

Skills for Work in Bulgaria: The Relationship between Cognitive and Socioemotional Skills and Labor Market Outcomes

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Table of Contents

Acknowledgments.....	3
List of acronyms.....	4
Executive Summary	5
1. Introduction: Demographic and Labor Market Challenges	8
2. The Relevance of Skills to Labor Market Outcomes.....	15
3. The Bulgarian Longitudinal Inclusive Society Survey (BLISS).....	16
4. The Skills Profile of Bulgaria’s Working-age Population.....	19
5. Which Skills Matter for Labor Market Success in Bulgaria?	25
6. Conclusions and Policy Implications	31
References	34
Annex A: Cognitive and Socioemotional Skills in BLISS Data	39
Annex References:	45
Annex B: Methodology and Detailed Results of the Analysis.....	46

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List of acronyms

BLISS	Bulgarian Longitudinal Inclusive Society Survey
CFA	Confirmatory factor analysis
CMS	Crisis Monitoring Survey
EC	European Commission
EFA	Exploratory factor analysis
ENHAB	Skills and Labor Market Survey, Peru
EU	European Union
ICT	Information, communication, and technology
IRT	Item response theory
LFPR	Labor force participation rate
MAP	Maximum a posteriori estimation
NEET	Not in employment, education, or training
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary least squares
PISA	Programme for International Student Assessment
STEP	Skills Toward Employability and Productivity program

Executive Summary

Bulgaria is undergoing both a rapid demographic transition and a significant structural shift in its economy. Increasing longevity combined with low fertility and emigration have made Bulgaria's age structure increasingly top-heavy and its dependency ratios higher. At the same time, the economic sectors that absorbed low-skilled workers during the high-growth early 2000s, such as construction and manufacturing, were those that contracted most during the 2008–09 economic crisis and they have not yet recovered. Meanwhile, activities demanding high-skilled labor, such as financial and business services and information, communication, and technology (ICT), have been faring relatively well.

The labor market is not yet responding adequately to Bulgaria's demographic challenge, mainly due to rising skills mismatch. Bulgaria's demographic situation implies that its economic future will depend in large part on how well it can utilize the available human resources. Though the country has an opportunity to mitigate the challenge of rising dependency ratios by bringing into the labor force currently under-utilized groups, such as youth (particularly Roma) and older adults, Bulgaria seems not to be prepared to meet this challenge, largely because its labor market has not performed well in recent years. The country has a relatively low labor force participation rate (LFPR) of 68.6 percent, and the second-highest rate in the EU of youth not in employment, education, or training (NEET). In several surveys, employers in Bulgaria have indicated that finding candidates who are appropriately educated and skilled has become increasingly difficult, particularly in such innovative sectors as IT and high-value-added manufacturing. The widening skills mismatch is also reflected in the growing gap between the unemployment rates of higher- and lower-skilled workers and the rising number of long-term unemployed. How well prepared the next generation will be for Bulgaria's new labor market is also in question—40 percent of its 15-year-olds are functionally illiterate and innumerate.

This study uses a new dataset with direct measures of cognitive and socioemotional skills to examine the relationship between skills and labor market outcomes in Bulgaria. For a long time, labor market studies had to rely on formal educational attainment as a measure of an individual's skills. However, the correlation between formal education and skills is not perfect, and not all diplomas are equal in terms of imparting certain skills to students. Moreover, valuable skills can be acquired without formal diplomas, for example through on-the-job training or learning-by-doing. In addition to using educational attainment this study therefore looks at direct measures of two types of skills that employers value: *cognitive skills*, such as functional literacy and numeracy, and *socioemotional skills*, such as self-discipline, perseverance, and ability to work well with others. The objective is to assess the extent to which these direct measures shed light on what matters for labor market success, defined as being in the labor force, being employed, and earning more. This analysis relies on original data (the Bulgarian Longitudinal Inclusive Society Survey, BLISS) collected by the World Bank and Open Society Institute–Sofia in the spring of 2013, which for the first time in the country included nationally-representative information on the cognitive and socioemotional skills of the working-age population.

The skills measured in BLISS vary by sociodemographic group and provide valuable information not captured by educational attainment. As would be expected, more educated Bulgarians are likely to have better cognitive and socioemotional skills. However, one aspect of general relationship is informative: relative to completed secondary education, attaining a bachelor's degree in Bulgaria is associated with better socioemotional but not better cognitive skills—an example of insights that can only be obtained from direct skills measures. Moreover, the skills mix changes across the lifecycle, with the age-related decline in cognitive skills being compensated by higher socioemotional skills related to socializing with others. Finally, the data demonstrate that skills gaps between ethnic Bulgarians and minorities, such as Roma, are largely connected with disparities in education and Bulgarian language proficiency.

Direct skills measures matter to labor market success in Bulgaria, beyond educational attainment, but skills premiums differ for men and women. Measuring cognitive and socioemotional skills provides insights into a number of central questions about Bulgaria's labor market, such as: Which skills, beyond those captured by diplomas, matter for the employability of active men? Why do women go into private or public sector jobs? To what extent are better skills rewarded by higher earnings? As shown in Table O.1, cognitive skills make a difference in the employability of active men with similar education, and for both genders they are rewarded by higher earnings beyond educational attainment. Surprisingly, relational skills, such as agreeableness and extraversion, are negatively correlated with the chances of active men being employed, and for working women they predict a higher likelihood of being employed in the public sector. Women with stronger working and learning style skills, e.g., those who are grittier, more conscientious and better at decision-making, are more likely to work in the private than the public sector; perhaps related, they are likely to earn more than working women who had lower scores on these socioemotional skills. For men in the labor force, better working and learning style skills imply higher employability, even when education is taken into account. Having more of a growth rather than fixed mindset—a belief in the ability to improve one's intelligence or influence one's personality—is associated with a greater likelihood that women will work in private sector jobs, but the earnings rewards for this skill are significant only for men.

Table O.1: Skills and Labor Market Outcomes in Bulgaria

	Labor force participation of		Employability for active		Sorting into private sector for employed		Earnings for employed	
	Women	Men	Women	Men	Women	Men	Women	Men
Cognitive skills				+			+	+
Relational factor				-	-			
Work/learning style factor				+	+		+	
Fixed mindset factor					-			-
Secondary education	+		+					
Post-secondary education	+	+	+			-	+	+

Source: Bulgarian Longitudinal Inclusive Society Survey (BLISS).

Notes: The table summarize the findings of multivariate regressions (see Annex B for more details). The sample excludes full-time students younger than 25 and individuals in public works.

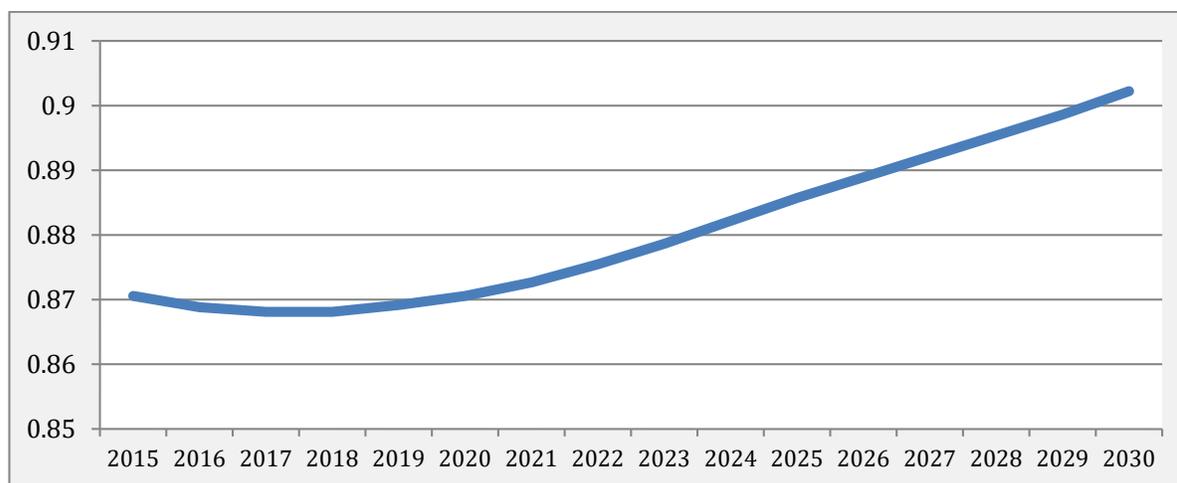
To respond effectively to demographic and economic transformations, Bulgaria will have to invest in upgrading the skills of its workers, both current and future. Appropriate policy responses, particularly provision of lifelong learning options and policies targeting skills development for marginalized groups, can facilitate greater activation and employability of those who must deal with particular skills-related barriers and thus generally improve labor market performance. Since it is well-known that early investment in skills has the highest returns, access to preschool and early childhood education programs for children from vulnerable groups and disadvantaged communities must be expanded. Other measures would be to adapt curriculum and teaching methods to target the skills gaps of disadvantaged communities, delay the early ability-based selection and tracking of students into profiled, general, or vocational education, so that basic education for all is of high quality, and inculcating socioemotional skills as part of the vocational / dual youth training system. To assist those already in the labor force, raising participation in effective active labor market programs and keeping in close communication with employers can enhance employability, especially for disadvantaged communities. A culture of lifelong learning and education that better meets the demands of the 21st century can facilitate Bulgaria’s convergence to other EU countries despite the significant demographic challenges that are already emerging.

1. Introduction: Demographic and Labor Market Challenges

The decline in the working age population in Bulgaria is one of the steepest in the world (World Bank 2013a). Since 1985 the population aged 15 to 64 has dropped from about 6 million to 5 million; 50 years from now it is expected to be only half that (United Nations 2012). This significant decrease, which is partly due to declining fertility rates, has been exacerbated by the large numbers of workers leaving Bulgaria for other countries, especially within the EU. Net emigration, which is both a cause and a consequence of domestic labor market problems, has caused about 17 percent of Bulgaria’s total population decline since the 1990s (World Bank 2013a).

The shrinkage of the working-age population, coupled with rapid population aging, is causing dependency ratios to surge. The total dependency ratio—the population aged 0–14 and 65+ over the working-age population—has been heading up since 2009 and is expected to continue growing, driven by the old-age dependency ratio (World Bank 2013a). For every 100 people of working age, by 2060 there will be about 53 aged 65 and over, up from 11 in that age group in 1960 and 27 in 2010 (United Nations 2010). Perhaps a more relevant economic measure, which takes into account improving health at older ages and behavioral adjustments to increase longevity by avoiding an arbitrary ceiling on “working age,” is the ratio of the inactive to the active population—but this ratio is also projected to grow significantly by 2030 (Figure 1.1).

Figure 1.1: Inactive to Active Population, 2015–30



Source: Bussolo et al. 2015.

Whether Bulgaria can adapt to its changing demographics and preserve its long-term economic prospects will depend on how its labor resources are utilized. As highlighted by the European Commission (EC 2014), in the long term aging, emigration, and inactivity will be a drag on Bulgaria’s employment and growth. Projected increases in spending on health, long-term care, and pensions, combined with smaller contributions from productive cohorts, are likely to cause fiscal problems in coming years. Simulations suggest that, mainly because of the shrinking

labor force, by 2050 GDP growth could be down to just 0.7 percent a year (World Bank 2013a, 2015a). Thus future economic and social development will be largely determined by how well Bulgaria can utilize its human resources.

An under-performing labor market has made it harder for the Bulgarian economy and its growth potential to adjust. The economic gains associated with steady and relatively high employment growth in Bulgaria during the early 2000s came to a halt in 2008–09. GDP growth fell to less than 1 percent in 2009 and has not recovered since (World Bank 2015e, EC 2013). Employment fell below EU averages (Figure 1.2), and unemployment soared from 5.1 percent in 2008 to 13.2 percent in 2013 (Figure 1.3). Bulgaria is also in the bottom third of EU countries ranked by the labor market participation rate: At 68.6 percent in 2013, it was well below the EU-28 average of 72.1 percent.

Figure 1.2: Employment Rates and GDP Growth, 2003–14

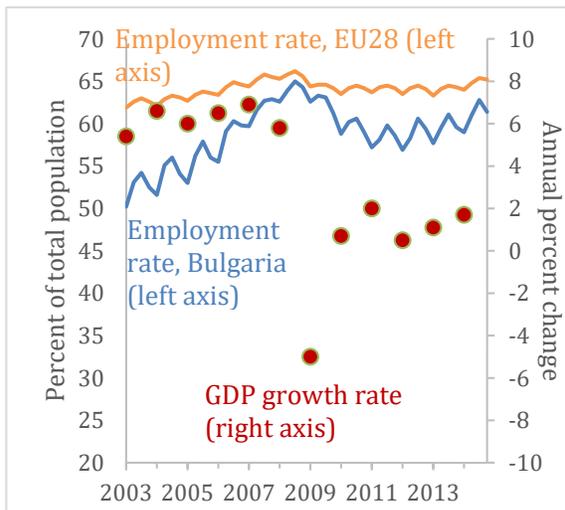
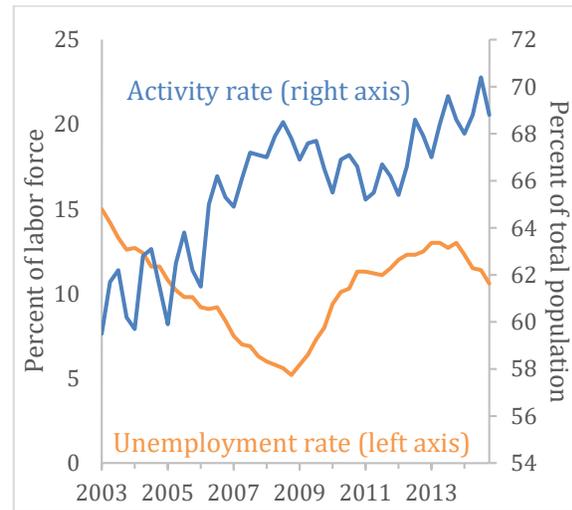


Figure 1.3: Unemployment and Labor Market Activity Rates, 2003–14

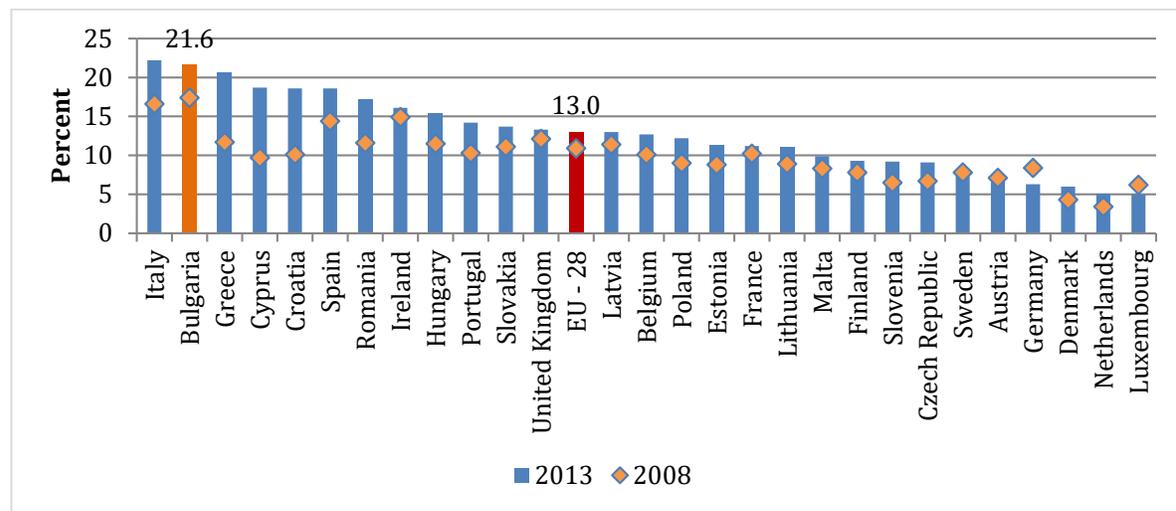


Source: Eurostat Labor Force Survey (LFS), national accounts data.

Note: Unemployment is measured using seasonally-adjusted quarterly data.

The economic crisis exposed the weaknesses of Bulgaria’s labor market; the young and less-educated workers were hit hardest. The rise in unemployment during the crisis was particularly pronounced for workers aged 15–24. In 2012, their employment rate, at 21.9 percent, was much lower than the 32.9 percent EU average (World Bank 2014a). Bulgaria had the fourth-lowest youth LFPR. Although this primarily reflects a national culture of full-time study in this age group (Dimitrov 2012), the country as a whole also has the second-highest NEET rate in Europe, and it has been rising since 2008 (Figure 1.4).

Figure 1.4: NEET Rates, European Countries, 2008 and 2013



Source: Eurostat, EU-LFS.

Note: The NEET rate is the percentage of the population aged 15–24 who are not in employment, education, or training.

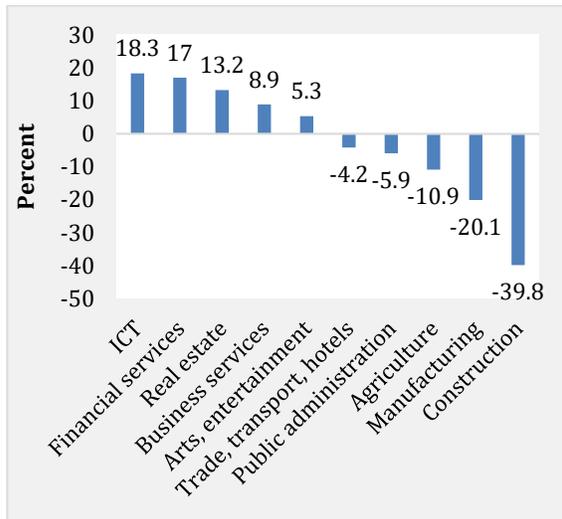
Labor market problems explain in large part the recent rise in poverty and inequality.

Inactivity and unemployment are disproportionately concentrated in households in the bottom 40 percent of the income distribution: One in four persons of working age in the bottom 40 are not in the labor force, and in 2012 their unemployment rate reached 26 percent. Those who do work usually have part-time, irregular, low-skilled, and low-paid jobs (World Bank 2015e). Although average wages across sectors have gone up since the crisis, low wages are now more prevalent among the poorest and most vulnerable segments of the population than before the economic downturn (EC2013, World Bank 2014a). As a result, in 2011 nearly half of all Bulgarians were at risk of poverty or social exclusion—the highest percentage in any EU country; the proportion of the working-age population at risk of poverty today is twice the EU average (World Bank 2013a, EC 2014).

The shift in labor demand from sectors of lower to higher skill intensity suggests that the previous growth model is now obsolete.

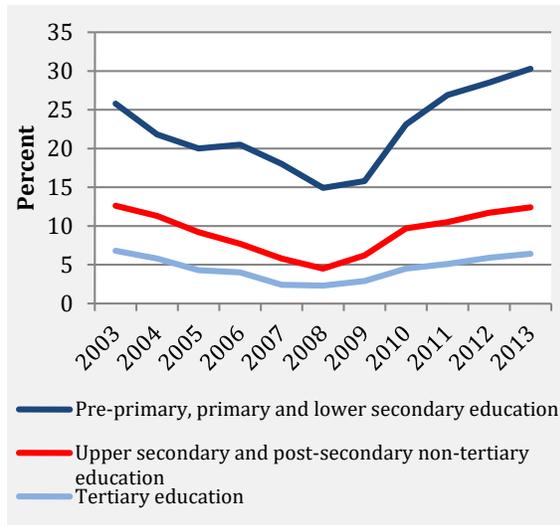
From 2000 to 2008, Bulgaria witnessed high economic growth and a reduction in poverty, fueled by increasing employment and labor productivity in sectors that drew on low-skilled labor, primarily trade, transport, construction, and industry. After 2008, these sectors contracted dramatically; meanwhile those employing higher-skilled labor, such as information and communications technology (ICT), financial services and real estate, and business services, have been thriving (Figure 1.5). The resultant labor shedding was thus concentrated among workers with less education, as can be observed by looking at unemployment rates by education (Figure 1.6). There are also signs that unemployment for the low-skilled is structural rather than cyclical: The average duration of unemployment has increased in recent years: by 2013, 57.3 percent of the unemployed were long-term unemployed (EC 2014).

Figure 1.5: Employment Growth by Sector, 2008–13



Source: National Statistical Institute data.

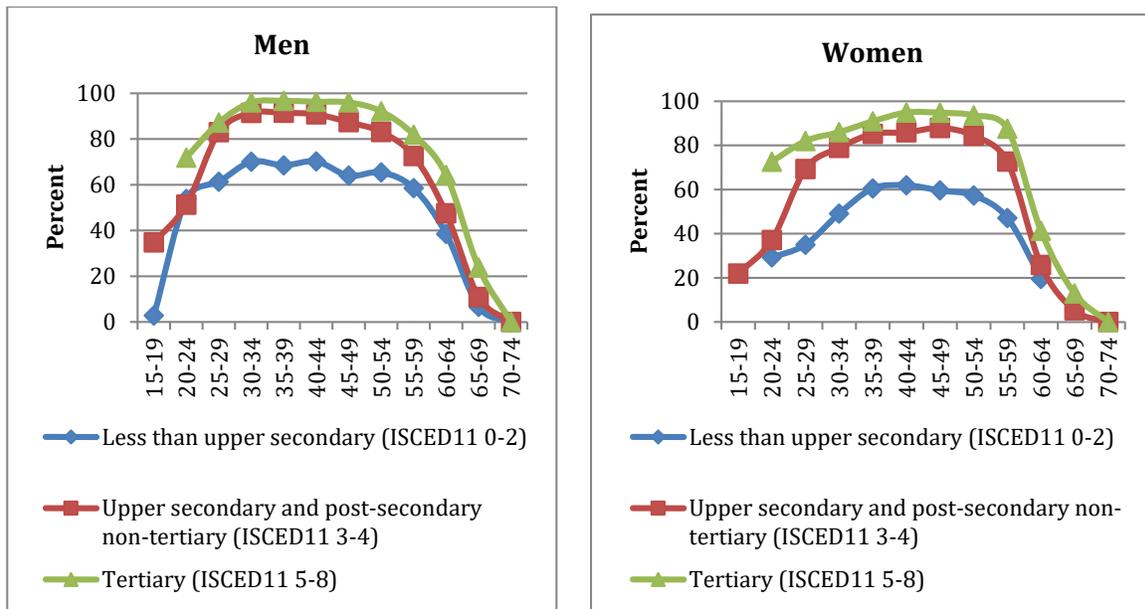
Figure 1.6: Unemployment Rate by Education, 2003–13, population aged 15 to 64



Source: Eurostat, EU-LFS.

There is significant potential to address the demographic challenge by increasing the LFPR of under-utilized groups, such as youth (particularly Roma) and older adults. The young and often low-skilled Roma population is a growing source of labor market entrants. Roma already provide 9 to 19 percent of new workers and their share is likely to increase substantially (de Laat and Bodewig 2011; World Bank 2013a). Removing constraints on Roma participation and employability and empowering them for labor market success can help to mitigate pressure from the demographic change now underway. For older adults, in the early 2060s LFPRs will fall precipitously, but they will still be higher for the better-educated men and women than the less-educated peers. It appears that in Bulgaria more education facilitates longer working lives (Figure 1.7).

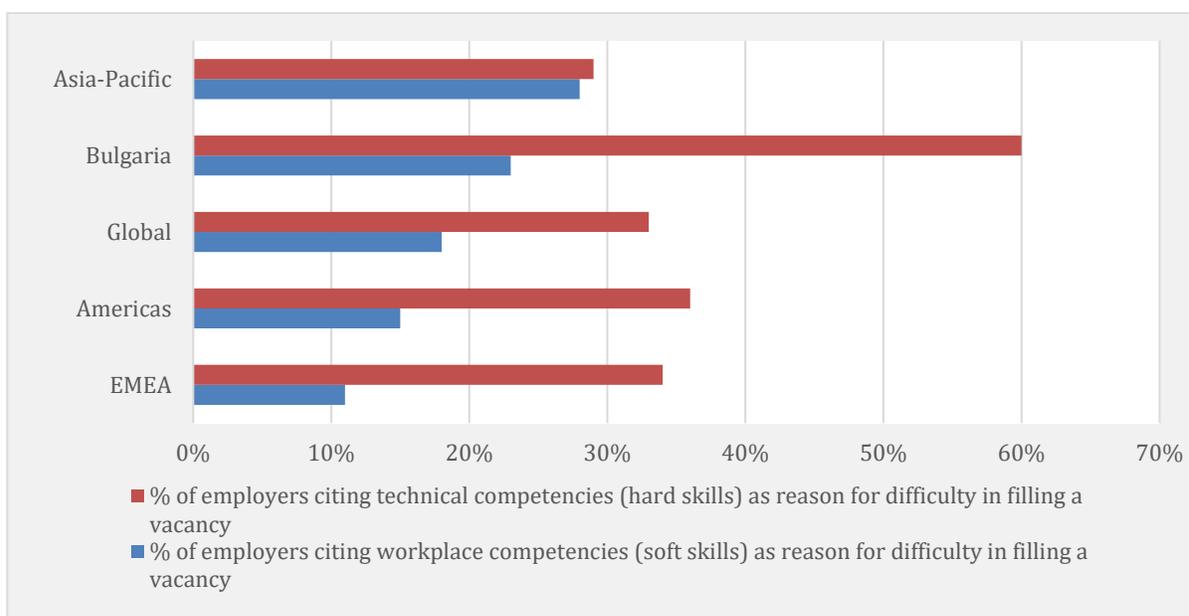
Figure 1.7: Labor Force Participation by Gender, Age, and Education, 2013



Source: Eurostat, EU-LFS.

However, it appears that Bulgaria’s current workforce is not equipped with the skills the labor market is demanding. According to the 2007 Investment Climate Assessment (World Bank 2008), workforce skills are a major concern for employers in Bulgaria, especially in more innovative sectors, such as IT and higher-value-added manufacturing (e.g., electronics, machinery, and equipment). A 2013 Manpower survey found that 54 percent of Bulgarian employers have difficulty filling jobs with the right candidates, up from 42 percent in 2011, and almost 25 percent cited a lack of “soft” (socioemotional) skills as the main reason (Manpower 2011, 2013). In fact, lack of socioemotional skills makes it much harder to fill a vacancy in Bulgaria than was the 2011 average for Europe, Middle East, and Africa, where only 11 percent of employers reported it as a problem; the country is second only to the Asia Pacific region in the severity of this workforce constraint (Figure 1.8).

Figure 1.8: Shortages of Hard and Soft Skills Reported by Employers, Bulgaria and World Regions, 2011



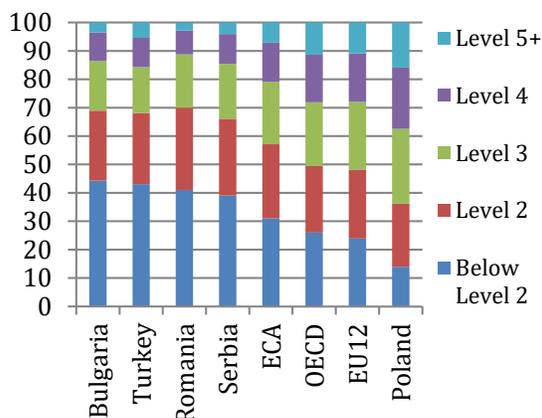
Source: Manpower 2011.

Note: EMEA = Europe, Middle East, and Africa.

In Bulgaria today students—future workers—may be having difficulty building adequate skills. In the 2012 assessment of educational attainment (OECD Programme for International Student Assessment, PISA), 15-year-olds in Bulgaria had the lowest scores of any EU country for reading ability and mathematics and were among the weakest performers in science (OECD 2014). About 39 percent of them are considered to be functionally illiterate—not able to understand and analyze what they read; and about 44 percent are considered functionally innumerate; this is the highest rate in Europe, and almost twice the OECD average (Figure 1.9). In addition, in Bulgaria, student gender, age, and socioeconomic status have a disproportionate relationship to PISA scores.

Bulgaria’s education system is very inequitable, and early assignment to tracks has a measurably negative effect on student performance. The social stratification of schools, measured as the tendency for students of similar socioeconomic characteristics to attend the same school, is very high (Figure 1.10). This is a consequence of both the growing residential stratification of Bulgarian households and the very early ability-based selection of students, starting as early as grades 1 and 4 and becoming system-wide after grade 7. Early tracking is reflected in very disparate educational outcomes: more than half the 15-year-old students in vocational schools (53.2 percent) are functionally illiterate, compared to 28.6 percent in profiled secondary schools. This can be attributed, at least in part, to the fact that the 2008 decentralization and per capita financing reforms affected only general schools, leaving vocational schools largely untouched (World Bank 2014c).

Figure 1.9: Distribution of Students by Proficiency in Math, PISA 2012, Percent



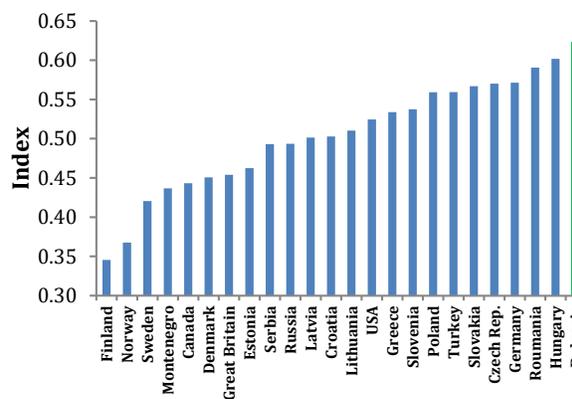
Source: Gortazar et al. 2014.

Notes: The ECA average includes Albania, Azerbaijan, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kosovo, Kyrgyz Republic, Latvia, Lithuania, FYR Macedonia, Moldova, Montenegro, Poland, Romania, Russian Federation, Serbia, Slovak Republic, Slovenia and Turkey.

The EU12 average includes Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Malta, Latvia, Lithuania, Poland, Romania, Slovenia and Slovak Republic.

The OECD average includes Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom and United States.

Figure 1.10: Index of School Social Stratification, PISA 2012



Source: Gortazar et al. 2014.

The objective of this report is to improve understanding of the interplay between skills and labor market outcomes for Bulgaria’s current working-age population. At the request of the Ministry of Labor and Social Policy, in collaboration with the Open Society Institute–Sofia, in spring 2013 the team conducted a nationally-representative household survey that for the first time assessed the cognitive and socioemotional skills of Bulgaria’s workforce. This report uses the findings to improve the knowledge base about the relationship between labor market outcomes and the skills profile of working-age Bulgarians.

The report is structured as follows: Section 2 discusses the motivation for measuring skills directly, rather than relying solely on educational attainment, as a correlate of labor market outcomes. Section 3 describes the new Bulgarian Longitudinal Inclusive Society Survey (BLISS) and the skills measures used in this survey. Based on BLISS data section 4 details the skills profile of Bulgaria’s workforce. Section 5 explores the relationship between labor market outcomes and skills. Based on that analysis, section 6 outlines conclusions and policy recommendations for enhancing skills in the Bulgarian workforce.

2. The Relevance of Skills to Labor Market Outcomes

A worker's skills—competencies and behaviors—consist of cognitive, socioemotional, and technical skills.

- *Cognitive skills* involve the use of logical, intuitive, and creative thinking; among them are problem-solving ability, verbal ability, numeracy, memory, and mental speed. Cognitive skills are usually measured by tests of intelligence and scores on standardized tests, such as the PISA.
- *Socioemotional skills* (noncognitive or soft skills) refer to the capabilities that allow individuals to navigate interpersonal and social situations effectively (Guerra et al. 2014).
- *Technical skills* (professional skills or vocational abilities) include those abilities that are associated with the specific knowledge to carry out a particular occupation (Cunningham and Villaseñor, forthcoming). They are usually measured through observed assessments of how individuals perform a task (Prada, forthcoming).

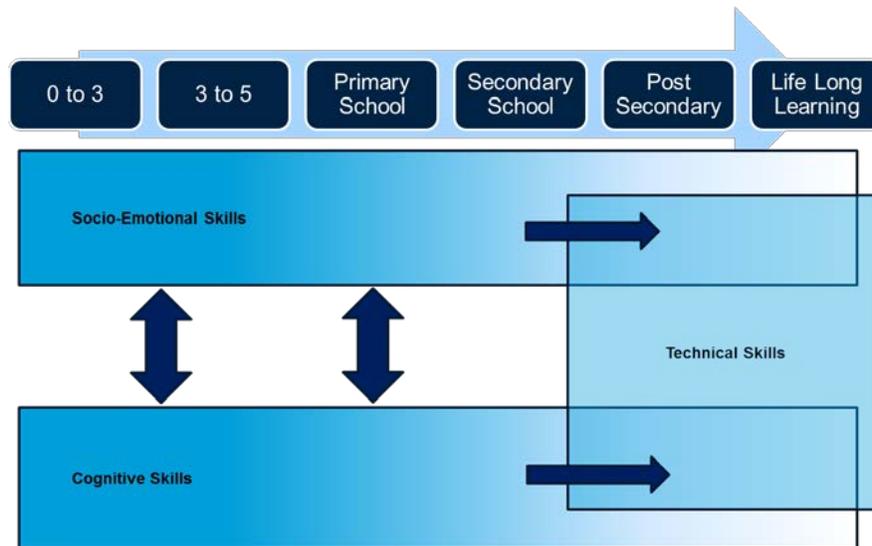
Cognitive and socioemotional skills play a key role in the labor market, together and in addition to diplomas. Numerous studies have found an association between cognitive skills and earnings in different countries, even accounting for differences in education, experience, and other factors (Cawley, Heckman, and Vytlačil 2001; Finnie and Meng 2001; Hanushek and Woessmann 2008; Lazear 2003; McIntosh and Vignoles 2001). Moreover, there is growing evidence that, beyond education, socioemotional skills rival cognitive skills in predicting labor market success (Barrick and Mount 1991; Cobb-Clark and Tan 2011; Heckman, Lockner, and Todd 2006; Wichert and Pohlmeier 2010). For example, personality traits have been shown to predict how individuals approach a job search, the types of jobs and thus the career pathways they choose, and work behaviors, such as absenteeism, job satisfaction, leadership, and counterproductive behavior (Heckman et al. 2006; Hogan and Holland 2003; Judge, Higgins, Thoresen, and Barrick 1999, all cited in Roberts et al. 2011). Moreover, personality traits predict job performance, long-term occupational attainment and income above cognitive ability (Ones, Viswesvaran, and Schmidt 2003; Judge, Bono, Ilies, and Gerhardt 2002; Judge, Heller, & Mount 2002; Roberts, Harms, Caspi, and Moffitt 2007). In particular, a large body of evidence demonstrates the significant role that socioemotional skills and personality traits, especially conscientiousness and emotional stability, can have in earnings (Almund et al. 2011; Bowles, Gintis, and Osborne 2001; Drago 2011; Judge and Hurst 2007; Nyhus and Pons 2005; Roberts et al. 2011).

The precise manner in which socioemotional skills interact with labor market status and earnings varies by gender and type of employment. Many relevant findings are gender-specific. For example, in Germany, agreeableness is correlated negatively with women's wages but positively with men's (Heineck and Anger 2010). The relationship of different traits or skills and labor market success also varies by occupation. For instance, jobs that demand ability to process information (e.g., professor, scientist, senior manager) require high-order cognitive skills (Schmidt and Hunter 2004). Conscientiousness and self-motivation, however, seem to be important for a broader range

of jobs, regardless of their complexity (Barrick and Mount 1991). Socioemotional abilities matter especially for occupations requiring low-order cognitive skills, such as those in the service sector (Bowles et al. 2001; Duckworth et al. 2007).

Skills are developed throughout the lifecycle, starting in early childhood and continuing through the formal education system and beyond. Early childhood, particularly the first 1,000 days of life, is the most important node at which basic cognitive and several socioemotional skills take shape; they set the stage for later accumulation of technical skills. While skill formation in early childhood is fundamental, skills can still be developed at later years, through targeted education and specific programs. In fact, for some skills, such as problem-solving and confidence, the optimal stage for skill acquisition coincides with the first few years of formal schooling (Guerra et al. 2014). All types of skills continue evolving in adolescence and youth and well into adulthood, shaped by education, work experience, and the influence of the immediate environment (Figure 2.1).

Figure 2.1: Skill Acquisition and Development by Age and Type of Skill



Source: Bodewig and Badiani-Magnusson 2014.

3. The Bulgarian Longitudinal Inclusive Society Survey (BLISS)

The BLISS data used for this analysis was collected from March to May 2013 among 1,700 adults. It builds on the Crisis Monitoring Survey (CMS) that was conducted in three waves, in February and October 2010 and February 2011. BLISS used the same sample as CMS, which makes it possible to look at the dynamics of labor market outcomes from 2010/2011 to 2013, the periods of crisis and economic recovery. The sample is nationally representative; to enable analysis by ethnicity, it incorporates a booster sample of households in segregated neighborhoods, primarily Roma. BLISS used the CMS questionnaire as its base but replaced the modules on crisis impacts

and coping strategies with modules on more structural issues, such as current and potential utilization of active labor market policies.

For the first time in Bulgaria, BLISS collected data on the cognitive and socioemotional skills of the adult population, aged 18–65. Data on cognitive skills were collected through a module that assessed memory, semantics, numeracy, and reading comprehension of texts, tables, and charts. Socioemotional skills were measured with a module that assessed participants’ “Big Five” personality traits of extraversion, conscientiousness, openness, emotional stability, and agreeableness; grit, defined as perseverance and passion for long-term goals (Duckworth et al. 2007); hostile attribution bias; decision-making; self-control; achievement striving; and growth vs. fixed mindset—the first time mindset had been measured in any nationally representative survey. Design of both modules was guided by psychologists from the New Bulgarian University and the Institute of Psychology. For purposes of the analysis, socioemotional skills were assigned to three categories: relational, work and learning style, and fixed mindset (Box 3.1). For more details, see Annex A.

Box 3.1: Skills in BLISS

The questions in the BLISS **cognitive skills** module were drafted by Bulgarian psychologists and pre-tested to ensure that they were valid for the Bulgarian context. The assessment evaluates memory, semantics, reading comprehension, comprehension of tables and charts, and numeracy.

- **Memory** was assessed by short-term recall of sequenced digits, which to begin were a relatively easy 2 numbers and went up to 9 numbers.
- **Semantics** was measured by multiple-choice questions on synonyms, antonyms, familiarity with idioms, and the ability to understand complex sentences.
- **Reading comprehension** was tested by reading a short text and responding to multiple-choice questions about the content. Questions related to tables and charts tested the ability to follow written instructions for a prescription drug and to understand a bus timetable.
- Finally, the **numeracy** test involved simple calculations, such as working out a sale price for mineral water.

An overall cognitive score was calculated using item response theory (IRT) analysis.

Socioemotional skills were classified as three different factors:

1. The **relational factor** captured how the individual socializes with others. It combined responses on the following scales:

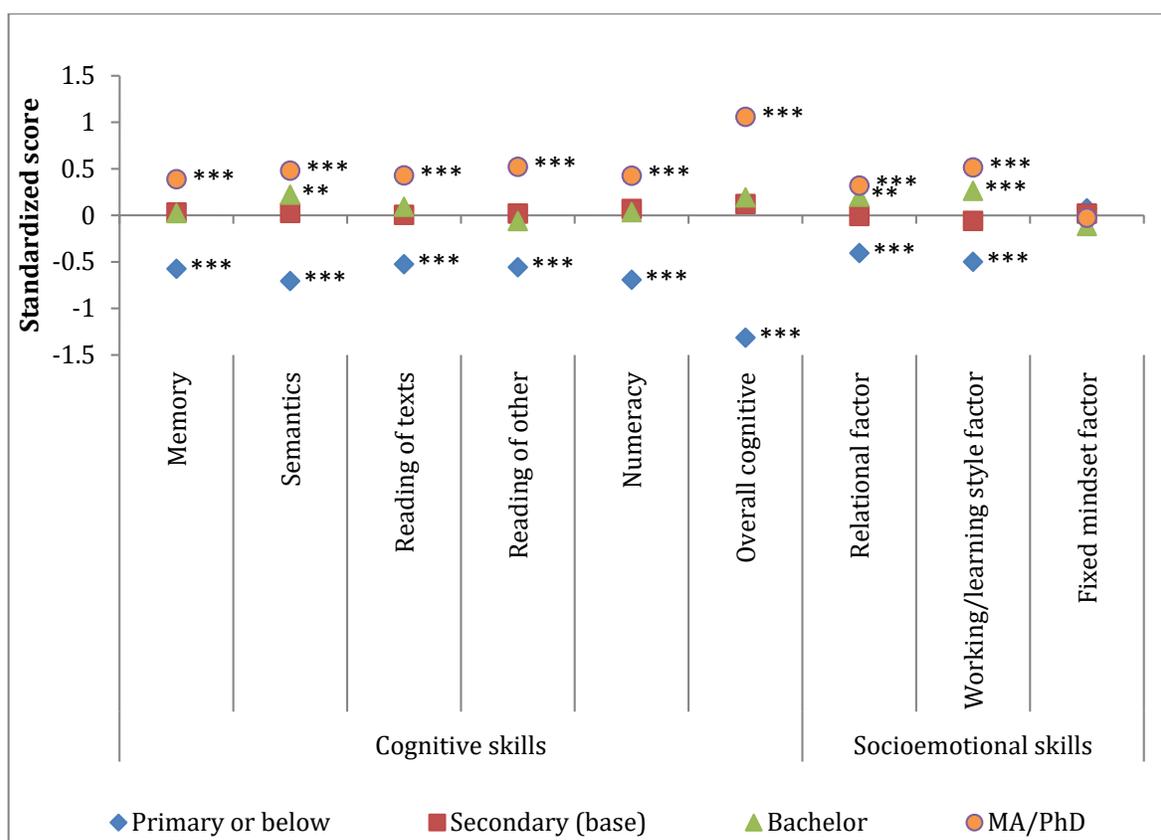
- *Extraversion* (Big Five): orientation of one’s interests and energies toward the outer world of people and things rather than the inner world of subjective experience; characterized by positive affect and sociability (e.g., Are you talkative?).
- *Agreeableness* (Big Five): tendency to act in a cooperative, unselfish manner (e.g., Are you generous to other people with your time or money?).

- A facet of *openness to experience* (Big Five): the tendency to be open to new aesthetic, cultural, or intellectual experiences (e.g., Do you enjoy beautiful things, like nature, art, and music?).
 - A facet of *decision-making*: (e.g., Do you ask for help when you don't understand something?).
2. The **work and learning style factor** captures the individual's attitude toward work and willingness to learn new things. It is a combination of the following skills:
- *Conscientiousness* (Big Five): tendency to be organized, responsible, and hardworking (e.g., When doing a task, are you very careful?).
 - A facet of *openness to experience* (Big Five): tendency to be open to new aesthetic, cultural, or intellectual experiences (e.g., Are you very interested in learning new things?).
 - *Grit*: perseverance and passion for long-term goals (e.g., Do you finish whatever you begin?).
 - *Achievement striving*, a facet of conscientiousness: need for personal achievement and sense of direction (e.g., Do you do more than what's expected of you?).
 - *Decision-making*: process of generating solutions and considering future consequences (e.g., Do you think about how the things you do will affect you in the future?).
3. The **fixed mindset factor** refers to the extent to which a person believes personality is malleable (growth mindset) or inherent and cannot be changed (fixed mindset) (e.g., “As much as I hate to admit it, you can't teach an old dog new tricks. You can't really change their deepest attributes”).

4. The Skills Profile of Bulgaria's Working-age Population

Because skills are significantly but not perfectly correlated with amount of education, it is important to measure skills beyond diplomas. Here, the analysis looks at differences in average performance on cognitive and socioemotional skills of the Bulgarian working-age population across a variety of socio-economic and demographic variables, among them education, age, gender, and ethnicity. For all cognitive and socioemotional skills except mindset, people with less education (measured as completed primary or below) have lower standardized scores (Figure 4.1). Interestingly, there is almost no difference in the cognitive skills of secondary-educated respondents and those with bachelor's degrees, except in semantics. However, earning a bachelor's degree is associated with higher skills in both working and learning style and relational factors. Finally, except for mindset attaining a master's degree or above is correlated with higher skills across the board.

Figure 4.1: Working-age Skills Profile by Education, 2013



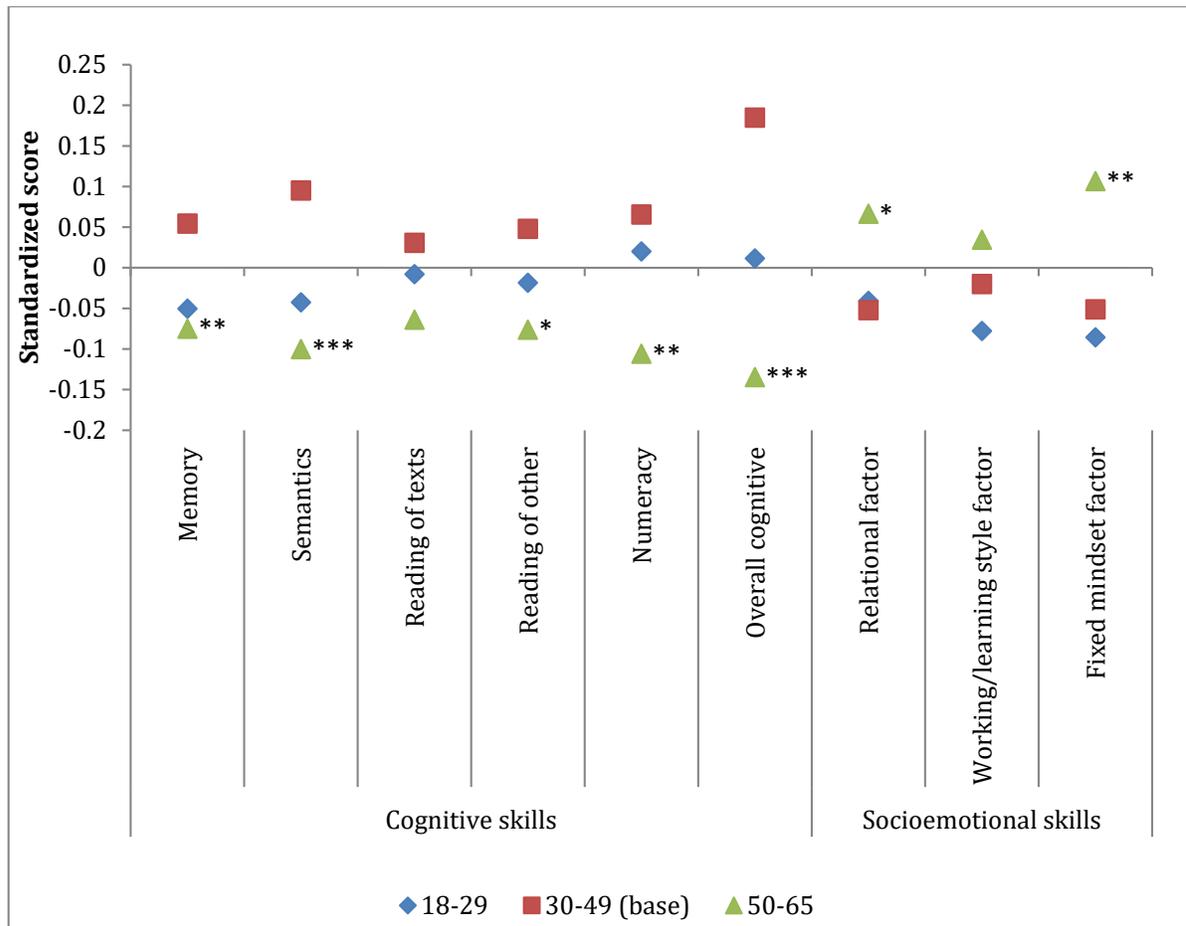
Source: BLISS.

Notes: Significant differences from base category: * 10%, ** 5%, ***1%. The sample excludes full-time students younger than 25.

The skills mix changes during the lifecycle, but men and women perform similarly on most skills. While no statistically significant differences were detected in the skills assessment of the young and the middle-aged, older Bulgarians did significantly worse on all measures of cognitive

skills except reading comprehension (Figure 4.2). However, although older adults tend to have more fixed mindsets than younger groups, they also have higher relational skills. Evidence from other countries supports the finding that cognitive skills tend to remain stable into adulthood but begin to deteriorate in old age (Borghans, ter Weel, and Weinberg 2008), and evidence is emerging that three of the Big Five socioemotional traits (conscientiousness, agreeableness, and neuroticism/emotional stability) tend to improve with age (Wieczorkowska-Wierzbinska 2014). There were very few gender differences in skills (Figure 4.3), although women performed somewhat better on comprehension of tables and charts and much better on the relational factor, which is a result supported by the literature (Roberts et al. 2011).

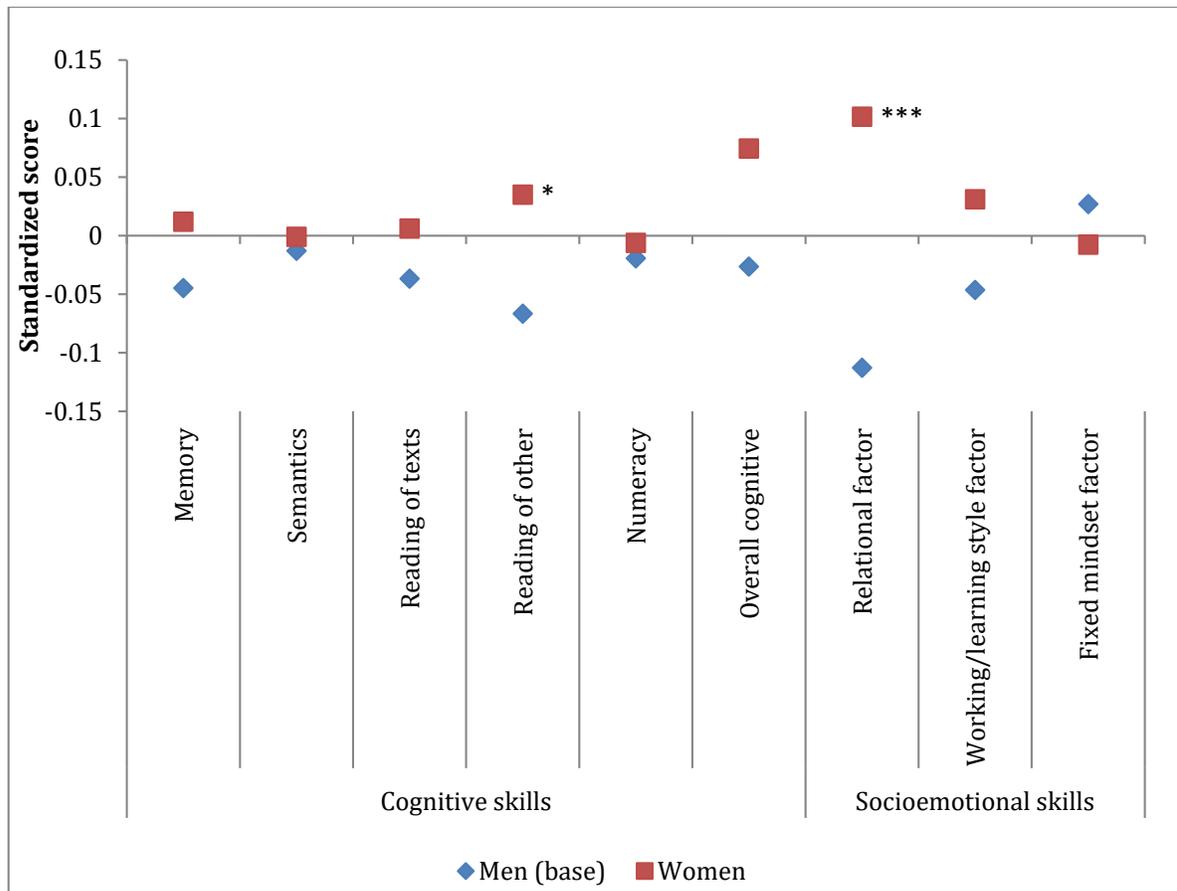
Figure 4.2: Working-Age Skills Profile by Age, 2013



Source: BLISS.

Notes: Significant differences from base category: * 10%, ** 5%, ***1%. The sample excludes full-time students aged less than 25.

Figure 4.3: Working-Age Skills Profile by Gender, 2013

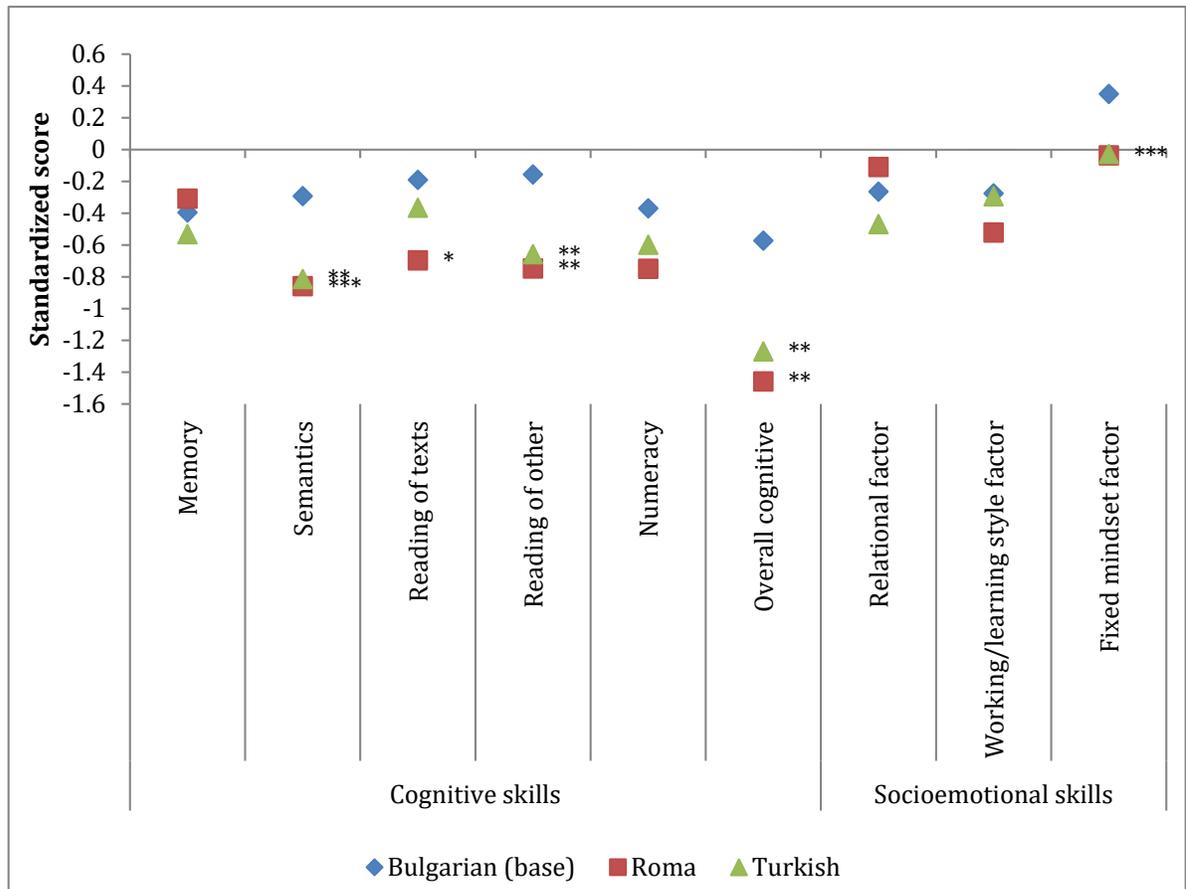


Source: BLISS.

Notes: Significant differences from base category: * 10%, ** 5%, ***1%. The sample excludes full-time students aged less than 25.

The lower educational attainment of Roma and other ethnic groups leads to skills gaps with ethnic Bulgarians. Roma and individuals from other ethnic groups (who mostly identify themselves as Turkish) have systematically lower scores than non-Roma on all categories of cognitive and socioemotional skills. This is not surprising; from a very early age, Roma children have considerably less education than their non-Roma peers: only 38 percent of Roma children aged 3–5 are enrolled in preschool compared to 79 percent of their non-Roma neighbors; and only 15 percent of Roma men (compared to 74 percent of non-Roma) and 9 percent of Roma women (compared to 76 percent of non-Roma women) complete secondary education (UNDP/EC/WB Roma Survey 2011). Skills gaps between working-age Roma and ethnic Bulgarians are mostly attributable to the gap in educational attainment, especially the disparity in Bulgarian language proficiency. When education is held constant, the differences in the socioemotional and most cognitive skills of Roma and non-Roma disappear, except for gaps directly related to knowledge of the Bulgarian language (Figure 4.4).

Figure 4.4: Working-age Skills Profile for Primary Educated by Ethnicity, 2013



Source: BLISS.

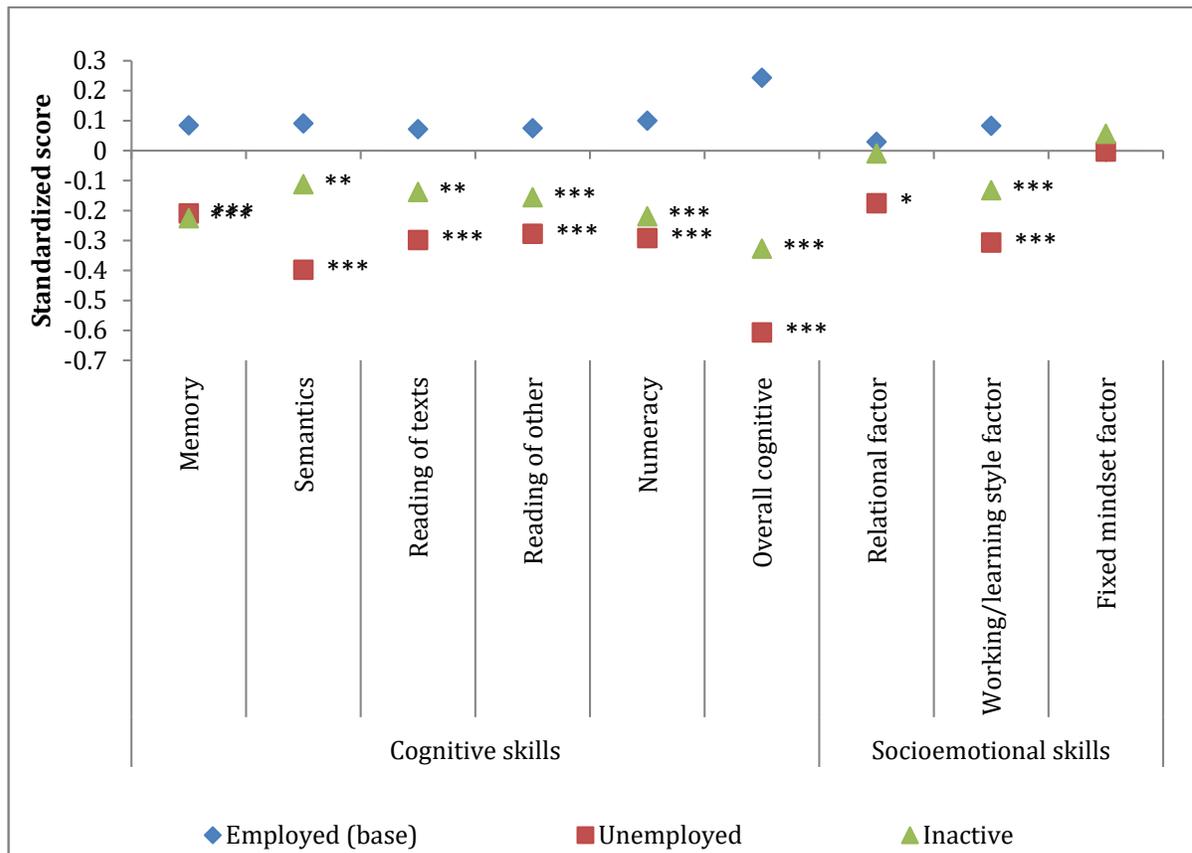
Notes: Significant differences from base category: * 10%, ** 5%, ***1%. The sample excludes full-time students aged less than 25.

The observed lower educational outcomes of Roma are likely linked to multiple disadvantages. Recent regional work on Equality of Opportunity for Roma sheds new light on the educational attainment gap of Roma children (World Bank 2014d). Children’s outcomes are shaped by circumstances beyond their control—typically gender and ethnicity but also parental background. Roma children face barriers linked not only to their ethnicity, such as discrimination, but also to the intergenerational transmission of poor education outcomes: parents with less education have lower incomes, which affects their children’s education. In addition, even when controlling for education Roma have poorer employment outcomes; this means they may also perceive the returns to education to be lower, further discouraging investment in education. Finally, Roma children may be internalizing the perceptions of others about their abilities, which can affect

both their academic performance and their willingness to invest in human capital (World Bank 2014d).¹

Individuals who have a job have better skills than those who do not (Figure 4.5). Unemployed and inactive individuals have significantly poorer cognitive skills (e.g., for memory, semantics, reading, numeracy), working and learning style skills, and relational skills than those who are working. Interestingly, cognitive and socioemotional skills do not differ significantly between the unemployed and the inactive on any dimension except semantics, where the inactive have significantly higher skills than the unemployed.

Figure 4.5: Working-Age Skills by Labor Market Status, 2013



Source: BLISS.

Notes: Significant differences from base category: * 10%, ** 5%, ***1%. The sample excludes full-time students aged less than 25.

However, other factors may be mediating the relationship between skills scores and labor market status—the results may underestimate or overestimate the true nature of the relationship. This is particularly likely given that labor force status is related to such individual

¹Such internalization of exclusion happens in many contexts: Hoff and Pandey (2014) demonstrated that revealing children’s “caste” in mixed-caste groups created a significant “caste gap” in puzzle-solving games (World Bank 2015d).

characteristics as age and education, which—as shown above—are also associated with performance on the BLISS assessment. The next section further examines the interaction between skills and labor market status by estimating the association between these variables when other factors are taken into account.

5. Which Skills Matter for Labor Market Success in Bulgaria?

In Bulgaria, skills matter considerably for employability, type of employment, and earnings, but for labor force participation what matters most is education. This section assesses the extent to which direct measures of skills matter for labor market outcomes of individuals with similar characteristics, including educational attainment. The first outcome examined is labor force participation, defined as either working or looking for work. Here, education appears to be the key driver; neither cognitive nor socioemotional skills make much difference. This may be because educational attainment captures fairly well the cognitive and socioemotional skills that could affect motivation to look for a job. Moreover, the decision on whether to join the labor force may be driven primarily by factors unrelated to skills, such as the imperative for even those with very few skills to obtain income or the necessity for even those with high skills to provide care for children or the elderly and thus stay out of the labor force. Indeed, care obligations seem to be a barrier to women's labor force participation; the presence in the household of children under 5 or of adults over 65 are both significantly correlated with lower labor force participation by women (see Annex B, Table B.2, Figure B.1).

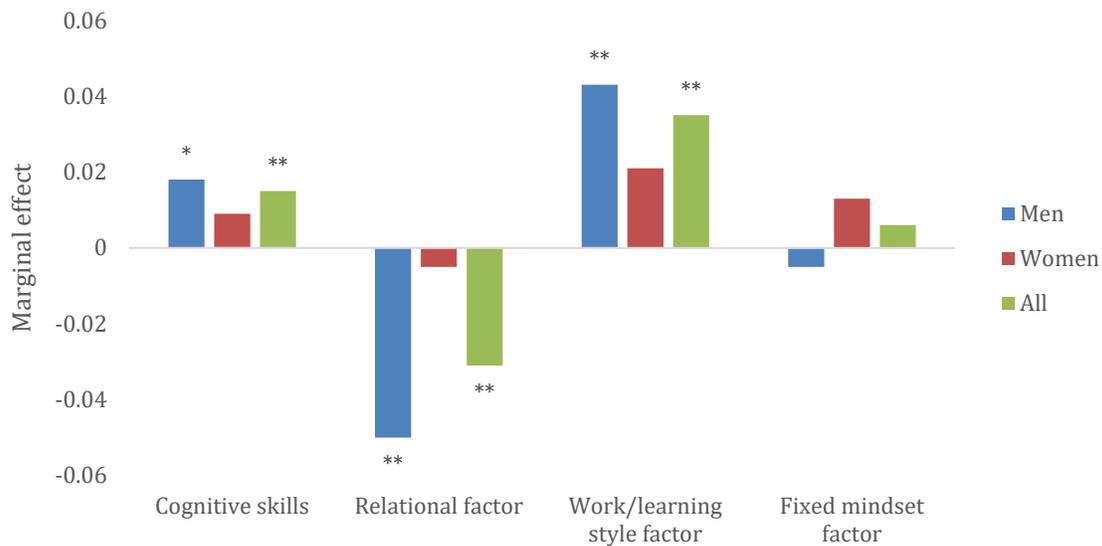
How important skills and diplomas are for employability clearly differs by gender: for men, what matters is skills, while for women, education is more important. For employment, when both assessed skills and diplomas are incorporated into the model, only skills turn out to be significantly associated with the probability of men being employed. For women, the primary predictor of finding or maintaining a job is formal education: indeed, active women with secondary education are 36 percentage points more likely to be employed than women with less than secondary education, and those with postsecondary education are 43 percentage points more likely (see Annex B, Table B.3 and Figure B.2).² The gender difference in the importance of skills may be related to the fact that women are more likely to work in the public sector –39 percent of employed women do so, compared to 22 percent of employed men. Diploma-based hiring may mean that the signaling value of diplomas is more important than skills to obtain or keep a job in the public sector; in the private sector, where men are more likely to work, skills, however obtained, may be more valuable than formal credentials.

For men's employability, the skills that matter are both cognitive and socioemotional. Active men who obtained higher scores on cognitive skills assessed in BLISS, such as functional literacy and numeracy, were more likely to have a job than men with lower scores (Figure 5.1). Thus, it is not just brain power that matters for men's employability in Bulgaria. Better performance on the working and learning style factor, which covers such socioemotional skills as self-discipline, perseverance, decision-making, and sense of direction, appear to be highly valuable for men, even when education is taken into account: a 1 standard deviation increase in these skills is associated

² The results hold for women when we control for selection into participation, using as instrumental variables the presence of children (aged 0-5 and 6-15) in the household.

with a 4 percentage point higher likelihood of being employed. Surprisingly, the relationship between the employability of men and their relational skills, such as extraversion and agreeableness, is negative. This puzzling result deserves further study but it may be related to previous findings that agreeableness is negatively correlated with earnings: agreeable people tend to get along better than they get ahead (Hogan and Holland 2003, cited in Roberts et al. 2011). Given the high unemployment rates, finding and keeping a job in Bulgaria may be competition-intensive, and agreeable men may find it difficult to succeed in such an environment.

Figure 5.1: Skills and Employability, Active Working-age Individuals by Gender, 2013

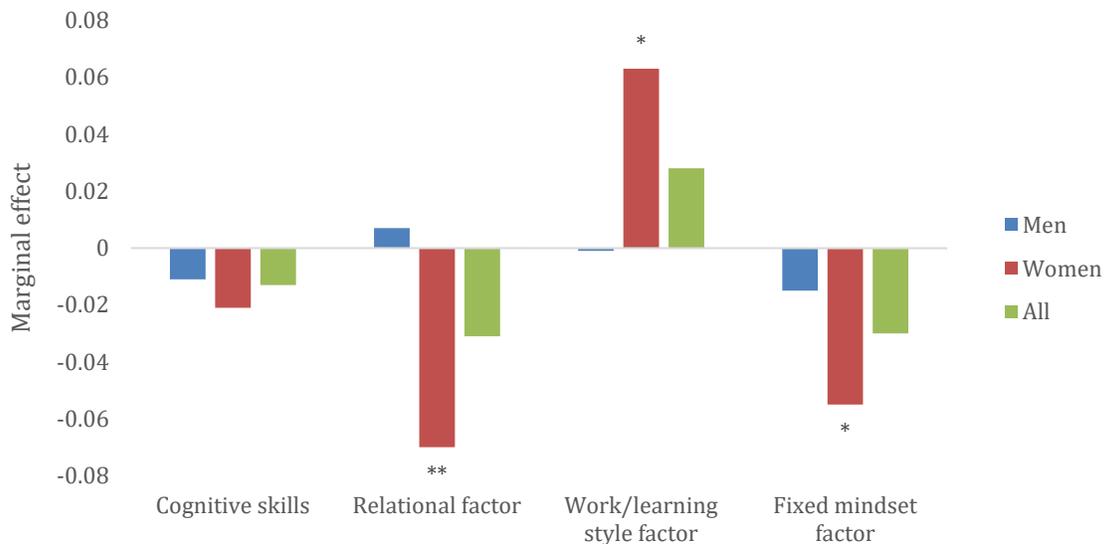


Source: BLISS.

Notes: The figure shows marginal effects from a multivariate regression (see Annex B, Table B.3 for more details). Coefficients' significance: * 10%, ** 5%, ***1%. The sample excludes full-time students aged less than 25 and individuals in public works.

Working women with a growth mindset and strong working and learning style skills are more likely to be employed in the private sector; the public sector attracts women with higher relational skills. Skills matter to whether women work in the private or the public sector, but for men the direct skills measures are statistically similar for both sectors (Figure 5.2). That women in the public sector have higher relational skills than women in the private sector is not surprising: many public sector occupations, such as teaching and nursing, rely heavily on relational skills like extraversion and agreeableness. On the other hand, since the public sector offers many jobs traditionally occupied by women, it is not unreasonable that women with more of a growth mindset—those who think they can improve their intelligence and influence their personality—are more likely to be working in less traditional private sector occupations. Thus women who score higher on working and learning style—who are grittier or more conscientious—are more likely to work in the private sector.

Figure 5.2: Skills and Employment in Private Sector, Employed Working-age Individuals, by Gender, 2013



Source: BLISS.

Notes: The figure shows marginal effects from a multivariate regression (see Annex B, Table B.4 for more details). Coefficients' significance: * 10%, ** 5%, ***1%. The sample excludes full-time students aged less than 25 and individuals in public works.

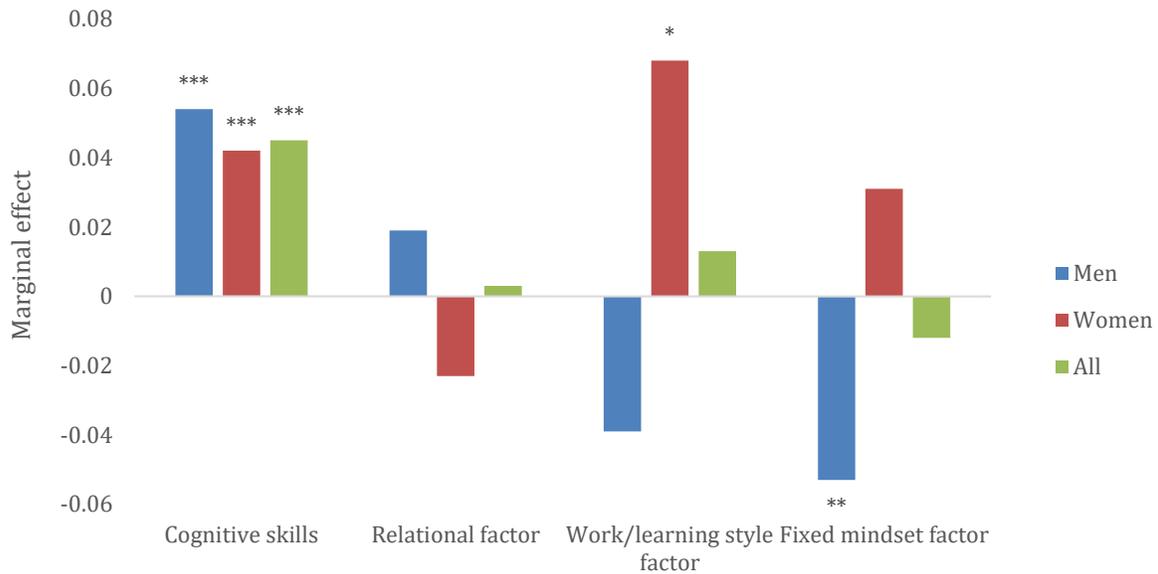
The private sector in Bulgaria is less likely to attract and keep working men with postsecondary education, which could be a problem for heightening productivity. Although direct skills measures are not related to whether men are employed in the public or the private sector, educational attainment does: postsecondary education is associated with a significantly lower likelihood of private sector employment (see Annex B, Table B.4, Figure B.3). It may be that public sector jobs offer highly-educated male workers benefits that private sector cannot match, but it will be hard for productivity to grow if higher-skilled workers opt for the public sector while high-productivity sectors like finance and ICT need their skills.³

Confirming the importance of cognitive skills at work, there is an earnings premium for both men and women whose cognitive skills are higher, even when educational attainment is taken into account (Figure 5.3). Thus formal education apparently does not fully capture the skills that attract higher earnings in Bulgaria, such as ability to process information and manipulate numbers. This result is in line with findings in other countries that individuals with the same amount of education but different levels of memory, numeracy, and literacy are rewarded differently in the labor market (e.g., Diaz, Arias, and Tudela 2012). Notably, completion of secondary education does not carry an earnings premium over basic education or some secondary

³ For example (see World Bank 2015c), the supply of skills for developing sophisticated services and supporting production of other activities is reduced by the emigration of highly-skilled Bulgarians to other EU countries; the most-skilled Bulgarians may be opting for public rather than private employment for similar reasons.

(see Annex B, Table B.5, Figure B.4). However, the premium for postsecondary education is substantial: with this qualification men earn 38 percent more and women 47 percent more than is earned by those of their gender with less education.

Figure 5.3: Skills and Earnings, Employed Working-age Individuals by Gender, 2013



Source: BLISS.

Notes: The figure shows marginal effects from a multivariate regression (see Annex B, Table B.5 for more details). Coefficients' significance: * 10%, ** 5%, ***1%. The sample excludes full-time students aged less than 25 and individuals in public works.

Socioemotional skills matter for earnings in Bulgaria, but the most lucrative skills differ by gender: for men, having a growth mindset is associated with higher pay, for women, it is higher working and learning style skills. A working and learning style factor that is higher by 1 standard deviation for women is associated with earning 6 percent more. The association between the socioemotional skills involved in working and learning style (such as conscientiousness and grit) and earnings is aligned with the findings of studies in other countries (e.g., Diaz et al. 2012, World Bank 2014b). For men, the more fixed the mindset, the lower the earnings, which suggests that individuals with a growth mindset earn a premium.⁴ Having a growth mindset has also been correlated with better negotiation and management skills—both of which may be rewarded more highly in the private sector, where men are concentrated (Haselhuhn and Kray 2011; Heslin, Latham, and VandeWalle 2005).

⁴ The results shown use a continuous measure of mindset, built using factor analysis. However, similar results are obtained with dummies built using thresholds matching Dweck's thresholds for fixed, ambivalent, and growth mindsets.

In sum, beyond education direct skills measures matter for different types of labor market success in Bulgaria, but their premiums differ for men and women. Measuring cognitive and socioemotional skills helps answer such questions about Bulgaria’s labor market as: Which skills, beyond what is captured by diplomas, matter to the employability of men? What attracts women to public or to private sector jobs? To what extent are better skills rewarded by higher earnings? As shown in Table 5.1, cognitive skills enhance the employability of men with similar education, and for both genders they are rewarded beyond educational attainment by higher earnings. Surprisingly, relational skills, such as agreeableness and extraversion, are negatively correlated with the chances of active men being employed; for working women, they predict a higher likelihood of being employed in the public sector. Women who are grittier, more conscientiousness, and better at decision-making—who have more impressive working and learning style skills—are more likely to work in the private than the public sector, which perhaps explains why their earnings are likely to be higher than the earnings of women with lower scores on these socioemotional skills. For men in Bulgaria’s labor force, even when education is taken into account, better working and learning style skills enhance their employability. Having more of a growth than a fixed mindset for women is associated with their likelihood of working in the private sector, but this skill generates significant earnings rewards only for men.

Table 5.1: Skills and Labor Market Outcomes in Bulgaria, 2013

	Labor force participation of		Employability for active		Sorting into private sector for employed		Earnings for employed	
	Women	Men	Women	Men	Women	Men	Women	Men
Cognitive skills				+			+	+
Relational factor				-		-		
Work/learning style factor				+		+	+	
Fixed mindset factor						-		-
Secondary education	+		+					+
Post-secondary education	+	+	+			-	+	

Source: BLISS.

Notes: The results summarize findings of multivariate regression (see Annex B for more details). The sample excludes full-time students aged less than 25 and individuals in public works.

For a few labor market outcomes, diplomas capture all the valuable information gathered in the direct skills assessment. Thus, the labor force participation of both men and women is significantly associated with educational attainment: men and women with postsecondary diplomas and women with completed secondary education are more likely to be in the labor force than their less-educated peers. When educational attainment was taken into account, direct measures of cognitive and socioemotional skills were about the same for both active and inactive Bulgarians. Similarly, women’s chances of being employed are significantly correlated with their diplomas; skills do not add much to this outcome. Finally, postsecondary education matters for whether men work in the private or the public sector; while direct skills measures contribute little.

Zeroing in on the labor market outcomes of Roma relative to ethnic Bulgarians, education is the main driver of the differences in labor force participation, but there is still a significant unexplained employability gap. Although Roma men and women are generally less likely to participate in the labor market, when education is taken into account they are as likely to participate as others (see Annex B, Table B.2, Figure B.1). However, when it comes to the probability of being employed once in the labor force, Roma men and women fare significantly worse. Even when education, cognitive and socioemotional skills, and such characteristics as age and urban or rural location are held constant, Roma are less likely to be employed than ethnic Bulgarians. This result may indicate discrimination by employers, but other factors that may make it difficult for Roma to find or keep a job could be the distance of their neighborhoods from employment locations, or a lack of networks.

6. Conclusions and Policy Implications

By providing new evidence of how cognitive and socioemotional skills interact with labor market outcomes, this report can help set the agenda for further studies of skills in Bulgaria. Future research using larger samples to allow data to be disaggregated by sector and occupation would provide valuable insights about the types of skills currently in demand and how they are rewarded in different types of jobs. Moreover, since this analysis looked only at labor supply, complementing it with a survey of employers would provide a more complete picture of Bulgaria's skills deficits.

The results underscore the need for Bulgaria to invest in upgrading the skills of its population. A better-functioning labor market that fully utilizes all labor resources can help the country adapt to the demographic transformation and enhance its long-term economic prospects. Low labor market participation rates, especially among the young and the Roma population, and high unemployment rates both appear to be associated with a growing skills mismatch: while labor demand is likely to come mostly from sectors that need high-skilled labor, a large proportion of the Bulgarian workforce is low-skilled. Moreover, the future workers represented by today's youth and children will not be able to find work if the educational system does not help them attain the skills an evolving economy increasingly requires.

The groups that hold the key to higher labor force participation in the future—youth (particularly Roma) and older adults—also have the greatest challenges in terms of skills development. While it is in many ways natural for participation rates to be highest among those of prime working age, Bulgarian participation rates for the youngest (aged 18–29) and the oldest (50–65) individuals in the working-age population are much lower than in other EU countries. In both groups, too, women constitute a large share of the permanently out-of-work. As the population as a whole ages, bringing such large segments of the population into the labor force will be crucial.

The marginalized Roma should be a priority target for activation and skills development. They are especially important not only because of the disparity in their education and labor market outcomes and their higher vulnerability but also because given current demographic trends they will soon make up an increasing share of the workforce. The analysis confirms earlier findings that less education explains a large part of their lower scores in cognitive and socioemotional skills assessments and pinpoints lack of education as a major barrier to their employment. There is also evidence that Roma labor market outcomes are often explained by constraints on their employability, including a mismatch between the skills employers require and those most Roma possess (World Bank, 2015b).

In the long term it will be crucial for Bulgaria to ensure that the next generation of workers have adequate skills by ensuring they have opportunities to build skills from an early age. Investment in skills, both cognitive and socioemotional, has the highest returns early in life, especially for children from disadvantaged backgrounds who do not have access to private

resources. Expanding access to early childhood education will be vital for them to acquire the foundational skills that pay off throughout the lifecycle.

To fully utilize the potential labor force, the educational system will need to target young people who confront barriers to their skills development. Curriculum and teaching methods need to be adapted to deal with the skills gaps of disadvantaged communities, especially acquisition of Bulgarian language skills by Roma and other minority children. Moreover, waiting to track students into general or vocational education would allow all to accumulate the foundational skills that can make workers more adaptable to the rapid changes in the economy, and also instill a habit of lifelong learning.

Reforms to optimize the network of vocational schools and introduce performance-based measures can increase the quality of public TVET. As recommended in the World Bank SABER Workforce Development report (2014c), changes to the VET Law present an opportunity to modernize the vocational curriculum and the network of vocational schools. A single concept of TVET quality management can be ensured through adoption of the new Preschool and School Law together with amendments to the VET Law. Since making similar reforms in 1999, Poland has seen consistent improvement in its PISA scores, and the positive impact of the reform has been confirmed through rigorous evaluation (Jakubowski et al. 2010).

For older students, making socioemotional skills programs part of vocational/ dual system youth training is recommended. The analysis here demonstrates that better performance on the working and learning style factor is associated for men with a higher likelihood of having a job, and for women with higher earnings. Evaluation of a Dominican Republic training program (*Juventud y Empleo*) that had a life skills component demonstrated that it had a significant positive impact on labor market outcomes (such as formal jobs for men and monthly earnings of the employed) as well as on such measured socioemotional skills as grit and self-esteem (Ibarraran et al. 2014). A number of training programs with life skills components are already part of the Adolescent Girls Initiative, and some have had significant impacts on the employability and earnings of their participants (World Bank 2013b, 2014e). Socioemotional skills programs may also become part of Bulgaria's new Youth Guarantee programs.

Since there is no culture of lifelong learning in Bulgaria, upskilling and reskilling for the working-age population may depend on better incentives. The share of Bulgarians over 25 participating in education and training (1.5 percent in 2012) has consistently been lower than the EU average (9% in 2012; EC 2013). BLISS found that only 7 percent of working-age Bulgarians had participated in training to improve their skills in the previous year.⁵ The reasons for nonparticipation varied widely by labor market status: for the employed, the major reason was lack of time, but the unemployed were mostly unaware of suitable training options, and the inactive reported a lack of interest. Yet there appears to be a significant latent demand for training: when

⁵ World Bank, forthcoming, technical note on Participation in Training Programs based on BLISS.

BLISS asked how likely respondents would be to use a free training voucher if the Public Employment Service provided one, a third reported being likely or rather likely to use it.

For those already in the labor force, higher participation in active labor market programs that respond effectively to employers' needs can enhance employability, especially for those from disadvantaged communities. Improving the availability, accessibility, and quality of employment services should be a priority. On the supply side, it will be necessary to build a management approach that offers customized support to different individuals or groups based on their profiles and previous experience. In particular, better-targeted employment assistance that focuses resources on the hard-to-reach, such as the Roma, could do a great deal to improve their labor market outcomes. Removing or reducing barriers to participation in activation programs for certain groups (lack of motivation for the inactive, lack of awareness for the unemployed), as well as barriers to labor force participation more generally (e.g., possible adverse incentives in the social protection system), as is explored in the companion notes on the Social Safety Net and Participation in Training Programs, will also be crucial. On the demand side, strengthening the relationship between employment services and local organizations and companies would enhance the effectiveness of those services. More opportunities for temporary or part-time placement would also encourage both older and younger individuals (e.g., people who retired early and young mothers) to join the labor force.

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Annex A: Cognitive and Socioemotional Skills in BLISS Data

This annex describes the design and sample of the skills module of the Bulgarian Longitudinal Inclusive Society Survey (BLISS) fielded by the Open Society Institute – Sofia and the World Bank in March through May 2013.

Motivation

In 2012, Bulgaria had a lower labor force participation rate and a higher unemployment rate than the EU-11 and OECD benchmarks. Employer surveys in Europe and Central Asia demonstrate that a major problem is a marked skills mismatch, in terms not just of technical or cognitive skills but also of socioemotional skills such as motivation and effort or perseverance. According to Manpower Group's 2013 Talent Shortage Survey, 54 percent of employers in Bulgaria were having difficulty filling jobs, up from 42 percent in 2011. That survey also supports the hypothesis of a skills mismatch, with 32 percent of employers citing lack of "hard" job or technical skills, 16 percent citing of right values and mindset, and 15 percent lack of "soft" interpersonal and communication skills as reasons why they were having difficulty filling specific jobs (Manpower 2011, 2013).

Despite the obvious importance employers assign to skills, labor market analysis has usually simply assumed that educational attainment was a good proxy for skills. However, the skills employers are demanding begin to form in early childhood and develop, at different rates, throughout the life cycle. Thus, the package of generic cognitive and socioemotional skills depends on factors that educational attainment does not fully capture, such as family background, the quality of education, occupation choice, and on-the-job learning. Indeed, a skills assessment survey for urban workers in Peru demonstrated that cognitive ability among individuals with the same education has a significant effect on individual earnings and that some socioemotional skills (i.e. grit and emotional stability) are associated with significant wage premiums even when education is held constant (Diaz et al. 2013).

The realization that to establish the relationship between skills and employability labor market analysis needs to go beyond education led to the development of the Skills Toward Employability and Productivity (STEP) Skills Measurement program, which has been described as "a unique resource for understanding (i) job skill requirements, (ii) backward linkages between skill acquisition and educational achievement, personality, and social background, and (iii) forward linkages between skill acquisition and living standards, reductions in inequality and poverty, social inclusion, and economic growth" (World Bank 2014). This program, so far conducted in 13 countries, combines an employer survey measuring skill demand with a household survey assessing the skills of adults. The household survey, besides collecting comprehensive background information about the randomly-selected respondent and his or her household, assesses the respondent's reading proficiency directly and has batteries of questions on cognitive, socioemotional, and technical job-related skills. Analysis of the household survey data allows a much more in-depth analysis of a country's skill supply than indicators like educational attainment

or literacy rates. It also makes it possible to estimate the impact of different levels of education on the skill set and how the labor market values cognitive and socioemotional skills, expressed either as higher employability or higher earnings.

With the same goal of identifying the linkages between skills, education, and the labor market, the World Bank and Open Society Institute-Sofia added a skills module to the BLISS.

Sample

The skills module was integrated into the BLISS questionnaire, which was implemented by Open Society Institute-Sofia in March-May 2013 using the panel of households that had participated in the three waves of the Crisis Monitoring Survey. In each household, a person aged 18 to 65 was randomly selected using the “next birthday” method. The response rate of these household members to the skills module, the last in the BLISS questionnaire, was 88.8 percent: of the 1,994 households with at least one person in the 18–65 age range, 1,771 respondents completed the skills module.

Design

There were two submodules that assessed socioemotional and cognitive skills.

Socioemotional Skills

This submodule, based on the STEP survey 24-item instrument, asked respondents questions about themselves with responses ranked on a four-point scale (“Almost always,” “Most of the time,” “Some of the time,” and “Almost never”).⁶ The STEP survey instrument assessed the Big-Five personality traits (openness, conscientiousness, extraversion, agreeableness, and emotional stability – 3 items per trait), grit (3 items), hostile bias (2 items), and decision-making (4 items). Added to the STEP instruments were two more measures – 3 items on achievement striving and 2 items on self-control, based on Lewis Goldberg’s International Personality Item Pool (IPIP) (Goldberg et al., 2006). Finally, 4 items on fixed personality mindset (Dweck, Chiu, and Hong, 1995; Dweck, 2008) were added to measure the extent to which a person believes personality is stable over time (demonstrating a fixed mindset) versus changeable (demonstrating a growth mindset). Responses to the fixed personality mindset assessment used a 6-point scale ranging from “Strongly agree” to “Strongly disagree.” Table A1 presents all the scales and the corresponding items.

All 33 items of the socioemotional skills sub-module were translated from English into Bulgarian, back-translated into English, pre-tested with university students, and piloted with more than 100

⁶ After the pilot, an example explaining the response scale was added to the enumerator script, using the question “Do you go to bed early?” and going through the response options. To facilitate recall, respondents were given a card showing the scale and asked to point to the preferred response to each question.

respondents. Based on the results of the pilot, translation of several items was revised to improve their reliability.⁷

Table A1.1: BLISS Socioemotional Skills Submodule

Socioemotional skill / trait	Items
Extraversion	<ul style="list-style-type: none"> - 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?
Conscientiousness	<ul style="list-style-type: none"> - When doing a task, are you very careful? - Do you prefer relaxation more than hard work? - Do you work very well and quickly?
Openness	<ul style="list-style-type: none"> - 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?
Emotional stability	<ul style="list-style-type: none"> - Are you relaxed during stressful situations? - Do you tend to worry? - Do you get nervous easily?
Agreeableness	<ul style="list-style-type: none"> - Do you forgive other people easily? - Are you very polite to other people? - Are you generous to other people with your time or money?
Grit	<ul style="list-style-type: none"> - 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?

⁷The final internal reliability of the scales, as measured by the Cronbach alpha statistic, is between 0.4 and 0.7 for most scales; it is 0.37 for the hostile bias scale and 0.86 for the fixed mindset scale). This agrees with prior studies that used 3-item assessment of each of the Big Five traits: in developed countries, alphas range around 0.5–0.6 (Lang et al. 2011), and in developing countries with STEP surveys, alphas were closer to 0.3–0.4.

Hostile bias	<ul style="list-style-type: none"> - Do people take advantage of you? - Are people mean/not nice to you?
Decision making	<ul style="list-style-type: none"> - 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? - Do you think about how the things you do will affect others?
Achievement, striving	<ul style="list-style-type: none"> - Do you do more than what's expected of you? - Do you continue until everything is perfect, excel in what you do? - Do you try to outdo others?
Self-control	<ul style="list-style-type: none"> - Do you spend more than you can afford? - Do you do crazy things, act wild and crazy?
Fixed mindset (personality)	<ul style="list-style-type: none"> - The kind of person you are is something very basic about you and it can't be changed very much. - You can do things differently, but the important parts of who you are can't really be changed. - As much as I hate to admit it, you can't teach an old dog new tricks. You can't really change their deepest attributes. - You are a certain kind of person and there is not much that can be done to really change that.

Initial analysis of the original 33 socioemotional items revealed two main issues with the data: (1) On many indicators the distribution of responses across the 4-point Likert scale deviated from normality, which invalidated the assumptions inherent in traditional statistical measurement. (2) Scoring items according to the 11 hypothesized noncognitive “constructs” and computing reliability coefficients indicated that some scores might have a significant degree of measurement error ($\alpha=.37-.86$). To better understand the relationship between observed items and unobserved latent constructs, a factor analysis was conducted.

There are two primary types of factor analysis: exploratory (EFA) and confirmatory (CFA). While both attempt to model the relationship between observed items using a smaller set of latent constructs, they differ in the a priori restrictions placed on them. EFA is a data-driven technique

that is mainly used when the factor structure (e.g., the appropriate number of underlying factors and the relationships of items to factors) is unknown, whether because the survey has never been administered before or it is being administered in new contexts. In CFA, a researcher specifies at the outset the number of hypothesized factors and the patterns of how items relate to factors. This solution is then evaluated with respect to how well it fits the observed data. In the case of BLISS data, the final factors were obtained through EFA analysis, because CFA did not provide a good fit to the data. Table A1.2 shows the final grouping of the individual items into four factors:

Relational

Are you talkative?

Do you like to keep your opinions to yourself? Do you prefer to keep quiet when you have an opinion?
(reversed)

Do you enjoy beautiful things, like nature, art, and music?

Do you forgive other people easily?

Are you very polite to other people?

Are you generous to other people with your time or money?

Do you ask for help when you don't understand something?

Work/Learning Style

When you perform a task, are you very careful?

Do you work very well and quickly?

Do you come up with ideas others haven't thought of before?

Are you interested in learning new things?

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 to complete?

Do you think about how the things you do will affect your future?

Do you think carefully before you make an important decision?

Do you think about how the things you do will affect others?

Do you do more than is expected of you?

Do you strive to do everything in the best way?

Do you try to outdo others, to be best?

Fixed mindset factor

The type of person you are is fundamental, and you cannot change much.

You can behave in various ways, but your character cannot really be changed.

As much as I hate to admit it, you cannot teach an old dog new tricks. You cannot change their most basic properties.

You have a certain personality and not much can be done to change that.

Self-control factor*

Do you spend more than you can afford?

Do you do crazy things and act wildly?

Note: * The self-control factor was not used in the final analysis as it was composed of only two items and appeared to lack internal validity (Gerganov and Todorov 2014).

Finally, once a factor structure was found to be a good fit to the data, individual scores on each of the factors were calculated using refined factor scoring techniques. Factor scoring is preferable here to traditional sum scoring methods because factor scores account for (1) the weight of individual item loadings; and (2) shared variance between the items and the factors and measurement error (DiStefano et al. 2009). Factor scores were created based on the EFA solution using maximum a posteriori (MAP) estimation in MPLUS, which accounts for the nonnormal distribution of item response (Muthén & Muthén, 1998-2012).

Cognitive Skills

The cognitive skills submodule had 34 items to assess working memory, semantics, reading comprehension of a narrative text, comprehension of instructions and a timetable, and numeracy.

The 12-item memory scale, adopted from the Skills and Labor Market Survey (ENHAB) in Peru, tested the short-term recall of increasingly longer number sequences (starting with two and ending with nine). Enumerators gave respondents three two-number practice examples to train them on how to answer the questions; they were instructed to read out numbers at a regular pace to avoid grouping.

The semantics scale consisted of 7 multiple-choice (4-option) items, 5 assessing familiarity with vocabulary using synonyms and antonyms, 1 testing understanding of a Bulgarian idiom, and 1 measuring comprehension of a complex sentence. To assess comprehension of a narrative text, respondents first read a 257-word non-technical text and then answered 5 multiple-choice (4-option) items about it. Items for both the semantics scale and the reading comprehension test were taken from instruments previously fielded with Bulgarian students.

Comprehension of instructions and timetables (4 items) was assessed with 2 multiple-choice (4-option) questions based on instruction for taking a medicine (paracetamol) and 2 multiple-choice (4-option) questions based on a timetable for inter-city buses. Finally, 6 multiple-choice (4-option) items assessed numeracy: 3 were based on an advertisement of the price of a six-pack of mineral water, and 3 on a graph of the growth of Bulgaria's population from 1900 to 2011. Items assessing numeracy and comprehension of instructions and timetable were adapted from the Adult Literacy and Lifeskills Survey and other instruments assessing adult competencies.

The full submodule was pre-tested with Bulgarian university students and piloted with more than 100 participants.

To generate the overall cognitive score, missing values were recoded as incorrect answers. For each cognitive assessment category, item response theory (IRT) ability measures were calculated for each individual and then aggregated into a single cognitive score using factor analysis.

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Annex B: Methodology and Detailed Results of the Analysis

This annex describes the sample and methodology employed in the different multivariate analysis conducted in the paper and presents the detailed results.

Sample

The sample was restricted to individuals who had participated in the skills module of the Bulgarian Longitudinal Inclusive Society Survey (BLISS) and were aged 18 to 65 when the data were collected. Full-time students⁸ younger than 25 (n=66) and individuals participating in the public works program⁹ (n=24) were excluded.

For each labor market outcome, the sample was restricted depending on the population of interest. While for the labor participation analysis no additional restrictions were applied; when looking at the correlates of employability only active individuals were considered; and when analyzing the probability of being employed in the private sector, only employed individuals were considered; and the different factors correlated with earnings (see Table B1).

Finally, to enable analysis based on ethnicity, the observations from both the main and the booster samples were combined and were weighted to be representative of the population of a province by ethnicity (Roma vs non-Roma) at the time of the fieldwork.¹⁰

⁸ Full-time students were defined as those who answered being a “student, pupil” to the question “What was the main reason [NAME] did not look for a job in the past 4 weeks?” and who were enrolled in education according to the question “At the moment [NAME] is currently enrolled in ...”

⁹ Individuals in public works are those who answered “a public works program” to the question “What type of employer did [NAME] have for this job?” (24 observations)

¹⁰ The assumption is that the booster sample was representative of the population living in Roma neighborhoods, which implies that the population of Roma captured in the main sample and the population of Roma captured in the booster sample are statistically identical and that the non-Roma captured in the booster sample are also statistically identical to the non-Roma in the main survey. Also, to calculate the expected population of Roma and non-Roma per province at the time of the fieldwork (March/April 2013 for BLISS), populations were projected using 2001 and 2011 census information by province and ethnicity. When ethnicity information was missing, the individual was considered to be non-Roma. a hard correction was applied to the weights so as to match to the full BLISS sample the distribution of the skills sample by age, gender, ethnicity, and labor market status. For this purpose, four age groups (18–29, 30–39, 40–49 and 50–65), two ethnicity groups (Roma and non-Roma), and four labor market status (employed, unemployed, inactive/retired/disabled, student) were defined.

Table B.1: Dependent Variables of the Multivariate Analysis

Dependent Variable	Possible Values	Definition	Sample Size					
			Not Weighted			Weighted		
			All	Men	Women	All	Men	Women
Labor force participation	0 Inactive	Individuals not employed or unemployed	371	119	252	921,181	337,244	583,937
	1 Active	Individuals employed or unemployed	1,270	607	663	3,262,883	1,674,015	1,588,868
Employability	0 Unemployed	Individuals not employed who are actively looking for a job ¹	236	114	122	460,993	240,264	220,728
	1 Employed	Individuals who worked in the 4 weeks up to the survey or had a job from which they were temporarily absent or that was temporarily discontinued. ²	1,034	493	541	2,801,890	1,433,751	1,368,139
Private / public sector employment	0 Public sector employment	Individuals working for the government, public sector, army, or a state-owned enterprise ³	295	102	193	844,891	315,212	529,679
	1 Private sector employment	Employees of a private company or enterprise, an NGO or a private individual or employers, workers on own account and unpaid workers in a family farm or business ⁴	722	387	335	1,920,896	1,107,515	813,381
Earnings	log (hourly wage)	Employed individuals with information on earnings and hours worked ⁵	963	462	501	2,624,551	1,343,776	1,280,775

¹ “Did [NAME] look for a job in the past 4 weeks?” → Yes.

² Has [NAME] worked in the past 4 weeks? Including unpaid work in a family business or family farm or even a few hours of casual work? → Yes or “Even if [NAME] did not work in the past 4 weeks, did [NAME] have a job from which [NAME] was temporarily absent or was temporarily discontinued?” → Yes.

³ “What type of employer did [NAME] have for this job?” → The government, public sector or army/ a State-owned enterprise.

⁴ “What type of employer did [NAME] have for this job?” → A private company or enterprise/ an NGO or nonprofit organization/ a private individual or “In this job, [NAME] is...” → An employer/ a worker on own account (self-employed)/ an unpaid worker in a family farm or business.

⁵ “What are [NAME'S] monthly average net wages (net of taxes and contributions) from this job?” or “What are [NAME'S] monthly average net earnings from this work or business for the last 12 months or from the beginning of the business?” and “How many hours did [NAME] work at this job in the last 7 days (including weekend days)?”

Methodology

Two estimation methodologies were applied, the choice being governed by the dependent variable. For models where the dependent variable is a dummy, such as labor force participation, employability, and working in the private sector or not, the marginal effects at the means of the independent variables were estimated using probit models. On the other hand, the earnings return on skills, education, and other personal characteristics was estimated using OLS.

As a robustness check, the models presented here were also estimated using more parsimonious specifications, with two ethnicity levels (Roma and non-Roma) and two education levels (dummy variable for having completed at least secondary education). To check the robustness of results to sample selection, Heckman selection correction was applied when estimating the correlates of employability and earnings, using the presence in the household of children aged 0–5 and 6–10 as instrumental variables. For all specifications, the results appeared to be robust.

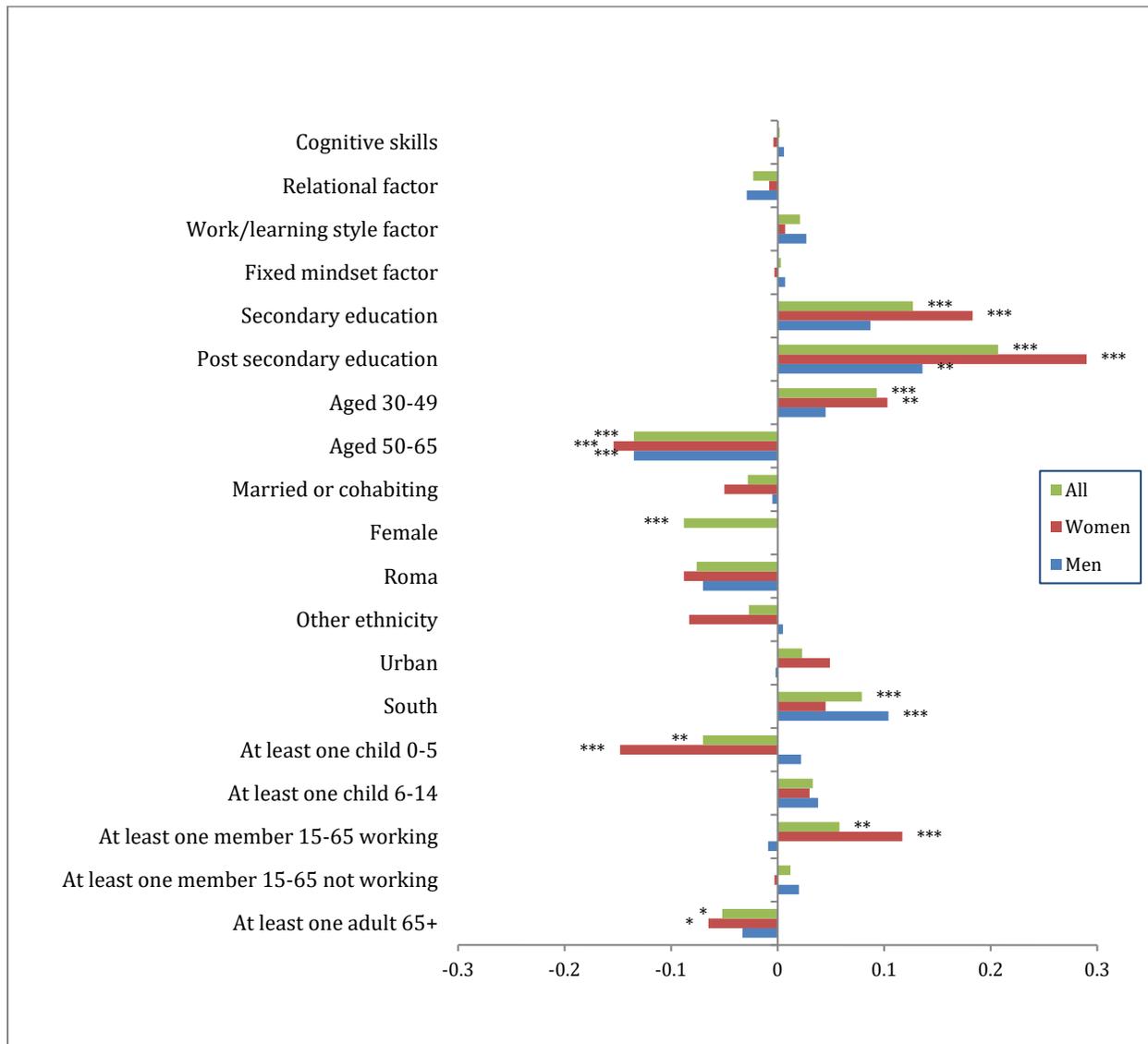
Detailed Results

The following tables and figures present the results of multivariate regression models.

Table B.2: Probit Estimates of Labor Force Participation for Working-age Individuals

	Not Conditional on Education			Conditional on Education		
	All	Women	Men	All	Women	Men
Aggregated cognitive skills	0.011 (0.01)	0.009 (0.01)	0.011 (0.01)	0.002 (0.01)	-0.004 (0.01)	0.006 (0.01)
Relational factor	-0.026* (0.01)	-0.007 (0.02)	-0.038* (0.02)	-0.023 (0.01)	-0.008 (0.02)	-0.029 (0.02)
Work factor	0.033* (0.02)	0.023 (0.02)	0.036 (0.02)	0.021 (0.02)	0.007 (0.02)	0.027 (0.02)
Fixed mindset factor	-0.001 (0.01)	-0.009 (0.02)	0.004 (0.02)	0.003 (0.01)	-0.003 (0.02)	0.007 (0.02)
Secondary				0.127*** (0.05)	0.183*** (0.07)	0.087 (0.06)
Postsecondary				0.207*** (0.05)	0.290*** (0.07)	0.136** (0.06)
30–49 years old	0.108*** (0.03)	0.122** (0.05)	0.061 (0.04)	0.093*** (0.03)	0.103** (0.05)	0.045 (0.04)
50–65 years old	-0.134*** (0.04)	-0.157*** (0.05)	-0.127** (0.05)	-0.135*** (0.04)	-0.154*** (0.05)	-0.135*** (0.05)
Married	-0.033 (0.02)	-0.061* (0.03)	-0.008 (0.04)	-0.028 (0.02)	-0.05 (0.03)	-0.005 (0.04)
Female	-0.083*** (0.02)			-0.088*** (0.02)		
Roma	-0.145** (0.06)	-0.186*** (0.07)	-0.116 (0.10)	-0.076 (0.06)	-0.088 (0.08)	-0.07 (0.10)
Other	-0.074* (0.04)	-0.152** (0.06)	-0.025 (0.05)	-0.027 (0.04)	-0.083 (0.06)	0.005 (0.05)
Urban	0.022 (0.03)	0.039 (0.04)	0.001 (0.04)	0.023 (0.03)	0.049 (0.04)	-0.002 (0.03)
South	0.094*** (0.03)	0.072** (0.04)	0.108*** (0.03)	0.079*** (0.02)	0.045 (0.03)	0.104*** (0.03)
Children 0–5	-0.076** (0.03)	-0.151*** (0.04)	0.014 (0.06)	-0.070** (0.03)	-0.148*** (0.04)	0.022 (0.05)
Children 6–14	0.026 (0.04)	0.017 (0.05)	0.039 (0.05)	0.033 (0.04)	0.03 (0.05)	0.038 (0.05)
Members 65+	-0.044 (0.03)	-0.053 (0.04)	-0.029 (0.05)	-0.052* (0.03)	-0.065* (0.04)	-0.033 (0.05)
Members 15–65 working	0.076*** (0.02)	0.143*** (0.03)	0.005 (0.04)	0.058** (0.02)	0.117*** (0.03)	-0.009 (0.03)
Members 15–65 not working	0.003 (0.02)	-0.014 (0.04)	0.011 (0.03)	0.012 (0.02)	-0.003 (0.04)	0.02 (0.03)
N	1,639	913	726	1,600	888	712

Figure B.1. Correlates of Being in the Labor Force for Working-age Individuals by Gender, 2013

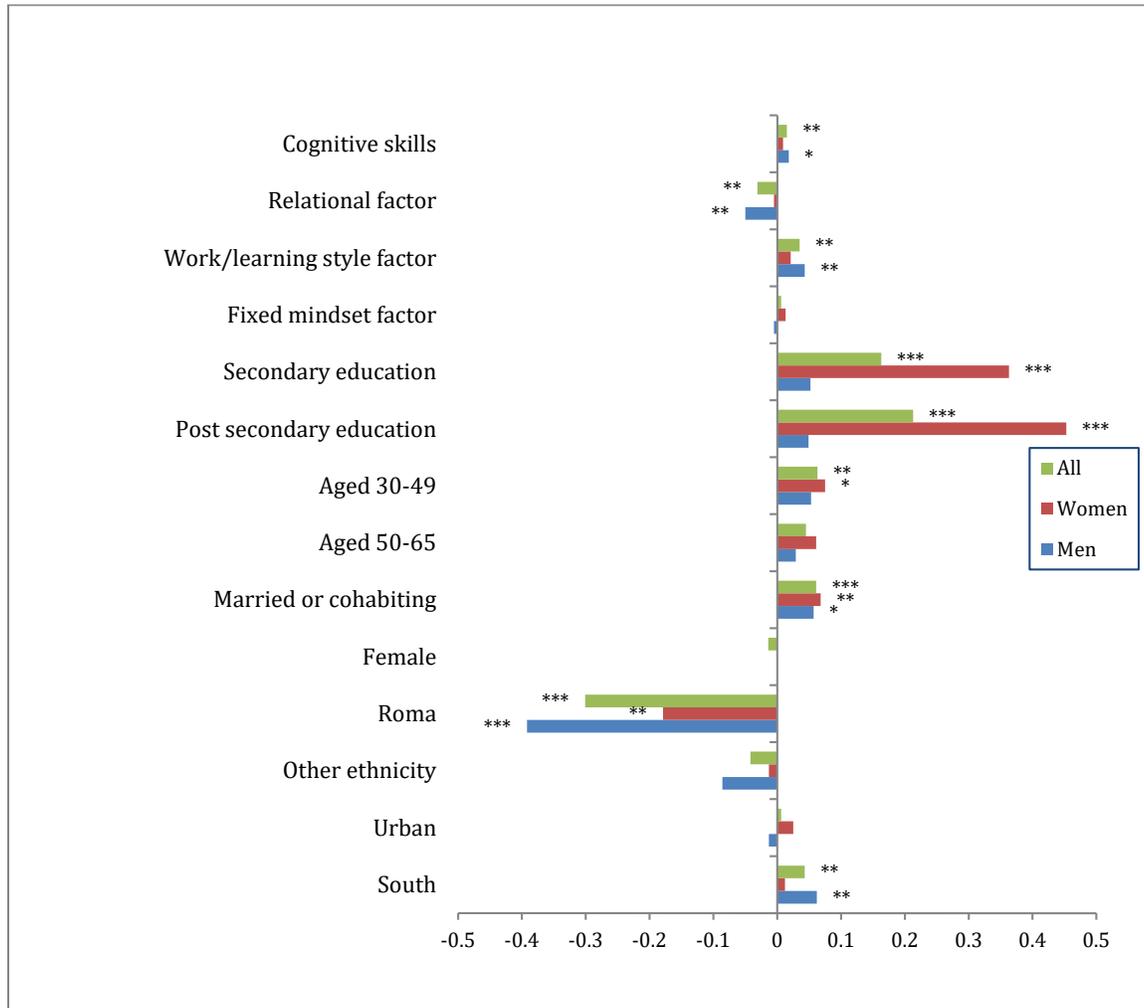


Source: Bulgarian Longitudinal Inclusive Society Survey (BLISS).

Table B.3: Probit Estimates of Being Employed for Active Working-age Individuals

	Not conditional on education			Conditional on education		
	All	Women	Men	All	Women	Men
Aggregated cognitive skills	0.022*** (0.01)	0.024** (0.01)	0.019* (0.01)	0.015** (0.01)	0.009 (0.01)	0.018* (0.01)
Relational factor	-0.032** (0.01)	-0.014 (0.02)	-0.049** (0.02)	-0.031** (0.01)	-0.005 (0.02)	-0.050** (0.02)
Work factor	0.045*** (0.02)	0.047* (0.02)	0.046** (0.02)	0.035** (0.02)	0.021 (0.02)	0.043** (0.02)
Fixed mindset factor	-0.001 (0.01)	0.007 (0.01)	-0.009 (0.01)	0.006 (0.01)	0.013 (0.01)	-0.005 (0.01)
Secondary				0.163*** (0.05)	0.363*** (0.08)	0.052 (0.05)
Postsecondary				0.213*** (0.05)	0.453*** (0.08)	0.049 (0.06)
30–49 years old	0.057* (0.03)	0.069 (0.05)	0.048 (0.04)	0.063** (0.03)	0.075* (0.04)	0.053 (0.04)
50–65 years old	0.044 (0.04)	0.068 (0.05)	0.027 (0.05)	0.045 (0.04)	0.061 (0.05)	0.029 (0.05)
Married	0.047** (0.02)	0.059** (0.03)	0.045 (0.03)	0.061*** (0.02)	0.068** (0.03)	0.057* (0.03)
Female	-0.01 (0.02)			-0.014 (0.02)		
Roma	-0.426*** (0.08)	-0.474*** (0.11)	-0.390*** (0.11)	-0.301*** (0.10)	-0.179** (0.09)	-0.392*** (0.14)
Other	-0.126*** (0.04)	-0.172** (0.08)	-0.112** (0.05)	-0.042 (0.04)	-0.013 (0.05)	-0.086 (0.06)
Urban	0.007 (0.02)	0.013 (0.03)	0.001 (0.03)	0.006 (0.02)	0.025 (0.03)	-0.013 (0.03)
South	0.049** (0.02)	0.035 (0.03)	0.058** (0.03)	0.043** (0.02)	0.012 (0.02)	0.062** (0.03)
N	1,268	661	607	1,245	648	597

Figure B.2. Correlates of Being Employed for Active Working-age Individuals by Gender, 2013

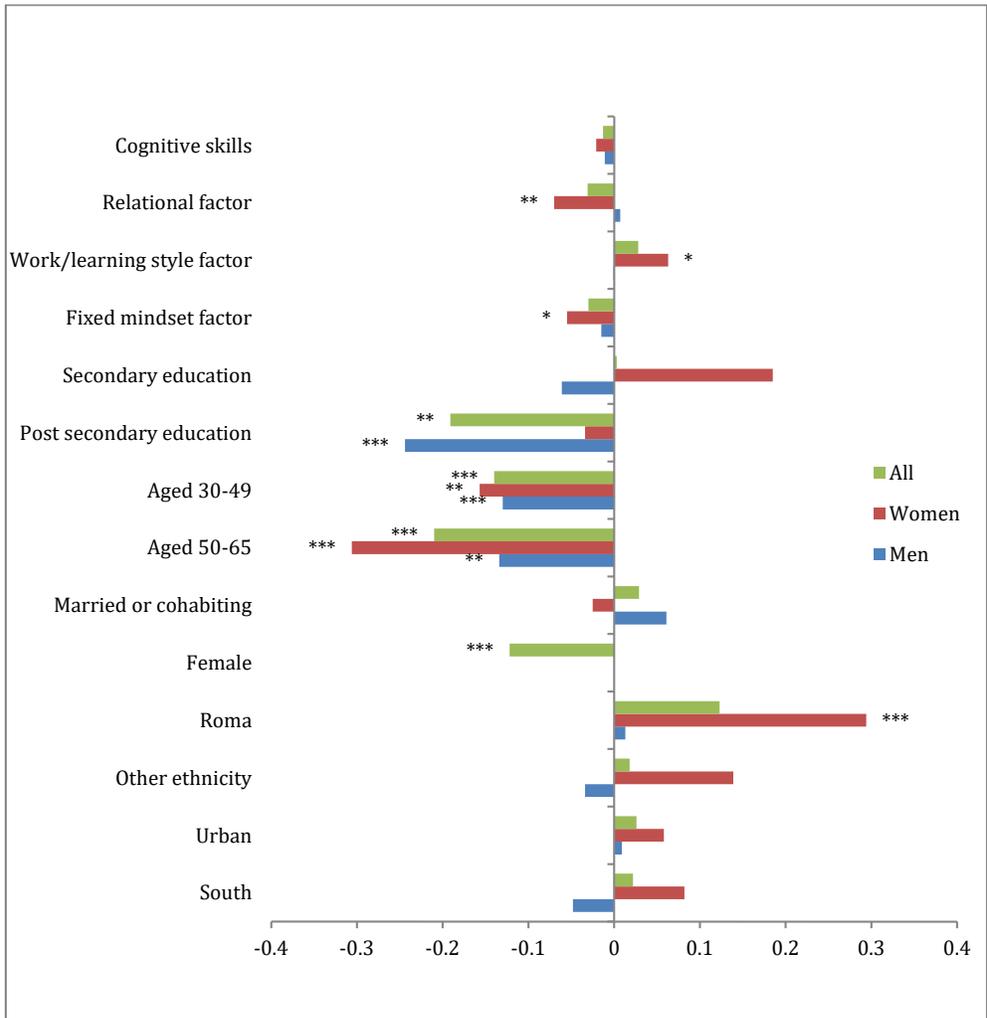


Source: BLISS.

Table B.4: Probit Estimates of the Probability of Working-age Individuals Being Employed in the Private Sector, 2013

	Not Conditional on Education			Conditional on Education		
	All	Women	Men	All	Women	Men
Aggregated cognitive skills	-0.018*	-0.028*	-0.015	-0.013	-0.021	-0.011
	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)
Relational factor	-0.022	-0.059*	0.012	-0.031	-0.070**	0.007
	(0.02)	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)
Work factor	0.001	0.034	-0.023	0.028	0.063*	-0.001
	(0.02)	(0.04)	(0.03)	(0.02)	(0.04)	(0.03)
Fixed mindset factor	-0.023	-0.047	-0.008	-0.03	-0.055*	-0.015
	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)
Secondary				0.003	0.185	-0.061
				(0.08)	(0.13)	(0.07)
Postsecondary				-0.191**	-0.034	-0.244***
				(0.08)	(0.13)	(0.09)
30–49 years old	-0.145***	-0.163**	-0.134***	-0.140***	-0.157**	-0.130***
	(0.04)	(0.07)	(0.05)	(0.04)	(0.07)	(0.05)
50–65 years old	-0.214***	-0.303***	-0.144**	-0.210***	-0.306***	-0.134**
	(0.05)	(0.07)	(0.07)	(0.05)	(0.07)	(0.07)
Married	0.041	0	0.065	0.029	-0.025	0.061
	(0.04)	(0.05)	(0.04)	(0.04)	(0.05)	(0.04)
Female	-0.150***			-0.122***		
	(0.04)			(0.04)		
Roma	0.163***	0.254***	0.106*	0.123	0.294***	0.013
	(0.06)	(0.08)	(0.06)	(0.08)	(0.08)	(0.10)
Other	0.062	0.164**	0.031	0.018	0.139	-0.034
	(0.07)	(0.08)	(0.08)	(0.08)	(0.09)	(0.09)
Urban	0.028	0.055	0.013	0.026	0.058	0.009
	(0.04)	(0.06)	(0.05)	(0.04)	(0.06)	(0.05)
South	0.013	0.073	-0.052	0.022	0.082	-0.048
	(0.04)	(0.06)	(0.05)	(0.04)	(0.06)	(0.05)
N	1,016	527	489	1,008	523	485

Figure B.3. Correlates of Being Employed in the Private Sector, for employed working-age individuals by Gender, 2013

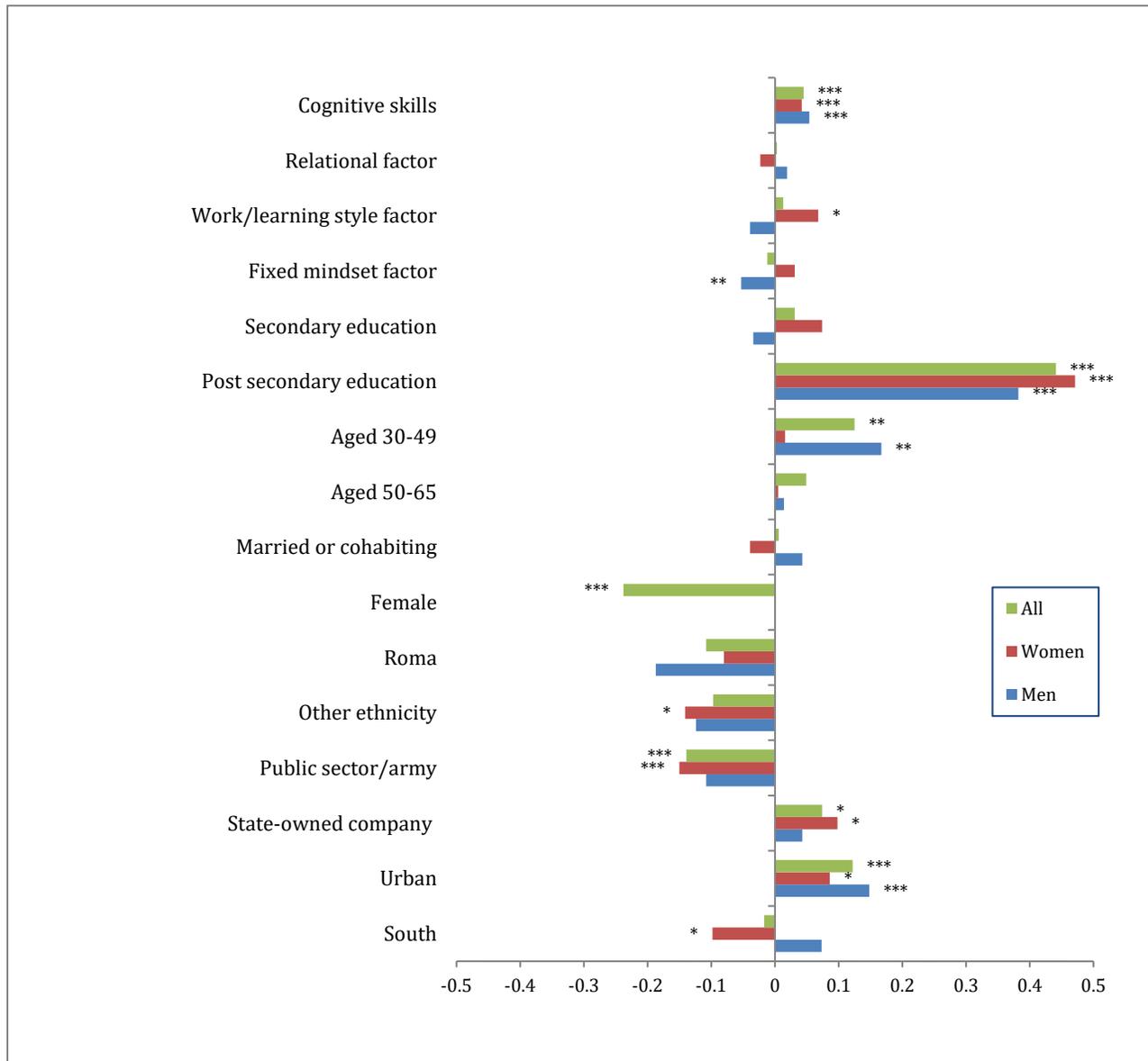


Source: BLISS.

Table B.5: OLS Estimates of Earnings of Employed Working-age Individuals

	Not conditional on education			Conditional on education		
	All	Women	Men	All	Women	Men
Aggregated cognitive skills	0.053*** (0.02)	0.056*** (0.02)	0.055** (0.02)	0.045*** (0.01)	0.042*** (0.01)	0.054*** (0.02)
Relational factor	-0.015 (0.03)	-0.046 (0.03)	0.003 (0.04)	0.003 (0.02)	-0.023 (0.03)	0.019 (0.04)
Work factor	0.069** (0.03)	0.133*** (0.04)	0.012 (0.04)	0.013 (0.03)	0.068* (0.04)	-0.039 (0.04)
Fixed mindset factor	-0.025 (0.02)	0.016 (0.02)	-0.064** (0.03)	-0.012 (0.02)	0.031 (0.02)	-0.053** (0.02)
Secondary				0.031 (0.07)	0.074 (0.08)	-0.034 (0.09)
Postsecondary				0.441*** (0.07)	0.471*** (0.09)	0.382*** (0.10)
Female	-0.196*** (0.03)			-0.238*** (0.03)		
Roma	-0.204*** (0.07)	-0.188* (0.10)	-0.235** (0.09)	-0.108 (0.09)	-0.08 (0.09)	-0.187 (0.13)
Other	-0.188** (0.08)	-0.235*** (0.09)	-0.193** (0.08)	-0.097 (0.07)	-0.141* (0.08)	-0.124 (0.09)
30–49 years old	0.125** (0.06)	0.002 (0.10)	0.167** (0.08)	0.125** (0.06)	0.016 (0.09)	0.167** (0.08)
50–65 years old	0.039 (0.07)	-0.029 (0.11)	0.019 (0.08)	0.049 (0.06)	0.005 (0.09)	0.014 (0.08)
Married	0.064 (0.05)	0.021 (0.07)	0.107* (0.06)	0.006 (0.05)	-0.039 (0.07)	0.043 (0.05)
Public sector/army	-0.024 (0.05)	-0.043 (0.06)	0.008 (0.08)	-0.139*** (0.05)	- (0.05)	-0.108 (0.07)
State-owned company	0.074 (0.05)	0.111* (0.06)	0.032 (0.06)	0.074* (0.04)	0.098* (0.05)	0.043 (0.05)
Urban	0.130*** (0.04)	0.099* (0.06)	0.146** (0.06)	0.122*** (0.04)	0.086* (0.05)	0.148*** (0.05)
South	-0.036 (0.03)	-0.140** (0.06)	0.077 (0.05)	-0.017 (0.03)	-0.098* (0.05)	0.073 (0.05)
Constant	0.915*** (0.08)	0.888*** (0.12)	0.842*** (0.09)	0.784*** (0.09)	0.660*** (0.13)	0.774*** (0.13)
r ²	0.127	0.152	0.129	0.257	0.294	0.245
N	958	496	462	951	492	459

Figure B.4: Correlates of Earnings for Employed Working-age Individuals by Gender, 2013



Source: BLISS.

SKILLS FOR WORK IN BULGARIA

The relationship between cognitive and socio-emotional
skills and labor market outcomes



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