Georgia

Skills toward Employment and Productivity (STEP)

Survey Findings (Urban areas)

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Executive Summary

Context

Skills development is key to promoting growth and technological progress. Moreover, recent research indicates that skills acquisition has important effects on labor market outcomes. Governments around the world assign top priority to job creation and productivity growth. The development of the right skills among workers is central to achieving both, as workers who acquire more relevant skills not only make both capital and other workers more productive but also facilitate the adoption and invention of new technologies. Recent research also indicates that for the individual worker, skill acquisition has a long-lasting impact on the trajectory of the person's life, and inequality in skills is associated with inequality in income.

Georgia's labor force participation is still low and concentrated in low-productivity sectors. Despite the growth experienced in the last two decades, the country's key labor market indicators are still weak. At 65 percent, Georgia has a low rate of participation in the labor force, while the unemployment rate, at 15 percent, is relatively high. Many of unemployed Georgians are highly educated. Over 50 percent of all unemployed have a secondary school diploma, and as many as 40 percent have a higher education degree. In urban areas, the proportion of unemployed with higher education is still higher, accounting for 46 percent of all unemployed.

A singularly important reason for the severe unemployment in Georgia appears to be that highly educated workers do not have the skills needed in the labor market. There is a large pool of jobless workers with tertiary and secondary education. Ordinarily this would suggest that employers should not have problems finding workers with the skills to perform necessary labor. But this is not the case in Georgia: many Georgian employers complain that hiring workers with the required skills is difficult. In 2008 close to 30 percent of Georgian employers see inadequate workforce skills as a major obstacle to the operation and growth of their firms. Importantly, innovative and growing firms suffer from skill shortages the most[1].

To better understand skill shortages in Georgia, this report looks into the current demand for skills from the labor market, as well as the current avenues for skills formation and utilization in the country,

[1] IBRD-World Bank Business Environment and Enterprise Performance Survey (2008)

using the newly available data from the World Bank's Skills Toward Employment and Productivity (STEP) household and employer surveys undertaken in the country between 2012 and 2013. These extensive surveys sampled Georgia's urban population and firms. Based on these surveys, this report aims to provide key diagnoses of skills demand and supply issues in Georgia. It also highlights a few initial steps that need to be taken to build a highly productive Georgian labor force, one that can contribute to as well as benefit from the accelerated economic growth.

Key findings

Consistent with what has been shown from other data sources, the STEP employer survey has found that Georgia's employers are dissatisfied with the supply of skills they face, and have unmet demand for job-relevant and socio-emotional skills. The study finds that when surveyed, employers report that they find it difficult to hire workers with the required skills. They report that college graduates generally lack the skills they need. According to the hiring information the employers provided, there appears to be more demand for middle-skilled workers than for high-skilled workers in both white- and blue-collar occupations. Beyond educational background, employers report that they are primarily looking for job-related skills, followed by positive personality traits. They generally believe that the educational system is not responding to the labor market needs.

For understanding the skills formation and utilization process in Georgia, the analysis in this report follows the five steps included in the STEP conceptual framework, a life-cycle approach founded on research-based evidence and practical experience from diverse areas. The STEP conceptual framework builds on five steps: (i) getting children off to the right start; (ii) ensuring that all students learn; (iii) building job-relevant skills that employers demand; (iv) encouraging entrepreneurship and innovation; and (v) matching the supply of skills with employer's demands. Following are the broad, key findings from the study. It should also be noted that the findings are representative only of Georgia's urban areas.

Consistent with the international evidence, participation in early childhood education (ECE) is associated with strong cognitive and socio-emotional skills in adulthood in Georgia. Quality early childhood education has been found by numerous studies to help build cognitive, socio-emotional, and behavioral skills that are later valuable to worker productivity and flexibility in the work environment. This study finds that the majority of the adult population in Georgia today did participate in ECE programs in the past, and that their participation in these programs was evenly distributed by

gender. The study finds that participation in ECE is associated with greater use of foundational skills later in life, including reading, numeracy, and writing, as well as reading proficiency. Moreover, adults who participated in ECE have a higher probability of using computer skills at a high-intensity level and a higher probability of having strong socio-emotional skills. This last finding in Georgia is consistent with the international literature, which has found high scores in socio-emotional traits to be associated with the type of character skills that matter for a range of outcomes in life, including employability and other labor market outcomes, health status, academic performance, and job performance.

The strong association between family socioeconomic background and both educational achievement and the acquisition and use of skills raises important equity concerns. The building of strong educational systems with clear learning standards, effective teachers, adequate resources, and an appropriate regulatory environment is key to better workforce development. The role of education in Georgia's workforce development is important, because it is associated with the retention of foundational skills, the later development of job-relevant skills, and the development of socio-emotional skills that are essential to employability. This study finds that in Georgia, an individual's past socioeconomic status—the relative wealth or poverty of the home he or she was raised in—is clearly associated with both educational attainment and skills acquisitions. This is a clear indication that inequalities in the early years of one's life often leave a lasting footprint throughout the lifecycle. Past socioeconomic status is also an important determinant of the use of these skills at the workplace. Given Georgia's trend of persistent poverty and unemployment and the close association between the two, these findings are of particular relevance for policy considerations.

Evidence suggests that the level of skills is positively associated with labor force participation, employment, and hourly earnings. This association is found to be just as strong as the positive associations with educational attainment. Moreover, the study finds strong evidence that skill sets, not educational background alone, matter for labor market outcomes. Stronger skills are clearly associated with improved employment opportunities and higher labor earnings. This leads us to highlight emphasis on the quality of skills that the current and future workers need to acquire from Georgia's education and training system. Finally, there is evidence that participation in a variety of training programs is associated with better skill profiles. Low rates of participation in on-the-job training and other forms of formal accreditation may be hampering skill acquisition and skill updating.

Entrepreneurship in Georgia is low, it normally engages individuals with low education and skills, and consequently it brings little value-added to the economy. Nevertheless, entrepreneurial activity is a valuable option in markets with low demand for workers and high unemployment. In addition, entrepreneurship can help bring new products to the market and foster innovation. The definition of entrepreneurs used in this paper includes self-employed individuals and all those who own a business. In Georgia today, when measured as a percentage of total employment, entrepreneurship is low. Overall, the country's entrepreneurs have different characteristics and skills when compared with wage workers, being more likely to be male, to have less education, and to be from less wealthy households. Today's entrepreneurs also exhibit lower use of job-relevant and cognitive skills than wage earners, and they are more likely to work in agriculture and trade. There does not appear to be an income premium in Georgia for being an entrepreneur. It is likely that this happens because entrepreneurs have lower education and skills and, therefore, engage in low value-added activities.

Georgia enjoys a moderately fast school-to-work transition for individuals between ages 25 and 40. At the same time, transition times differ markedly depending on educational attainment. Rapid transitions are associated with better labor market outcomes. Individuals who found employment within six months of completing schooling are substantially more likely to be employed. Fast-transition into employment is strongly associated with the stock of job-relevant skills. A majority of first out-of-school jobs in Georgia are in skilled occupations. Those that fill these job positions are likely to be tertiary education graduates and to possess and utilize cognitive and job-relevant skills more intensely.

A severe gender disparity characterizes the country's inactive population. Among all 25-to-40-year-old non-working individuals who are neither studying nor actively looking for employment, almost 9 out of 10 are women. These individuals also differ from employed individuals in their skill profiles. For example, they are not as proficient in reading and tend to use computer skills less often. These differences are likely to further limit their prospects of finding quality jobs.

Future policy and research agenda

Policy options can also be explored following the STEP framework. For early childhood education and development, the immediate challenge is to expand the service provision to meet the increased demand while in the meantime maintaining service quality standards and fiscal sustainability. In view of these challenges and constraints, consideration can be given to: (i) varied service models with differentiated cost-sharing arrangements, with a priority in service access given to the

socioeconomically disadvantaged households to whom the system is currently out of reach; (ii) clear definitions of central and local government roles and responsibilities in service standard-setting, financing, and provision and in the monitoring and evaluation of performance; and (iii) tapping into private sector's potential to expand service provision.

Moving forward, to improve its education and training system, Georgia will need to prioritize the following:

(i) *Improving learning outcomes and skills formation in its education system*. Worldwide experience shows that this is not an easy task, and results may take years to show. Lessons from other countries also show that having a high-quality and effective teaching force is the foremost necessary condition for high quality education. Having a strong quality-assurance and accountability system for learning results is another important prerequisite.

(ii) *Strengthening tertiary education*. This will be necessary because over half of Georgia's labor force comes from tertiary graduates. The systemic as well as institutional reforms should emphasize building a close link with the labor market need for a skilled and innovative labor force—not only as employees, but also as entrepreneurs.

(iii) *Narrowing the socioeconomic gaps in learning outcomes and skills acquisition.* Measures need to be put in place targeting those who lag behind in the school system. An effective school system should serve as an important channel for narrowing the gaps associated with the different family backgrounds from which the students come.

On top of the foundational skills, technical and job-specific skills need to be strengthened, and this will require rethinking the two important stages of the formation of these skills. (i) The vocational education and training system needs to be assessed and strengthened. The Government of Georgia has a comprehensive plan to revitalize this system. However, implementing this plan will face a key challenge in improving the effectiveness of the current vocational schools so that they provide the skills needed in the labor market. In the longer term, as the demand for high-level skills rises, an option that can be evaluated and considered is whether to delay tracking into technical and vocational education after completing foundational learning up to senior secondary education. (ii) Various forms of on-the-job training remain the most effective way to acquire job-specific skills. To increase opportunities for on-the-job training, incentives can be designed to encourage firms to provide their

employees with more on-the job training and apprenticeship opportunities in collaboration with schools and training institutions.

To encourage productive entrepreneurship and innovation, future policy assessment and consideration can aim at: (i) creating an enabling business environment and improving business-supporting services and risk management policies and instrument to encourage entrepreneurship targeting innovative sectors; and (ii) aligning some of the education and training courses, particularly at the tertiary level, with the objective of fostering entrepreneurship by equipping trainees with the essential knowledge, skills, and attitudes.

To fully understand labor market mobility and job match, two important questions need to be addressed by future research: (i) What are the job turnovers in Georgia, in the present and expected in the future, and how should the system of adult learning and skills re-training or updating respond to the need? (2) What public employment services exist, what is their performance record, and how could they function more effectively to foster labor market mobility, that is, how could they provide real-time labor market information and bridge employers and job-seekers?

1. About the Report

Skills are at the core of improving individuals' employment outcomes and increasing countries' productivity and growth. A labor force with adequate skills is quintessential for enhancing labor and total factor productivity (TFP), as it enables firms and workers to adapt to rapid technological change and innovation. This is particularly relevant as today's developing and emerging countries seek higher sustained growth rates. In recent decades, scientific development has sped up and new technologies have become increasingly available and accessible worldwide. In the meantime, the markets for goods, services, capital, and labor have become increasingly global, creating opportunities as well as challenges for countries and individuals.

These global trends have given rise to structural changes in the labor market. The demand for and returns to high-level worker skills have been rising. Cross-country data show a strong positive correlation between the level of economic development and the intensity of cognitive skills in the economy (Aedo et al., 2012). In the meantime, there are increasing gaps between the skills of the labor force and the skills needed by firms. Surveys of businesses often indicate that the skill set of workers is one of the main bottlenecks. More and more employers demand a sophisticated set of skills, including behavioral and higher-order cognitive skills, but education and training systems have yet to be adapted in order to impart these skills.

Earlier boom years in the Europe and Central Asia (ECA) region already exposed significant bottlenecks to growth with respect to the skills of the labor force. A shortage of worker skills has emerged as one of the most important constraints to firm expansion. As shown in Mitra, Selowsky, and Zalduendo (2010), over the latter half of the first decade in the 2000s there was a substantial increase in the share of firms reporting that finding workers with adequate skills was a major or very severe constraint to business growth, and this increase occurred in virtually all ECA countries.

Because the countries of the ECA region are recovering from the recent recession which was as severe there as in any other developing region, they are facing post-crisis conditions that are also very different from those of preceding years. Financial resources are more limited and more expensive, and export growth is restrained by potentially slower growth in destination countries. Restoring and sustaining growth in this context requires deep reforms that can boost competitiveness and increase labor productivity.

Context and objective

In Georgia, skills development is a priority for a number of reasons: first, for governments and citizens alike, employment has taken center stage as a high priority in the political and economic discourse. Second, there is considerable interest in enhancing skills for enhanced productivity and competitiveness. Not unrelated to this is strong interest in skills to unleash entrepreneurship.

The education systems in Georgia have important advantages, including higher average enrollments than most countries at comparable levels of development, as well as higher attainment levels. The country embarked on ambitious reform programs which have yielded some positive results; however, the educational systems have been slow to adjust to the changing needs of the economy: The earlier vocational education systems, which had been adequate for providing skills that would lead directly to employment opportunities in the centrally planned economy, collapsed at the time of the breakup of the Soviet Union; few vocational programs in Georgia have been able to provide the required skills for the modernizing economies or to ensure the levels of employment needed.

The scenario in Georgia is no exception to what was analyzed in the recent World Bank ECA regional report, *Skills Not Just Diplomas* (Sondergaard and Murthi, 2012). That report uses a range of different data sources to argue that the skills problem in the ECA region is more closely related to the quality and relevance of the education provided in ECA countries than to problems of access. A central argument of the report is that policymakers are constrained in a number of ways from effectively managing their education and training sectors. The lack of systematic data on key skills-related issues is one of the impediments to improving quality and relevance. While there are international assessments that provide information on student competencies up to the age of 15 (usually the end of lower-secondary education), this is not an age when most people in the region are entering the job market. Beyond these early-stage assessments, no comprehensive, fully reliable information exists on individual competencies. What is more, the information on competencies that is available relates only to fundamental cognitive skills, not the behavioral skills—involving such issues as work ethic and teamwork—that are emphasized by employers. For policymakers to better understand the causes of the emerging skills bottleneck and how best to address it, this informational gap needs to be closed.

In another ECA regional report, *Back to Work: Growing with Jobs in Europe and Central Asia* (Arias and Sanchez-Paramo, 2014), the authors use the job lens to examine the extent to which workers in the region are prepared to take on new job opportunities; they look into the skills gaps that constrain

employment in ECA. They argue that skills gaps hinder the labor performance of both youth and older workers, to varying degrees across countries. As in more modern economies, jobs in the ECA region are becoming increasingly intensive in higher-order (new economy) skills—especially in countries more integrated into external markets and with a more skilled workforce—and economic developments post-transition may have rendered obsolete the skills of many older workers.

The response from education and training systems has been uneven in the region. Tertiary schooling has expanded fast among youth—delivering diplomas, though with varying quality and relevance. Meanwhile, the legacy of early tracking into technical and vocational education and training (TVET) and labor training with loose market links limits the needed skills upgrading among adults and older workers. As a result, youth and older workers are affected by skills gaps in distinctive ways. Youth do better in acquiring skills, but many often acquire the wrong set (both generic and technical). Many older workers educated for centrally planned economies are at risk of skills obsolescence, which hinders their capacity to tap into new employment opportunities. And in some fast-aging countries, the emigration of better educated youth compounds skills constraints. In a nutshell, throughout the ECA region reforms and policies aiming at strengthening the system of building skills for the workplace should prioritize the development of a strong foundation of generic skills, ensure quality and relevance in expanding tertiary education systems, and make the training system market responsive and age sensitive to enable lifelong skills acquisition.

This new report on skills development in Georgia builds on these two recent World Bank regional reports, adding country-specific analysis enriched by the latest employer and household surveys. The objective of this report is to build a country-specific knowledge base and provide a solid platform for Georgia to explore policy reforms in skills development.

With a focus on skills formation, the new information from the survey data sets enables this report to answer some important questions on how to build relevant skills in today's Georgia. The report presents findings on the overall trends on educational attainment, skills use, and labor market outcomes. While labor force surveys monitor standard indicators of educational attainment, employment and unemployment, occupation and industry, earnings, and hours worked to track short- and long-term labor market conditions, the new survey data sets underlining this report fill some important information gaps. These include: what types of skills are actually required by current or future jobs; why a particular level of education might be needed for certain kinds of jobs; how education and skills are relate to the technological content of certain jobs; and even what level of

education and skills are needed for these jobs. The new survey data also measure mismatches between skill stocks and job skill requirements or the degree to which the skills of workers and jobs are meeting national goals.

In addition, the information collected covers both cognitive and socio-emotional skills and personal characteristics. With a growing body of research that has been documenting the importance of these skills in determining labor market performance (Cawley, Heckman and Vytlacil, 2001; Jacob, 2002; Behrman *et al*., 2006; Heckman, Stixrud, and Urzua, 2006; Borghans, Meijers, and Ter Weel, 2008; Hanushek and Woessmann, 2008), introducing the multi-dimensional measurement of skills has become critical to understanding the complexity of skills formation and utilization.

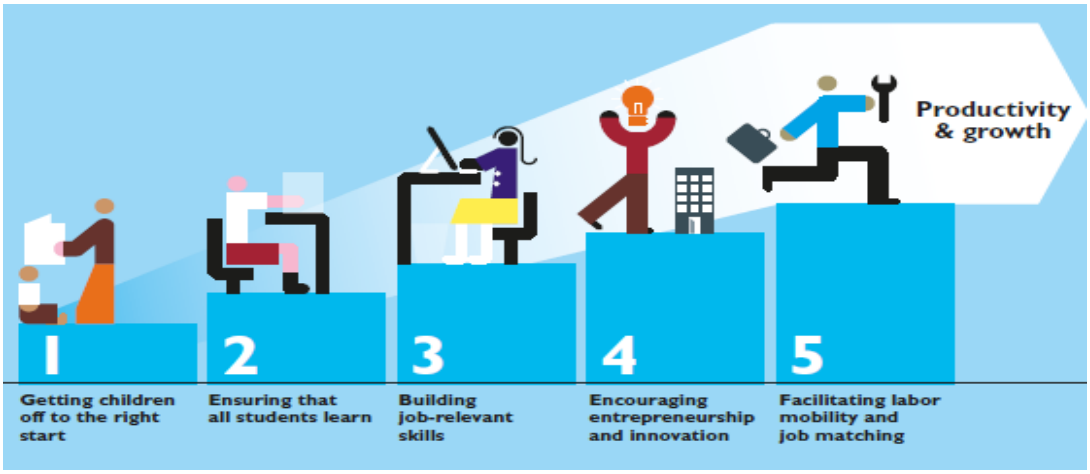
The information presented in this report is not meant to be exhaustive or definitive. Most of the findings reflect suggestive correlations, but not causalities. Nonetheless, these exploratory findings identify areas of high policy relevance and pave the ground for further policy research on skills, employment, productivity, and earnings.

Conceptual framework and research questions

Skill formation can be considered as a continuum over the life cycle of an individual, with key stages for the development of both cognitive and socio-emotional skills. Cunha *et al.,* (2006) find evidence that there are sensitive and critical periods for inputs in the acquisition of cognitive skills and non-cognitive skills. For example, their findings suggest that parental inputs are particularly critical for cognitive skill formation during a child's early years (preschool and early primary grades).[2] Non-cognitive skills appear to be more malleable throughout the life cycle; however, early interventions appear to have large positive effects. For example the Perry Preschool program in the United States, which focused on early childhood development, was found to have large positive effects on non-cognitive skills (Heckman *et al.*, 2010). These findings have important implications for the design of effective policies and the delivery of time-sensitive programs.

[2] The evidence from several studies surveyed in Cunha *et al.,* (2006) shows that IQ is relatively stable after age eight, which implies that early childhood is the key period for the development of cognitive skills.

Figure 1.1: Skills toward Employment and Productivity (STEP) Framework



Source: World Bank, Stepping up Skills for More Jobs and Higher Productivity (Washington, DC: 2010).

This report follows the five steps included in the STEP conceptual framework (World Bank, 2010), which follows a life cycle approach. The STEP framework brings together research-based evidence and practical experience from diverse areas—from research on the determinants of early childhood development and learning outcomes to policy experience in the reforming of vocational and technical education systems and labor markets. It also provides a set of powerful messages for policymakers, researchers, and practitioners.

The five steps from the framework may be summarized as follows (

Figure 1.1).

Step 1. Getting children off to the right start—by developing the technical, cognitive, and behavioral skills conducive to high productivity and flexibility in the work environment through early childhood education (ECE), with an emphasis on nutrition, stimulation, and basic cognitive skills. Research shows that handicaps developed early in life are difficult if not impossible to remedy later and that effective ECE programs can have a very high payoff. The key questions to consider in this step include these:

- What is the status of ECE in terms of access and quality?
- Are the current ECE programs effective in early skills development?
- Are there life-long benefits of ECE?
- What can be done to further improve ECE for effective and equitable skills development?

Step 2. Ensuring that all students learn—by building stronger education systems with clear learning standards, good teachers, adequate resources, and a proper regulatory environment. Lessons from research and on-the-ground experience indicate that the key decisions about education systems are how much autonomy to allow and to whom, how much accountability to expect from whom and for what, and how to assess performance and results. The key questions to consider in this step include these:

- Is the current education system delivering high-quality and job-relevant skills?
- How do family socioeconomic factors affect the educational attainment and skills development of school-age children?
- How can the current education system be strengthened to deliver better and more equitable learning outcomes?

Step 3. Building job-relevant skills that employers demand—by developing the right incentive framework for both pre-employment and on-the-job training programs and institutions (including higher education). A growing body of experience is showing how public and private efforts can be combined to achieve more relevant and responsive training systems. The key questions to consider in this step include these:

- To what extent do skills shortages or mismatches explain unemployment?
- Is the current pre-employment TVET system effective?

- How can pre-employment TVET and on-the-job training be more effective in delivering job-relevant skills?

Step 4. Encouraging entrepreneurship and innovation—by creating an environment that encourages investment in knowledge and creativity. Emerging evidence shows that this requires innovation-specific skills (which can be developed starting early in life) and investments to connect people with ideas (such as through collaborations between universities and private companies) as well as risk-management tools that facilitate innovation. The key questions to consider in this step include these:

- What are the skill sets possessed by the current entrepreneurs?
- How do skill sets differ between entrepreneurs and wage earners?
- What are the skills gaps for innovation and knowledge powered growth?

Step 5. Matching the supply of skills with employers' demands—by moving toward more flexible, efficient, and secure labor markets. Avoiding rigid job protection regulations while strengthening income protection systems, supplemented by efforts to provide information and intermediation services to workers and firms, make up the final complementary step that enables skills to be transformed into actual employment and productivity. The key questions to consider in this step include these:

- Are there clear market signals of demand for skills?
- What are the symptoms of supply-demand mismatch?
- What are the key regulatory barriers for job market entry and mobility?
- How can labor market information and intermediation services function better?

Data, type and definition of skills measured, and methodology

Data

The report draws its evidence mainly from the STEP surveys, which include both a household-based survey and an employer survey. The household survey has three unique modules that cover the skills mentioned above: (i) a direct assessment of reading proficiency and related competencies scored on the same scale as the OECD's PIAAC (Programme for International Assessment of Adult Competencies) assessment; (ii) a battery of self-reported information on personality, behavior, and preferences (e.g., Big Five, GRIT, decision-making, and hostility bias); and (iii) a series of questions on the task-specific skills that the respondent possesses or uses in his or her job. The employer survey

gathers information on job skill requirements using questions parallel to those in the household survey, a feature that facilitates analysis of skill gaps and mismatches. The employer survey also has information on practices relating to (i) hiring and compensation, (ii) training, and (iii) enterprise productivity.

Additionally, the following sources of information were included to situate and contextualize findings: (i) the World Bank's System Assessment Better Educational Reform (SABER) country reports on Workforce Development (WfD) and Early Childhood Development (ECD) systems in Georgia (Pierre et al., 2014); (ii) Georgia's Integrated Living Conditions surveys; (iii) UNESCO's World Data on Education; (iv) OECD's Programme for International Assessment of Adult Competencies (PIAAC); and (v) the Trends in International Mathematics and Science Study (TIMSS).

Type and definition of skills measured

The STEP survey measures three broad categories of skills: cognitive skills, socio-emotional skills, and job-relevant skills (Pierre *et al*., 2014). Within each of these categories are more specific skills that can each be measured, either by direct measurement or by self-reporting. All the skills are listed in Table 1.1 below.

Cognitive skills are defined as the "ability to understand complex ideas, to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, to overcome obstacles by taking thought."(Neisser et al. 2006). Literacy, numeracy, and the ability to solve abstract problems are all cognitive skills. The STEP survey provides a direct measurement of reading proficiency and an indirect measurement of reading, writing, and mathematics skills.

The direct measurement of cognitive skills entails the assessment of reading proficiency through the reading literacy assessment designed by the Educational Testing Services (ETS). Cognitive reading assessment results are scored on the same scale as the test in the OECD's PIAAC.

The reading literacy assessment has three parts. The first part (Section A) evaluates foundational reading skills, including word meaning, sentence processing and passage comprehension. The second part (Section B) consists of a core literacy assessment that is intended as a filter to sort the least literate adults from those with higher reading skill levels. The core has a total of eight items.

Respondents with three or more correct responses are regarded as having met a minimum reading literacy threshold. The third part (Exercise booklets) is only administered to respondents having passed the core assessment. The booklets use a variety of materials, focusing on non-school-based items that are encountered in daily life and involve different types of tasks, including tasks that require respondents to access and identify information (in both text-based and non-prose materials such as tables, graphs and forms), to integrate and interpret information, and to evaluate information by assessing the relevance, credibility, or appropriateness of the material for a particular task. Items present varying levels of difficulty, with tasks ranging from locating a single piece of information in a very short advertisement to summarizing reasons for using generic drugs as presented in a newspaper article. Overall reading proficiency scores are reported on a scale ranging from 0 to 500, which is divided into 5 levels, with Level 1 characterized by the least demanding tasks and Level 5 by the most demanding. For each respondent, 10 plausible values were generated.

Table 1.1. Skills measured

Cognitive skills	Direct measurement of reading literacy based on the Survey of Adult Skills instruments	▪ Reading proficiency
	Indirect assessment (self-reported) on individuals' use of foundational skills--at work or in daily life	▪ Reading ▪ Writing ▪ Numeracy
Socio-emotional skills	Personality traits	▪ Openness ▪ Conscientiousness ▪ Extraversion ▪ Agreeableness ▪ Neuroticism ▪ Grit
	Behavior	▪ Hostile attribution bias ▪ Decision making
	Risk and time preference	
Job-relevant skills	Qualifications required for the job and job learning times	
	Indirect assessment of skills used at work	▪ Computer use ▪ Contact with clients ▪ Solving and learning ▪ Autonomy and repetitiveness ▪ Physical tasks

The indirect measures of cognitive skills include self-reported information on respondents' use of

cognitive skills in daily life and at work, namely if they read, write, or use mathematics, as well as the intensity of use, which in most instances is a proxy for complexity. For each of these cognitive skills, a score ranging from 0 to 3 is computed. When a respondent reports not using a given skill, the score is set at 0. For respondents who do use a given skill, intensity or complexity of use is defined (1 for low, 2 for medium, and 3 for high).

Socio-emotional skills, sometimes referred to in the literature as non-cognitive skills or behavior skills, relate to traits covering multiple domains (such as social, emotional, personality, behavioral, and attitudinal). The survey builds on the "Big Five" personality traits: *openness, conscientiousness, extraversion, agreeableness,* and *neuroticism* (or its opposite, emotional stability). Measures of grit, which has been shown to have an impact on life outcomes, and hostile attribution bias are also included, as well as questions pertaining to how individuals make important decisions. Response categories range from 1 ("almost never") to 4 ("almost always").

Job-relevant skills are task-related and build on a combination of cognitive and socio-emotional skills. The STEP survey asks respondents about their use of such skills on the job, including, among others, computer use, repair and maintenance of electronic equipment, operation of heavy machinery, client contact, solving and learning, and supervision. For each skill, a score ranging from 0 to 3 is computed. When a respondent reports not using a given skill, the score is set at 0. For respondents who do use a given skill, intensity or complexity of use is defined (1 for low, 2 for medium, and 3 for high). The survey also includes self-reported information about the educational attainment required to do one's job and the time required to learn how to do one's job; these responses contribute to our understanding of what the education system is currently producing, what the current positions seem to demand, and how well they match.

This report uses several other concepts which it is important to clarify here. First, it uses the term ECE to refer to participation in any form of pre-school education; participation does not necessarily mean actual enrollment rates, nor is anything implied about the quality of such education. Second, the *socioeconomic status at age 15* is a self-reported variable, for which the survey asks each individual to rank his or her household's economic well-being when he or she was age 15, using a score from 1 to 10. Third, the *current wealth index* is estimated using factor analysis on several non-income related assets and dwelling characteristics. Fourth, *entrepreneurs* are defined as all those who reported being self-employed, with or without employees; hence the report uses the terms entrepreneur and self-employed interchangeably. Lastly, in categorizing commercial sectors this report includes medium-

high-tech manufacturing and knowledge-intensive services under *high innovation* sectors and medium-low-tech manufacturing and less knowledge-intensive services under *low innovation* sectors. The agricultural and construction sectors are classified as low innovation sectors.

Methodology and limitations

This report relies on a combination of three type of analysis: descriptive analyses, simple probability models, and earnings regressions. All of these are used throughout the report with different levels of intensity, and all the estimates reported are statistically significant unless noted to the contrary. The estimation is carried out with sample weighting, and the results are representative for the urban population in Georgia.

The *descriptive analyses* present variable distributions and a range of cross-tabulations. For example, they include distributions of use and intensity of skills, and the scores of reading proficiency, which are further cross-tabulated by gender, age cohort, and socioeconomic status. This type of analysis also includes illustrations of an individual's skill profiles by: (i) socioeconomic status at age 15 and current household wealth index, and (ii) current education and education required for the job.

The *probability models* are used to estimate the effects of participation in education and socioeconomic status on the acquisition of education and skills, and to model the effects of skills and education on employment participation. They control for different characteristics such as age, gender, mother's and father's education, own education, socioeconomic status at age 15, number of household shocks experienced by age 12, and in some cases for cognitive, socio-emotional and job relevant skills.

The earnings regressions follow Bowles, Gintis and Osborne (2001) and Weinberger (2013) in order to estimate the returns to earnings and analyze how different skill sets contribute in conjunction with education. The objective of following these authors is to shed light on skills that are rewarded in the labor market but are not captured by the usual measures of educational attainment and to motivate the discussion of complementarity between cognitive and social skills. We acknowledge the limitations that this estimation procedure may have in terms of multi-collinearities, biases, and/or weak instruments. However, this is a first step towards exploring these issues in greater depth.

2. Labor Market and Demand for Skills

Unemployment and skills-mismatch

Although Georgia's economic growth has started to improve since the 2008 financial crisis, key labor market indicators still need to catch up. At 65 percent, Georgia has a labor force participation rate comparable to those of neighboring countries. However, Georgia's unemployment rate has been persistently high, at around 15 percent. The situation might be even worse than what the unemployment rate indicates, considering the proportion of people who ceased looking for jobs once their efforts proved futile, that is, "discouraged workers," who have thereby dropped out from the labor force. Roughly one in five Georgians who could work does not do so currently. This translates into a substantial output loss.

High unemployment persists in Georgia despite periods of strong economic growth. Even during the period of economic upturn preceding the 2008 crisis, the unemployment rate hovered around 13 percent. This means that employment in Georgia is relatively unresponsive to economic growth. During the period 2005-10, GDP grew at an average annual rate of 5.1 percent, but employment declined slightly--at an annual rate of negative 1.4 percent. Output growth is achieved primarily through growth in capital investment, and the labor content of economic growth is low.

Table 2.1. Labor force participation rates, Georgia, Armenia, and Azerbaijan, 2005–12 (percent)

	2005	2006	2007	2008	2009	2010	2011	2012
Georgia	64	64	63	64	64	64	64	65
Armenia	60	60	59	59	59	62	62	63
Azerbaijan	64	64	64	64	65	65	65	66

Source: World Bank. 2014a. World Bank Development Indicators.

Table 2.2. Unemployment rates, Georgia, Armenia, and Azerbaijan, 2005–12 (percent)

	2005	2006	2007	2008	2009	2010	2011	2012
Georgia	14	14	13	17	17	16	15	15
Armenia	28	25	28	29	19	19	18	19
Azerbaijan	6	7	7	6	6	6	5	5

Source: World Bank. 2014. World Bank Development Indicators.

Many of the unemployed Georgians are highly educated. Over 50 percent of all unemployed have a secondary school diploma, and as many as 40 percent have a higher education degree. In urban areas, the proportion of unemployed with higher education is even higher, accounting for 46 percent of all

unemployed. In contrast to most EU countries, where unemployment is heavily concentrated among less educated workers, in Georgia those with less than secondary education represent a minority among the unemployed. The high unemployment among highly educated workers carries considerable individual and social costs, implying a loss of human capital investment. The skills of these workers are not utilized and they tend to erode during periods of unemployment.

The high rate of unemployment among workers with tertiary education stems from at least two contributing causes. First, it reflects the relative scarcity of jobs requiring tertiary education in Georgia. In agriculture and trade—the two largest sectors in Georgia—the demand for higher education graduates is limited. A second and perhaps more prominent reason for unemployment appears to be that highly educated workers do not have the skills needed in the labor market. The fact that there is a large pool of jobless workers with tertiary and secondary education would normally suggest that employers should not have problems finding workers with the necessary skills. But this is not the case in Georgia: many Georgian employers complain that hiring workers with the required skills is difficult. The 2008 IBRD-World Bank Business Environment and Enterprise Performance Survey shows that close to 30 percent of Georgian employers regard inadequate workforce skills as a major obstacle to the operation and growth of their firms. Importantly, innovative and growing firms suffer from skill shortages the most.

In summary, despite a large supply of highly educated workers, lack of skills appears to be a major constraint. Highly educated workers are not necessarily highly skilled. This implies that skill shortages, if not addressed, may become an important constraint to the modernization and growth of the Georgian economy.

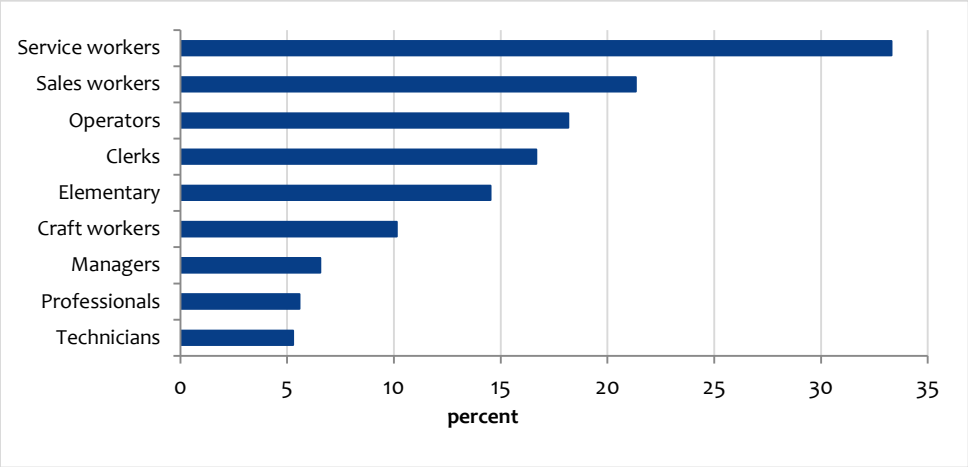
Types of skills in demand

If a shortage of skills—rather than a shortage of degrees or diplomas—is a major concern in Georgia today, then one must ask, What types of skills are needed? The STEP Employer Survey examines three groups of skills and characteristics—cognitive and job-related skills, socio-emotional skills, and personal characteristics (such as gender and age)[3]—and their relevance to the labor market.

[3] Some important clarifications about the STEP Employer Survey should be noted. First, the sample size of the survey is 354 firms, which were stratified by activity and firm size. A majority of the firms (67 percent) are from the construction industry, and many of the firms were large rather than small firms. Second, the survey design was intended to describe two types of workers for each firm: "Type A" workers, encompassing those who are highly skilled and usually labeled as white collar, who have higher or secondary technical education; and "Type B" workers, including those who are middle- and low-

The survey confirms the view that the traditional economic structure in Georgia has led most employers looking for workers to fill low- and middle-skilled jobs rather than highly skilled jobs – a pattern that has also been manifested by the "over-education" of Georgian workers. Approximately 75 percent of new hires have been blue-collar workers (both unskilled and skilled), while only 12 percent have been white-collar workers such as professionals or technicians. Only 25 percent of all jobs require professional or advanced technical skills. Employers also reported that they are planning to increase the employment of middle-skilled white- and blue-collar occupations (Figure 2.1). Employers have a high demand for service and sales workers but a lower demand for technicians and professionals, who are often considered to be highly skilled white-collar workers.

Figure 2.1. Employers' planned employment growth over next 12 months by occupational skill type, Georgia

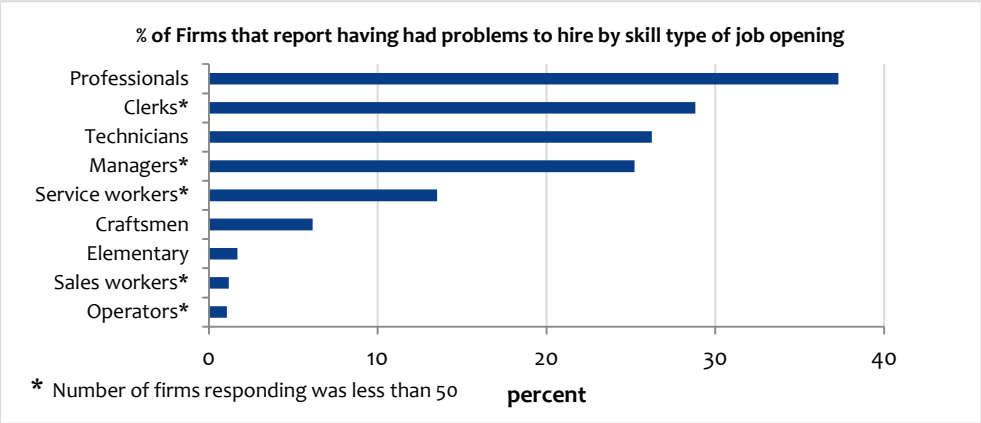


Source: Rutkowski (2013).

Another consistent finding from the survey is that employers have been encountering difficulties filling job vacancies, with employers pointing to a lack of required skills as the predominant reason. One in three firms hiring new workers has had difficulty hiring a professional worker, and many firms find it difficult to hire workers to fill highly skilled white-collar jobs (Figure 2.2). Although a high proportion of work applicants in Georgia are college graduates, employers report that these graduates lack the required skills for their jobs. Approximately one in five firms reports that workforce education is a severe problem, one that poses a bigger challenge to employers than payroll taxes or business licensing.

skilled and are usually referred to as blue collar workers, who have secondary or less education. Limitations in the analysis may be due to the small sample size, so the results should be used simply to promote public debate. Given the above considerations, the results presented need to be interpreted based on and for the firms represented in the sample, since the survey was not an economic census to which all the firms in the country were asked to respond.

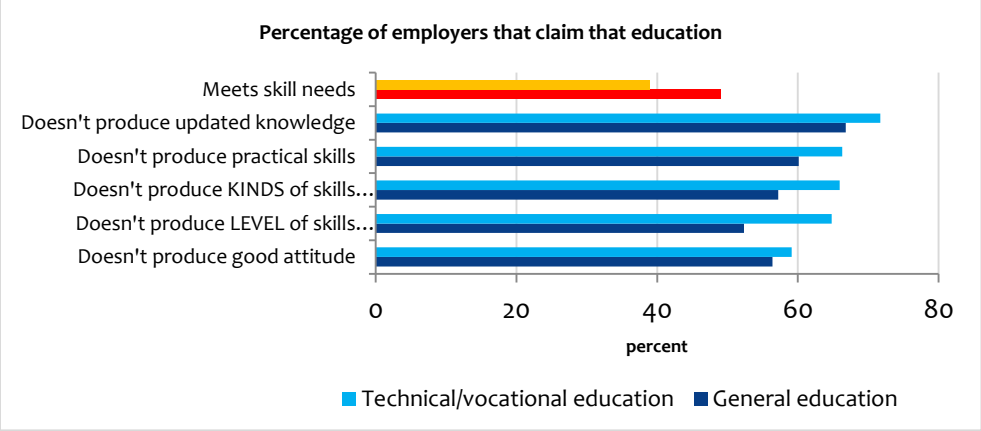
Figure 2.2. Percentage of firms that report having had problems trying to hire, by skill type of job opening, Georgia



Source: Rutkowski (2013).

Not surprisingly, Georgia's employers are critical of the quality of the skills possessed by the current workforce. More than 60 percent of employers are dissatisfied with the quality of technical and vocational education in the country. A majority (70 percent) of employers complain that the education system is not teaching graduates up-to-date knowledge or practical skills (Figure 2.3).

Figure 2.3. Employers' views of the adequacy of technical and general education, Georgia

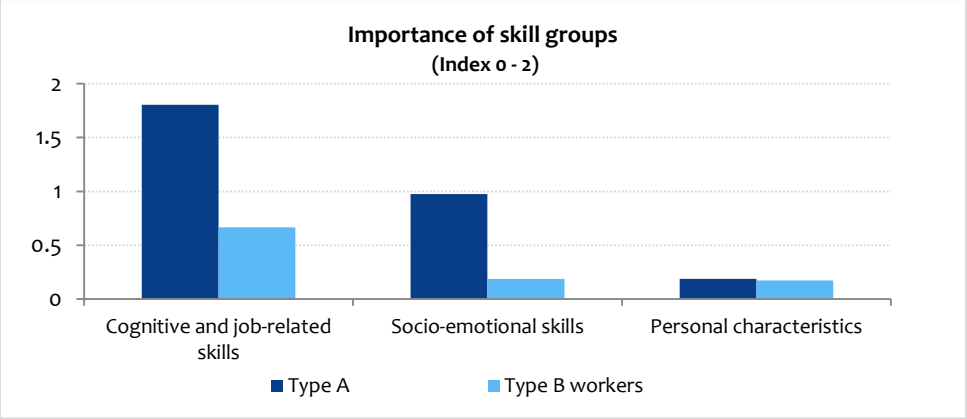


Source: Rutkowski (2013).

Most firms look for cognitive and job-related skills, particularly technical skills, for both white-collar and blue-collar workers. Employers in the survey were asked what types of skills are the most important when deciding to retain an employee. Their responses indicate that the most important skills are cognitive and job-related, followed to a lesser degree by socio-emotional skills. The least important factors for hiring, from the employers' viewpoint, are personal characteristics (Figure 2.4).

This view applies equally among employers regarding both white- and blue-collar workers and for small, medium, and large firms. Job-specific skills are somewhat more important for Type A workers (white-collar workers) to have than Type B workers (blue-collar workers), while socio-emotional skills and personal characteristics are slightly more important for Type B workers than for Type A ones. It appears from this that white-collar workers might be hired specifically for their technical skills, while blue-collar workers are expected to use their socio-emotional skills on the job much more.

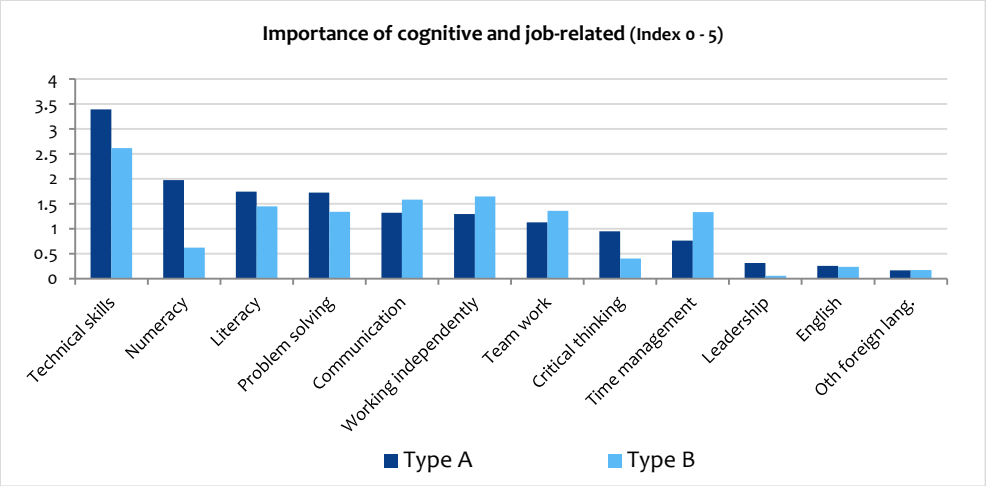
Figure 2.4. Employers' ranking of the importance of skill groups, by type of worker, Georgia



Source: Rutkowski, 2013.
Note: The index = 2 if all employers point to the given skill as the most important one, and the index = 0 if no employer points to the skill as important.

Among cognitive and job-related characteristics, technical skills are the most valued for both white- and blue-collar workers. Employers highly value numeracy, literacy, and problem-solving skills among white-collar workers. Literacy skills are also valued for blue-collar workers, but employers also want these workers to have communications skills, the ability to work independently, and teamwork skills (Figure 2.5).

Figure 2.5. Employers' ranking of cognitive and job-related skills, by type of worker, Georgia



Source: Rutkowski, 2013.
Note: The index = 5 if all employers point to a given skill as the most important one, and the index = 0 if no employer points to the skill as important.

Among socio-emotional skills, conscientiousness is the skill that employers value most for both white- and blue-collar workers. Conscientiousness includes elements of responsibility, self-discipline, carefulness, and motivation. This skill has come up as a desirable skill among many employers in other countries as well, including Macedonia, Poland, Russia, and the United Kingdom (World Bank, 2013a, p. 63). This suggests that workers who are hard-working and do a thorough job are more likely to be hired than workers who do not. For white-collar workers the second most desirable socio-emotional skill is emotional stability, followed by openness; whereas for blue collar workers, the third most desirable after emotional stability is agreeableness.

Overall, the feedback from Georgian employers clear indicates that their demand for middle-skilled workers currently exceeds their demand for high-skilled workers in both white- and blue-collar occupations. However, the graduates today do not seem to be equipped with adequate skills, even for the jobs that require mid-level skills. The most highly desired skills include cognitive and job-related technical skills, followed by socio-emotional or behavioral skills.

Addressing this skills challenge and narrowing the skills gap will require a fundamental understanding of the existing systems of skills formation and utilization, together with some measure of the returns to skills and related market mechanisms and signals for the acquisition of the right type of skills. The next few sections provide insight into these key areas.

3. Step 1 | Getting Children Off to the Right Start

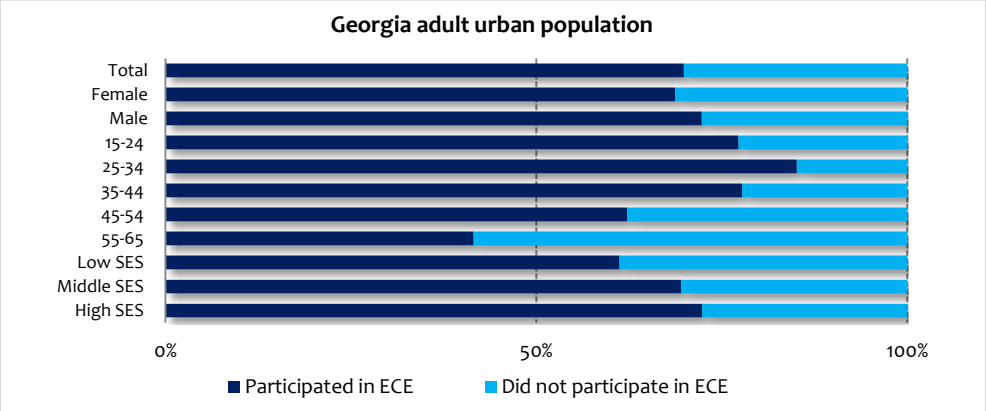
Skills developed in early childhood—from birth to primary school entry—form the basis of future learning and labor market success. This section reviews trends in participation in early childhood education (ECE) programs in Georgia across age cohorts. It then analyzes the relationship between that participation and later use of foundational and job-relevant skills, including computer and solving and learning skills at work.

The section focuses on two questions: (i) Who participates in ECE? and (ii) Do ECE participants have a different skill profile from other workers? To answer these questions, we rely primarily on descriptive analyses and findings from simple probability models, which we use to estimate the effect that participation in ECE has on the use of computer skills and on a given socio-emotional score. The results presented here are statistically significant, after controlling for gender, education attainment, mother's education, father's education, number of household shocks experienced by age 15[4], household socio-economic status (SES) at age 15, and indicator variables for age groups.

Who participates in early childhood education?

Participation in ECE is widespread in Georgia and has increased across age cohorts. Almost 70 percent of adults in Georgia reported having attended some form of organized ECE program (such as kindergarten, crèche, daycare, or nursery school) before starting primary education[5] (Figure 3.1).

Figure 3.1. Participation in ECE by demographic and socio-economic characteristics, Georgia (percent)



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

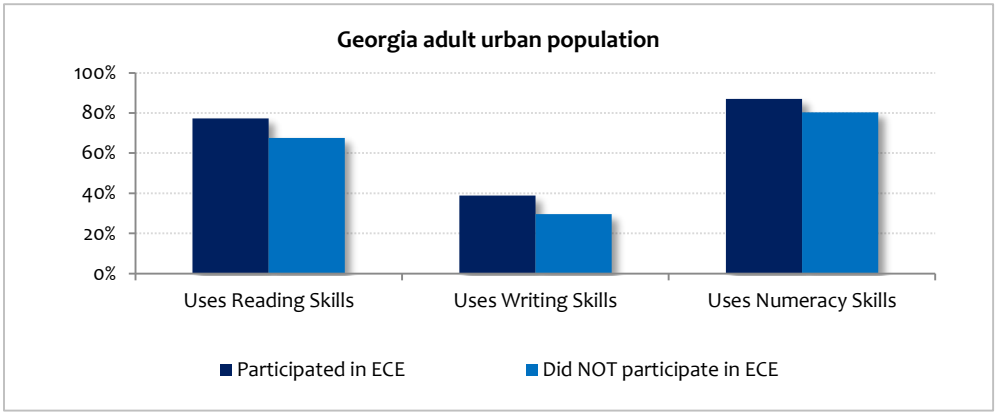
[4] Shocks may include death or illness of a household member, family breakup, addiction, loss of employment, bankruptcy natural disasters, violence, or displacement, among other things.
[5] Participation in ECE is measured broadly; hence it is different from gross or net enrollment in preschool education.

Differences in ECE participation between men and women are negligible. Across age groups, participation had been increasing steadily over time, up until the most recent generation. The younger cohort (adults ages 15 to 24) experienced a drop in participation, falling from the high of 85 percent attained by the preceding cohort (ages 25 to 34) to about 77 percent. This drop may be an issue worth exploring in more depth to determine whether the pattern has continued. Participation in ECE is also correlated with past household socio-economic status. For example, adults who lived in low socio-economic status households at age 15 reported a participation rate of 61 percent, compared to 72 percent for adults living in high-income households at age 15.[6]

Do ECE participants have a different skill profile?

ECE participation is associated with greater use of foundational skills as adults, including reading, numeracy, and writing. In the case of numeracy, the proportion of adults reporting *not* using numeracy skills is 20 percent for those who did not participate in ECE, as compared to 13 percent for those who did participate. In addition, adults who participated in ECE programs report using foundational skills more intensively (Figure 3.2).

Figure 3.2. Percent of adults using foundational skills, by ECE participation, Georgia

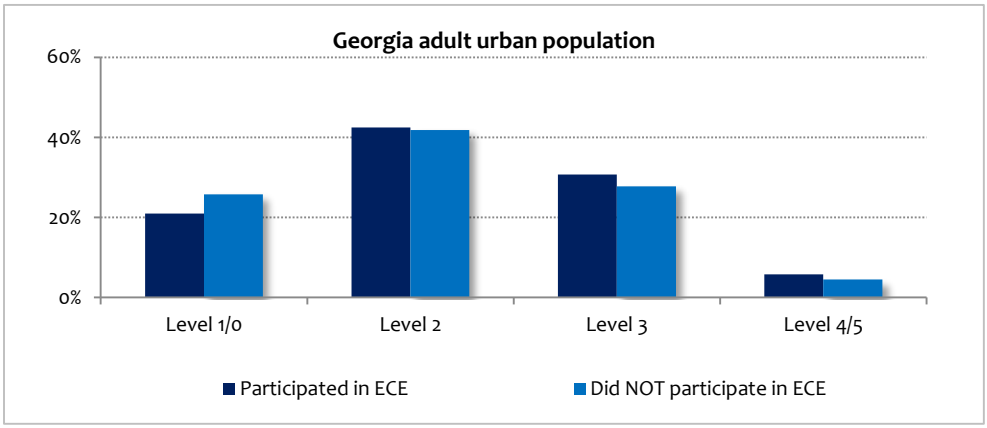


Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

ECE participation is also associated with reading proficiency. The proportion of adults scoring at level 0 or 1 in the reading assessment—levels indicating their ability to read only very basic text and reading materials—is higher for adults who did not participate in ECE compared to those who did (Figure 3.3).

[6] To construct the past SES of the household, the STEP surveys asked individuals to rank their household's SES when they were 15 years old from 1 to 10. Similarly, to construct a wealth index for a household at the time the survey was administered, the survey included information from different types of assets and dwelling characteristics which was compiled into an index using factor analysis methods. Robustness checks rendered the variables reliable.

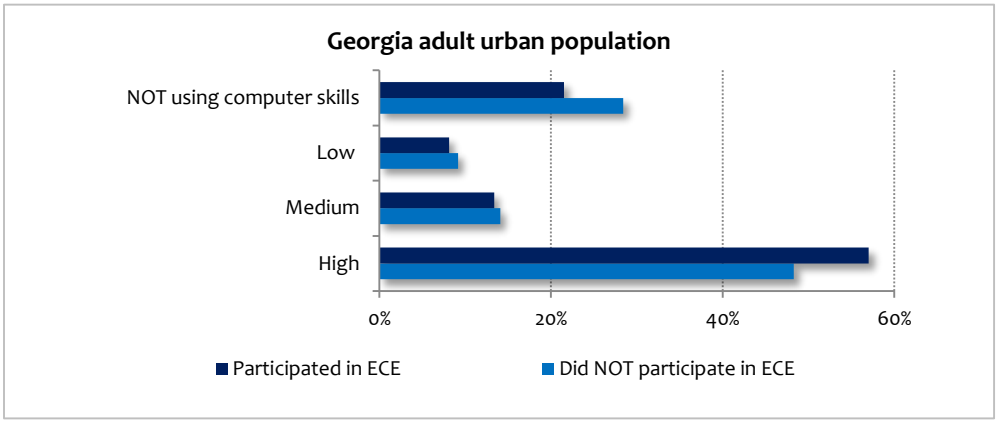
Figure 3.3. Distribution of reading level in adult population, by ECE participation, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

Adults who participated in ECE have a higher probability of using computer skills. Also, participation in ECE appears to reduce the probability of using computer skills at low intensity levels and increases the probability of using these skills at the highest intensity levels (Figure 3.4).

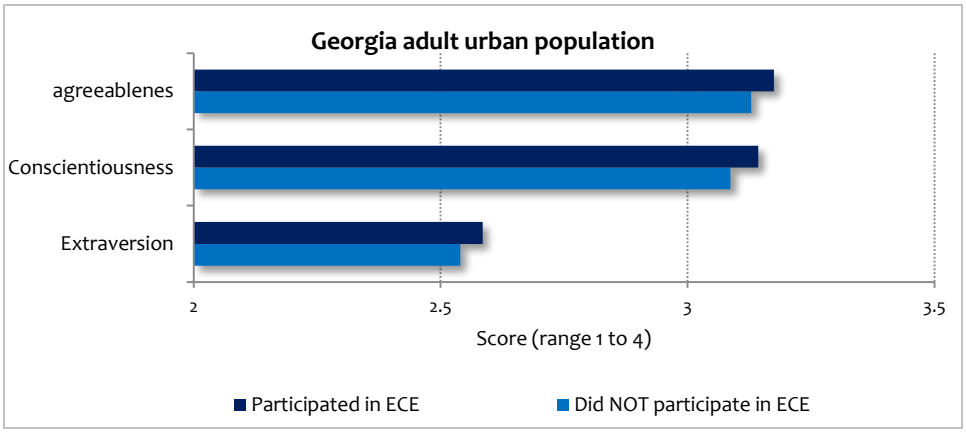
Figure 3.4. Probability of using computer skills and intensity of use, by ECE participation, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

Adults who participated in ECE also have higher scores in several socio-emotional skills. These socio-emotional skills include *extraversion, conscientiousness, and agreeableness*. Although the magnitude of the effect is small, it is significant. Extraversion is often defined as having positive emotions, such as assertiveness, and sociability is associated with the tendency to seek stimulation in the company of others. Conscientiousness is usually defined as a tendency to be organized and dependable, show self-discipline, aim for achievement, and prefer planned rather than spontaneous behavior. Finally, agreeableness is often defined as a tendency to be compassionate and cooperative rather than suspicious and antagonistic toward others; it also measures the degree to which a person is trusting and helpful and whether a person is generally good tempered or not (Figure 3.5).

Figure 3.5: Predicted scores in socio-emotional skills by ECE participation, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

This last finding in Georgia is consistent with the international literature. These socio-emotional traits—in addition to others—are associated with "character skills" that matter for a range of outcomes in life, including employability and labor market outcomes (Heckman and Kautz, 2013), health outcomes (Hampson et al., 2007), academic performance (Komarraju et al., 2011; Klimstra, 2012; Poropat, 2009; ETS, n.d.) and job performance (Barrick and Mount, 1991). This is an important finding and consistent with the accumulated evidence on the role of high-quality early childhood and basic education programs to improve socio-emotional skills (Heckman and Kautz, 2013).

Highlights of findings

- Participation in early childhood education (ECE) in Georgia is widespread. It had been increasing steadily for at least four decades, although this expansion appears to have stopped roughly a decade ago. Participation also has been evenly distributed among boys and girls.
- Examination of ECE participants' later careers as adults shows that their ECE participation is associated with greater use of foundational skills, including reading, numeracy and writing, as well as with reading proficiency.
- Adults who participated in ECE as children also have a higher probability of using computer skills at a high intensity level and a higher probability of having strong socio-emotional skills.
- This last finding in Georgia is consistent with the international literature, which has found that high scores in these socio-emotional traits are associated with the type of "character skills" that matter for a range of outcomes in life, including employability and labor market outcomes, health outcomes, academic performance, and job performance.

4. Step 2 | Ensuring that All Students Learn

Schools are expected to teach basic competencies that enable students to acquire the skills they will need to make informed life choices and that will later be valued by employers and useful for self-employment. These competencies include cognitive skills such as reading, writing, and numeracy; socio-emotional skills, including the "Big Five" socio-emotional skills of openness, emotional stability, conscientiousness, agreeableness and neuroticism, and job-relevant skills such as techniques in information technology, communications, problem-solving, and team work.

This section provides insights on trends in educational attainment, the use of foundational skills (reading, writing and numeracy), and the current level of reading proficiency in the adult population using a reading assessment module developed to capture reading ability. It also explores the roles that past socioeconomic status, current household wealth status, and the role that parental background plays in influencing the use of foundational and job-relevant skills.

The section addresses the following questions: (i) Is educational attainment associated with the use of foundational and job relevant skills? (ii) What is the role of past socioeconomic status on education attainment and skill acquisition? and (iii) Do early skills gaps translate into current skills gaps?

To answer these questions, the section uses descriptive analyses and estimates simple probability models to determine the effect of socio-emotional skills on education attainment, use of job-relevant skills, and gaps in skills acquisition by past socioeconomic status and current household wealth index. The results presented here are statistically significant, after controlling for gender, mother's education, father's education, number of household shocks experienced by age 12, and indicator variables for age groups.

Is educational attainment associated with the *use* of foundational and job-relevant skills?

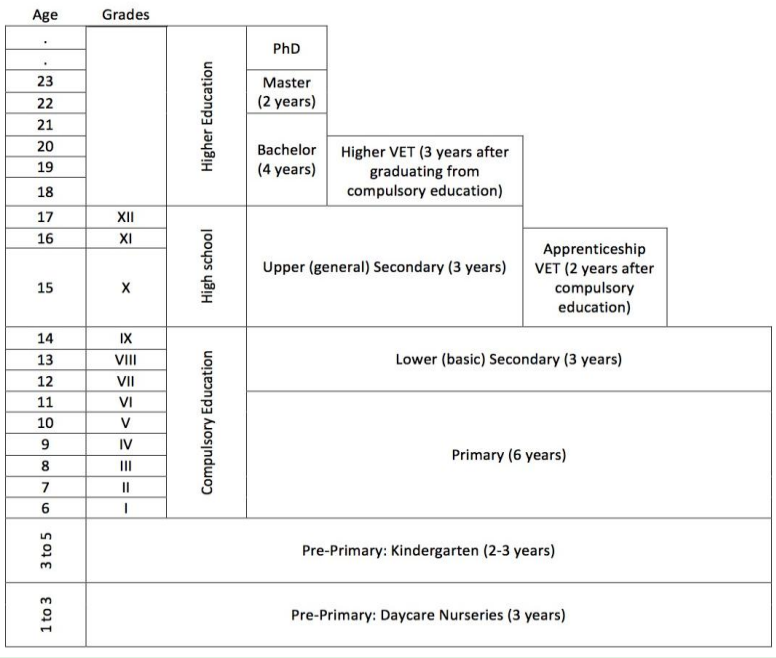
Educational attainment in Georgia is high. Almost 90 percent of adults living in urban areas report having completed upper secondary or tertiary education. Almost half of the surveyed adults report having completed tertiary education, with women reporting higher attainment rates (62 percent) than men (51 percent). Across age cohorts, about 70 percent of adults ages 35 and above report completing tertiary education, compared to 62 percent of adults in the 25 to 34 age cohort (Figure 4.1).

Box 4.1. Georgia's Education System

The formal education system in Georgia follows a 6-6-4 structure, and can take at least 19 years to complete if pre-primary education is included. Basic or general education is compulsory and comprises six years of primary schooling and three years of lower-secondary (basic) education. These two levels are followed by three years of upper secondary (complete) education or two to four years of vocational education. Primary and secondary education is free. A bachelor's degree program is normally four years. The Ministry of Education and Science oversees the public education system and provides funding directly to primary, secondary, vocational, and higher education institutions based on a per capita financing model. Literacy rates in the country have remained high during the 2000s; the literacy rate for both men and women ages 15 and older was 99 percent, both in 2002 and again in 2012 (**World Bank, 2014a**).

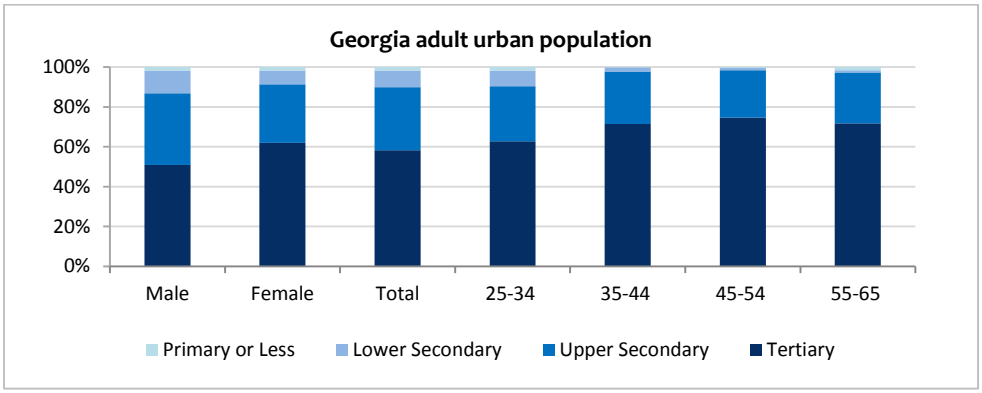
Except for pre-primary and primary education, enrollment rates have been decreasing since 2000. The net pre-primary enrollment rate has increased since 1999, when it was 21 percent, to 43 percent in 2007, and gross pre-primary enrollment was 58 percent in 2008 (World Bank, 2014a). Primary school attendance is near universal, with a net primary enrollment rate of 98 percent in 2012, which is an increase from 90 percent in 2004. The gross tertiary enrollment ratio has steadily decreased since 2005, when it was 47 percent, to only 28 percent in 2012 (World Bank, 2014a). It appears that while students in Georgia are completing compulsory education, a large and growing majority of them are not attaining higher degrees.

Generally, Georgia spends less than comparator OECD and EU countries, since public education expenditure in Georgia ranged between one and three percent of GDP during the 2000s. The OECD recommends that public expenditure on education should be at least 5 percent of GDP. In 2012, public expenditure on education in Georgia was 2 percent of GDP, which was a decrease from the 2009 outlay of 3 percent of GDP (UNESCO Institute for Statistics, 2014). Georgia's public expenditures on education, both in total and on a per-student basis, are also lower than those of countries with similar levels of income-per-capita. They have declined as well as a percentage of total government expenditure, from 15 percent in 2004 to 7 percent in 2012 (World Bank, 2014a).



Source: UNESCO International Bureau of Education. 2010. *World Data on Education: Georgia, VII Ed. 2010/2011*. Retrieved from http://www.ibe.unesco.org/fileadmin/user_upload/Publications/WDE/2010/pdf-versions/Georgia.pdf.

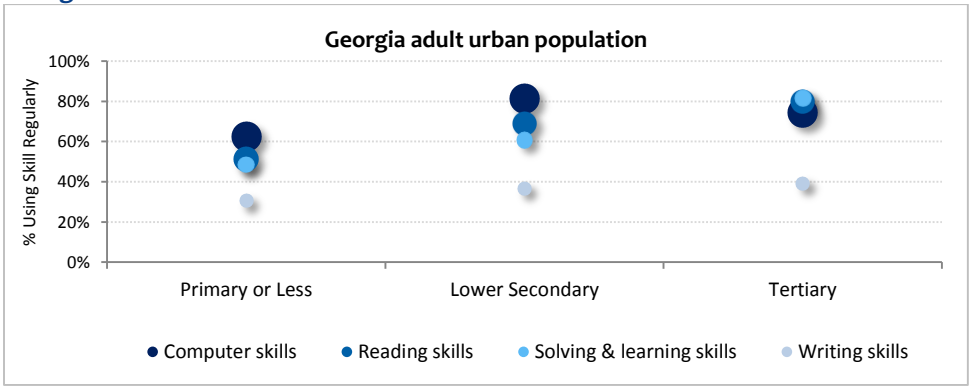
Figure 4.1. Educational attainment by gender and age, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

Higher educational attainment is associated with greater use of foundational and job-relevant skills. Although the use of reading, computer, and solving and learning skills is relatively high among all adults, a slightly higher proportion of adults with tertiary education report using these skills regularly. Writing skills are the least commonly used foundational skill—just 36 percent of all adults use the skill regularly—and numeracy is the most commonly used skill—85 percent of all adults use the skill regularly (numeracy not pictured) (Figure 4.2).

Figure 4.2. Percent of adults regularly using foundational and job-relevant skills by educational attainment, Georgia

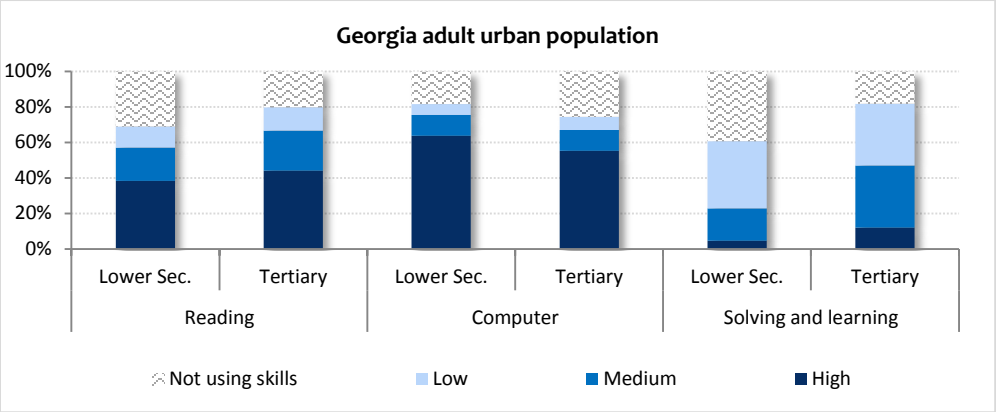


Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

Higher educational attainment is also associated with more intense use of reading skills and solving and learning skills. About 67 percent of adults with tertiary education use reading skills at medium- and high-intensity levels, reflecting greater frequency and complexity of text material, as compared with 57 percent for adults whose highest educational attainment was lower-secondary. Similarly, about 47 percent of adults with tertiary education use problem solving and learning skills at work,

compared with 23 percent of adults with lower-secondary attainment. Interestingly, computer use shows the inverse relationship: adults with less than tertiary education report using computers *more* frequently (Figure 4.3).

Figure 4.3. Percent of adults using reading, computer, and solving and learning skills, by educational attainment and intensity level, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

Are educational achievements translating into better reading outcomes?

Although educational attainment seems to be relatively high, an important question that remains is whether this is translating into better reading outcomes. The STEP household survey administered a reading assessment to evaluate adults' reading proficiency in depth. The assessment instrument used a variety of materials, focusing on non-school-based items encountered in daily life. Reading proficiency is grouped into five levels, from level 0/1 through level 5. This five-level reading competency scale is consistent with international benchmarks of reading proficiency (OECD, 2013b).

An advantage of the five-level scale is that it also provides an assessment of what an individual at each level is capable of in terms of reading proficiency (see Table 4.1 below and the Technical Annex). For example, adults scoring below level 1 perform at a very basic level; they are not expected to understand the structure of sentences or paragraphs or make use of other text features. In contrast, adults scoring at level 5 are able to search and integrate information across multiple dense texts, construct syntheses of similar and contrasting ideas, and evaluate evidence-based arguments.

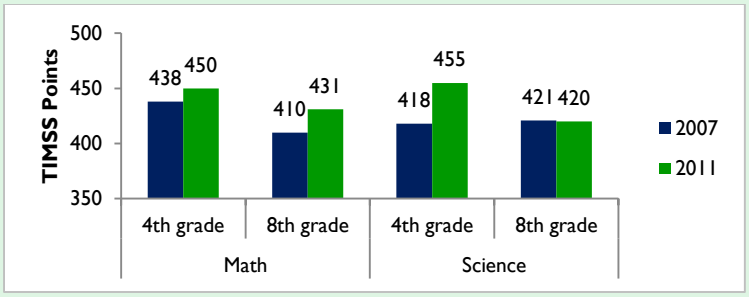
Reading proficiency among adults in Georgia is below the average for OECD nations but above the average for countries in the STEP survey. Adults in Georgia score about 17 points below the average

on the OECD-PIAAC[7] assessment of reading literacy. The widest gap is for tertiary education graduates, who score on average 39 points below the OECD-PIAAC average for tertiary education graduates. This finding is consistent with the results for the PISA 2013, in which 15-year-old students in Georgia scored on average below the OECD average. Taken together, these findings point to a need to improve the quality of education in Georgia, most likely starting at the earliest levels of education, since foundational skills begin to take shape in preschool and early in the primary education cycle.

Box 4.2. Georgia's Math and Science Scores from the 2007 and 2011 TIMSS

Georgia's students performed better on TIMSS 2011 in both math and science exams when compared to TIMSS 2007, although there are areas for improvement. The Trends in International Mathematics and Science Study (TIMSS) is an international exam that assesses, every four years, how well fourth and eighth grade students are performing in math and science. Scores for Georgia's students in both subjects rose between 2007 and 2011; fourth graders' mean math score rose from 418 to 455. On the eighth grade math exam, more students reached the Advanced, High, or Intermediate benchmarks in 2011 than in 2007, although a majority of Georgia's eighth graders still scored below the Intermediate international benchmark score of 475. Despite this, a higher share of Georgia's students are scoring below the "low" proficiency level in math than students in OECD and EU countries on average.

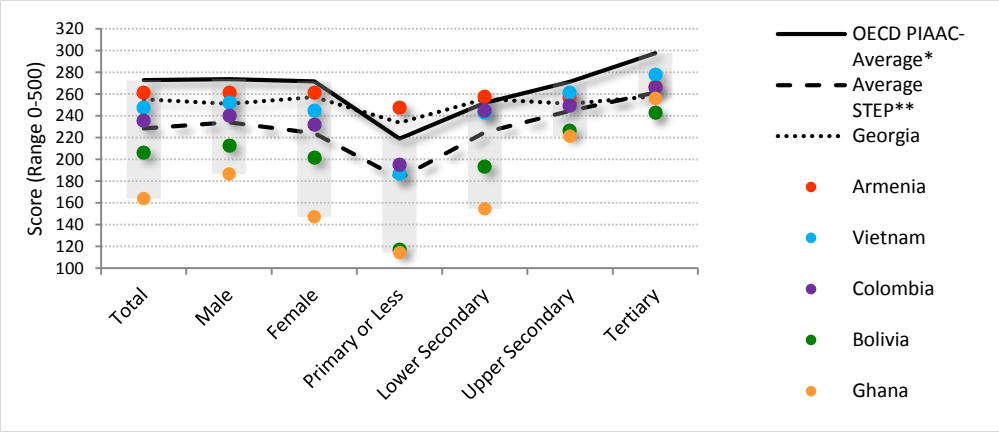
Figure B1. TIMSS Scores in Math and Science, Georgia, 2007 and 2011



Further analysis suggests that socioeconomic inequality may be increasing. Since 2007, students in Georgia from wealthier households have improved their TIMSS math results, but the scores of students from poorer households have remained unchanged. The students living in urban areas have also improved their performance on TIMSS math exams between 2007 and 2011, while those living in rural areas have seen no change in their scores. In 2011, students whose parents had graduated from university (or earned a higher degree) experienced approximately half of a standard deviation improvement in their math scores, while students whose parents had only completed lower secondary school did not not improve their average math score. These trends are worrisome, because the inequality gaps between rich and poor as well as the gaps between urban and rural appear to be widening.

[7] The OECD's Programme for the International Assessment of Adult Competencies (PIAAC) survey of adult skills is representative of a national population of adults ages 15 to 65, whereas the STEP surveys are representative of urban populations of adults ages 15 to 64. Moreover, while the surveys have some commonalities—the reading literacy scale is the same—there are some differences in content and implementation. These differences place some limitations on the inferences that can be made from comparative analyses. The first round of PIAAC was carried out in 2012 and 2013.

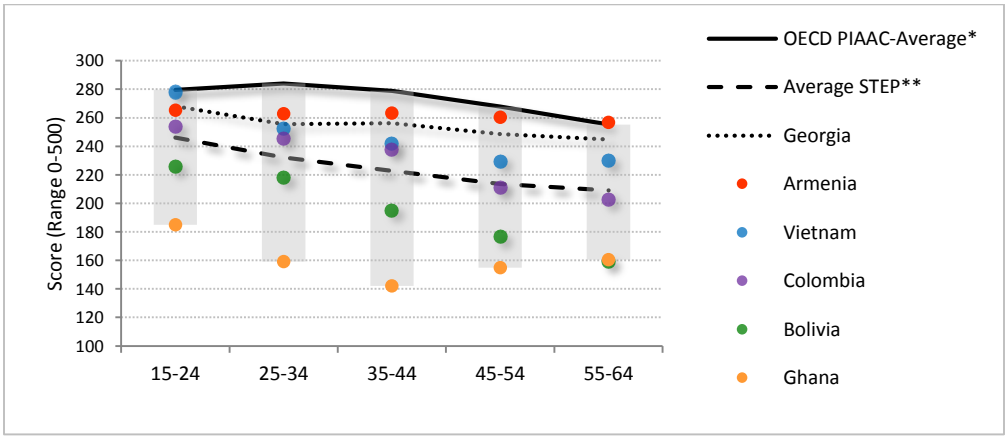
Figure 4.4. Reading scores by gender and educational attainment, STEP countries and OECD average



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.
*OECD-PIAAC survey covers a national population of adults ages 15 to 65
** STEP covers ONLY the urban population of adults ages 15 to 64

Within Georgia, younger cohorts score higher in reading proficiency; there is a 10-point difference between adults ages 15 to 24 and those ages 55 to 64. This trend is similar across the countries that have participated in the STEP Skills Measurement program, showing possibly a deterioration of skills over time. Adults in Georgia score higher than adults in most STEP countries, but their scores fall below those for all age groups in the OECD-PIAAC average (Figure 4.5).

Figure 4.5. Reading scores by age group, STEP countries and OECD average



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.
*The OECD-PIAAC survey covers a national population of adults ages 15 to 65.
**The STEP survey covers only the urban population of adults ages 15 to 64.

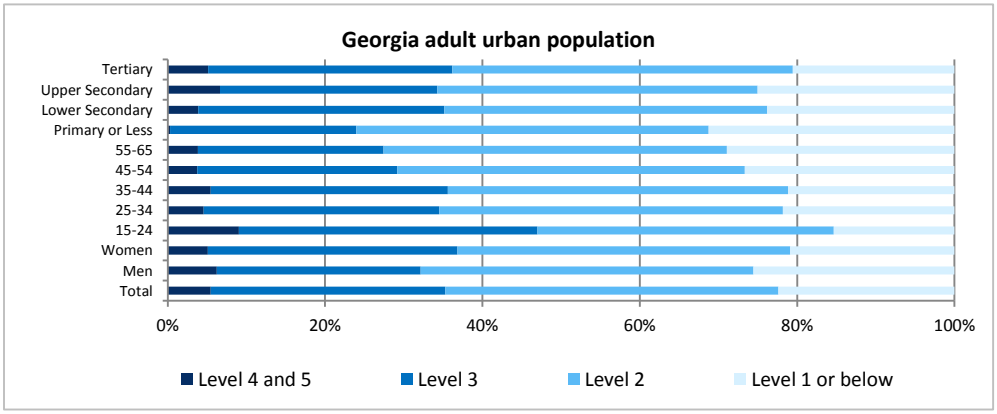
Table 4.1. Reading literacy assessment guide*

Level	Score Range	Details
0	0–175	▪ Respondent is required to read brief texts on familiar topics to locate a single piece of specific information.
1	176–225	▪ Respondent is required to read relatively short digital or print continuous, non-continuous, or mixed texts to locate a single piece of information which is identical to or synonymous with the information given in the question or directive.
2	226–275	▪ The complexity of text increases. The medium of texts may be digital or printed, and texts may comprise continuous, non-continuous, or mixed types.
3	276–325	▪ Texts at this level are often dense or lengthy, including continuous, non-continuous, mixed or multiple pages. Understanding text and rhetorical structures becomes central to successfully completing tasks, especially in navigating complex digital texts.
4	326–375	▪ Tasks at this level often require respondents to perform multiple-step operations to integrate, interpret, or synthesize information from complex or lengthy continuous, non-continuous, mixed, or multiple type texts.
5	376–500	▪ At this level, tasks may require the respondent to search for and integrate information across multiple, dense texts; construct syntheses of similar and contrasting ideas or points of view; and evaluate evidence-based arguments.

* Reading literacy levels were constructed to match those of the Programme for the International Assessment of Adult Competencies (PIAAC) administered by the OECD. However, it should be emphasized that comparability between the two surveys must take into account differences in sample populations – PIAAC is representative of the national populations of adults ages 15 to 65 while STEP is only representative of urban populations of adults ages 15 to 64—and differences in implementation protocols—the surveys have some similarities but they were not identical. Thus, results are by no means interchangeable; rather, they are indicative of trends.

Most adults in Georgia score below level 3 in the international benchmark of reading literacy. This means that although the adult population is highly educated, a high proportion of young adults do not display the high-level reading and analytical skills required to integrate, interpret, or synthesize information from different types of complex texts (level 4) or construct syntheses of similar and contrasting ideas or points of view and evaluate evidence-based arguments (level 5) (Figure 4.6).

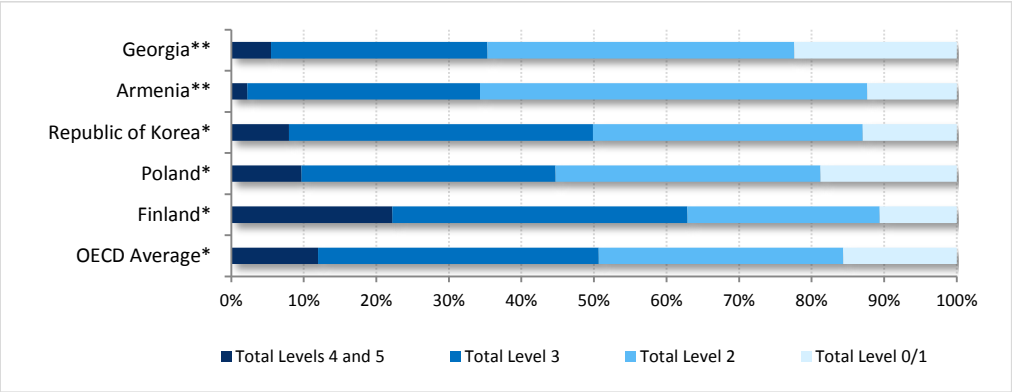
Figure 4.6. Reading assessment proficiency level by gender, age, and educational attainment, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

Although young adults perform substantially better than older adults, there is much room for improvement, especially when comparing the performance of adults in urban areas in Georgia to national averages from high-performing countries such as Finland and Korea (Figure 4.7).

Figure 4.7. Reading assessment proficiency levels, selected countries and OECD average



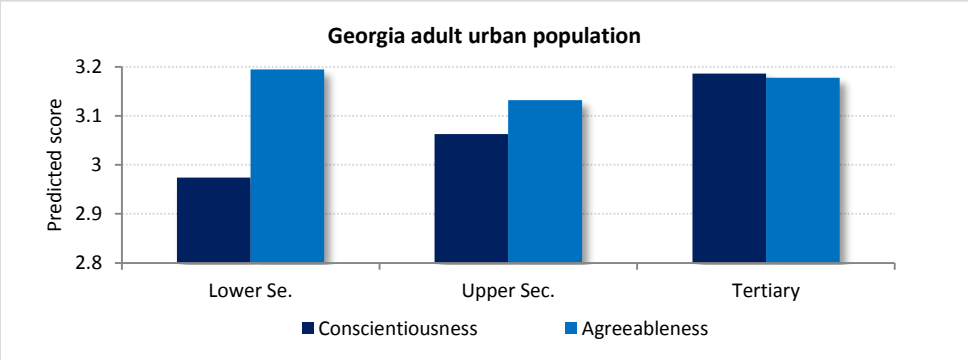
Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.
*Based on the OECD-PIAAC survey, which covers a national population of adults ages 15 to 65
** Based on STEP survey, which covers only the urban population of adults ages 15 to 64.

Are educational attainment and reading proficiency linked to socio-emotional skills?

Adults in Georgia with higher educational attainment are more likely to score higher on socio-emotional skills such as conscientiousness and agreeableness. The probability of scoring higher in conscientiousness and agreeableness increases with educational attainment, the contrast being starkest between adults with lower-secondary education and tertiary education completed. For example, the predicted conscientiousness score for adults with lower-secondary attainment is 2.97, compared with 3.18 for adults with tertiary education (

Figure 4.8). The predicting model controls for education, gender, current household wealth, mother's education, number of household shocks experienced by age 12, household socio-economic status at age 15, type of school, and school proximity.

Figure 4.8. Predicted scores in conscientiousness and agreeableness by educational attainment, Georgia

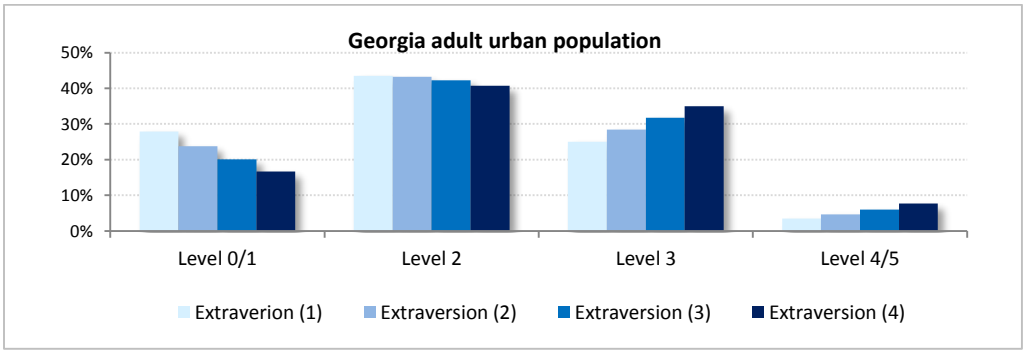


Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

Conscientiousness is the socio-emotional skill that is defined as being thorough, careful, or vigilant, and it implies a desire to do a task well. Conscientious individuals tend to be efficient, organized, and generally dependable. They exhibit a tendency to show self-discipline, act dutifully, and aim for achievement. Conscientiousness is manifested in characteristic behaviors such as being neat and systematic, careful, and thorough and having a tendency to think carefully before acting (Thompson, 2008). Research has shown an association between conscientiousness and academic performance, labor market outcomes, and life outcomes (Higgins et al., 2007; Ozer and Benet-Martinez, 2006; Walton and Roberts, 2004; Salgado, 1997).

Socio-emotional skills such as extraversion are positively associated with reading proficiency. Adults who score high in extraversion have a higher probability than other adults of scoring at the highest levels of reading proficiency—levels 3 to 5 (Figure 4.9). The results are statistically significant and they control for education, gender, current household wealth, mother education, number of household shocks experienced by age 12, socio-economic status at age 15, other socio-emotional skills, type of school, and school proximity.

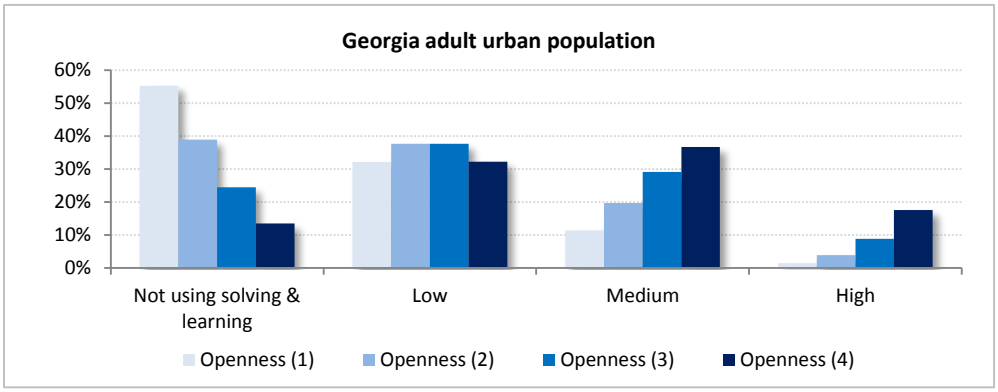
Figure 4.9. Distribution of scores in extraversion by reading level, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

Adults who score high in openness are more likely to use solving and learning skills at work. Adults who score high in openness have a higher probability than other adults of using solving and learning skills at work. The results are statistically significant and they control for education, gender, current household wealth, mother's education, number of household shocks experienced by age 12, socioeconomic status at age 15, other socio-emotional skills, type of school, and school proximity (Figure 4.10).

Figure 4.10. Distribution of scores in openness, by intensity of use of solving and learning skills at work, Georgia



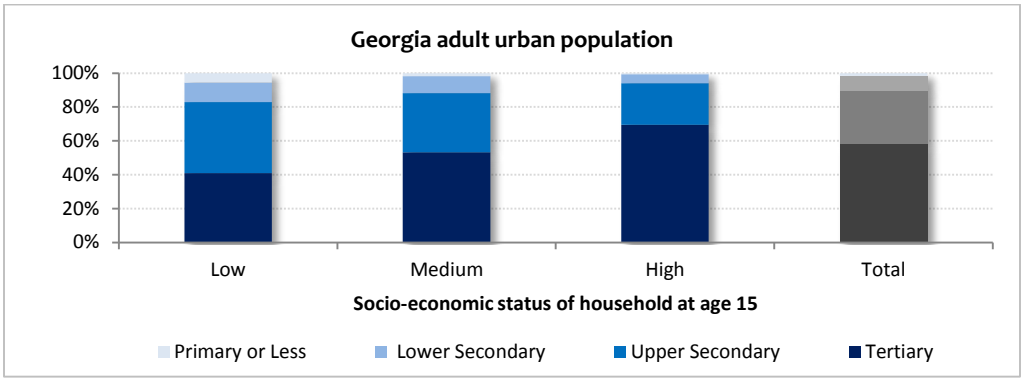
Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

What is the role of past socioeconomic status in educational attainment and skill acquisition?

In order to determine patterns in skills acquisition and reading proficiency outcomes by household socioeconomic status, this section uses variables on the socioeconomic status of the households respondents were living in when they were 15 years old (individuals were asked to rank their households' socioeconomic status from 1 to 10), as well as information on current household dwelling characteristics and assets to determine present household wealth. Robustness checks were carried out to ensure the viability and precision of the indicators. Using these variables, we explore the extent to which the education and skills profile of respondents who grew up in poor households but are now living in wealthy households are significantly different from the profiles of respondents who grew up in poor households and remain in poor households at present.

Past household socioeconomic status is associated with educational attainment… Adults who lived in poor households at age 15 are less likely to attain upper-secondary and tertiary education than adults who lived in wealthy households at that age (Figure 4.11)

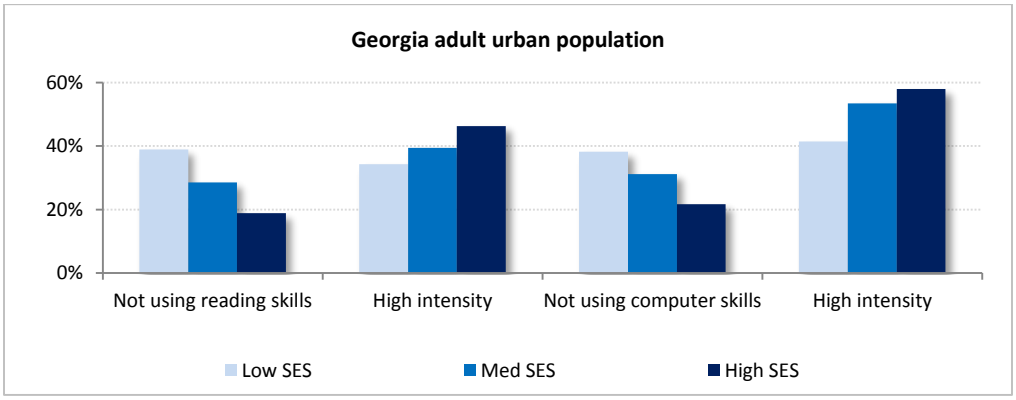
Figure 4.11. Distribution of educational attainment by past household socio-economic status, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

… and with the use of foundational skills and job-relevant skills. Adults who lived in wealthy households at age 15 are more likely to use reading skills, computer skills, and solving and learning skills at work and to use those skills more intensively than adults who lived in poor households at age 15. All results are statistically significant and control for education, gender, current household wealth, mother's education, number of household shocks experienced by age 12, socio-economic status at age 15, socio-emotional skills, type of school, and school proximity (Figure 4.12).

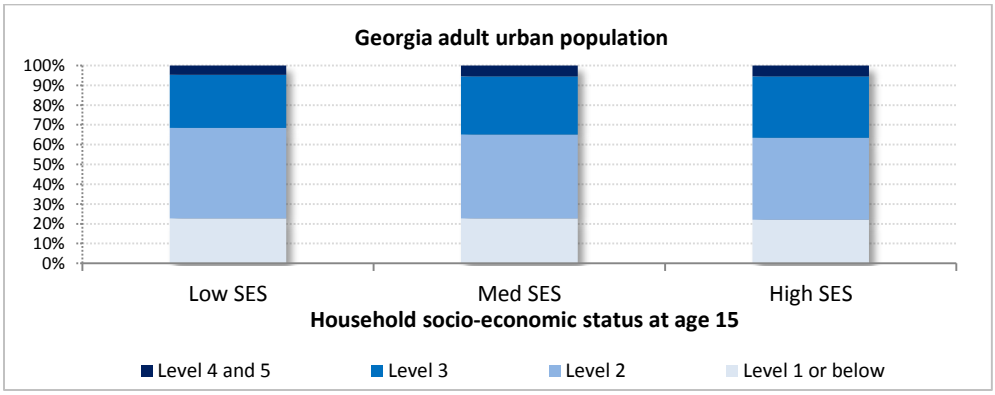
Figure 4.12. Use and intensity of reading and computer skills by past household socio-economic status, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

However, adults who grew up in wealthy households do not show better performance in reading proficiency. Interestingly, adults who lived in wealthy households at age 15 do not perform better in reading proficiency compared to adults who lived in poor households (Figure 4.13). This finding seems to indicate that the use of reading and intensity of use may be tied to factors beyond actual reading performance. Factors could include, for example, social connections that afford adults from better-off households more opportunities for skill use (at work or in daily life). More in-depth analysis would be required to tease out specific factors. (In the following sections, this report begins to disentangle the relationship between education, skills, and labor market outcomes.)

Figure 4.13. Reading proficiency level by past socio-economic status, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

Do early skills gaps translate into current skills gaps?

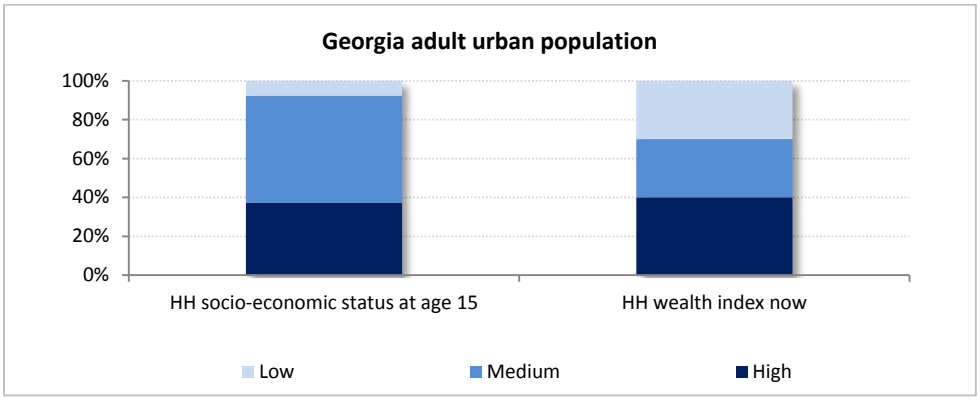
As noted above, skills acquisition is positively correlated with the socioeconomic status of the household where the adult grew up. The question that remains to be explored here is whether adults who did not transition from low socioeconomic status have a different skill profile than those adults who managed to transition into middle- or high socioeconomic status, using a household wealth index.

Before venturing too far into an analysis of differences in skills profiles,

Figure 4.14 shows the distribution of respondents by socio-economic status at age 15 and by household wealth index now. It shows an increase in the proportion of respondents who currently have a low socioeconomic status. The trend may be explained by a range of factors, including the economic shifts that followed the political, social, and economic transitions in the region in the 1990s, as well as the most recent global financial crisis. Recent estimates show that poverty (measured at USD2 PPP) increased from 14 percent in 1996 to 35.6 percent in 2010. Although it increased most acutely in rural areas, it also affected urban centers, and inequality (measured by the Gini coefficient) has also

increased, rising from 0.371 to 0.421 over the same period (World Development Indicators, 2014).

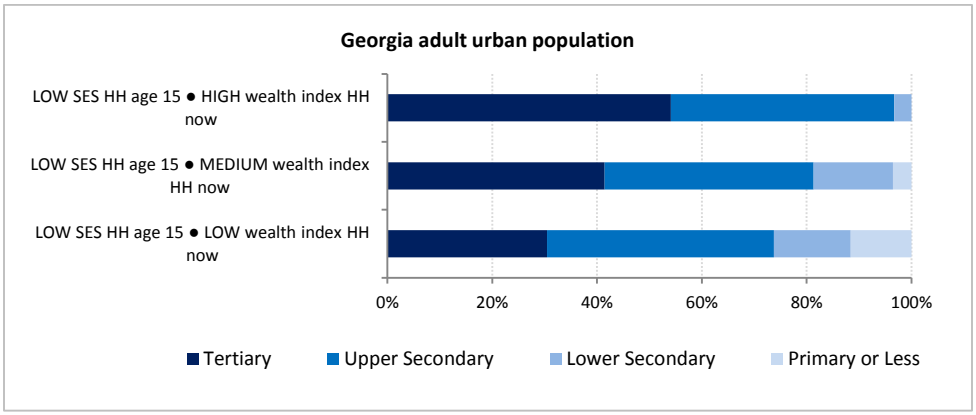
Figure 4.14. Distribution of adult respondents' household SES both at age 15 and at present, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

Adults who grew up in and continue to live in poverty have a different education profile. About 54 percent of adults who transitioned from growing up in a poor household to currently living in a higher-socioeconomic-status household have tertiary education, compared with 30 percent of those who remained at a low socio-economic status (Figure 4.15).

Figure 4.15. Distribution of adults' educational attainment by household SES transition (from age 15 to present), Georgia

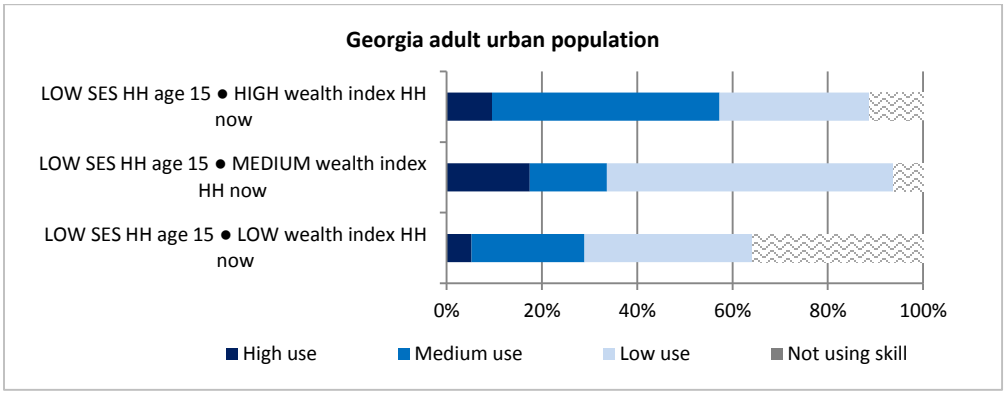


Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.
Note: SES=socio-economic status; HH=household.

Adults of different socioeconomic background and status also have some differences in the use of

solving and learning skills. Adults who transitioned into high-wealth households used problem-solving and learning skills more and used them more intensively compared to adults who did not transition out of a low socioeconomic status (Figure 4.16).

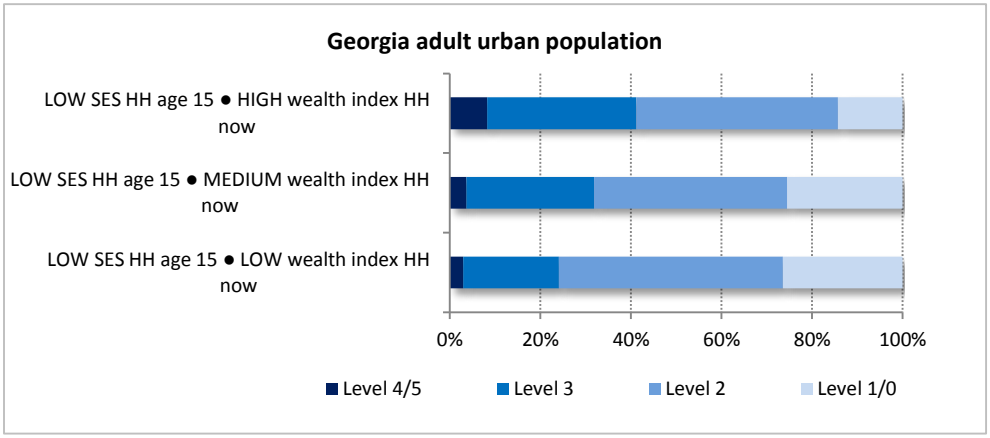
Figure 4.16. Distribution of adults' use of solving and learning skills at work by household SES transition (from age 15 to present), Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

There are also differences in reading proficiency outcomes among adults of different socioeconomic background and status. Adults who transitioned into high-wealth-index households have a higher proportion scoring at levels 3 and 4 compared (41 percent) to adults who did not transition out of low socio-economic status (24 percent) (Figure 4.17).

Figure 4.17. Distribution of adults' reading proficiency levels by household SES transition (from age 15 to present), Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

Highlighted findings

- The role of education in Georgia's workforce development is important, because it is associated with the retention of foundational skills, the later development of job-relevant skills, and the development of socio-emotional skills that are essential to employability.
- An individual's past socioeconomic status—the relative wealth or poverty of the home he or she was raised in—is clearly associated with both educational attainment and skills acquisitions. As a result, inequalities in early life leave a footprint that remains long into an individual's adult working life.
- Past socioeconomic status is also an important determinant of the *use* of foundational and job-relevant skills, that is, the possession of the types of jobs that engage workers in those skills. Given Georgia's socioeconomic trend of recent decades of widening poverty, these close associations between childhood wealth, educational achievement, and skills acquisition and use are of particular concern.

5. Step 3 | Building Job-Relevant Skills

The educational system and the household both play pivotal roles in improving individuals' labor market performance, as the findings in Step 2 showed. Both provide solid foundational skills as well as job-relevant skills that enhance the individual's employability and productivity.

Notwithstanding the fundamental role education plays in equipping people with appropriate skills, skills acquisition can continue over a lifetime. Continuing education and training programs that are part of a workforce development system are important to ensure that workers maintain or upgrade their skills to keep up with evolving trends. In particular, they are important so works can keep up with changing business trends, changing production processes and, more broadly, changes in the workplace environment brought about by technological change.

This section discusses differences in the skill profiles between the employed and the unemployed, and shows how these differences may be detrimental to the unemployed. Also, it evidences how skills matter, and shows that they matter at least as much as education for the labor market. It lays out evidence regarding how (and which) skills pay off in Georgia for labor force participation, employment and earnings. It also examines to what extent training or other forms of accreditation, such as certification and apprenticeships, help skill acquisition and what type of skills they are most closely associated with.

In more detail, this section focuses on answering these three questions: (i) Are there differences in skill profiles across the labor market status? (ii) Are skills paying off in the labor market? and (iii) Is training associated with increasingly skilled workers?

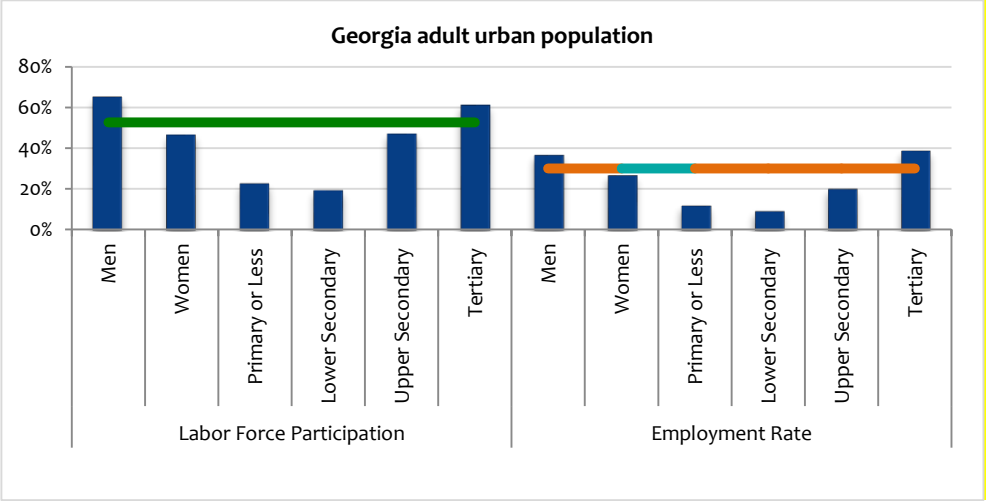
Note on methodology. The analysis carried out in this section relies on descriptive statistics, probability models on two major outcomes (labor force participation and employment), Mincerian regressions to capture the returns on earnings, and a simple regression model designed to identify correlations between training and skill acquisition. The probability models control for cognitive skills (reading proficiency scores), socio-emotional skills, computer use, household related variables, dropout, age, mother education, father's education, socio-economic status at age 15, and the number of shocks at age 12. The second model follows Bowles, Gintis, and Osborne (2001) and Weinberger (2013) in order to estimate the returns to earnings and analyze how different skill sets contribute in conjunction with education. It controls for age, gender, wage worker, years of education, literacy

score, socio-emotional skills, computer use, contact with clients, solving and learning new things, autonomy, economic sector, and occupation. Lastly, the simple regression model aims to estimate the relationship between skills and participation in different forms of training (on-the-job training, professional certificate, and apprenticeships). The regression controls for gender, education, age group, and labor market status. All the results presented here are statistically significant, unless noted otherwise. We acknowledge the possible limitations of the estimation procedure, in terms of possible multi-collinearities or biases. However, we expect this to be a first step towards exploring these issues in greater depth.

Are there differences in skill profiles across labor market status?

Roughly half the working-age population in Georgia is active in the labor force, although only a third of the population is currently employed. The total labor force participation for urban areas is around 53 percent, with stark differences across gender (65 percent for men but only 47 percent for women) and educational attainment (20 percent for those with lower secondary only and 61 percent for those with tertiary education). However, the employment rate is only around 30 percent, with the same stark differences across gender (37 percent for men and 27 percent for women) and educational attainment (9 percent for lower secondary and 39 percent for tertiary education) (Figure 5.1).

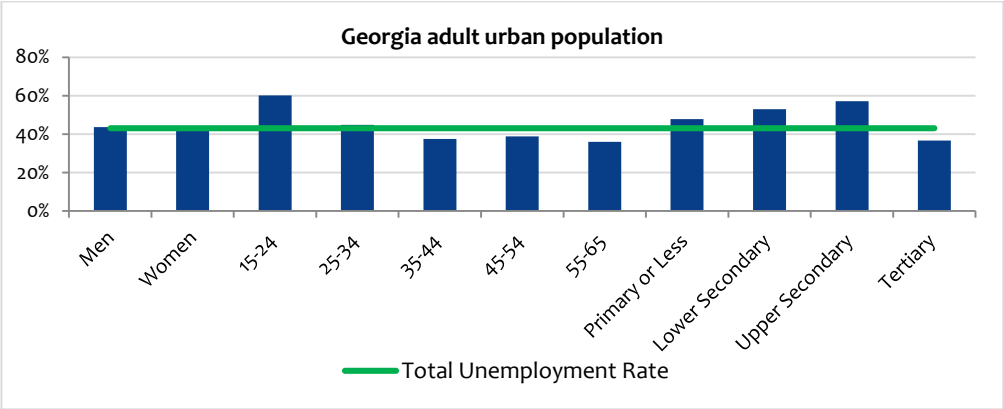
Figure 5.1. Labor force participation and employment rate by gender and educational attainment, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

The unemployment rate is high, especially among the younger cohorts and those with lower educational attainment. The total urban unemployment rate is around 43 percent. This rate goes as high as 60 percent for individuals between ages 15 and 24 and as low as 36 percent for those ages 55 to 65. Also, this rate remains above the overall average (the solid line in Figure 5.2) and is high across educational attainment (48 percent for primary graduates, 57 percent for upper secondary graduates) with the exception of tertiary graduates, for whom the rate drops to 37 percent (Figure 5.2). These high rates may be hampering the skill profile in the labor market, having an impact on individuals through two linked channels. First, many individuals might have lower skill profiles than those that employers are keen to hire, perpetuating their unemployment spells even to the point of inactivity. Second, the possibility of further acquiring or upgrading their skills through on-the-job training may be limited, harming employed individuals' stock of skills.

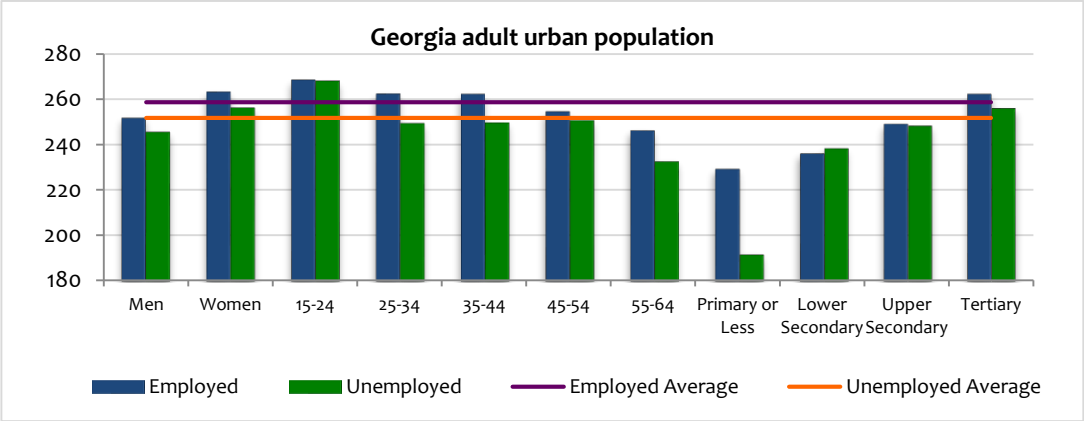
Figure 5.2. Unemployment rate by gender, age cohort, and educational attainment, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

There is a difference in reading proficiency that favors the employed, and this difference is constant across groups. The average score in reading proficiency for the employed is 259, while for the unemployed it is 252. Even though both scores are within the same reading proficiency level—level 2, which is a fairly basic level—this six-point difference is statistically significant. The pattern is the same across categories, with the employed having more skills than the unemployed. It is important to note that women score higher than men in reading proficiency, among both employed and unemployed, and that younger cohorts have about the same skill levels as older cohorts. Nevertheless, because these reading skill differences are not large, it is likely that other skill differences have a greater impact on the employment status.. It is also worth noting that there is a large difference between those with primary or less education and those with more education, both in their skills and in their labor market status.

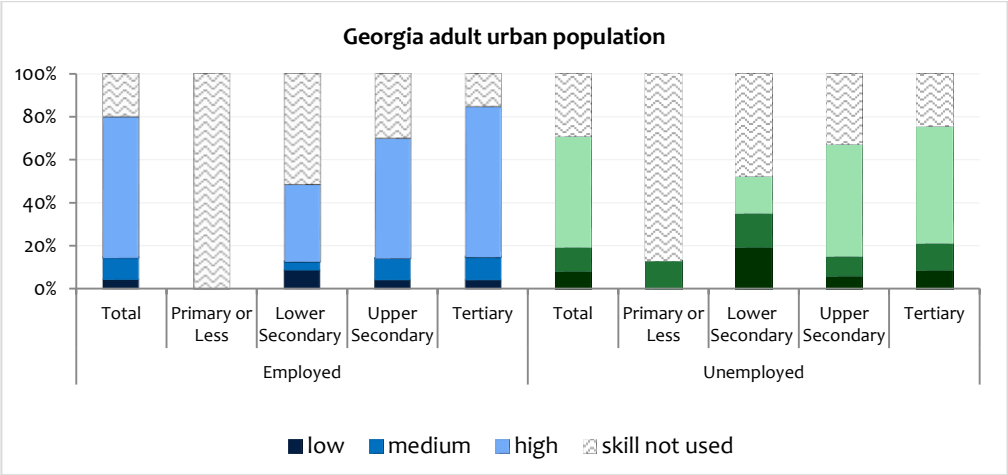
Figure 5.3. Average reading proficiency score by gender, age cohort, and educational attainment, employed vs. unemployed, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

Differences in other skills, such as those reflected in computer use, can provide insights into the differences in skill profiles between the employed and unemployed. For instance, the overall use of computers—the probability that a person uses them at all— is 9 percentage points lower for the unemployed, and this difference is statistically significant. This difference in overall computer use, as well as differences in intensity of use, applies across educational attainment between both groups. Among those with a tertiary education, for example, computer use is higher among the employed (84 percent) than the unemployed (76 percent). Along the same line, the rate of people reporting high intensity in their use of computer skills is higher among the employed (70 percent) than the unemployed (54 percent) (Figure 5.4).

Figure 5.4. Overall computer use and intensity of use by educational attainment, employed vs. unemployed, Georgia



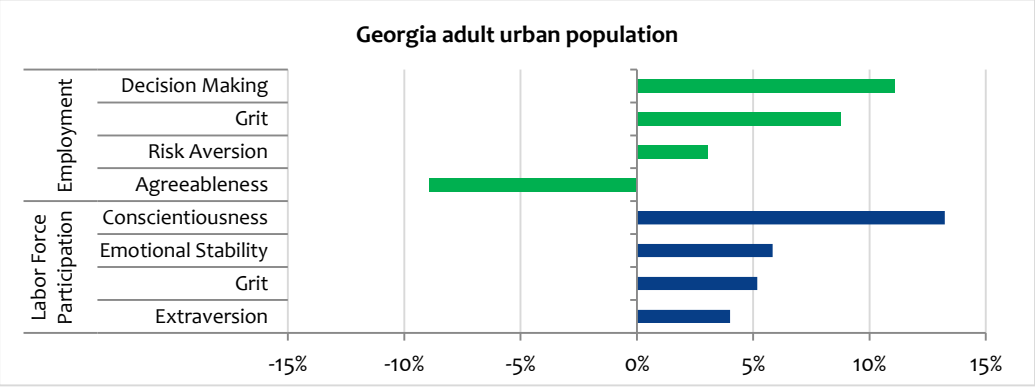
Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

Are skills paying off in the labor market?

Up to 30 percent of the effect of education on participation in the labor market can be attributed to skills. Without accounting for any skill, an extra year of education can represent around 2.6 percentage points' increase in the chances of participating in the labor market in urban areas. However, after accounting for the varying effects of each skill group, the effect of one extra year of education is reduced to between 2 and 2.5 percentage points. Finally, accounting for all the skill groups further reduces the effect to 1.8 percentage points, some 30 percent lower than the increase in chances without accounting for skills. This suggests that, while education is an important proxy to capture an individual's skills profile, there is a value-added from measuring skills that allows a better assessment of what is driving this labor market outcome. Furthermore, the effect of education in employment chances seems to vanish when accounting for different characteristics and skills. An extra year of education has no statistical or economical effect on the probability of employment across the different specifications used. (The results are shown in Annex Table 13 and Annex Table 14.)

Some skills matter even more than education in raising the probability of participating in the labor market and the chances being employed. For instance, better scores in socio-emotional skills such as extraversion, grit, emotional stability, and conscientiousness are associated with 4, 5.2, 5.8 and 13.1 percentage point increases, respectively, in the probability of participating in the labor market. Also, the probability of employment increases with some socio-emotional skills such as grit (8.8 percentage points) and decision making (11.1 points), as well as with traits as risk aversion (3 points). However, agreeableness seems to correlate *negatively* with employment and reduces the chances by almost 9 percentage points (Figure 5.5).

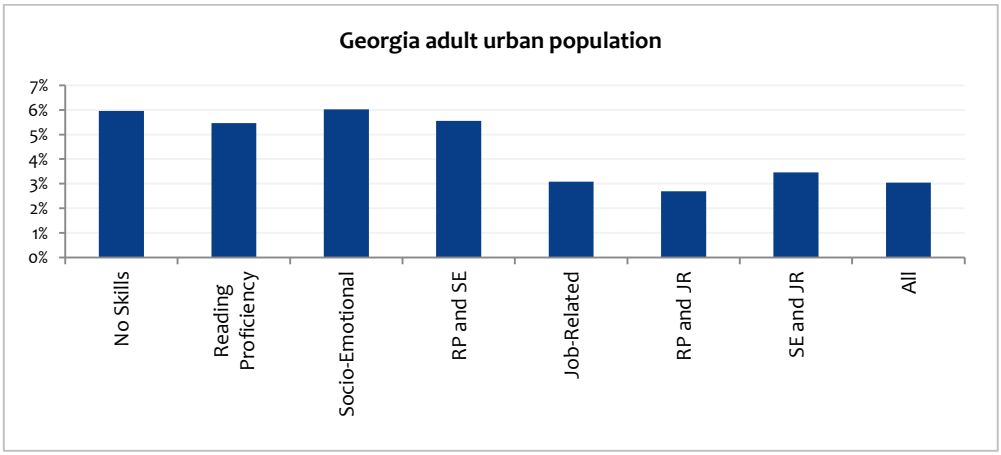
Figure 5.5. Increase in probability of being employed by years of education, skills, and skill levels, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

Skills matter as much as education in their effect on earnings. There is sufficient evidence supporting the payoff for workers who invest in their own education and skills, albeit there are different caveats both in theory and in estimation procedures (see Griliches, 1977; Heckman, Stixrud, and Urzua, 2006; and Hanushek and Woesmann, 2008, for some of the different approaches to this subject). In this sense, this report follows Bowles, Gintis, and Osborne (2001) and Weinberger (2013) to estimate the returns of education and skills on earnings for urban workers. An extra year of education, without controlling for any additional skill, represents an increase of 6 percentage points in hourly earnings. The addition of reading proficiency and socio-emotional skills in separate regressions did not change the magnitude and statistical significance in years of education, suggesting that these skills groups are complementary to education. The job-related skill group seems to capture some of the effect of the years of education (it reduces the effect from 6 to 3 percentage points), but it leaves the effect as statistically significant. Finally, including all the skill groups together suggest that an additional year of education has a positive return of around 3 percentage points to hourly earnings. All of these findings reinforce the idea that not accounting for skills may be biasing the estimates of the impact of education upwards due to omitted variable bias (Figure 5.6).

Figure 5.6. Returns of an extra year of education on earnings by different characteristics and skill groups, Georgia

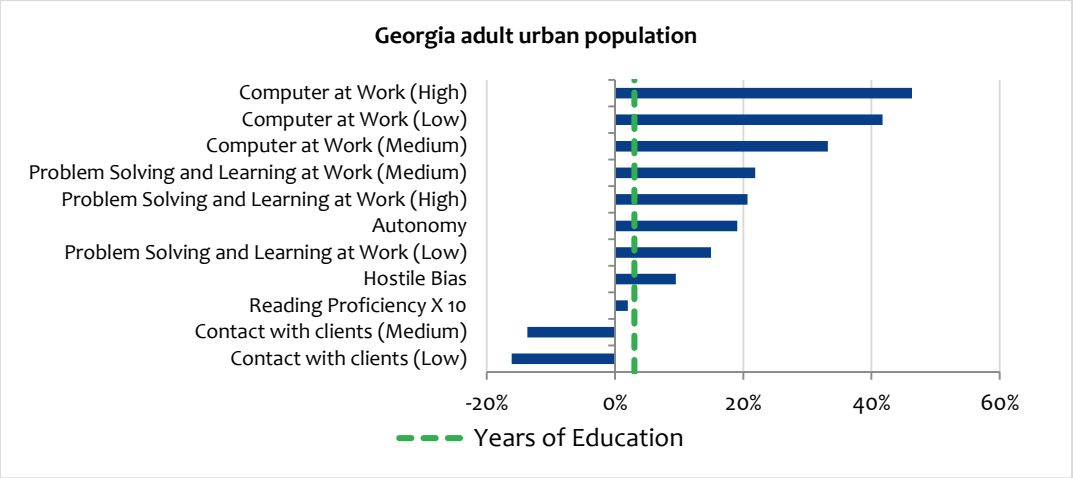


Note: RP = Reading Proficiency, SE = Socio-Emotional, and JR = Job-Related.
Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

Overall, not all skills affect earnings in the same manner. The results of this analysis suggest that there are substantive variations among the returns to various skills in terms of hourly earnings (see the last column in Annex Table 14). The different returns are presented in Figure 5.7, where the vertical dashed

line represents the returns to education to benchmark the magnitude. Those job-related skills that involve contact with clients are usually associated with service sector employment opportunities, which tend to have lower-than-average hourly earnings. On the other hand, problem solving at work and learning and use of computer at work seem to yield substantive rewards in hourly earnings.

Figure 5.7. Returns of different skills on earnings (percent), Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

Skills have different payoffs across age groups, but computer skills matter across the board. It is assumed that skills are used differently across the lifecycle. In this sense, one should expect that the same skills have different payoffs across age groups. For instance, using the highest level of problem solving and learning new things at work (with a 57 percentage point increase) seem to matter more for those between ages 25 and 34 than for those in the older age groups (45 years old and more), whereas employing high levels of autonomy (with a 21 point increase) seems to matter more for the older age groups. However, one skill that seems to matter across the board is use of computer at work. The payoff of computer skill is positive and statistically significant (with a 52 – 60 percentage point increase in hourly earnings) across all age groups.

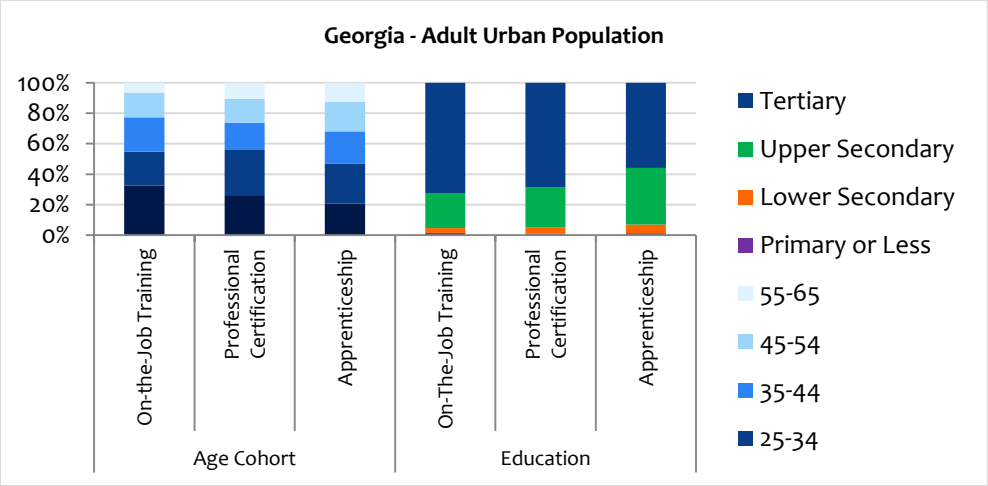
There is a large gender gap in labor earnings across age groups. There is a big penalty in hourly earnings for women in Georgia's labor market. On average, they are receiving around 36 percentage points less than men. The gap seems to be wider when broken into different age groups. For instance, women earn on average 45 percentage points less than men in the 25 to 34 years old age group while the same gap for the 45 years old and more age group is 41 percentage points. The gap reduces to 18 percentage points for the youngest age cohort (15 to 24 years old) but this is not statistically significant.

Is training associated with more highly skilled workers?

The evidence presented above suggests that labor market status may be affected by and may affect a person's stock of skills, and that this same market is rewarding skills in greater measure than education. Workers then need a way to either upgrade their present skills or acquire relevant skills, which they can do by participating in vocational education to revamp both their skills and their credentials or by participating in a variety of types of training. Whatever approach they use, it is imperative that both vocational education and training channels be adequate and relevant and that they generate enough incentives for participation (see Box 5.1). This section briefly reviews participation in different forms of training (on-the-job training, professional certification, and apprenticeship) and examines its implications for skills development.

Participation in any form of training in Georgia is low and limited to certain groups. Participation of the adult population in professional certification is the highest (12 percent), followed by apprenticeships (9 percent) and on-the-job training (8 percent). Additionally, among those who participated in any of the three forms of training, the largest portion is individuals with tertiary education, who make up 73 percent of those who have received on-the-job training, 68 percent of those with professional certificates, and 56 percent of those who have had apprenticeships. By age cohort, the largest portion of trainees is from the youngest cohort, ages 15 to 34, who make up 55 percent of those who have received on-the-job training, 56 percent of those with a professional certificate, and 47 percent of those who have done an apprenticeship.

Figure 5.8. Participation in on-the-job training, professional certification and apprenticeship by age cohort and educational attainment, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013

Box 5.1. Findings from the World Bank SABER-Workforce Development Study

A recent World Bank study, known as SABER-WfD, assessed the current status of workforce development policy and institutions in Georgia. This study is based on an analytical framework that identifies and ranks a country in three dimensions: (i) *strategic framework,* which represents the advocacy, championship, and coordination of the objective of workforce development with national priorities; (ii) *system oversight,* which refers to provisions for funding, quality, and learning pathways that affect individuals, employers, and training providers; and (iii) *service delivery,* which encompasses the diversity, organization, and management of training provision. Following are some of the study's key findings.

Status of workforce development in Georgia

- The roles for implementing workforce development policies among ministries, providers, and other stakeholders are clearly laid out and embodied in the National Professional Council. Efforts have focused on putting governance structures in place to create incentives for training provision and to broaden the choices for students and firms.
- A system for assessing and certifying skills is well established and supported by the National Qualification Framework. However, its governance and funding have been less than desirable. Additionally, there are deficiencies in recognition and in scaling-up measures for nationwide occupational and career guidance.
- A broad range of state and non-state providers offer vocational education. Although the Ministry of Education and Science is permitted to take measures for quality assurance, the quality assurance issue remains a principal concern. In fact, a lack of mechanisms for monitoring and evaluating programs is hindering service delivery.

Policy recommendations

- *Improve the strategy framework* of the workforce development system by fostering a demand-driven approach that produces more timely, constant, and precise information on labor market needs and includes industry and employer representatives as key stakeholders in strategic decision making areas. These areas include vocational standards, program curricula, and teaching facilities.
- *Improve system oversight* by tightening the performance targets for vocational education centers in order to promote higher standards and trust in the qualifications conferred. System oversight could also benefit from more adequate financial and non-financial incentives to private providers for service provision.
- *Improve service delivery* by paying more attention to other service tools besides the Initial Vocational Education and Training. These service tools include: (i) continuing vocational education, which needs to be strengthened to promote its use in small- and medium-size firms; (ii) active labor market polices, which need to be considered more comprehensively; and (iii) the vocational education and training system, which has problems of permeability that challenge accessibility and academic paths.

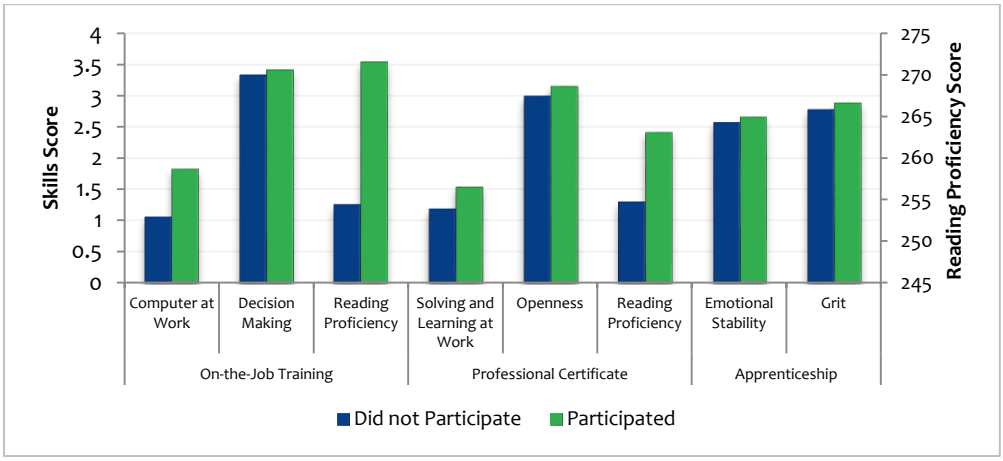
Source: World Bank 2014a.

Participation in any form of training is associated with having higher skills, though each form of training contributes differently in terms of magnitude and type of skills. We perform a simple regression analysis to determine whether participation in any single form of training is correlated with higher scores in the different skill groups (job-relevant, socio-emotional, and reading proficiency). In total, we reviewed 13 skills, organized as follows: (i) job-relevant skills: use of computer at work, solving and

learning new things at work, and autonomy; (ii) socio-emotional skills: extraversion, conscientiousness, openness, emotional stability, agreeableness, grit, decision making, hostile bias, and risk; and (iii) reading proficiency score. The regression model controlled for gender, education, age group and labor market status. We are aware that this model may present some biases, but it is a first step in this line of research and yields interesting results for further research.

The results suggest that on-the-job training has a positive and significant effect on 7 out of the 13 skills measured. Professional certificate training had this type of effect on only 5 out of the 13 skills, and apprenticeships had this type of effect on just 2 out of the 13 skills. The results also suggest that both on-the-job training and professional certificates have some impact on all three skills groups, while apprenticeships only seem to have an impact on socio-emotional scores. Figure 5.9 presents the predicted scores for selected skills for both participating and not participating in any form training.

Figure 5.9. Predicted skill score by participation in on-the-job training, professional certificate and apprenticeship, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

Highlights of findings

- Skills matter for better labor market outcomes, and because of this they need to be built solidly both in the education system and in the household. Differences in skill profiles between the employed and the unemployed may indicate that the latter group is clearly at a disadvantage and needs special attention.
- Stronger skills are also associated with improved chances of labor force participation and employment and pay off in higher earnings.
- Workers are using skills to differentiate themselves in the labor market. This puts an emphasis on the quality of skills they need to acquire from the education system.
- Finally, low rates of participation in on-the-job training and other forms of formal certification may be causing losses in skill acquisition and skill updating. There is evidence that participation in any form of training is associated with better skill profiles. Interventions to improve access to and the quality of training may provide a gateway for skill upgrading, mainly (but not exclusively) through on-the-job training and professional certification.

6. Step 4 | Encouraging Entrepreneurship and Innovation

Possessing the right set of skills and behaviors is not only necessary to increase an individual's employability and productivity. A variety of studies have consistently found that it is also valuable to empower entrepreneurial activity.

An *entrepreneur* may be defined as someone willing to take the risk of starting a business in order to make a profit (Valerio et al., 2014; Chell and Ozkan, 2010). In this paper, our definition of entrepreneurs includes self-employed individuals and all those who own a business. Entrepreneurial activity is a valuable option in markets with low demand for workers and high unemployment. When their number is sizable, entrepreneurs can drive job creation and new enterprises, key factors to boosting shared prosperity. Research also shows that improving regulations and reducing constraints to doing business encourages entrepreneurship and innovation.

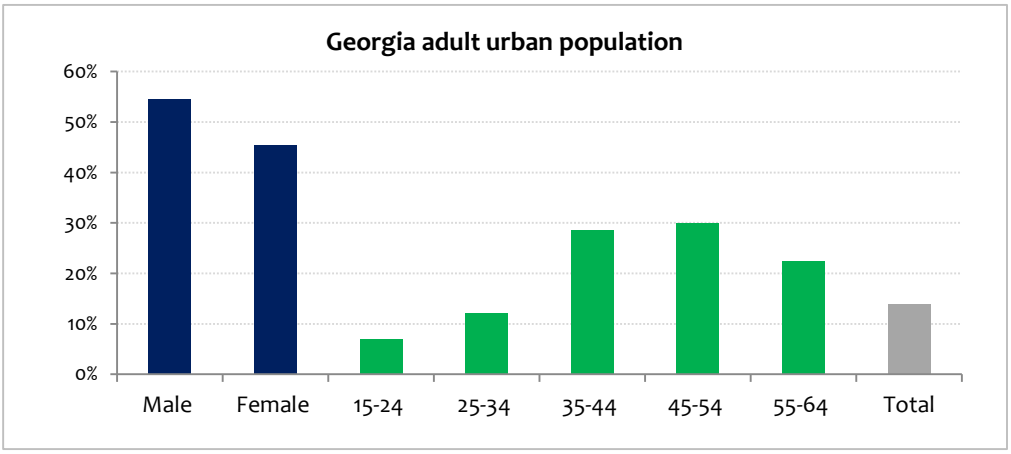
We use the term *innovation* in this report to signify the use of knowledge to create new marketable products. Innovation is also considered an important component in a country's economic success. To encourage both entrepreneurship and innovation, policymakers need to ensure that workers are able to acquire the skills that will enable them to create new jobs and adapt to new technologies.

This section uses descriptive statistics and Mincerian regressions to explore the skills used both in entrepreneurship and in innovation in Georgia, based on information from the STEP survey. Specifically, it answers two questions: First, what are the differences between entrepreneurs and wage earners in their use, and intensity of use, of skills? Second, what are the differences in the use, and intensity of use, of skills between individuals working in the high- and low-technology sectors? The section starts with a snapshot of entrepreneurs in the country's urban areas, presenting measurements of their characteristics—including gender, educational attainment, economic sector, age, and skill profiles—as compared with wage earners. Then, under the topic of innovation, it explores how skills vary between those who work in high-tech sectors and those who work in low-tech sectors.

Who are the entrepreneurs in Georgia?

There are relatively few entrepreneurs in Georgia (14 percent of the employed labor force, compared with 86 percent who have a wage job). Entrepreneurs tend to be men between the ages of 45 and 54 with less education than wage earners. In Georgia, entrepreneurs are slightly worse off than wage earners, as measured by their current household wealth, and there are many more entrepreneurs in the lowest wealth quintile than there are in any other quintile. Men are more likely to be entrepreneurs than women; 90 percent of women are in wage work, compared with 81 percent of men. There are differences across age cohorts, too. Entrepreneurship is highest, at 30 percent, for the 55 – 64 age cohort, compared to about 12 percent reported by the 25-34 age cohort (Figure 6.1).

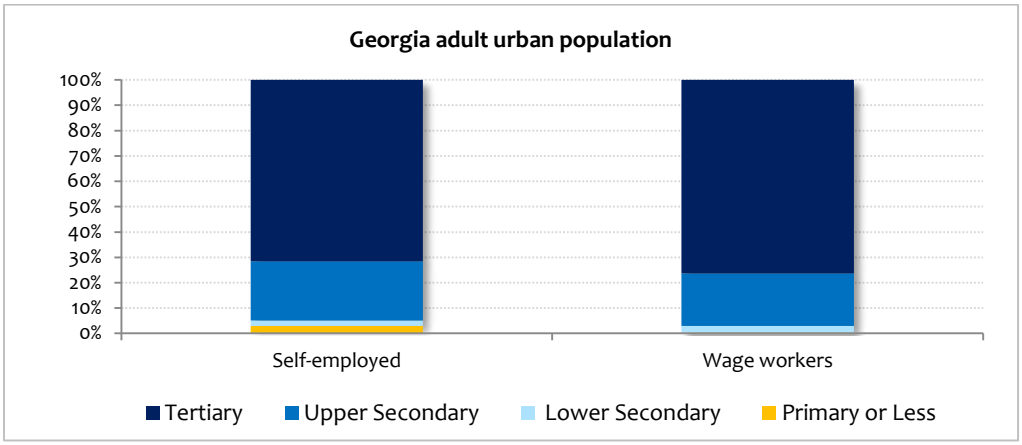
Figure 6.1. Distribution of entrepreneurs by gender and age cohort, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

The educational profile of entrepreneurs varies slightly from that of wage earners. While the majority of entrepreneurs (72 percent) have completed a tertiary degree, a higher share of wage earners (76 percent) have a tertiary education. This is reflected in the higher share of wage earners in high-skilled white collar occupations, as illustrated in Figure 6.2. A higher share of entrepreneurs than wage earners have an upper-secondary education, although a similar proportion of wage earners and entrepreneurs have completed lower-secondary only. Nonetheless, the share of entrepreneurs with only primary education or less is 3 percent, while the share of wage earners with only primary education is less than half a percentage point. These patterns are consistent with the higher proportion of wage earners who belong to the higher wealth quintiles.

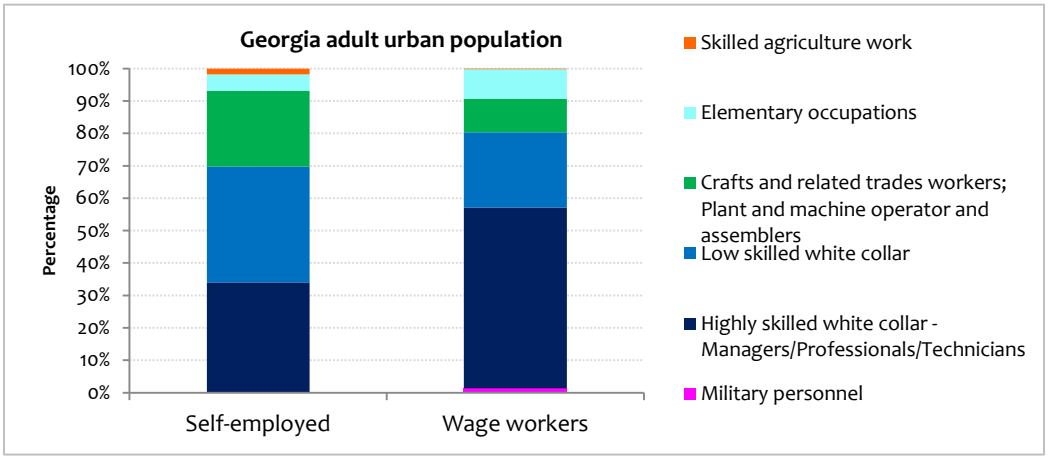
Figure 6.2. Distribution of educational levels for the self-employed and wage workers, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

The profile of entrepreneurs varies by economic sector and also by occupation. Most entrepreneurs and wage earners are in the service sector, 61 and 80 percent, respectively. However, there are more entrepreneurs than wage earners in natural resources, mining, agriculture, and trade. This may be due to the lower entry barriers and educational requirement for running businesses in these sectors. Interestingly, there are similar proportions of wage earners and entrepreneurs in construction and manufacturing. Regarding occupations, entrepreneurs are concentrated in white-collar occupations, including both low-skilled white collar jobs and high-skilled white collar jobs (36 percent and 34 percent, respectively). The majority of wage earners are in white-collar jobs too, but more than twice as many of them work in highly skilled jobs as work in low-skilled white-collar jobs. In addition, entrepreneurs are more likely than wage earners to be employed in crafts and related trades (23 percent compared with 10 percent) (Figure 6.3).

Figure 6.3. Distribution of occupations for entrepreneurs and wage workers, Georgia

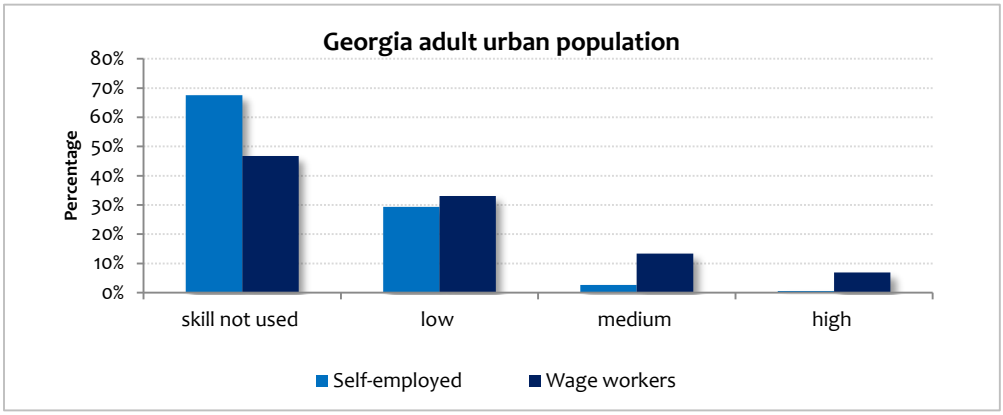


Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

How do entrepreneurs and wage earners differ in their use of skills?

Overall, entrepreneurs report less use of cognitive skills than wage earners. For instance, 50 percent of wage earners report high use (that is, frequent use) of reading skills, compared with 27 percent of the self-employed. In addition, 24 percent of entrepreneurs report that they do not read regularly, compared with only 15 percent of wage earners. Surprisingly, the use of numeracy is not very different between entrepreneurs and wage earners. For example, 12 percent of the entrepreneurs report a high use of numeracy compared with 15 percent of wage earners. Sixty percent of entrepreneurs report a medium use of numeracy compared with 58 percent of wage earners. Overall, entrepreneurs tend to use numeracy skills at levels similar to wage earners but use reading and writing skills at higher levels. Finally, entrepreneurs are less likely to use computers at work. For instance, almost 40 percent of wage earners reported high use of computer skills at work, compared with 15 percent of entrepreneurs. This adds to the evidence presented before that entrepreneurship in Georgia is often related to occupations that use lower levels of skills, except for numeracy (Figure 6.4).

Figure 6.4. Reading skills for entrepreneurs and wage earners, Georgia

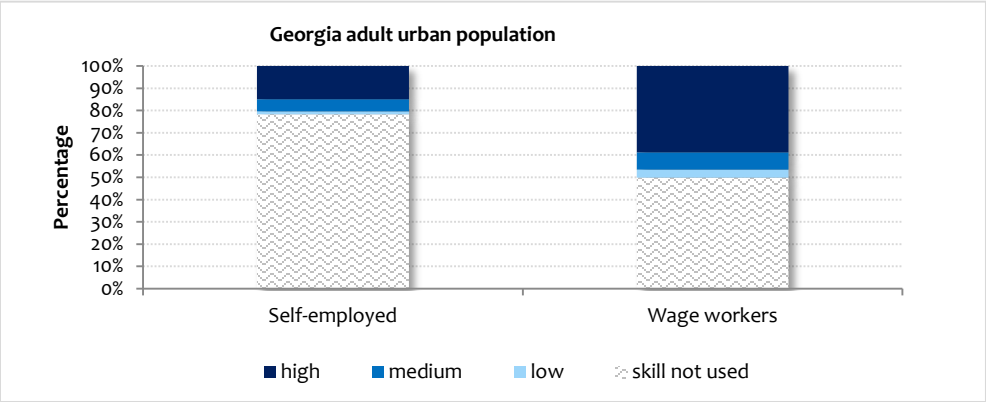


Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

Entrepreneurs are very similar to wage earners in their socio-emotional skills. For instance, the mean score of extraversion for both entrepreneurs and wage earners is 2.6. Scores are also similar for entrepreneurs and wage earners for skills such as conscientiousness, grit, stability, agreeableness, and openness. Interestingly, this is true for stability as well; even though this could reflect the risk of being an entrepreneur, it does not seem to be different between the two groups.

There are many differences in the use of job-relevant skills between entrepreneurs and wage earners. Wage earners are more likely to use reading and writing skills, to use thinking and learning skills frequently, and to use computer skills at work, whereas entrepreneurs are more likely to have contact with people outside of work. For instance, a large percentage, 78 percent, of entrepreneurs report not using computer skills at all in their jobs. This is much higher than the 50 percent of wage earners who report that they do not use computer skills at work. It is also worth noting that 39 percent of wage earners report that they use their computer skills "a lot" compared to only 15 percent of entrepreneurs. This may be indicative of the types of jobs the two groups have. In contrast, almost 60 percent of entrepreneurs have contact with people outside of work, while only 40 percent of wage earners do. This suggests that entrepreneurship is much more related to activities that have to do with direct people-to-people contact, while wage earners use their cognitive and job-related skills much more frequently (Figure 6.5).

Figure 6.5. Frequency of computer use at work for entrepreneurs and wage earners, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

There does not seem to be a wage premium in being an entrepreneur in Georgia, where entrepreneurs are not as likely as wage earners to have higher incomes. This may be the case because they have lower education and skills and, therefore, the activities in which they engage may not bring an increase in value-added. As it currently stands, entrepreneurship in Georgia, while being another route for those who may be looking for a job, does not necessarily come with higher returns.

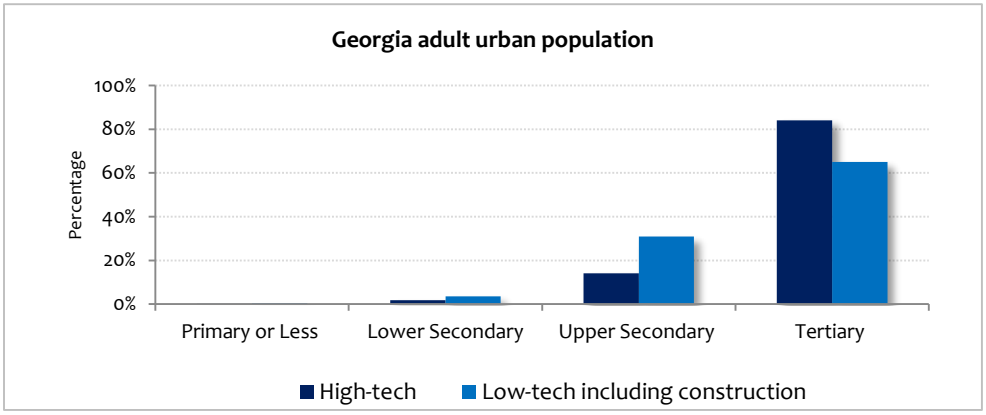
Who is working in the high-innovation sectors?

A division usually made by researchers to explore the innovation topic is between high-tech and low-tech manufacturing. This section expands on that approach. Following the World Bank's recent report on jobs in Europe and Central Asia, we explore skill-related issues across workers between those in high-tech and low-tech *economic sectors*, with the latter including construction.

More than half of Georgia's urban working population (57 percent) works in high-tech sectors, compared to 43 percent who work in low-tech sectors. Interestingly, highly educated women with tertiary education are the most likely to work in high-tech sectors, and in general, the majority of individuals working in high-tech sectors are women (71 percent), compared with 30 percent of men. Individuals working in high-tech sectors also have higher degrees; over 80 percent of them having completed their tertiary education. The proportions of individuals working in low- and high-tech sectors are very similar across age cohorts; for example, 22 percent of individuals in both sectors are between 45 and 54 years old.

Not surprisingly, more workers with a tertiary degree are employed in the high-tech sectors than in the low-tech sectors; and more workers who only completed upper-secondary are employed in low-tech sectors than in high-tech sectors. Finishing a tertiary degree increases a worker's likelihood of being employed in a high-tech sector. Very few individuals in Georgia have less than a lower-secondary attainment—they make up less than 3 percent of all workers—and not surprisingly, most of them work in low-tech sectors (Figure 6.6).

Figure 6.6. Educational levels of individuals working in high- and low-tech sectors, Georgia

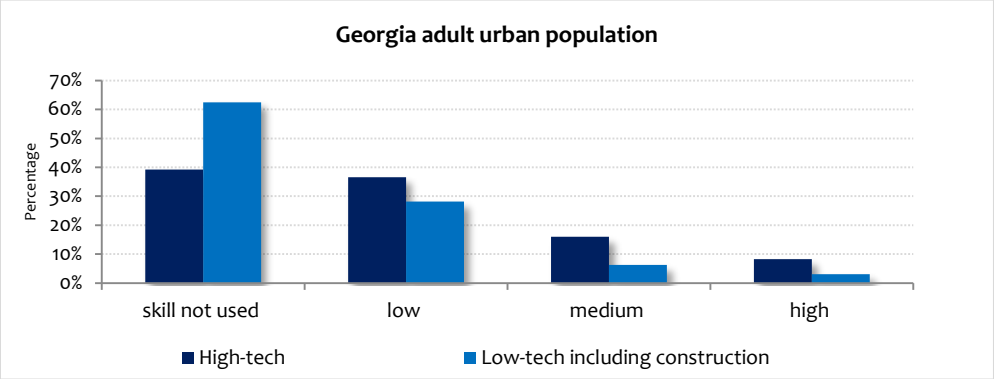


Source: World Bank, Georgia STEP Skills Measurement Survey, 2013

What skills are used in sectors most related to innovation?

Cognitive skill use is much higher among individuals working in high-tech sectors than among those working outside of them. Both the frequency and the intensity of use of reading and writing skills are much higher among individuals working in high-tech sectors than among those in low-tech sectors. For instance, about 55 percent of workers in high-tech use reading skills with high frequency, compared with 34 percent of those in low-tech. Surprisingly, as in the case of entrepreneurs and wage earners, the use of numeracy skills is quite similar for both groups of individuals, although it is slightly higher in those individuals who work in high-tech occupations. Nonetheless, neither high-tech nor low-tech workers seem to use their reading skills to a high degree, and there is a nearly equal distribution of high- and low-tech workers who report low or no usage of reading skills at work (Figure 6.7).

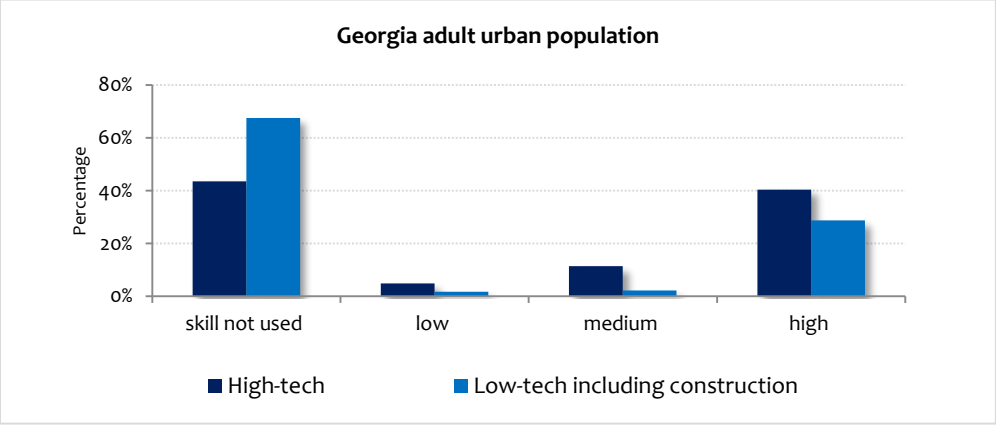
Figure 6.7. Reading skill use among high- and low-tech workers, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

While the job-relevant characteristics of individuals working in high- versus low-tech occupations are different, the distribution of individuals across the different socio-emotional characteristics is fairly similar. Individuals working in high-tech sectors use reading, writing, and computer skills on the job much more often than their counterparts in low-tech occupations. For instance, 40 percent of individuals working in high-tech report a high use of computer skills, compared with 29 percent of low-tech workers. However, it is worth noting that a high proportion of individuals working in both high- and low-tech sectors do not use computer skills much: 43 and 68 percent, respectively. A higher proportion of individuals in high-tech sectors report having more contact with people other than colleagues and co-workers. The distribution of individuals working in high- and low-tech sectors does not seem to differ in regard to the frequency of using thinking skills and learning new things. Overall, individuals in high tech-sectors demonstrate greater use of higher-order skills on the job than workers in low-tech sectors (Figure 6.8).

Figure 6.8. Computer skill use among high- and low-tech workers, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

Highlights of findings

- Entrepreneurship in Georgia, when measured as a percentage of total employment, is low.
- Overall, entrepreneurs have different characteristics and skills when compared with wage earners. They are more likely than wage earners to be male, to have less education, and to belong to less wealthy households. They also exhibit lower use of job-relevant and cognitive skills than wage earners.
- Entrepreneurs are as likely as wage earners to work in manufacturing and construction, and they are more likely to work in agriculture and trade.
- Interestingly, there does not seem to be a wage premium in Georgia for being an entrepreneur.
- Comparisons of individuals working in high-tech versus low-tech sectors shows, unsurprisingly, that those in high-tech use their cognitive and job-related skills, such as computer skills, much more than those in low-tech sectors.

7. Step 5 | Facilitating Labor Market Mobility and Job Matching

The previous sections have shown that educational system and households in Georgia can promote learning for all, can help build the right skills for jobs, and that such skills matter for employability. Another key factor for employability is the quality of labor mobility. While multiple measures of labor mobility exist, the STEP survey first focuses on individuals' school-to-work transitions. The STEP survey results suggest that the longer an individual takes to find a first job after completing his or her highest level of education, the less promising his or her employment prospects are, and the lower the rewards to his or her skills. Further, labor mobility facilitates job matching which increases economic efficiency, and enables individuals to be productive and to use their skills efficiently.

This section starts by exploring the school-to-work transition in Georgia and its implications for the further use of skills. It then goes on to briefly explore the occupational mismatches between the qualifications of the workers and the qualifications required by the types of jobs demanded in the market. In more detail, this section focuses on these three questions: (i) Is the school-to-work transition associated with current labor market outcomes? (ii) Does the first out-of-school job occupation matter in terms of skills? and (iii) What is the difference in skill profile between the inactive—those neither studying nor actively looking for employment—and those who are employed?

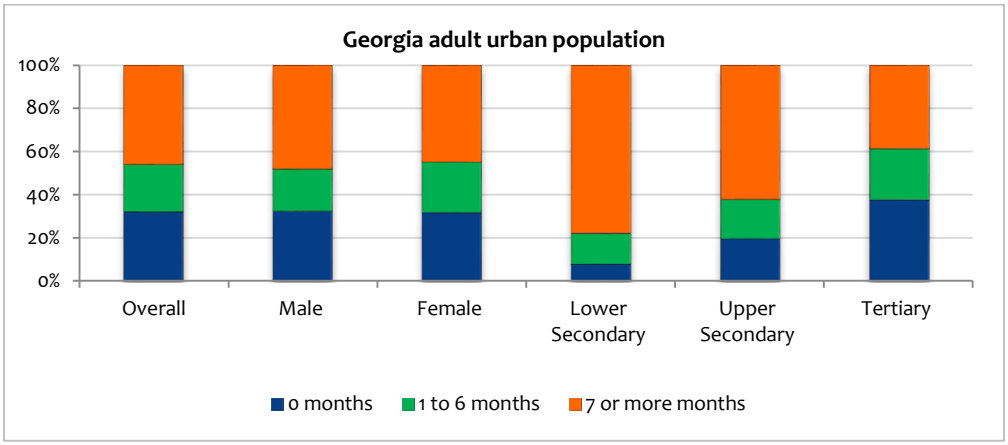
The analysis relies primarily on descriptive statistics covering adults between ages 25 and 40 in urban Georgia. By focusing on this population, we aimed to capture the transitions of individuals most likely to be out of their highest education level and with some labor market experience. The survey asked for the first job out of the highest level of education that lasted more than six months, and its occupation.

Is the school-to-work transition associated with current labor market outcomes and skills?

In Georgia, there is a moderately fast school-to-work transition for individuals between age 25 and 40 in urban areas; however, there are large differences across educational attainment. For instance, more than half of individuals between ages 25 and 40 find a job within six months of leaving school. This pattern is the same for both genders (52 percent for men and 56 for women). However, there are large

differences across educational attainment: among those with tertiary education, close to 61 percent find a job within six months, but for lower-secondary and upper-secondary graduates the rates are around 22 percent and 38 percent, respectively (Figure 7.1).

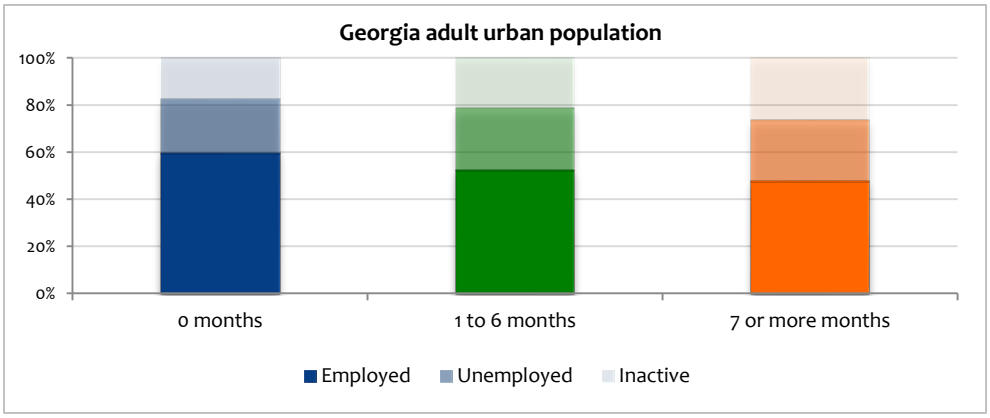
Figure 7.1. Distribution of school-to-work transition times by gender and educational attainment, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

The rapid transition often leads to better labor market outcomes. Those individuals who had a school-to-work transition of less than one month and one-to-six months have greater chances of being employed (59 and 52 percent, respectively) than of being unemployed (23 and 27 percent, respectively) or inactive (17 and 21 percent, respectively). However, the proportion of inactive individuals increases as transition times grow longer, which may suggest that individuals are opting out of the labor market when job search becomes difficult (Figure 7.2).

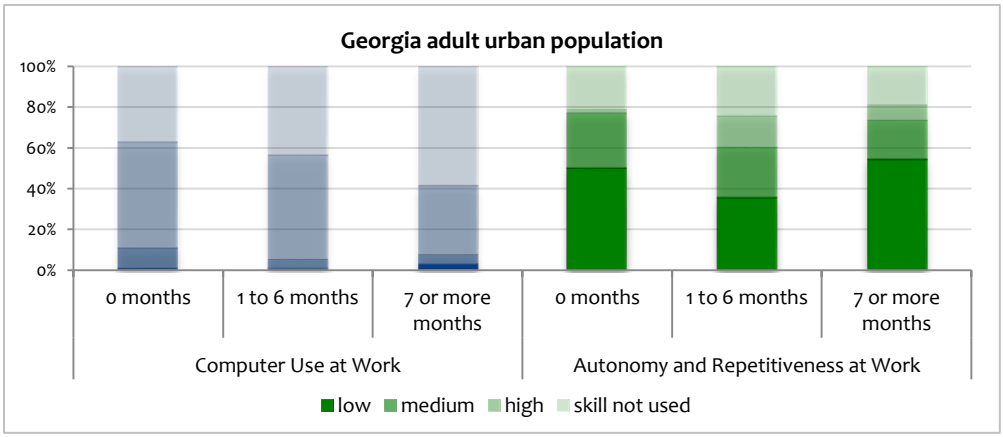
Figure 7.2. Distribution of labor market status by school-to-work transition time, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

Also, a quicker school-to-work transition is associated with a higher stock of job-relevant skills. Differences in the duration of school-to-work transition also correlate with differences in job-relevant skills, such as computer use and intensity of use and autonomy at work. In the first case, individuals who spent more time in the school-to-work transition report less use and less intensive use of computer skills. On the other hand, individuals tend to use autonomy and repetitiveness skills at work at the same level regardless of the length of their school-to-work transition, although the intensity varies (Figure 7.3).

Figure 7.3. Computer use at work and autonomy and repetitiveness at work: Distribution of intensity by duration of school-to-work transition, Georgia

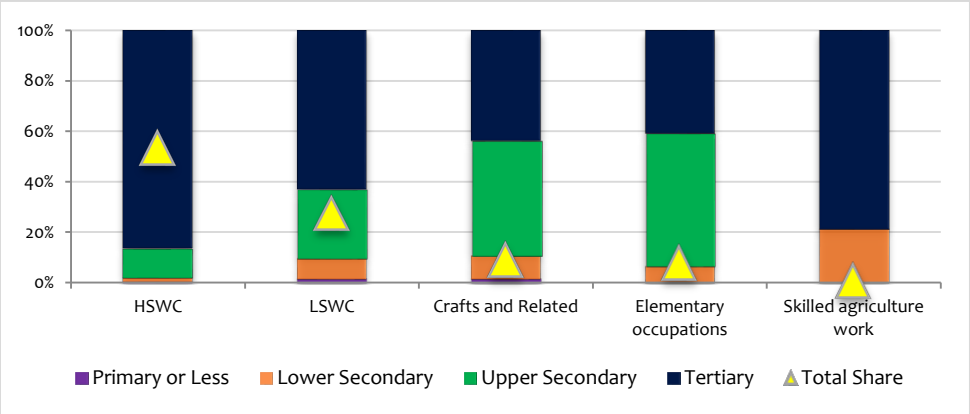


Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

Does the first out-of-school job occupation matter in terms of skills?

The quality of first out-of-school job matters to better leverage the skills obtained in the educational system. Around 81 percent of the individuals between ages 25 and 40 were employed in white-collar occupations as a first out-of-school job. These occupations may provide the individual with tasks that demand the skills learned at that individual's highest level of education. It is worth noting that around 53 percent of these first job holders are in high-skilled white collar (HSWC) occupations, reinforcing the idea that they are working in adequate tasks and using relevant skills. Given this, it is not surprising that around 81 percent of these individuals in first-time HSWC occupations have a tertiary education. Additionally, 17 percent of these first job holders are in blue-collar occupations (crafts and related, 9 percent; and elementary occupations, 8 percent) that come mostly from upper-secondary education (45 percent for craft and related and 53 for elementary occupations) (Figure 7.4).

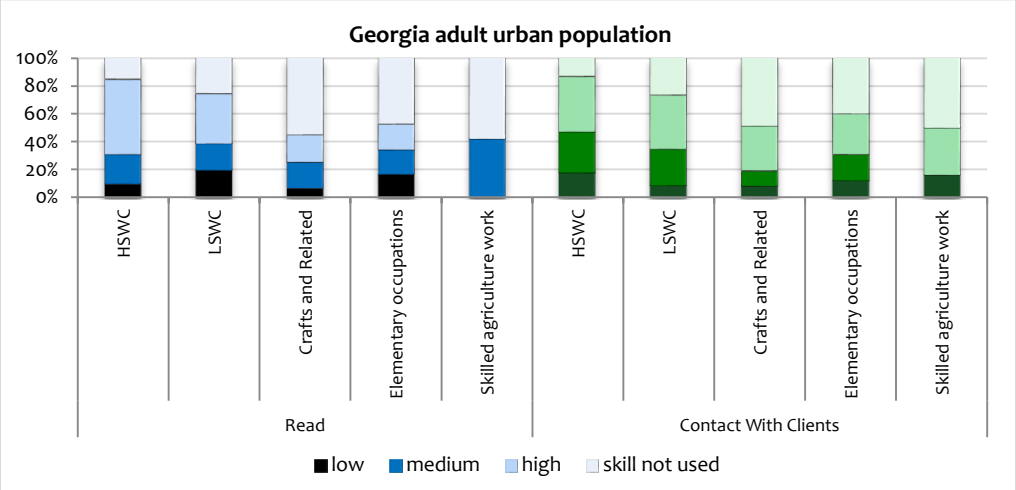
Figure 7.4. Educational attainment: Composition and total share of individuals by first out-of-school occupation type, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

Differences in the occupations among first out-of-school jobs are also reflected in differences in observed skills. For instance, looking at this same 25 to 40 age cohort, the cognitive skill of reading (self-reported) is used more, and used more intensively, by individuals in HSWC occupations than by those in crafts and related and elementary occupations. The same pattern holds for job-relevant skills such as contact with clients, which HSWC workers tend to use more, and more intensively, than those in all other reported first out-of-school job occupations (Figure 7.5).

Figure 7.5. Distribution of reading and contact with clients, use and intensity, by first out-of-school occupation, Georgia



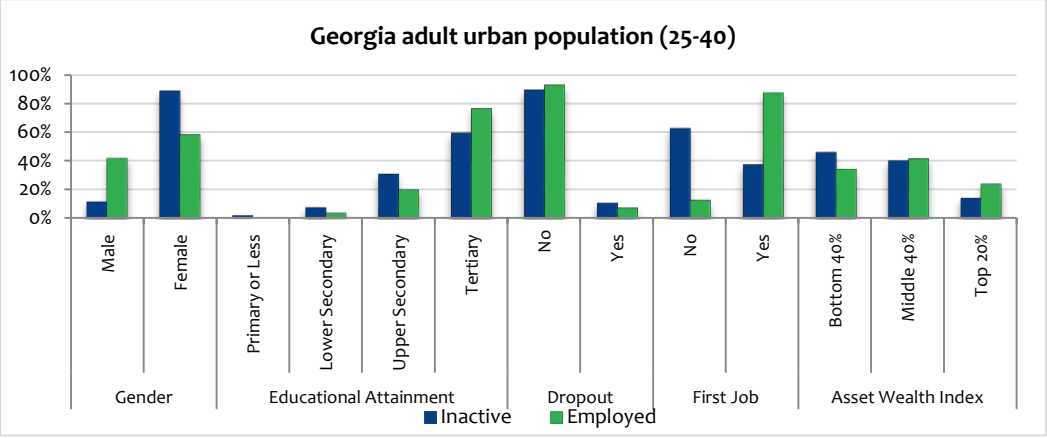
Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

How do those who are inactive differ from those who are employed?

Approximately 156,000 individuals between ages 25 and 40 (around 35 percent of this age group) are currently inactive, in this case neither studying nor actively looking for employment, in urban Georgia. This presents a challenge for policy since: (i) these people are at risk of becoming a vulnerable population; and (ii) their status represents a loss in human capital in the form of education investment and skills. Thus, it is important to understand who the inactive are, what their skill profiles are, and whether they are essentially different from those who are employed.

Differences in their experience finding a first out-of school job and in their gender seem to be the main factors differentiating the inactive from the employed. Almost 9 out of 10 individuals ages 25 to 40 who are currently inactive are women, while among those in this age group who are currently employed only 6 out of 10 are women. While only 4 out of 10 of the currently inactive report having had a first out-of-school job that lasted more than six months after their highest educational attainment, among those currently employed almost 9 out of 10 report this experience. Finally, a larger proportion of the inactive seem to belong to currently poorer households than those who are employed. For instance, 46 percent of the inactive are in the bottom 40 percent of households, compared with 34 percent of those employed (Figure 7.6).

Figure 7.6. Distribution of gender, educational attainment, dropout, first out-of-school job and asset wealth by inactive and employed, Georgia

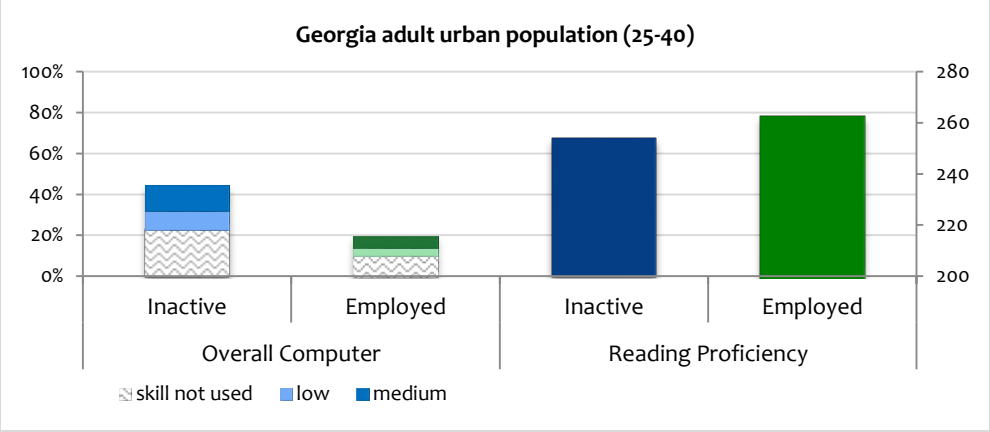


Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

Inactive and employed individuals also differ in their skill profiles in ways that will further limit inactive individuals' prospects of finding quality jobs. For instance, the inactive tend to use computer skills less often (77 percent) and less intensively (55 percent using at high intensity) than those who are

employed (90 percent using and 80 percent using at high intensity). This is also reflected in differences in reading proficiency. The average reading score for the inactive is 254, while for the employed it is 263, a difference that is statistically significant. Both computer and reading skills are correlated with better labor market outcomes, as discussed earlier in Step 3 (Figure 7.7).

Figure 7.7. Distribution of computer use, intensity of use, and reading proficiency scores by inactive and employed, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

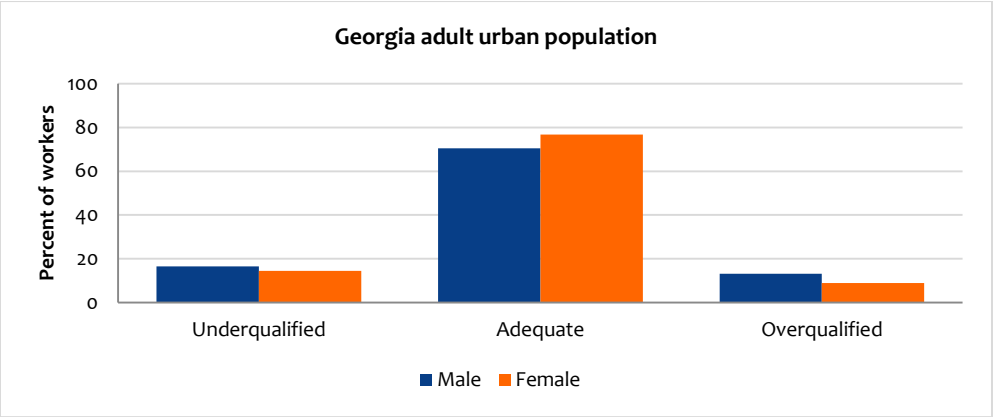
To what extent are there occupational mismatches in the labor market?

The rest of this section explores aspects of job matching, and in particular occupational mismatch for the working age population in Georgia. Workers have to both learn skills and use them in the workplace in order to be productive. However, mismatches can occur between job requirements and a worker's qualifications and skills due to imperfectly competitive labor markets, incomplete information about an applicant's qualifications, or limited geographic mobility.

Mismatch is defined as a poor fit between the individual's qualifications and job-required qualifications (Quintini, 2011). *Over-qualification* is defined as a situation where a worker's qualification is higher than what is required for the job, while *under-qualification* is the reverse. There are different approaches to measuring mismatches; for instance, there can be skills or occupational mismatches. In this section, we use occupational mismatch and measure it using the method of realized matches (Clog and Shockey, 1984; Verdugo and Verdugo, 1989), which roughly assumes that years of schooling reflect the abilities or skills of an individual. The section then explores how the skills of those who experience mismatch compare with the skills of those who do not experience mismatch.

About 74 percent of Georgia's workers have adequate qualifications, measured by years of education, for the jobs they hold. Only 15 percent of wage earners are underqualified, and 10 percent are overqualified. The difference in occupational mismatch is gender-neutral, and it is highest for those in the 40–49 age cohort, not counting young people (the 15–24 cohort), who tend to be underqualified for the jobs (Figure 7.8).

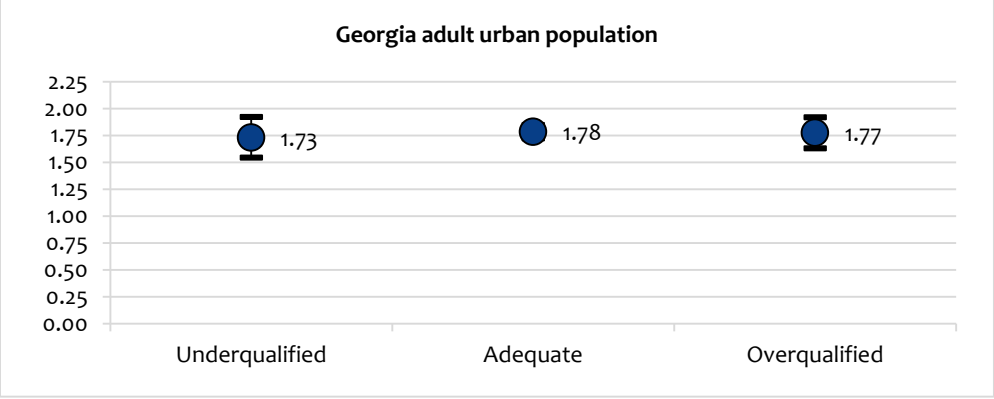
Figure 7.8. Distribution of occupational mismatch by gender, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.

Interestingly, cognitive skills do not vary much for individuals who are overqualified compared with those who are underqualified or adequate for the job. For instance, overqualified workers report levels of use of reading and writing skills similar to those reported by workers who are adequate or underqualified. Nonetheless, overqualified individuals have very marginally better numeracy and written skills than those who are adequate or underqualified (Figure 7.9).

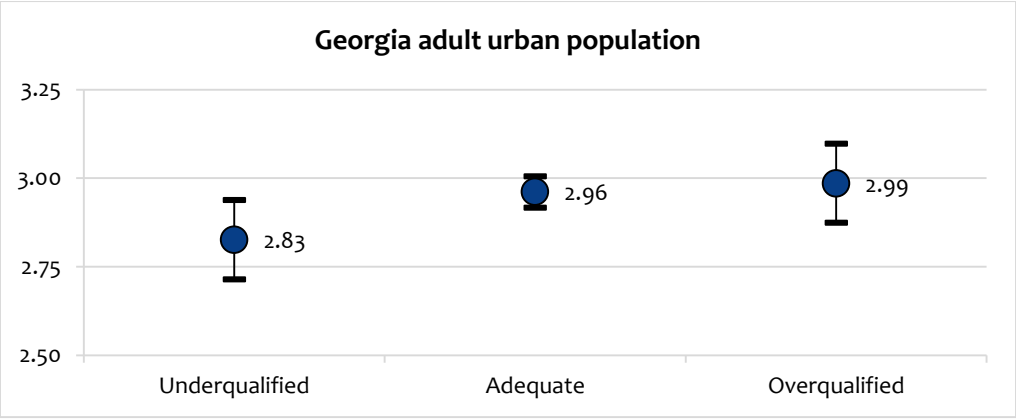
Figure 7.9. Average numeracy scores by job qualification, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.
Note: Numeracy overall skill is measured by an index that runs from 0 to 3, 0 signifying almost no use of numeracy skills, and 3 signifying high use of numeracy skills.

Similarly, socio-emotional skills are also likely to be similar among the three type of workers (underqualified, adequate, and overqualified individuals). Most of the socio-emotional skill profiles are quite similar. An exception is grit (Figure 7.10), which seems to be higher among overqualified and adequate individuals. On job-relevant skills, overqualified individuals report being more likely to supervise other people at work, reading and writing more, and having a higher use of numeracy skills.

Figure 7.10. Average grit scores by job qualification, Georgia



Source: World Bank, Georgia STEP Skills Measurement Survey, 2013.
Note: Grit is measured by an index that goes from 0 to 4, 0 signifying low grit, and 4 signifying higher and more intense levels of grit.

Highlighted findings

- There is a moderately fast school-to-work transition for individuals between ages 25 and 40 in Georgia. At the same time, transition times differ markedly depending on educational attainment.
- Rapid transitions are associated with better labor market outcomes. Individuals who transitioned from school to work in less than six months are roughly twice as likely to be employed (at the time of the survey) as to be unemployed, and they are also more likely to have a large stock of job-relevant skills.
- Most individuals holding their first out-of-school jobs are in skilled occupations with large shares of high educational attainment, which is reflected in the very high proportion of 25-to-40-year-olds whose first job out of school was in a white-collar occupation.
- A severe gender disparity distinguishes individuals who are inactive from those who are employed, looking for work, or in school. Almost 9 out of 10 inactive individuals between 25 and 40 years old are women.
- The inactive differ from the employed in their skill profiles—for example, by the fact that they tend to use computer skills less often—and this difference is likely to further limit their prospects of finding quality jobs.
- The analysis of occupational mismatch shows us that overall there seems to be a good match between workers and jobs in Georgia. The distribution of individuals between underqualified, adequate, and overqualified categories seems to be gender-neutral.
- Cognitive skills for underqualified, adequate, and overqualified individuals are broadly similar, but there are slight differences between overqualified and underqualified individuals in socio-emotional and job-relevant skills.

8. Conclusions and Way Forward

Given the challenges in growth and employment, it is imperative that Georgia's workforce have the right skills to prepare for the new and modern jobs as well as the skills that can drive entrepreneurship and innovation. Employers in Georgia today often contend that they cannot find suitable workers who meet their needs, and the inadequate education and training of the labor force is one of the most felt obstacles for expanding businesses. This may be leading to maintain an underqualified workforce, although the majority of workers believe they have the right skill set. In the meantime, Georgia has a large number of workers with tertiary education who experience difficulties finding jobs. There is an obvious gap between skills and diplomas. While transforming Georgia's traditional economic structure and creating jobs will lead to more and better employment opportunities for many, a labor force equipped with relevant skills is a necessary condition for this transformation to take off in the first place. Under the STEP framework and enriched with the newly available survey data sets, the findings presented in this report point to several key areas that need to be given due attention to build such a highly skilled Georgian workforce.

Step 1 | Getting children off to the right start. The data shows that participating in early childhood education services is traditionally common in Georgia. This report finds that there are obviously significant payoffs from participating in early childhood education programs: higher levels of cognitive and socio-emotional skills and better labor market outcomes later in adulthood. The Government of Georgia has been well aware of the benefits of investing in early childhood education, and in 2013 it announced a free pre-school policy. There has been indication of increased demand countrywide. The immediate challenge is to expand the service provision to meet the increased demand while in the meantime maintaining service quality standards and fiscal sustainability. In view of these challenges and constraints, consideration can be given to: (i) establishing varied service models with differentiated cost-sharing arrangements, with priority given to access for the socioeconomically disadvantaged households from whom these services are currently out of reach; (ii) clearly defining central and local government roles and responsibilities in terms of setting standards, financing, and providing services, as well as monitoring and evaluating performance; and (iii) tapping into the potential of the private sector to expand service provision.

Step 2 | Ensuring that all students learn in Georgia. Georgia has a well-educated population overall, with a large share of tertiary diploma holders. Higher levels of educational attainment in Georgia are also associated with higher levels of reading proficiency; higher scores in some socio-emotional skills; and more frequent use of foundational and job-relevant skills. However, compared with OECD countries, Georgian adults' average reading proficiency is low. Most distinctively, the skills gains obtained by rising through educational levels appear to be much smaller than the gains observed in OECD countries. Two recent, negative trends particularly need to be further looked into: the first is the declining ratio of tertiary education enrollment, and the second is the widening gaps in education and skills that are appearing across the household socioeconomic strata.

Moving forward, Georgia will need to prioritize the following actions:

(i) *Improve learning outcomes and skills formation in the education system*. Worldwide experience shows that this is not an easy task, and results may take years to show. Lessons from other countries also show that having a high-quality and effective teaching force is the foremost necessary condition for high-quality education. Having a strong quality assurance and accountability system for learning results is another important pre-requisite.

(ii) *Strengthen tertiary education*. This will be necessary as over half of Georgia's labor force comes from tertiary graduates. The systemic as well as institutional reforms should emphasize building a close link with the labor market's need for a skilled and innovative labor force, not only as employees, but also as entrepreneurs.

(iii) *Narrow the learning outcome and skills gap*. Measures targeting those who lag behind in school need to be put in place. An effective school system should serve as an important channel to narrow the gaps associated with the different family backgrounds from which students come.

Step 3 | Building job-relevant skills in Georgia. Skills matter for labor market outcomes in Georgia. In addition to educational attainment, some direct measure of skills appears to have a significant association with improved employment opportunities as well as with earnings. These not only include cognitive but also socio-emotional skills. Data analysis also shows that participating in any form of on-the-job training, professional certification, and apprenticeship is associated with higher level of skills. On top of the foundational skills, technical and job-specific skills will need to be built, and this will require a re-thinking of the two important stages of this skill formation:

(i) *Vocational education and training.* The systems for vocational education and training need to be assessed and strengthened. The Government of Georgia has a comprehensive plan to revitalize these systems. A key challenge, however, will be how to implement this plan to improve the effectiveness of the current vocational schools in providing the skills needed on the labor market. In the longer term, as the demand for high-level skills rises, whether to delay tracking into technical and vocational education and training after completion of foundational learning up to senior secondary education can be evaluated and considered.

(ii) *On-the-job training.* Various forms of on-the-job training remain the most effective way to acquire job-specific skills. To increase opportunities for on-the-job training, incentives can be designed to encourage firms to provide their employees with more on-the job training and apprenticeship opportunities in collaboration with schools and training institutions.

Step 4 | Encouraging entrepreneurship and innovation in Georgia. The prevalence of entrepreneurship in Georgia, defined in this report as self-employment, is low as measured by the percentage of total employment. The findings indicate that Georgian entrepreneurs tend to have lower levels of educational attainment and lower scores in job-relevant, socio-emotional, and cognitive skills than wage earners, and also have lower income levels. This may indicate that entrepreneurship, as defined, is not often linked to innovation and higher productivity activities. However, there are signs that the innovative sectors have good potential, since high-tech sectors already provide a substantial share of all workers in Georgia (57 percent), and 71 percent of these workers are women. Future policy assessment and consideration can aim at: (i) creating an enabling business environment and improving business-supporting services and risk management policies and instrument to encourage entrepreneurship, targeting the innovative sectors; and (ii) aligning some of the education and training courses, particularly at the tertiary level, with the objective of fostering entrepreneurship by equipping trainees with the essential knowledge, skills, and attitudes.

Step 5 | Facilitating labor market mobility and job matching. In Georgia, the transition period between finishing school and starting the first job is generally short. This report has found that smooth school-to-work transition often leads to better and more job-relevant skills and further increases employability and earnings prospects. In addition, a majority of workers seem to have adequate qualifications for the jobs they have, even though "qualifications" may not be fully aligned with "skills." To fully understand labor market mobility and job match, two important questions need future research: (i) What are the job turnovers in Georgia, in the present and expected in the future,

and how should the system of adult learning and skills re-training or updating respond to the need? (2) What public employment services exist, what is their status or performance, and how could they function effectively to foster labor market mobility by providing real-time labor market information and bridging employers and job-seekers?

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Technical Annexes

Annex 1: The STEP Skills Measurement Program: The Household Survey

1. Geographic coverage

The STEP Skills Measurement household survey program covers a large sample of low and middle-income countries, including Armenia, Bolivia, Colombia, Georgia, Ghana, Kenya, Lao PDR, Macedonia, Sri Lanka, Ukraine, Vietnam, and the Yunnan Province in China. Surveys were carried out between 2011 and 2013. In Armenia, the household survey was implemented in 2013. The field work was carried out from April to June 2013.

2. Target population

The STEP target population is the urban population ages 15 to 64. The sampling strategy was designed to ensure that the target population represents at least 95 percent of the urban working-age population (aged 15 to 64) in each country. The specifics for the Georgia data are included in Tables A1 and A2.

Annex Table 1: Main characteristics / Georgia

Target population	Non-institutionalized persons 15 to 64 years of age (inclusive) living in private dwellings in urban areas of Georgia at the time of data collection. Persons living in the conflict regions Abkhazia and South Ossetia are excluded.
Initial sample size	5,402 activated households, of them 4,786 eligible households
Response rate	62.6%
Final sample size	2,996 participating selected persons with a final person weight
Field work	March – May 2013
Coverage	The sample was stratified by 5 geographic areas: Capital, Other Urban Northeast, Other Urban Northwest, Other Urban Southeast, and Other Urban Southwest.

Source: WB, 2013, STEP Survey Weighting Procedures Summary: Georgia (Based on the World Bank Weight Requirement), Draft 1, December 27.

Annex Table 2: STEP and alternative estimates of urban population (15-64 years) by gender & age group

	STEP (unweighted), urban	STEP (weighted), urban	Administrative demographic statistics (beginning of 2013), urban and rural	Integrated Household Survey 2012 (average annual), urban and rural
Total (persons)	**2,996**	**1,346,787**	**3,100,200**	**2,456,300**
Female (%)	67.3	67.5	51.6	54.4 (population 15+)
Age group (%)				
15-19	7.5	9.1	9.1	10.0
20-24	11.3	14.0	11.8	11.1
25-29	10.5	11.5	11.6	10.6
30-34	11.2	10.0	10.7	9.5
35-39	10.5	9.4	10.1	9.8
40-44	9.4	8.8	9.8	9.9
45-49	10.0	9.5	9.9	10.6
50-54	11.0	10.5	10.6	10.5
55-59	9.7	9.1	8.8	10.1
60-64	9.1	8.2	7.6	8.0

Source: STEP Georgia; National Statistics Office of Georgia, on-line Geostat Database (http://www.geostat.ge/index.php?action=page&p_id=1145&lang=eng); author's calculations.

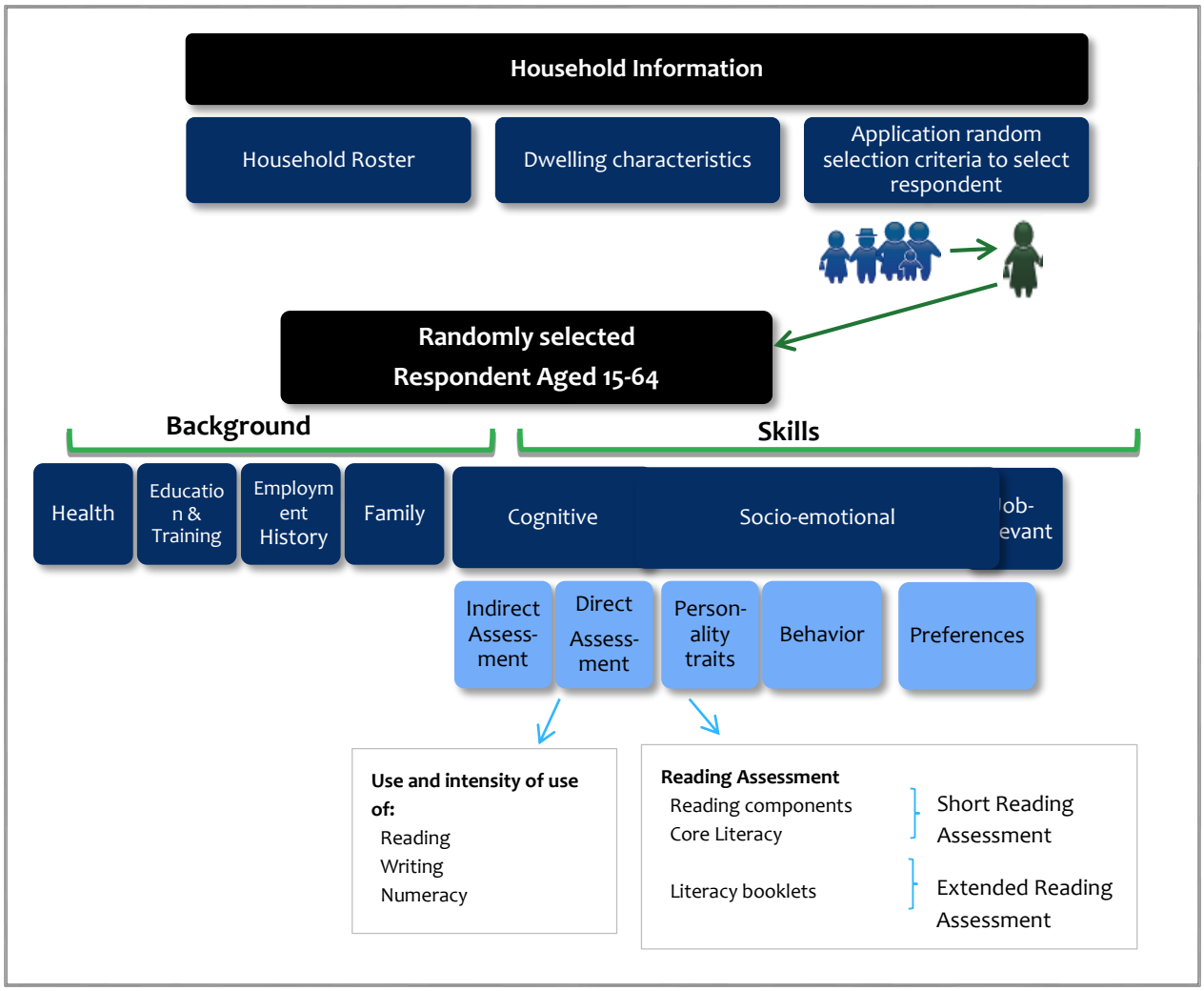
3. Background questionnaire

The STEP survey collects comprehensive information not typically captured by traditional household surveys. It includes two distinct instruments: a background questionnaire and a reading literacy assessment. The background questionnaire is organized in three household background modules and seven thematic modules. Module 1 starts with a standard household roster and a section on dwelling characteristics. It concludes with the random selection of a household member aged 15 to 64 to whom the remainder of the survey is administered. The random selection is based on strict guidelines set by the STEP technical standards. Modules 2 to 11 are applied to the randomly selected respondent. Module 2 collects in-depth information on education, training, and the person's first job. Module 3 asks health-related questions. Module 4 gathers extensive information on the respondent's current occupation(s). Modules 5 and 6 include some of STEP's most innovative features. Module 5 asks detailed questions on the respondent's use of reading, writing, and numeracy skills in daily life and at work, as well as job-relevant skills used at work. Module 6 provides information on personality traits, behavior, and preferences. It is important to note the survey gathers skills information from the entire sampled population, regardless of their labor force status (employed, unemployed or inactive) and type of employment. Job-relevant skills, however, are captured only for respondents who are currently working or have worked at some time in the 12 months prior to the survey. Finally, Module 7 focuses on family background.

4. Reading literacy assessment

The second part of the STEP survey consists of a reading literacy assessment, which was specifically developed for the STEP survey by Educational Testing Services (ETS). This assessment provides a direct measure of respondents' reading proficiency. It is organized in three parts. The first part focuses on foundational reading skills, including word meaning, sentence processing and passage comprehension. The second part consists of a core literacy assessment, which is used as a screener intended to sort the least literate from those with higher reading skill levels. The third part is only administered to respondents having passed the core literacy assessment. It provides a finer evaluation of reading skills for the most literate individuals in the sample. The STEP Survey in the Yunnan province of China, Lao PDR, and Sri Lanka included only parts one and two of the reading literacy assessment. In Sri Lanka the test was administered in Tamil and Sinhala.

Annex Figure 1: Structure of household survey



5. Technical standards

The STEP Skills Measurement household survey was specifically designed to ensure data comparability. Coordination and supervision were centralized so survey instruments were administered in a standardized way across all participating countries, including Georgia. All survey firms benefited from the STEP team's technical assistance throughout the implementation process and complied with the STEP technical standards. Each survey firm's implementation plan was summarized in a National Survey Design Planning Report. The sampling strategy and data weighting were carried out by a single survey methodologist to ensure consistency across methodologies (see STEP Skills Measurement Survey Methodology Note, 2014).

6. Overall sample size and response rates

Sample sizes vary from 1,196 observations in Sri Lanka to 3,405 observations in Vietnam. Response rates range from 60 percent in Sri Lanka to 98 percent in the Yunnan Province. In Bolivia and Colombia however, response rates were markedly lower (respectively 43 percent and 46 percent).

Annex Table 3: Sample sizes and response rates, by country

	Armenia	Bolivia	Colombia	Georgia	Ghana	Lao PDR	Sri Lanka	Vietnam	Yunnan Province
Sample Size	2,992	2,435	2,617	2,996	2,987	2,032	1,196	3,405	2,017
Response Rate in %	50%	43%	48%	63%	83%	94%	60%	62%	98%

Note: All samples are for urban areas *only*.

Annex 2: Skills Measured in the STEP Skills Survey

The STEP surveys measure the skills shown below in Table A4.

Annex Table 4: STEP skills measured

Cognitive Skills	Direct measurement of reading literacy based on the Survey of Adult Skills instruments	▪ Reading proficiency
	Indirect assessment (self-reported) on individuals' use of foundational skills--at work or in daily life	▪ Writing ▪ Numeracy
Socio-emotional skills	Personality traits	▪ Openness ▪ Conscientiousness ▪ Extraversion ▪ Agreeableness ▪ Neuroticism ▪ Grit
	Behavior	▪ Hostile attribution bias ▪ Decision making
	Risk and time preference	
Job-relevant skills	Qualifications required for the job and job learning times	
	Indirect assessment of skills used at work	▪ Computer use ▪ Contact with clients ▪ Solving and learning ▪ Autonomy and repetitiveness ▪ Physical tasks

Cognitive skills are defined as the "ability to understand complex ideas, to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, to overcome obstacles by taking thought." Literacy, numeracy, and the ability to solve abstract problems are all cognitive skills. The STEP survey provides a direct measurement of reading proficiency and an indirect measurement of reading, writing, and mathematics skills.

1. Direct measurement

The survey includes a direct measure of reading proficiency through the reading literacy assessment designed by the Educational Testing Services (ETS), as outlined in Figure A2.

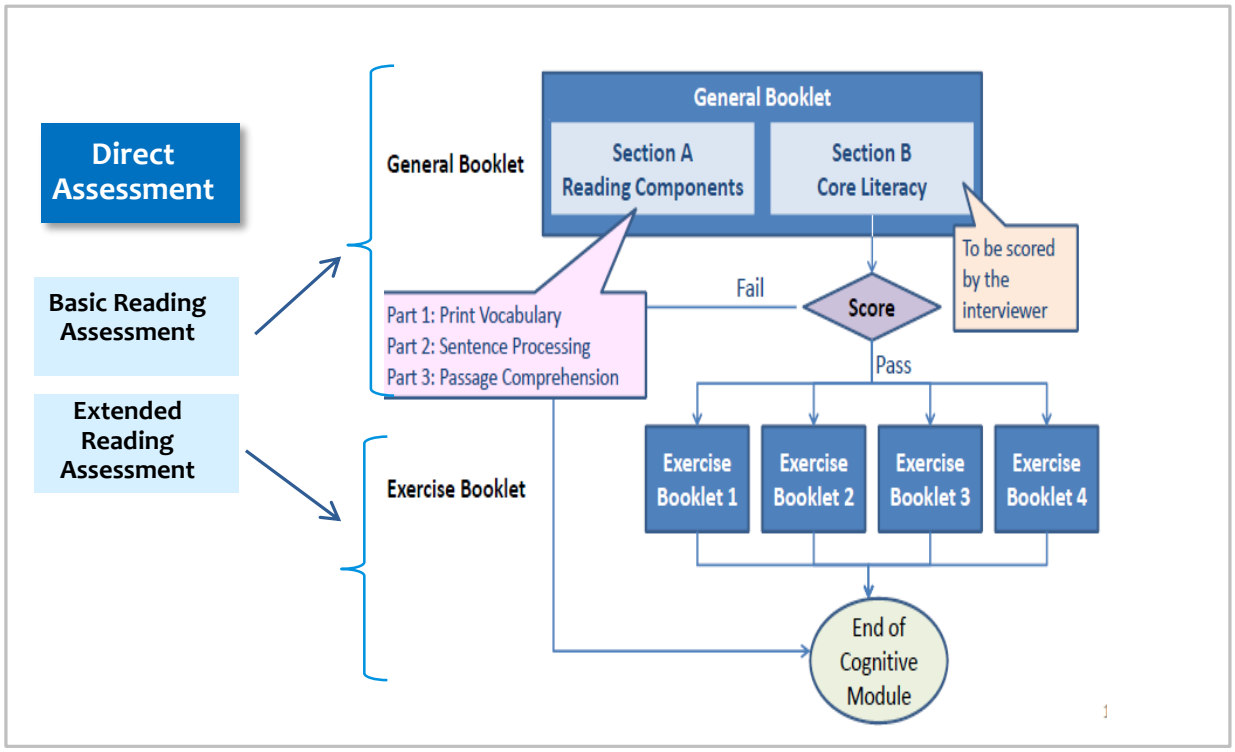
This assessment has three parts:

(i) The first part of the assessment (Section A) evaluates foundational reading skills, including word meaning, sentence processing and passage comprehension. Word meaning exercises ask respondents to match written words to pictures of everyday objects. Sentence processing exercises ask individuals to identify whether or not a given sentence makes sense. Finally, passage comprehension exercises require respondents to complete sentences embedded in a paragraph, by selecting one of two words that best fit the overall meaning of the section. As these exercises were timed, the analysis may also include a time dimension. The data provided by part one of the assessment can translate into multiple variables (e.g., score, pace).

(ii) The second part (Section B) consists of a core literacy assessment, which sorts the least literate from those with higher reading skill levels. This section includes eight items. Respondents with three or more correct responses are regarded as having met a minimum reading literacy threshold. The present document uses an indicator variable to identify respondents having passed the core reading assessment.

(iii) The third part (Exercise booklets) is only administered to respondents having passed the core assessment. It evaluates reading proficiency in more depth. The assessment uses a variety of materials, focusing on non-school-based items encountered in daily life. It also involves different types of tasks, including tasks that require respondents to access and identify information (in both text-based and non-prose materials such as tables, graphs and forms), to integrate and interpret information, and to evaluate information by assessing the relevance, credibility, or appropriateness of the material for a particular task. Items present varying levels of difficulty, with tasks ranging from locating a single piece of information in a very short advertisement to summarizing reasons for using generic drugs as presented in a newspaper article. Overall reading proficiency scores are reported on a scale ranging from 0 to 500, which is divided into 5 levels, with Level 1 characterized by the least demanding tasks and Level 5 the most demanding. (Table A5 below explains the levels and scoring in detail.) For each respondent, 10 plausible values were generated. Findings presented in this report are based on using all 10 plausible values.

Annex Figure 2: Direct assessment of reading literacy – reading assessment flow chart



Annex Table 5: Direct measurement of reading proficiency | Key indicators

Core Literacy Assessment	
Did not pass Answered fewer than 3 correct responses out of 8 items	Respondent's reading proficiency is below a minimum reading literacy threshold
Pass Answered 3 or more correct responses out of 8 items	Respondent has met a minimum reading literacy threshold

	Reading Proficiency Levels and Score
Literacy Below Level 1 **0 to 175**	The tasks at this level require the respondent to read brief texts on familiar topics to locate a single piece of specific information. Only basic vocabulary knowledge is required, and the reader is not required to understand the structure of sentences or paragraphs or make use of other text features. There is seldom any competing information in the text and the requested information is identical in form to information in the question or directive. While the texts can be continuous, the information can be located as if the text were noncontinuous. Tasks below Level 1 do not make use of any features specific to digital texts.

Literacy Level 1 **176 to 225**	Most of the tasks at this level require the respondent to read relatively short digital or print continuous, non-continuous or mixed texts to locate a single piece of information which is identical to or synonymous with the information given in the question or directive. Some tasks may require the respondent to enter personal information into a document, in the case of some noncontinuous texts. Little, if any, competing information is present. Some tasks may require simple cycling through more than one piece of information. Knowledge and skill in recognizing basic vocabulary, evaluating the meaning of sentences, and reading of paragraph text is expected.
Literacy Level 2 **226 to 275**	At this level, the complexity of text increases. The medium of texts may be digital or printed, and texts may comprise continuous, noncontinuous or mixed types. Tasks in this level require respondents to make matches between the text and information, and may require paraphrase or low-level inferences. Some competing pieces of information may be present. Some tasks require the respondent to cycle through or integrate two or more pieces of information based on criteria, compare and contrast or reason about information requested in the question, or navigate within digital texts to access and identify information from various parts of a document. (cont'd. …)
Literacy Level 3 **276 to 325**	Texts at this level are often dense or lengthy, including continuous, noncontinuous, mixed or multiple pages. Understanding text and rhetorical structures become more central to successfully completing tasks, especially in navigation of complex digital texts. Tasks require the respondent to identify, interpret or evaluate one or more pieces of information and often require varying levels of inference. Many tasks require the respondent to construct meaning across larger chunks of text or perform multistep operations in order to identify and formulate responses. Often tasks also demand that the respondent disregard irrelevant or inappropriate text content to answer accurately. Competing information is often present, but it is not more prominent than the correct information.
Literacy Level 4 **326 to 375**	Tasks at this level often require respondents to perform multiple-step operations to integrate, interpret, or synthesize information from complex or lengthy continuous, noncontinuous, mixed, or multiple type texts. Complex inferences and application of background knowledge may be needed to perform successfully. Many tasks require identifying and understanding one or more specific, non-central ideas in the text in order to interpret or evaluate subtle evidence claims or persuasive discourse relationships. Conditional information is frequently present in tasks at this level and must be taken into consideration by the respondent. Competing information is present and sometimes seemingly as prominent as correct information.

Literacy Level 5 **376 to 500**	At this level, tasks may require the respondent to search for and integrate information across multiple, dense texts; construct syntheses of similar and contrasting ideas or points of view; or evaluate evidence-based arguments. Application and evaluation of logical and conceptual models of ideas may be required to accomplish tasks. Evaluating reliability of evidentiary sources and selecting key information is frequently a key requirement. Tasks often require respondents to be aware of subtle, rhetorical cues and to make high-level inferences or use specialized background knowledge.

2. Indirect measurement

The STEP survey also asks respondents to report on their *use* of cognitive skills in daily life and at work, namely if they read, write, or use mathematics. For each skill, a score ranging from 0 to 3 was computed. When a respondent reports not using a given skill, the score is set at 0. For respondents who do use a given skill, intensity or complexity of use was defined (1 for low, 2 for medium, and 3 for high). The aggregation process and reliability testing are described in the STEP Skills Measurement Survey Methodology Note (2014). Table below lists the key indicators for cognitive skills.

Annex Table 6: Indirect measurement of cognitive skills | Key indicators

Use of reading and writing skills		Intensity of use	Level
Does not read/write	=	Does not use	0
Read/write documents of 5 pages or less	=	Low	1
Read/write documents of 6 to 25 pages	=	Medium	2
Read/write documents of more than 25 pages	=	High	3
Use of numeracy skills		**Complexity of use**	**Level**
Does no math	=	Does not use	0
Measures or estimates sizes, weights, distances; calculates prices or costs; performs any other multiplication or division	=	Low	1
Uses or calculates fractions, decimals or percentages	=	Medium	2
Uses more advanced math such as algebra, geometry, trigonometry	=	High	3

Socio-emotional skills, sometimes referred to in the literature as non-cognitive skills or soft skills, relate to traits covering multiple domains (social, emotional, personality, behaviors, attitudes, etc.). The survey builds on the "Big Five" personality traits: openness, conscientiousness, extraversion, agreeableness, and neuroticism (or its opposite, emotional stability). Measures of grit, which has been shown to have an impact in life outcomes and hostile attribution bias, were also included, as well as questions pertaining to how individuals make important decisions. Response categories range from 1, "almost never", to 4, "almost always". The aggregation process and reliability testing are described in the STEP Skills Measurement Survey Methodology Note (2014). Table A7 presents the questionnaire items used for each socio-emotional skill.

Annex Table 7: Socio-emotional skills | Items

Socio-emotional skill	Items
Openness	Do you come up with ideas other people haven't thought of before? Are you very interested in learning new things? Do you enjoy beautiful things, like nature, art and music?
Conscientiousness	When doing a task, are you very careful? Do you prefer relaxation more than hard work? Do you work very well and quickly?
Extraversion	Are you talkative? Do you like to keep your opinions to yourself? Do you prefer to keep quiet when you have an opinion? Are you outgoing and sociable, for example, do you make friends very easily?
Agreeableness	Do you forgive other people easily? Are you very polite to other people? Are you generous to other people with your time or money?
Emotional Stability (Neuroticism)	Are you relaxed during stressful situations? Do you tend to worry? Do you get nervous easily?
Grit	Do you finish whatever you begin? Do you work very hard? For example, do you keep working when others stop to take a break? Do you enjoy working on things that take a very long time (at least several months) to complete?
Hostile Bias	Do people take advantage of you? Are people mean/not nice to you?
Decision-making	Do you think about how the things you do will affect you in the future? Do you think carefully before you make an important decision? Do you ask for help when you don't understand something?

Job-relevant skills are task-related and build on a combination of cognitive and socio-emotional skills. The STEP survey asks respondents about their use of such skills on the job, including among others computer use, repair and maintenance of electronic equipment, operation of heavy machinery, client contact, solving and learning, supervision, etc. For each skill, a score ranging from 0 to 3 was computed. When a respondent reports not using a given skill, the score is set at 0. For respondents who do use a given skill, intensity or complexity of use was defined (1 for low, 2 for medium, and 3 for high). The STEP Skills Measurement Survey Methodology Note (2014) provides more information on the selection of this particular set of skills and on the way these skills are assessed in the STEP survey. See Tables A8 and A9, below, for lists of skills and associated scales.

Annex Table 8: Job-relevant skills

Computer use		Intensity of use	Level
"As a part of your work do you use a computer?" "As a part of your life [outside work] have you used a computer in the past 3 months?"			
Does not use a computer/use a computer almost never	=	Does not use	0
Uses computer less than three times per week	=	Low	1
Uses computer three times or more per week	=	Medium	2
Uses computer every day	=	High	3

Contact with clients		Intensity of use	Level
"As part of this work, do you have any contact with people other than co-workers, for example customers, clients, students, or the public?" *			
Does not have any contacts with clients	=	Does not use	0
Involvement scale ranges from 1 to 4	=	Low	1
Involvement scale ranges from 5 to 7	=	Medium	2
Involvement scale ranges from 8 to 10	=	High	3

* Scale ranges from 1 to 10, where 1 is little involvement and 10 means much of the work involves meeting or interacting with people other than co-workers.

	Solving and learning at work		Intensity of use	Level
Average of 2 items	Item 1. "Some tasks are pretty easy and can be done right away or after getting a little help from others. Other tasks require more thinking to figure out how they should be done. As part of this work, how often do you have to undertake tasks that require at least 30 minutes of thinking?"			
	Never	=	Does not use	0
	Less than once per month	=	Low	1
	Less than once a week but at least once a month OR at least once a week but not every day	=	Medium	2
	Every day	=	High	3
	Item 2. "How often does (did) this work involve learning new things?"			
	Rarely	=	Does not use	0
	At least 2-3 months or at least once a month	=	Low	1
	At least once a week	=	Medium	2
	Every day	=	High	3

Autonomy and repetitiveness	Intensity of use	Level

Average of 2 items	Item 1. "Still thinking of your work, how much freedom do you have to decide how to do your work in your own way, rather than following a fixed procedure or a supervisor's instructions? Use any number from 1 to 10 where 1 is no freedom and 10 is complete freedom."			
	Decision freedom scale from 1 to 2	=	Close to none	0
	Decision freedom scale from 3 to 6	=	Low	1
	Decision freedom scale from 7 to 9	=	Medium	2
	Decision freedom scale 10	=	High	3
	Item 2. "How often does (did) this work involve carrying out short, repetitive tasks?"			
	Almost all the time	=	Close to none	3
	More than half the time	=	Low	2
	Less than half the time	=	Medium	1
	Almost never	=	High	0

Annex Table 9: Aggregation of variables

Score	Use of computer (at work and outside it)	External inter-personal skills at work	Thinking at work of at least 30 minutes	Learning new things at work	Autonomy at work	Repetitive tasks at work	Physical tasks at work
0 (not used/close to none)	Does not use a computer/ almost never uses a computer	Does not have any contacts with clients	Never	Rarely	Decision freedom scale from 1 to 2	Almost all the time	Not at all physically demanding
1 (low)	Uses computer less than three times per week	Involve-ment scale ranges from 1 to 4	Less than once per month	At least 2-3 months or at least once a month	Decision freedom scale from 3 to 6	More than half the time	Physical demand scale ranges from 2 to 4
2 (medium)	Uses computer three times or more per week	Involvement scale ranges from 5 to 7	Less than once a week but at least once a month OR at least once a week but not every day	At least once a week	Decision freedom scale from 7 to 9	Less than half the time	Physical demand scale ranges from 5 to 6

3 (high)	Uses computer every day	Involve-ment scale ranges from 8 to 10	Every day	Every day	Decision freedom scale 10	Almost never	Physical demand scale ranges from 7 to 10

Annex 3: Selected Statistical Results

Annex Table 10: Probability of using computer skills and intensity of use by ECE participation

Marginal Effects on Probability of Computer Use				
	Georgia			
VARIABLES	None	Low	Medium	High
	(5)	(6)	(7)	(8)
1.gender	0.016	0.002	0.001	-0.019
	(0.015)	(0.002)	(0.001)	(0.018)
years_educ	-0.031***	-0.003***	-0.003***	0.036***
	(0.002)	(0.000)	(0.000)	(0.003)
1.ece	-0.064***	-0.006***	-0.005***	0.074***
	(0.018)	(0.002)	(0.001)	(0.021)
1.mother_educ	0.101	0.006	0.002	-0.108
	(0.114)	(0.009)	(0.006)	(0.126)
2.mother_educ	0.001	0.000	0.000	-0.001
	(0.099)	(0.009)	(0.006)	(0.113)
3.mother_educ	-0.053	-0.005	-0.004	0.063
	(0.099)	(0.009)	(0.006)	(0.113)
4.mother_educ	-0.029	-0.003	-0.002	0.034
	(0.106)	(0.010)	(0.007)	(0.123)
1.father_educ	0.013	0.001	-0.000	-0.014
	(0.133)	(0.006)	(0.001)	(0.137)
2.father_educ	-0.082	-0.005	-0.002**	0.089
	(0.122)	(0.005)	(0.001)	(0.127)
3.father_educ	-0.122	-0.009*	-0.006***	0.137
	(0.123)	(0.006)	(0.001)	(0.128)
4.father_educ	-0.068	-0.004	-0.002	0.074
	(0.125)	(0.006)	(0.002)	(0.131)
1.shocks2	0.001	0.000	0.000	-0.001
	(0.020)	(0.002)	(0.002)	(0.023)
2.shocks2	0.014	0.001	0.001	-0.016
	(0.027)	(0.003)	(0.002)	(0.032)
2.ses	-0.054**	-0.004**	-0.002***	0.061**
	(0.027)	(0.002)	(0.001)	(0.030)
3.ses	-0.104***	-0.009***	-0.007***	0.121***
	(0.028)	(0.002)	(0.001)	(0.031)
2.age_group	0.129***	0.038***	0.055***	-0.221***
	(0.014)	(0.004)	(0.006)	(0.021)
3.age_group	0.265***	0.058***	0.072***	-0.395***
	(0.020)	(0.005)	(0.006)	(0.025)

4.age_group	0.470***	0.063***	0.061***	-0.595***
	(0.018)	(0.005)	(0.006)	(0.020)
Observations	2,981	2,981	2,981	2,981
Did Not Participate in ECE	0.282	0.0942	0.146	0.478
Participated in ECE	0.206	0.0821	0.138	0.574
Participated in ECE:				
g1524	0.0410	0.0189	0.0648	0.911
g2534	0.129	0.0783	0.117	0.600
g3544	0.352	0.101	0.145	0.400
g4565	0.591	0.103	0.134	0.194
Did Not Participate in ECE:				
g1524	0.0237	0.0288	0.0461	0.865
g2534	0.187	0.0633	0.134	0.690
g3544	0.267	0.0923	0.147	0.496
g4565	0.495	0.0976	0.118	0.268

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Annex Table 11: Predicted Scores in socio-emotional skills by ECE participation

Regression on Socio Emotional Scores			
	Georgia		
VARIABLES	Extraversion	Conscientiousness	agreeableness
	(10)	(11)	(14)
1.gender	0.084***	0.049*	0.051**
	(0.023)	(0.025)	(0.023)
1.ece	0.047*	0.050*	0.045*
	(0.026)	(0.026)	(0.025)
2.edu1	0.136	-0.002	0.168
	(0.105)	(0.122)	(0.111)
3.edu1	0.081	0.103	0.105
	(0.098)	(0.117)	(0.102)
4.edu1	0.160	0.219*	0.154
	(0.099)	(0.116)	(0.103)
1.mother_educ	-0.319***	0.073	-0.131
	(0.117)	(0.178)	(0.203)
2.mother_educ	-0.266**	0.111	0.076
	(0.106)	(0.166)	(0.199)
3.mother_educ	-0.235**	0.083	0.103
	(0.109)	(0.162)	(0.197)
4.mother_educ	-0.351***	0.081	0.075
	(0.124)	(0.181)	(0.222)
1.father_educ	-0.013	0.020	0.098
	(0.151)	(0.219)	(0.188)
2.father_educ	-0.011	-0.038	0.040
	(0.128)	(0.199)	(0.168)
3.father_educ	0.027	0.008	0.072
	(0.134)	(0.199)	(0.170)
4.father_educ	-0.013	0.047	0.143
	(0.147)	(0.197)	(0.189)
1.shocks2	0.001	-0.007	-0.040
	(0.031)	(0.035)	(0.031)
2.shocks2	0.029	0.111**	-0.055
	(0.052)	(0.049)	(0.048)
2.ses	-0.048	-0.054	0.021
	(0.042)	(0.049)	(0.044)
3.ses	-0.018	0.030	-0.012
	(0.043)	(0.050)	(0.048)
2.age_group	-0.188***	0.118***	-0.052

	(0.037)	(0.038)	(0.041)
3.age_group	-0.202***	0.106***	0.019
	(0.042)	(0.041)	(0.036)
4.age_group	-0.232***	0.080**	0.094***
	(0.039)	(0.039)	(0.035)
Constant	2.779***	2.752***	2.787***
	(0.169)	(0.259)	(0.211)
Observations	2,942	2,942	2,938
R-squared	0.045	0.054	0.025
Did Not Participate in ECE	2.532	3.094	3.130
Participated in ECE	2.579	3.143	3.174

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Annex Table 12: Distribution of scores in extraversion by reading level

Marginal Effects on Probability of Reading Proficiency

	Georgia			
VARIABLES	Level 0/1	Level 2	Level 3	Level 4/5
	(1)	(2)	(3)	(4)
1.gender	-0.002	-0.000	0.002	0.000
	(0.016)	(0.006)	(0.019)	(0.003)
2.asset_p medium	0.024	0.010	-0.029	-0.005
	(0.022)	(0.011)	(0.028)	(0.005)
3.asset_p high	0.055**	0.017	-0.063**	-0.009*
	(0.027)	(0.011)	(0.031)	(0.005)
1.mother_educ primary				
2.mother_educ secondary	-0.081	0.001	0.073*	0.007*
	(0.052)	(0.012)	(0.041)	(0.004)
3.mother_educ tertiary	-0.120**	-0.015	0.121***	0.014***
	(0.052)	(0.014)	(0.041)	(0.005)
4.mother_educ don't know	-0.030	0.004	0.024	0.002
	(0.069)	(0.012)	(0.055)	(0.005)
1.shocks2 1 shock	-0.007	-0.003	0.009	0.001
	(0.023)	(0.010)	(0.029)	(0.004)
2.shocks2 > 1 shock	0.019	0.005	-0.021	-0.003
	(0.029)	(0.007)	(0.032)	(0.004)
2.ses med	-0.040	-0.011	0.044	0.006
	(0.032)	(0.008)	(0.034)	(0.004)
3.ses high	-0.023	-0.004	0.024	0.003
	(0.032)	(0.006)	(0.033)	(0.004)
2.age_group	0.047**	0.026**	-0.062**	-0.010**
	(0.019)	(0.012)	(0.026)	(0.005)
3.age_group	0.030	0.019	-0.042	-0.007
	(0.019)	(0.013)	(0.027)	(0.005)
4.age_group	0.069***	0.031**	-0.087***	-0.014**
	(0.021)	(0.013)	(0.027)	(0.006)
2.edu1	0.049	0.021	-0.061	-0.009
	(0.092)	(0.044)	(0.109)	(0.018)
3.edu1	0.042	0.021	-0.054	-0.009
	(0.087)	(0.043)	(0.105)	(0.018)
4.edu1	-0.027	-0.004	0.028	0.003
	(0.085)	(0.044)	(0.104)	(0.018)
extraversion	-0.009	-0.003	0.010	0.002
	(0.011)	(0.004)	(0.013)	(0.002)

conscientiousness	-0.032**	-0.012*	0.038**	0.006*
	(0.015)	(0.006)	(0.018)	(0.003)
openness	-0.018	-0.006	0.021	0.003
	(0.015)	(0.006)	(0.018)	(0.003)
stability	0.001	0.000	-0.001	-0.000
	(0.011)	(0.004)	(0.013)	(0.002)
agreeableness	0.002	0.001	-0.002	-0.000
	(0.017)	(0.006)	(0.020)	(0.003)
grit	0.011	0.004	-0.014	-0.002
	(0.014)	(0.006)	(0.017)	(0.003)
decision	-0.009	-0.003	0.011	0.002
	(0.015)	(0.006)	(0.018)	(0.003)
hostile	0.018	0.007	-0.022	-0.003
	(0.012)	(0.004)	(0.014)	(0.002)
2.school_type	0.082	0.007	-0.080	-0.009*
	(0.066)	(0.011)	(0.054)	(0.005)
3.school_type	-0.030	-0.021	0.042	0.008
	(0.049)	(0.037)	(0.069)	(0.015)
2.school_prox	0.012	0.004	-0.014	-0.002
	(0.028)	(0.009)	(0.032)	(0.005)
3.school_prox	0.103*	0.003	-0.095**	-0.011**
	(0.062)	(0.019)	(0.044)	(0.005)
Observations	2,908	2,908	2,908	2,908
Conscientiousness (1)	0.245	0.562	0.185	0.008
	(0.046)	(0.018)	(0.036)	(0.004)
Conscientiousness (2)	0.206	0.563	0.219	0.011
	(0.026)	(0.016)	(0.025)	(0.004)
Conscientiousness (3)	0.172	0.557	0.256	0.016
	(0.014)	(0.017)	(0.018)	(0.004)
Conscientiousness (4)	0.141	0.543	0.294	0.022

Annex Table 13: Probability models for Labor Force Participation and Employment

	Labor Force Participation					Employment				
Variables	1	2	3	4	5	6	7	8	9	10
Women	-0.2656***	-0.0467	-0.0488	-0.0469	-0.0461	-0.0173	-0.0640	-0.0727	-0.0495	-0.0774
	(0.0232)	(0.0439)	(0.0454)	(0.0428)	(0.0462)	(0.0297)	(0.0659)	(0.0649)	(0.0638)	(0.0677)
Years of Education	0.0302***	0.0254***	0.0200***	0.0233***	0.0179***	0.0257***	0.0024	0.0016	0.0002	-0.0009
	(0.0043)	(0.0053)	(0.0054)	(0.0053)	(0.0056)	(0.0057)	(0.0076)	(0.0075)	(0.0075)	(0.0080)
Reading Score Level 2		0.0068			-0.0094		0.0172			0.0098
		(0.0385)			(0.0385)		(0.0682)			(0.0691)
Reading Score Level 3		0.0260			-0.0064		0.0216			0.0017
		(0.0445)			(0.0476)		(0.0680)			(0.0688)
Reading Score Level 4|5		-0.0395			-0.0802		0.1158			0.1102
		(0.1561)			(0.1584)		(0.1719)			(0.1666)
Extraversion			0.0412*		0.0401*			0.0243		0.0204
			(0.0224)		(0.0229)			(0.0347)		(0.0357)
Conscientiousness			0.1296***		0.1323***			-0.0561		-0.0573
			(0.0244)		(0.0251)			(0.0397)		(0.0411)
Openness			0.0298		0.0238			-0.0660		-0.0697
			(0.0283)		(0.0291)			(0.0497)		(0.0504)
Emotional Stability			0.0582***		0.0583***			0.0083		0.0083
			(0.0170)		(0.0179)			(0.0281)		(0.0287)
Agreeableness			-0.0302		-0.0278			-0.0892***		-0.0891**
			(0.0233)		(0.0240)			(0.0340)		(0.0357)
Grit			0.0544**		0.0518**			0.0875***		0.0877***
			(0.0238)		(0.0240)			(0.0322)		(0.0335)
Hostile Bias			-0.0079		-0.0073			-0.0259		-0.0242
			(0.0187)		(0.0193)			(0.0287)		(0.0297)
Decision Making			0.0119		0.0116			0.1089**		0.1109**
			(0.0278)		(0.0282)			(0.0458)		(0.0462)
Risk Aversion			-0.0077		-0.0098			0.0326**		0.0303*
			(0.0108)		(0.0112)			(0.0162)		(0.0164)
Computer Use (Low)				-0.0487	-0.0387				-0.1003	-0.0935
				(0.0439)	(0.0468)				(0.0825)	(0.0837)
Computer Use (Medium)				0.0490	0.0425				0.0281	-0.0014
				(0.0498)	(0.0494)				(0.0690)	(0.0740)
Computer Use (High)				0.0681**	0.0552				0.0507	0.0442
				(0.0331)	(0.0347)				(0.0506)	(0.0549)
Household Related	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Observations	2,989	2,930	2,926	2,984	2,873	1,626	1,592	1,600	1,623	1,569
Mean Probability	0.518	0.533	0.536	0.534	0.536	0.572	0.626	0.629	0.625	0.628

Standard errors in parentheses. Marginal effects estimated after a probit model. Omitted categories are Reading Proficiency Level 1 and below and computer use (not use). The household related variables include: whether individual has a spouse, and its interaction with gender; whether there are children living in the household, whether there are children under 6 years old, and their interaction; whether individual has labor dependants; mother and father education level, socio economic status at age 15; and whether individual had economic shocks at age 12.

*** p<0.01, ** p<0.05, * p<0.1

Standard errors in parentheses

Annex Table 14: Returns on Hourly Earnings by Age groups.

	Age group											
	15-65								15-24	25-34	35-44	45+
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Women	-0.4185***	-0.4301***	-0.4138***	-0.4232***	-0.4467***	-0.4556***	-0.4354***	-0.4432***	-0.2066	-0.6034***	-0.5499***	-0.5313***

	(0.0687)	(0.0692)	(0.0684)	(0.0689)	(0.0660)	(0.0664)	(0.0647)	(0.0650)	(0.1770)	(0.0967)	(0.1286)	(0.0920)
Years of Education	0.0579***	0.0532***	0.0585***	0.0540***	0.0304**	0.0266**	0.0340***	0.0300**	-0.1640***	0.0040	0.0658**	0.0552***
	(0.0123)	(0.0124)	(0.0118)	(0.0119)	(0.0125)	(0.0123)	(0.0121)	(0.0120)	(0.0632)	(0.0280)	(0.0323)	(0.0177)
Reading Proficiency Score		0.0021***		0.0021***		0.0019**		0.0020***	-0.0019	0.0056***	0.0016	0.0014
		(0.0008)		(0.0008)		(0.0008)		(0.0008)	(0.0046)	(0.0015)	(0.0014)	(0.0011)
Extraversion			-0.0652	-0.0795			-0.0638	-0.0764	0.3909**	-0.1511	0.1320	-0.0040
			(0.0561)	(0.0553)			(0.0563)	(0.0556)	(0.1865)	(0.1101)	(0.0986)	(0.0766)
Conscientiousness			0.0703	0.0765			0.0679	0.0731	-0.6513***	0.1176	0.1084	0.0480
			(0.0655)	(0.0635)			(0.0616)	(0.0598)	(0.1489)	(0.1011)	(0.1047)	(0.0576)
Openness			0.0997	0.0877			0.0442	0.0335	1.0337***	0.0910	0.0185	-0.1137
			(0.0711)	(0.0698)			(0.0686)	(0.0673)	(0.2410)	(0.0946)	(0.1086)	(0.0848)
Emotional Stability			0.0935**	0.0843**			0.0732*	0.0647	0.7957***	-0.0941	-0.0121	0.0640
			(0.0407)	(0.0412)			(0.0392)	(0.0399)	(0.1550)	(0.0868)	(0.0723)	(0.0564)
Agreeableness			-0.0515	-0.0365			-0.0587	-0.0450	0.2697*	0.0556	-0.1545	-0.0490
			(0.0542)	(0.0556)			(0.0541)	(0.0548)	(0.1495)	(0.0879)	(0.0955)	(0.0734)
Grit			-0.0026	0.0025			-0.0255	-0.0189	-0.3955**	-0.0248	-0.0940	0.1708**
			(0.0557)	(0.0552)			(0.0535)	(0.0532)	(0.1758)	(0.1012)	(0.0977)	(0.0739)
Hostile Bias			0.0825*	0.0900**			0.0823*	0.0905**	0.2798*	0.2672***	0.0874	-0.0255
			(0.0455)	(0.0446)			(0.0429)	(0.0423)	(0.1597)	(0.0905)	(0.0788)	(0.0562)
Decision Making			0.0744	0.0589			0.0555	0.0388	0.0192	-0.1002	-0.0529	0.0972
			(0.0753)	(0.0710)			(0.0690)	(0.0656)	(0.3103)	(0.1132)	(0.1431)	(0.1000)
Risk Aversion			0.0330	0.0332			0.0221	0.0222	0.2122**	-0.0293	-0.0977*	0.0778**
			(0.0234)	(0.0238)			(0.0225)	(0.0229)	(0.0949)	(0.0399)	(0.0547)	(0.0307)
Computer Use (Low)					0.3180***	0.3376***	0.3305***	0.3487***	0.4077	0.4150	-0.0001	0.5047***
					(0.1158)	(0.1061)	(0.1144)	(0.1047)	(0.3608)	(0.2694)	(0.2505)	(0.1233)
Computer Use (Medium)					0.3223**	0.3155**	0.2951**	0.2867**	-1.1440***	0.1367	0.5738**	0.3012
					(0.1397)	(0.1401)	(0.1407)	(0.1410)	(0.3304)	(0.2117)	(0.2462)	(0.2131)
Computer Use (High)					0.4121***	0.4012***	0.3882***	0.3808***	-0.1438	0.4178***	0.4490***	0.4729***
					(0.0834)	(0.0838)	(0.0790)	(0.0795)	(0.2326)	(0.1297)	(0.1475)	(0.1148)
Interpersonal Contact (Low)					-0.2050**	-0.2082**	-0.1721*	-0.1756*	-0.4646	-0.1371	-0.3275*	-0.0626
					(0.0927)	(0.0923)	(0.0920)	(0.0913)	(0.5008)	(0.1605)	(0.1908)	(0.1242)
Interpersonal Contact (Medium)					-0.1539*	-0.1482*	-0.1531*	-0.1473*	0.0680	-0.0612	-0.2145	-0.2119*
					(0.0821)	(0.0808)	(0.0817)	(0.0808)	(0.3038)	(0.1335)	(0.1657)	(0.1115)
Interpersonal Contact (High)					-0.0963	-0.1037	-0.0957	-0.0988	0.4752	-0.1338	-0.0196	-0.0875
					(0.0737)	(0.0722)	(0.0737)	(0.0721)	(0.4332)	(0.1349)	(0.1450)	(0.1081)
Problem Solving and Learning (Low)					0.1390*	0.1489*	0.1268	0.1395*	-0.3582	-0.0300	0.0934	0.3157***
					(0.0783)	(0.0782)	(0.0778)	(0.0774)	(0.2268)	(0.1714)	(0.1474)	(0.0983)
Problem Solving and Learning (Medium)					0.1969**	0.1980**	0.1960**	0.1980**	-0.2338	0.1936	0.1373	0.2032
					(0.0803)	(0.0798)	(0.0828)	(0.0824)	(0.1974)	(0.1750)	(0.1455)	(0.1243)
Problem Solving and Learning (High)					0.1902*	0.2028*	0.1743	0.1880*	-0.4410	0.4541**	-0.0094	0.0823
					(0.1151)	(0.1121)	(0.1163)	(0.1128)	(0.2927)	(0.2088)	(0.2224)	(0.1693)
Autonomy (Low)					0.0127	0.0092	-0.0155	-0.0196	-0.1056	-0.0390	-0.2164	-0.0089
					(0.0687)	(0.0680)	(0.0710)	(0.0705)	(0.2157)	(0.1141)	(0.1508)	(0.0927)
Autonomy (Medium)					0.1895**	0.1879**	0.1740*	0.1744*	-0.1490	0.1666	-0.1066	0.2955***

					(0.0923)	(0.0914)	(0.0932)	(0.0929)	(0.2910)	(0.1702)	(0.2065)	(0.1130)
Autonomy (High)					0.0798	0.0763	0.0691	0.0635	-0.5443	-0.1629	-0.0409	0.1949*
					(0.0909)	(0.0918)	(0.0944)	(0.0950)	(0.7338)	(0.1580)	(0.1608)	(0.1083)
Constant	-0.3637	-0.8412*	-1.0572*	-1.4920***	-0.4657	-0.8928**	-0.8068	-1.2216**	-2.7455***	-2.4361**	-0.6930	-1.2986
	(0.4272)	(0.4401)	(0.5467)	(0.5429)	(0.4304)	(0.4306)	(0.5137)	(0.5033)	(0.9897)	(1.1298)	(1.6430)	(0.9418)
Observations	670	670	663	663	660	660	653	653	54	161	170	268
R-squared	0.3081	0.3205	0.3325	0.3442	0.3816	0.3917	0.3952	0.4057	0.9261	0.5682	0.4664	0.6158

Standard errors in parentheses. Regression model with log hourly earnings as a dependent variables. The model includes potential experience and potential experience squared, mother's edcuation, and indicator variables for wage earners, occupations and economic sector. The omitted categories for computer use, interpersonal contact, problem solving and learning, autonomy is task not used.

*** p<0.01, ** p<0.05, * p<0.1