of poaching and to internalize the social benefits for training, one approach would be to subsidize employers for the training they provide, for example through the tax system. Also, apprenticeships systems are frequently employed in developed and developing countries. Through these, firms and workers share the investment cost in training as (young) workers are hired by a firm, usually for wages below-market rate (with the expectation that they will rise later) and workers receive training in combination with working (Almeida, Behrman, & Robalino, 2012).

The advantages of apprenticeship systems are their flexibility around curriculum and financing modes and the opportunity they offer for young workers to make the transition from school to work. Their challenge lies largely in building and overseeing a harmonized system with transferrable skills through standardized curricula and certification/accreditation. Subsidies for training can also be employed to increase the social benefits of training when they increase those of the individual firms. Industry-specific training funds are a common form of collecting revenue from firms in order to build national training systems and/or finance incentives based schemes where firms that provide training get compensated for costs incurred in relation to training. Such programs require careful design as publicly subsidized training runs a risk of replacing investments that would have taken place anyway, because of the potential deadweight losses associated with tax-based financing, and because their efficiency needs to be assured by involvement of employers in their design (Almeida, Behrman, & Robalino, 2012).

Where collaboration among firms, within industries, in value-chains, or geographical clusters, would be profitable but does not take place, policy interventions can help build and strengthen coordination mechanisms, such as employer associations and chambers of commerce. These associations can help firms identify training needs, coordinate advocacy vis-à-vis government, coordinate industry-specific training initiatives, and provide monitoring and evaluation of various programs and initiatives. They can take the lead role in identifying industry-specific occupational standards, as well as play the role of counterpart in the dialogue and collaboration with private and public education providers and policy makers. Figure 7.2 summarizes the reform areas and policy actions for employers and hints at possible tools on how to implement those policy actions.

Figure 7.2: Reform areas and policy actions for employers



Source: Authors.

7.2 An education system that responds to changing demands

How can education systems become better at responding to changing skills needs over time, and in ensuring broad-based participation and several alternative modes of building skills? Workforce development reforms in the education system require (i) a strong strategic framework that sets priorities based on wide consultations (ii) a system for financing and delivering services that is governed to ensure relevance and financial sustainability, and (iii) incentives that ensure that service delivery is driven to aim for the highest efficiency and standard possible (Box 7.1). Of course, a precondition for successful reform is strong political will to adapt existing education structures. The political economy challenges around closing, for example, TVET schools and firing teachers in one occupations branch while expanding in another one are significant and not easy to overcome.

Box 7.1: Systems Approach for Better Education Results (SABER): Diagnostics to improve workforce development (WfD)

Workforce development systems can be evaluated using the SABER diagnostics tool, which assesses the degree to which current education and training systems have a strategic framework in place, the extent to which the system is diversified, efficient and equitable, as well as accountable to a certain level of standards, and whether service delivery is effective and relevant.

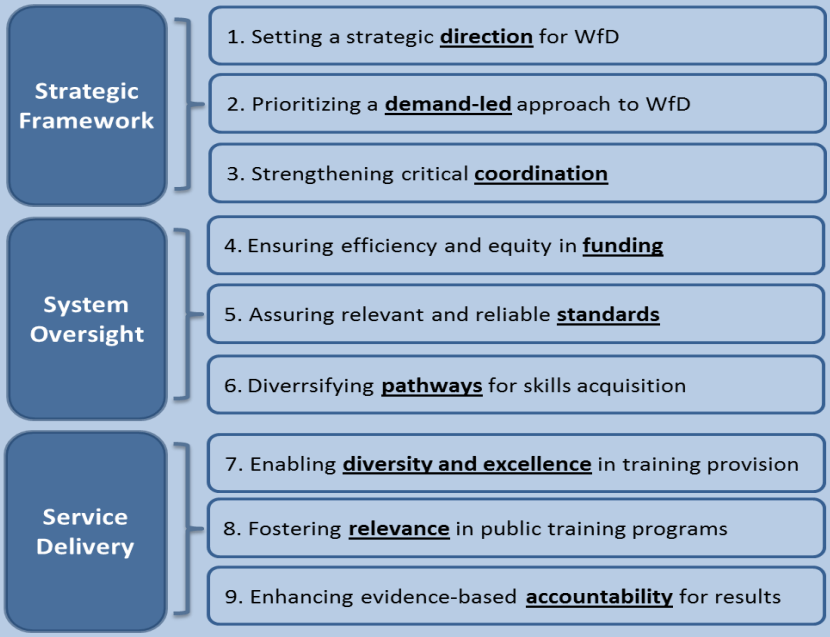
The SABER Workforce Development Diagnostics focuses on assessing system strengths and weaknesses relative to international best practice, along three key dimensions: strategy, system, and service delivery, each with three sub-goals.

Strategic framework. Do countries have a strategic direction for workforce development? Is there a strong demand led approach? Is there broad coordination among stakeholders—education systems, policy makers, firms, and so on—around diagnostics, priorities, incentives?

System oversight. Are investments in workforce development efficient and equitable, notably with respect to broad partnerships for funding, and sufficient funding for vocational systems, and is the system financially sustainable over the long term? Are there mechanisms in place to ensure relevant and reliable standards for quality in service provision and skills acquisition? Are there different opportunities for skills acquisition through different pathways, such as permitting those with diplomas from TVET systems to enter further studies?

Service delivery. Is the system open to a diverse set of skills providers, and are these provided with incentives to excel? Are (public) training programs relevant to the demand for skills on labor markets, based on information from the enterprise sector, experienced teachers, and the materials and equipment needed to provide relevant training? Are systems monitored and evaluated?

Box Figure: Workforce development: dimensions and sub-goals



These are rated compared to best practice countries along a scale of 1-4, where a rating of 4 is the level corresponding to advanced economies where systemic good practice meets global standards.

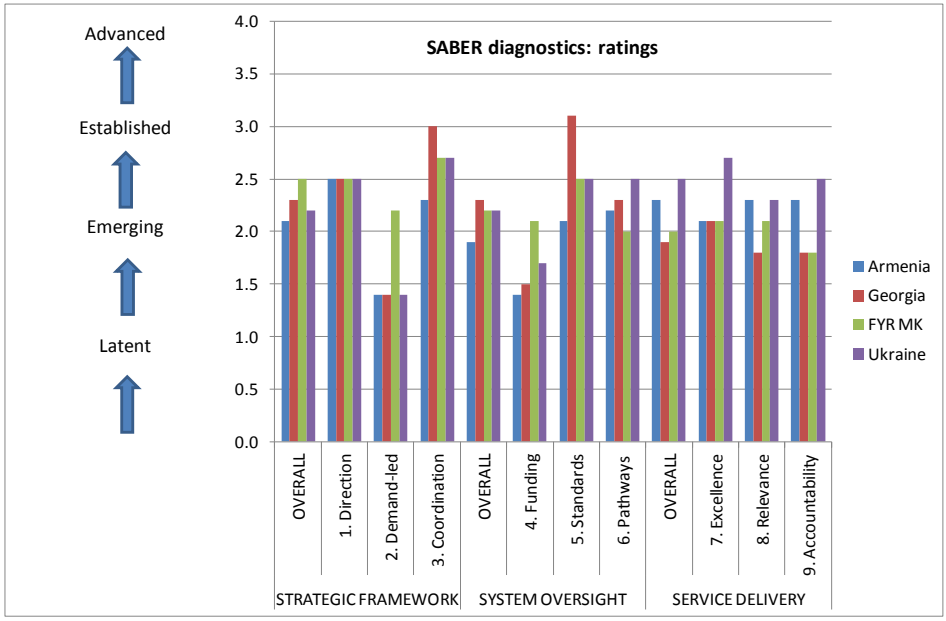
Source: World Bank (2013)

Diagnostics of the policy framework for workforce development (WfD) undertaken for the STEP countries show that these countries face significant needs to reform their systems to increase strategic focus, governance, and excellence in delivering results . In most areas, STEP countries are characterized

as emerging countries in terms of policy framework—showing some instances of good practice, but far from being established good practice systems that correspond to globally recognized best standards.

As a legacy of times of a planned economy, the diagnostic exercise reveals particular weaknesses in involving the demand side in setting the strategic framework (like, for example, assessing the implications of economic structure and prospects for skills or engaging employers as partners), and in efficiency and equity of funding (Figure 7.3).

Figure 7.3: SABER diagnostics of Workforce Development



Source: World Bank, 2014a, 2014b, 2014c, 2014d.

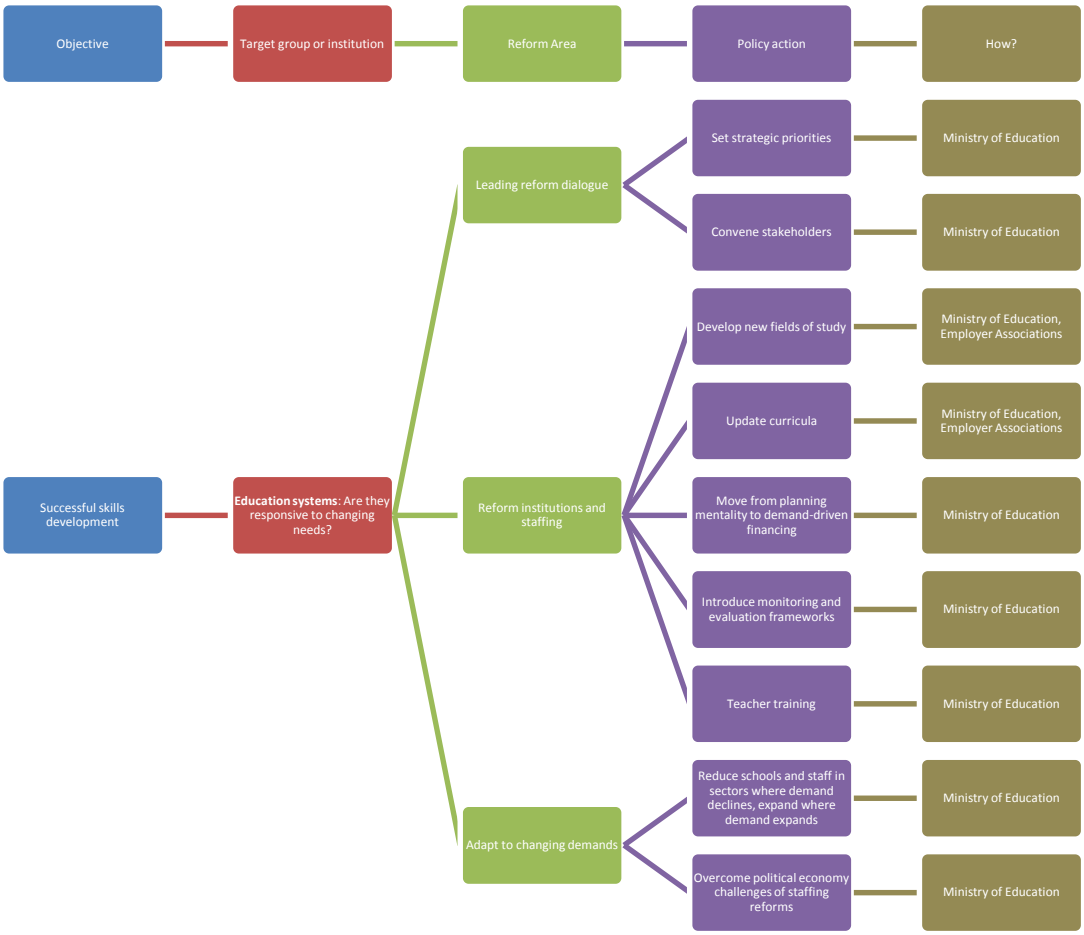
While challenges of aligning skills development systems to the needs of the economy are recognized and addressed in the countries' strategic documents, policy documents are rarely accompanied by robust assessments of the economic prospects and their implications on skills demanded on the labor market. The lack of broad, regular and relevant data on skills gaps continues to hinder the design and implementation of policy interventions with high potential to improve the WfD framework. The policy dialogue is sporadic, and deals more with sector-specific and technical issues, rather than with strategic priorities. In Armenia, efforts have gone into engaging employers at various levels including with career centers, boards of educational institutions, and so on, but overall the influence of businesses and industries in shaping and implementing WfD priorities remains modest (and *ad hoc*). Government funding for education is overall modest, not supplemented by other sources, and not related to performance.

Ministries of Education will need to be responsible for leading the reform dialogue, reform institutions and the size and composition of staff to increase accountability towards results, and adapt to changing demands. They have convening power to bring together the different stakeholders and are ultimately tasked to set strategic priorities as well as put in place financial mechanisms that ensure flexible training provision, high and certifiable standards of training, and sustainability. They set standards for teacher training, and should take the lead in establishing monitoring and evaluation frameworks by enhancing evidence-based accountability including the practice of routinely sponsoring skills-related surveys and

impact evaluations of existing programs (for graduates labor market outcomes, for all modes of delivery of training services—IVET, CVET, ALMPs) as well as due diligence reporting on enrolments, budgets and budget execution. Together with employer representatives, ministries should identify new fields of study, and continuously monitor and update curricula. Importantly, ministries are responsible for overseeing the elimination of corruption that distorts the investments in, and rewards to, skills acquisition.

In increasing flexibility of training systems, public policy is likely to face significant political economy challenges that need to be acknowledged upfront in the policy agenda. These include notably the resistance to changes or reductions in teaching and other staff, the opening up to dialogue and joint decision making with employers, private providers of training, and other stakeholders, and the broadening of stakeholders to the firms with a growth potential which may or may not be part of the set of large firms that usually are brought to the table. Figure 7.4 summarizes the reform areas and policy actions for the education sector and hints at possible tools on how to implement those policy actions or institutions responsible for implementation.

Figure 7.4: Reform areas and policy actions for the education sector



Source: Authors.

7.3 Workers who invest in skills

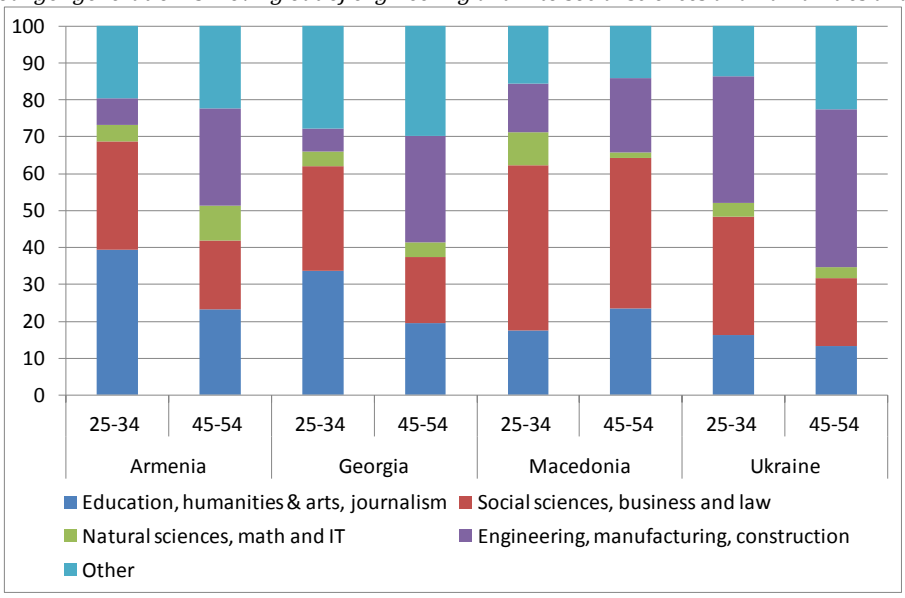
For workers to be able to invest in relevant skills, they need the basic foundations acquired early in life to be able to continue to build up their skills. Throughout basic education and beyond, they need to be exposed to generic and technical skills and offered the opportunity to hone entrepreneurial skills, as well as soft skills. Stimulating these broader skills sets should be an integral part of school curricula, but will also need to be included in adult training and employment services.

Students also need help to make informed choices: to understand what skills pay off in the labor market, what and how their own aptitudes and interest can best be matched to these opportunities, and what schools provide the best sources of skills development.

In fact students are changing their preferences in STEP countries, as evidenced in a clear change in fields of study. The younger generation in Armenia, Georgia and Ukraine are more likely to be in humanities and social sciences than in engineering or natural sciences (Figure 7.5). In Macedonia, engineering has given way to natural sciences and social sciences. The extent to which these changes are relevant for labor market outcomes requires tracing past students through their transition to working life. A much quoted example from the Netherlands shows how tracer surveys of graduates can shed light on different aspects of labor market outcomes including the duration of job search, access to employment, overall working conditions including contract type and earnings, and the satisfaction with use of skills and the job overall (Sondergaard & Murthi, 2012).

Figure 7.5: Education profiles are changing

The younger generation is moving out of engineering and into social sciences and humanities and arts



Source: Authors, based on STEP household surveys

In this context, labor market observatories, when well-managed, have the potential to improve the quality and scope of labor market information, available to students and job seekers, employers, authorities, private and public education providers, employment offices, and others. Experience from Poland's regional labor market observatories suggests that while observatories can be helpful, several

factors are needed to increase their positive impact (Box 7.2). These include clear strategic vision, in-house analytical capacity and clear communication and dissemination strategies, and high accountability vis-à-vis results performance.

Box 7.2: Success factors for Labor Market Observatories

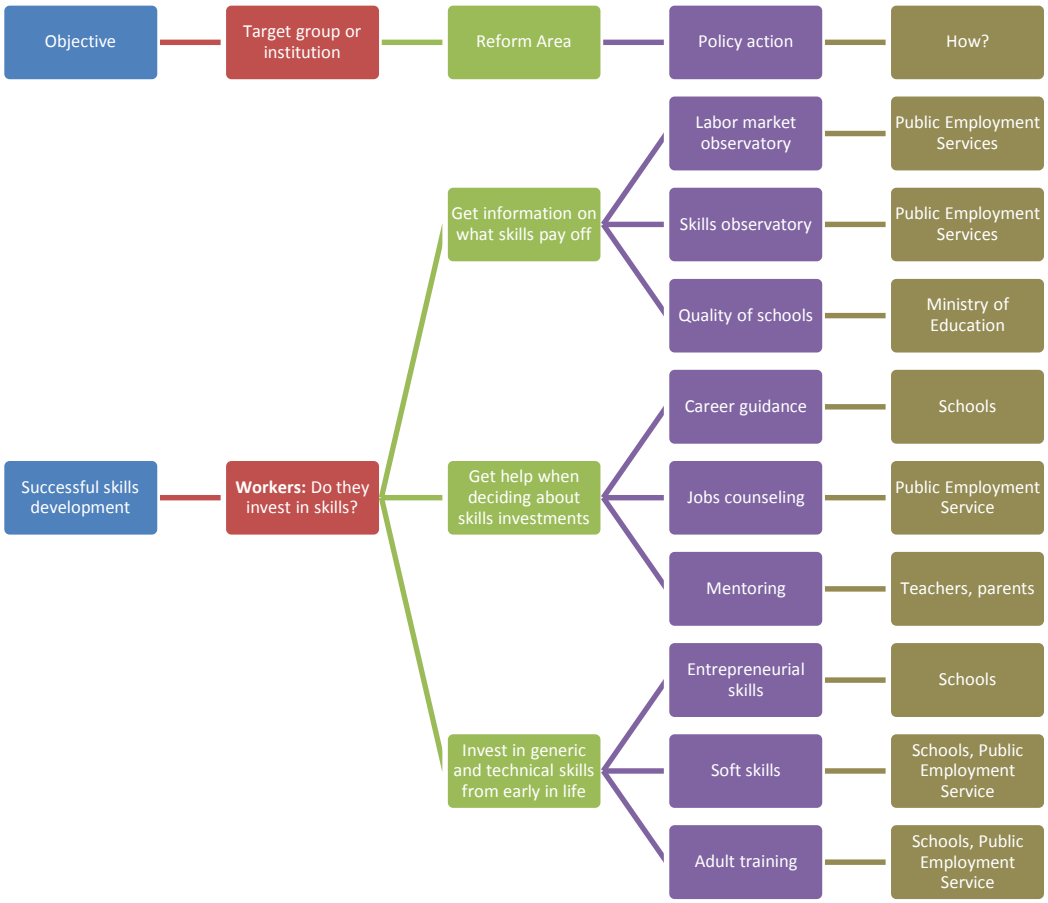
Labor market observatories provide information to guide policy makers, students, job-seekers, firms, educational institutes and others in providing or choosing timely and relevant skills development. Successful observatories produce information tailored to the needs of these users. Critical success factors to provide relevant and useful information include:

(i) Governance structures that ensures accountability of the owner (and main user) of information, like, for example, Ministry of Labor or Ministry of Education
(ii) Clear objective: to monitor and interpret changes in labor supply and labor demand, and any arising mismatches because of labor or skills shortages
(iii) Statistical infrastructure is available and information is shared among different producers and consumers of statistics
(iv) Analytical capacity in-house is sufficient to identify important issues, provide analysis, and outsource special surveys or research questions to adequate external parties
(v) The end users of information and their needs are clearly identified and products tailored to their different requirements
(vi) Communication and dissemination capacity exists to ensure information can be used.

Source: Rutkowski (2015)

Equipped with information on labor market situations and returns to skills, individuals may also need specific career guidance to improve their chances of making good choices for their working future. Although information on what constitutes the most effective forms of career guidance is scarce—it would require tracing outcomes over many years—international best practice for career orientation has been established as independent (external to school), impartial (not favoring one specific orientation) and complete (including all options) guidance for students in lower and higher secondary education, specifically tailored to each age group. A range of career guidance options can be envisaged: at a group level (seminar, visits, and lectures), or at an individual level (teachers, former students, mentors, internships visits to firms). Career guidance services may also be tailored to groups and individuals requiring special assistance, including children and youth from remote areas. Figure 7.6 summarizes the reform areas and policy actions for students and workers and hints at possible tools on how to implement those policy actions.

Figure 7.6: Reform areas and policy actions for students and workers



Source: Authors.

7.4 Labor markets that reward skills

Closing information gaps will not be sufficient to close skills gaps, unless labor markets in fact reward skills—otherwise, youth may be making perfectly rational choices in acquiring or even buying diplomas that offer not much skills content or choosing schools that provide connections for "insiders". The evidence from STEP countries is not irrefutable on the role of skills versus other factors—the most important contribution to earnings is given by the type of occupation, rather than the skills used in that occupation, hinting at the possibility of segmented labor markets. The fact that so many with tertiary education and with more intense skills levels end up in the public sector while the private sector is skills constrained, is also one indication of skewed incentives in terms of skills acquisition: if it consistently pays off better to work in the public rather than the private sector, youth will acquire the education and contacts that ensure public employment rather than for private sector activity.

Labor markets that reward good performance—presumably the outcome of possessing labor market relevant skills—are also likely to signal to youth the advantages of investment in adequate skills. Labor codes and collective bargaining agreements that encourage promotion and pay raise based on merit, rather than seniority, education levels, or age, contribute to fostering incentives. Similarly, with overly

rigid labor market regulations, making mistakes in the hiring process can be extremely costly, if it is not possible—or very expensive—to let workers go if they prove not to have the skills necessary for the job.

Such distortions aside, skills based hiring may also be hampered by lack of means of signaling available or needed skills—which is why diplomas remain a key factor in discerning available skills. Private and public employment services can be helpful in developing effective labor mediation that identifies skills available and skills in need. New technology is also being introduced by firms, like, for example, in the Unites States, to directly and more efficiently test skills as well as personality traits in the hiring process in order to achieve better matching results. Evidence seems to suggest that this increased testing for skills by employers has, on the one hand, increased the duration it takes to fill a vacancy, but on the other hand it has improved the quality of job matches and therefore reduced turnover rates. In other words, employers are getting smarter about the hiring process, apply better skills testing, and as a result hire better people and do not need to fire (and re-hire) as many people. Developing these kind of new skills tests also in the transition countries of ECA could, in fact, increase the reward for skills and ultimately foster better skills development.

Figure 7.7: Reform areas and policy actions for labor market institutions

Source: Authors.

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