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WORLD BANK GROUP

Supply of skills in Moldova

Findings from the Moldova Skills Measurement Survey (MSMS)

This draft: July 2019

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LIST OF ACRONYMS AND ABBREVIATIONS

BLISS	Bulgarian Longitudinal Inclusive Society Survey
ECA	Europe and Central Asia
ECE	Early Childhood Education
ETF	European Training Foundation
ISCO	International Standard Classification of Occupations – 2008
ILO	International Labour Organization
MSMS	Moldova Skills Measurement Survey
NACE Rev.2	Statistical classification of economic activities (Nomenclature Statistique Des Activités Économiques Dans La Communauté Européenne)
OECD	Organisation for Economic Cooperation and Development
n.a.	not available
PIAAC	Programme for the International Assessment of Adult Competencies
PISA	Programme for International Student Assessment
PSNT	Post-secondary non-tertiary (education)
SD	Standard deviation
SE	Standard error
SDC	Swiss Agency for Development and Cooperation
STEP	Skills Toward Employability and Productivity program

1. Introduction

Low labor force participation and employment rates in Moldova demonstrate ineffective use of scarce labor resources. At 43 percent, Moldova's labor force participation rate is among the lowest in Europe and Central Asia, which typically stands at 60-70 percent of population aged 15 years and above.¹ Low participation and employment rates, especially in rural areas, are partly explained by migration and remittances that affect the labor market decisions not only of those who migrate abroad for work, but also of household members left behind (World Bank, 2016a). The unemployment rate has substantially decreased – from over 7 percent of the labor force in 2010 to 3 percent in 2018. But this decline was not underpinned by the creation of good jobs and is mainly attributed to widespread informal employment and subsistence agriculture, reliance on remittances and high migration propensity (World Bank, 2016 a, b; ETF, 2019). A high share of jobs is still concentrated in low-productivity sectors such as agriculture and trade and in public services, and a lot of jobs, especially in rural areas, are informal and of low quality.²

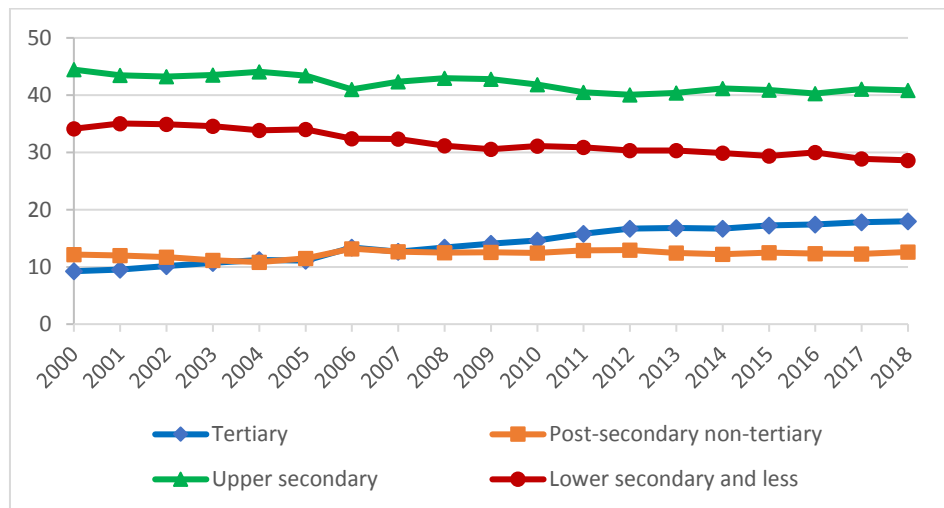
Equipping the workforce with the right skills and alleviating other barriers to productive employment is critical to Moldova's development, especially given low rates of labor force participation, forthcoming decline in working age-population and widespread skills mismatches. Despite the impressive increase in enrollment to universities in the 2000-s compared to the previous decades and the rise in educational attainment of Moldovans (Figure 1), many firms in Moldova report difficulties finding workers with the right skills profile for the job. According to the Labor Market Forecast Survey-2018, 25 percent of firms reported that they experienced labor shortage in the last 12 months, and 64 percent of these firms mentioned that a lack of qualified workers with necessary experience was a major reason for labor shortage (Rizvi, 2019). Technical knowledge, work ethic, motivation and initiative are the top skills identified as the greatest obstacles to firm performance in 2016 and 2018 (Rutkowski et al., 2017; Rizvi, 2019). The analysis of requirements to skills specified by Moldovan employers in job vacancy postings reveals that the most valued skills are job-specific technical skills, work ethic, Romanian and Russian languages, computer literacy, communication skills, knowledge of English or other foreign language (Kupets, 2019). Thus, individuals need a mix of technical, cognitive and socio-emotional skills to meet employers' demand and to succeed in modern life. However, the Moldova's education system is not sufficiently geared to the skills demanded on the labor market whereas the system of life-long learning is not yet functioning systematically in Moldova (World Bank, 2016a; ETF, 2019).

¹ The National Bureau of Statistics of Moldova classifies all international migrants as inactive individuals when calculating labor force and employment rates. But the analysis based on the individual-level Labor Force Survey data shows that even after excluding international migrants from inactive and total population, the labor force participation and employment rates in Moldova are still lower than in Central Asian transition countries and more developed European economies (ETF, 2019; Kupets, 2018; World Bank, 2016a).

² According to NBS statistics based on the Labor Force Survey data in 2018, agriculture accounted for 36.1 percent of total employment, followed by public administration, education, health and social work (18.4 percent) and by trade, hotels and restaurants (15.5 percent). The incidence of informal employment was 38.5 percent in Moldova as a whole, 13.9 percent in urban areas and 56.9 percent in rural areas. According to ETF (2019), the incidence of vulnerable employment, defined as employment of own-account and contributing family workers, increased from 24.4 percent of total employment in 2010 to 36.4 percent in 2016.

A disconnect between education and training providers, employers, students and job seekers that exists due to poor labor market information, weak incentives and capacity constraints, leads to persistent skills mismatches and underemployment of scarce labor resources (ETF, 2019; World Bank, 2016c). The shortage of labor and skills, if not addressed properly, may become a binding constraint to further modernization and growth of the Moldovan economy (World Bank, 2016a).

Figure 1: Population aged 15 years and above by educational attainment (%), 2000-2018



Source: Author’s calculations based on NBS Labor Force Survey data, series “Population aged 15 years and over by economic status by Economic status, Level of education, Years and Sex”.

Notes: Post-secondary non-tertiary education refers to Secondary specialized education according to the NBS classification. Upper secondary education includes Secondary professional and Secondary school. Lower secondary and less includes Gymnasium and Primary or no education.

The importance of reducing skills mismatches is recognized in the Government’s *Moldova 2020 Strategy* and it is the objective of ongoing project efforts. “Aligning education with labor market needs” is one of the top objectives of the *Moldova 2020 Strategy*. The Government is embarking on reforms to improve the quality of education and to provide accessible and timely labor market information to facilitate better job matches. The Government is also actively reforming the National Employment Agency to improve the functioning of the Moldovan labor market. One of the important steps to designing effective programs to address skills mismatches is accurate measurement of skills demand and supply. The Ministry of Health, Labor and Social Protection is implementing the “Moldova Skills Data Capacity Building” project with support of the World Bank which defined skills development – enhancing quality and relevance of education and training institutions to enable acquisition of job-related skills – as one of the three major focus areas in the FY18-21 Country Partnership Framework (World bank, 2017).

Before 2018-2019, important data on skills supply were missing in Moldova, and researchers had to rely on formal educational attainment as a measure of skills. However, there is only an imperfect correlation between formal education and skills, and both cognitive and non-cognitive skills might directly affect employment, wages and other labor market outcomes (Heckman et al., 2006, among many others). Following the experience in many low

and middle-income countries,³ the World Bank supported collection of household data in Moldova using more direct measures of cognitive (literacy, numeracy, memory) and socio-emotional (openness to experience, conscientiousness, emotional stability, decision making, etc.) skills. Such measures enable analysis of the skills profile of the current workforce and the relationship between skills and labor market outcomes. This analysis can be used for evidence-based policy making to address observed skills mismatches and increase productivity of the workforce.

The objective of this report is to fill the observed knowledge gaps on skills supply in Moldova by providing the first findings from the Moldova Skills Measurement Survey (MSMS). The survey was implemented by IMAS in October 2018-March 2019. This is the first nationally representative survey in the country that provides information on cognitive and socio-emotional skills of the working-age population (18-64 years) and skills used at work by the employed population. This report focuses on the skills-related analysis, namely it describes the skill profiles of the workforce in Moldova and identifies the extent to which different skills matter for labor market success, defined as being in the labor force, being employed, and earning more. The barriers to employment that are not linked to skills, including reservation wages, mobility, and caregiving constraints, need to be explored in a separate study. A by-product of the data analysis is validation of the instrument for measuring skills of the working-age population as requested by the Ministry of Health, Labor and Social Protection.

The rest of the report is structured as follows: Next section briefly describes the Moldova Skills Measurement Survey and provides definitions of the skills used in this survey, with more technical details provided in Annex A. Section 3 describes the levels of cognitive and socio-emotional skills of Moldova's working-age population and assesses skills differences by education and participation in early childhood development programs, age and gender, locality (rural vs. urban) and region, labor force status and occupation of those employed. Section 4 provides information on the skills used at work, lack of literacy and computer skills as an obstacle to (better) jobs, perceived usefulness of education, and the incidence of training, with comparison to other transition countries in the region whenever possible. Section 5 explores the relationship between education, skills and labor market outcomes based on the regression analysis. Section 6 concludes with a summary of findings and policy implications.

³ The World Bank's STEP Skills Measurement Program (STEP) is the initiative to measure skills in low and middle-income countries (<https://microdata.worldbank.org/index.php/catalog/step/about>).

2. Moldova Skills Measurement Survey

The main objective of the Moldova Skills Measurement Survey (MSMS) is to collect information on individuals' cognitive and socio-emotional skills. Besides, the survey provides background information on the household structure and assets, individual's health and some household characteristics when the respondent was 15 years old, education and training, labor force participation and various barriers to employment, employment and earnings. The MSMS builds on the World Bank STEP questionnaire but with additional cognitive module like in the Bulgarian Longitudinal Inclusive Society Survey (BLISS), the empathy (reading the mind in the eyes) test and some questions about barriers to the labor market.

The survey's target population is non-institutionalized population of working age (18-64 years old), except for the people with lack of mental abilities. The final sample includes 2,070 adults from all regions of the Republic of Moldova, except for Transnistria. The fieldwork lasted from October 2018 to March 2019. Unlike STEP household surveys conducted in other countries only in urban areas for working-age population defined as 15 to 64 years, MSMS covers both urban and rural areas for working-age population defined as 18 to 64 years. Given this, comparison of some indicators in Moldova and other countries in the region is provided for a subsample of urban residents aged from 18 to 64 years.

The concept of skills refers to the ability of individuals to apply knowledge and use know-how to compete tasks and solve problems (Cedefop, 2014). Following the literature on economics, as well as on behavioral, industrial and organizational psychology, labor-market related skills are usually classified into three groups (Cunningham and Villasenor, 2016):

- **Cognitive skills (intelligence or mental abilities)** can be defined as “ability to understand complex ideas, to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, to overcome obstacles by taking thought” (Neisser et al., 1996). They encompass fundamental academic knowledge and comprehension, including literacy and math, and higher-order skills such as critical thinking, analytical skills, problem solving, oral and written communication, and adaptive learning. There is now considerable evidence in developed and developing countries that cognitive skills measured by test scores are directly related to personal achievement, individual earnings and other labor market outcomes (Cunningham and Villasenor, 2016; Hanushek, 2009).
- **Socio-emotional** skills (non-cognitive or soft skills), are behaviors, attitudes, and personality traits that enable individuals to manage interpersonal and social situations effectively (Del Carpio et al., 2017). These skills can be categorized on several levels. A popular taxonomy widely used in STEP-based skills reports and academic research is the Big Five personality model based on the following traits: openness to experience, conscientiousness, extraversion, agreeableness, and emotional stability (Table 1). A growing body of literature finds a significant correlation between socio-emotional skills and wages, professional success, and a range of other labor force outcomes. There are also studies that find that although both cognitive and socio-emotional skills determine social and economic success, socio-emotional skills may be even more important than cognitive skills for employment outcomes, especially among low-skilled occupations (a short review of studies in Cunningham and Villasenor, 2016).

Table 1: Big Five personality traits

Big Five personality trait	Short description	Important facets
Openness to experience	Exploring the world of things and ideas	Imagination, curiosity, and creativity vs. shallowness and imperceptiveness
Conscientiousness	Getting things done, as required and in time	Organization, thoroughness, and reliability vs. carelessness, negligence, and unreliability
Extraversion	Enjoying and exceling in the company of others	Talkativeness, assertiveness, and activity level vs. silence, passivity, and reserve
Agreeableness	Concern for the well-being of others	Kindness, trust, and warmth vs. hostility, selfishness, and distrust
Emotional stability (the opposite of Neuroticism)	Having a calm and positive emotionality	Stress resistance, and emotional control vs. nervousness and moodiness

Source: Author based on OECD (2015) and Goldberg (1993).

- **Technical skills (job-specific skills or vocational abilities)** include the specific knowledge required to carry out one’s job (Cunningham and Villasenor, 2016). The most popular examples of such skills from the vacancy analysis in Moldova are proficiency in “1-C Accounting” as well as in Photoshop, CorelDRAW, Adobe Illustrator and other graphics software, knowledge of labor and tax law, accounting and marketing principles, sales and Social Media Marketing skills which are required by employers in many non-manual occupations (in vacancies posted on private job portals as well as those reported to the National Employment Agency). Sewing skills are required from garment and related trades workers which is the top occupation among vacancies registered at the National Employment Agency (Kupets, 2019). Good technical skills are important for individual’s labor market success, but it is difficult to measure the returns to them using the household survey because technical skills are usually very specific to occupation/sector or even to a firm.

The Moldova Skills Measurement Survey provides information on some cognitive and socio-emotional skills of the adult population (18-64 years), as well as the skills used by employed adults at work. The skills used in this report are summarized in Figure 2. Annex A explains in greater detail how these skills are measured in the Moldova Skills Measurement Survey. Descriptive statistics for skills is provided in Annex B, Tables B.1 and B.2.

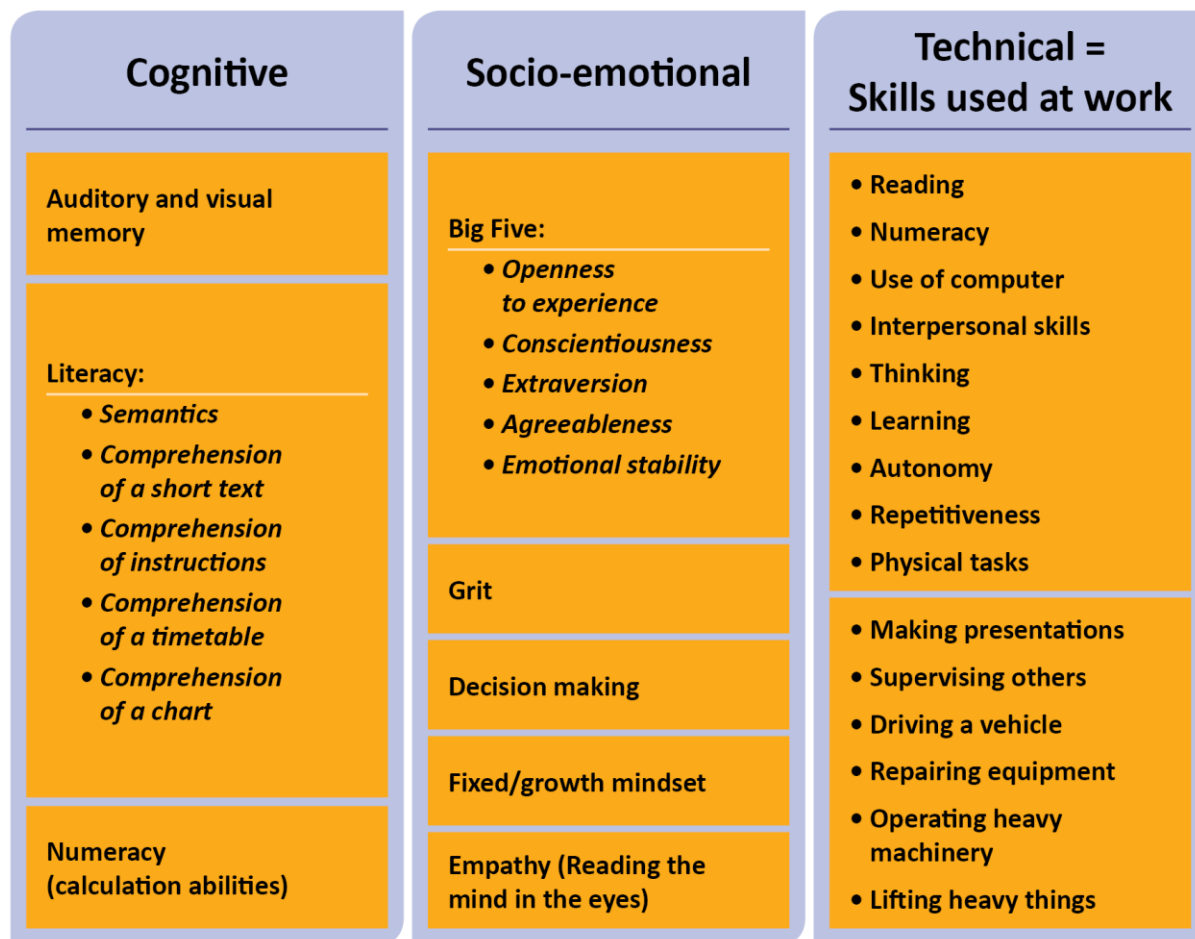
Data on **cognitive skills** were collected through a module that assessed respondents’ auditory and visual memory, semantics (vocabulary), comprehension of a short text, instructions, a timetable, and a chart, and basic calculation abilities (numeracy).

Socio-emotional skills were measured through a module of questions grouped in three sets. The first set consists of 44 questions that help assess respondents’ **Big Five personality traits**, grit (i.e. passion for long-term goals) and decision-making. The second set includes five questions to measure the **fixed mindset** factor according to Dweck (2007). Fixed mindset refers to the idea that intelligence and other talents are set at birth and cannot be changed, whereas growth mindset is the belief that intelligence and other positive traits can be developed with practice. Individuals with a growth mindset are more likely to succeed, as they believe that “everyone can get smarter if they work at it” (Dweck, 2007).

A novelty of the Moldova Skills Measurement Survey is **the Empathy test, or Reading the Mind in the Eyes test**, which is a third part of the socio-emotional skills module. This test

measures “how well the respondents can put themselves into the mind of the other person and tune in to their mental state” (Baron-Cohen et al., 2001). People with greater ability to make inferences about others' mental states are likely to be more competent at various kinds of social interactions. As the study by Engel et al. (2014) shows, this ability is important not only for traditional face-to-face or verbal interactions but also for modern online environments with limited nonverbal cues.

Figure 2. Skills measured in MSMS



Because technical skills are often job-specific, it is hard to capture them using a survey instrument aimed at the general population. Like the STEP survey, the MSMS asks respondents a set of questions to measure intensity/ complexity or the incidence of skills used at the workplace, including reading and numeracy, computer use, contacts with clients, repair and maintenance of electronic equipment, operation of heavy machinery, supervision, presentation, etc. (Figure 2, Table A.3 in Annex A).

Although the MSMS is similar to STEP household surveys conducted in many transition and developing countries,⁴ there are important differences that complicate comparison of cognitive and socio-emotional skills. MSMS measured memory, literacy and basic numeracy using tests developed in Bulgaria, whereas STEP surveys include a direct assessment of reading proficiency, which is very different from reading/comprehension tests in Bulgaria or Moldova. Socio-emotional skills are grouped in Moldova and countries with STEP surveys into

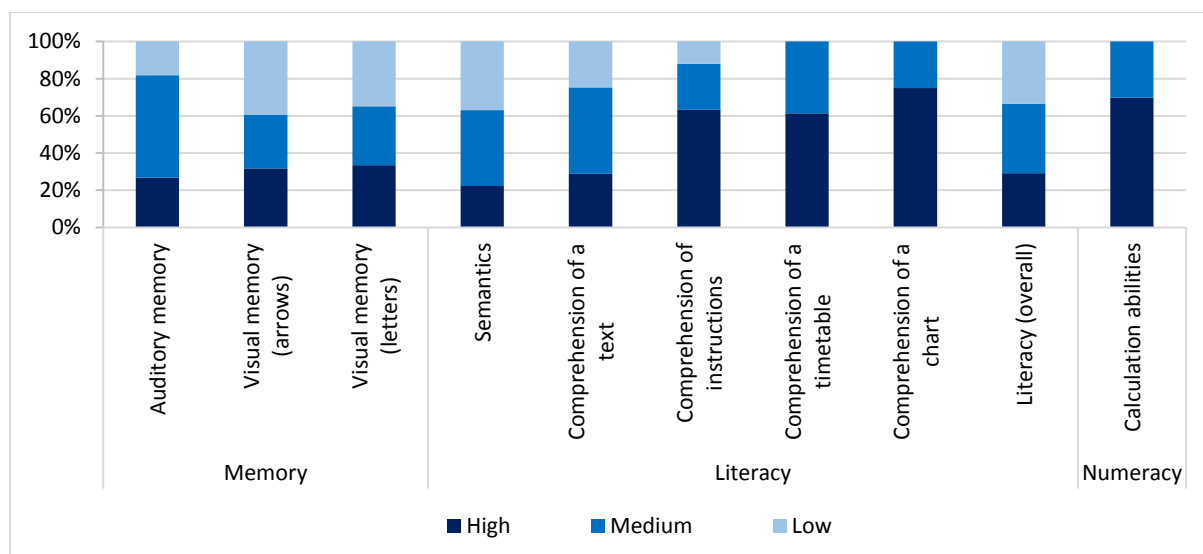
⁴ <https://microdata.worldbank.org/index.php/catalog/step/about>; Pierre et al. (2014).

the same Big Five, grit and decision-making but the components used to aggregate those broad skills are not exactly the same.

3. Skills profile of working-age population: Cognitive and socio-emotional skills

Moldova’s working-age population has on average high levels of memory, literacy and numeracy. Frequency distributions of recorded scores for most components, excluding auditory memory, are skewed to the right (Buianina, 2019), and median values are very close to the maximum score (see Annex B, Table B.1). Figure 3 shows the composition of population by the level of skills defined with the use of thresholds suggested by a local psychologist. A relatively worse performance, as measured by a higher share of individuals with a low skill level, is in visual memory, semantics, and comprehension of a narrative text. A large share of population has good calculation abilities and comprehension of instructions, timetables and charts but this is partly because the tests consisting of few multiple-choice questions were too simple (see Annex A, Table A.1).

Figure 3: Composition of working-age population by the level of cognitive skills

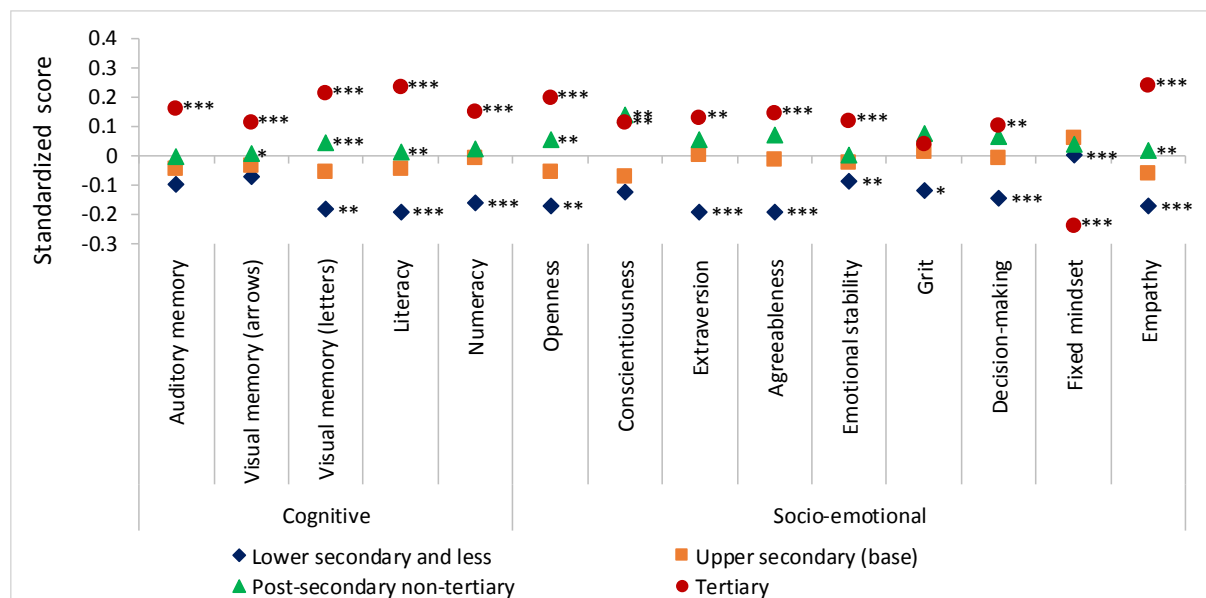


Source: Moldova Skills Measurement Survey.

Notes: Definition of skills and their levels is provided in Annex A, Table A.1. The sample excludes students (individuals who were attending a formal education program) aged less than 25 years.

Individuals with tertiary education have significantly higher standardized scores for cognitive and socio-emotional skills than individuals with upper secondary education (Figure 4). On the other hand, lower educated individuals perform much worse than graduates of lyceums and professional schools do. Interestingly, there is almost no difference in many cognitive and socio-emotional skills of college graduates (post-secondary non-tertiary education) and those with secondary general or vocational education. This points to possible problems in developing skills in Moldovan colleges along with self-selection of lower-skilled individuals into colleges compared to their peers who have chosen to get tertiary education. Another interesting finding is that there is no significant difference between individuals with higher levels of education in the level of grit, and that the average level of auditory memory is statistically different only among individuals with tertiary education.

Figure 4: Cognitive and socio-emotional skills by education



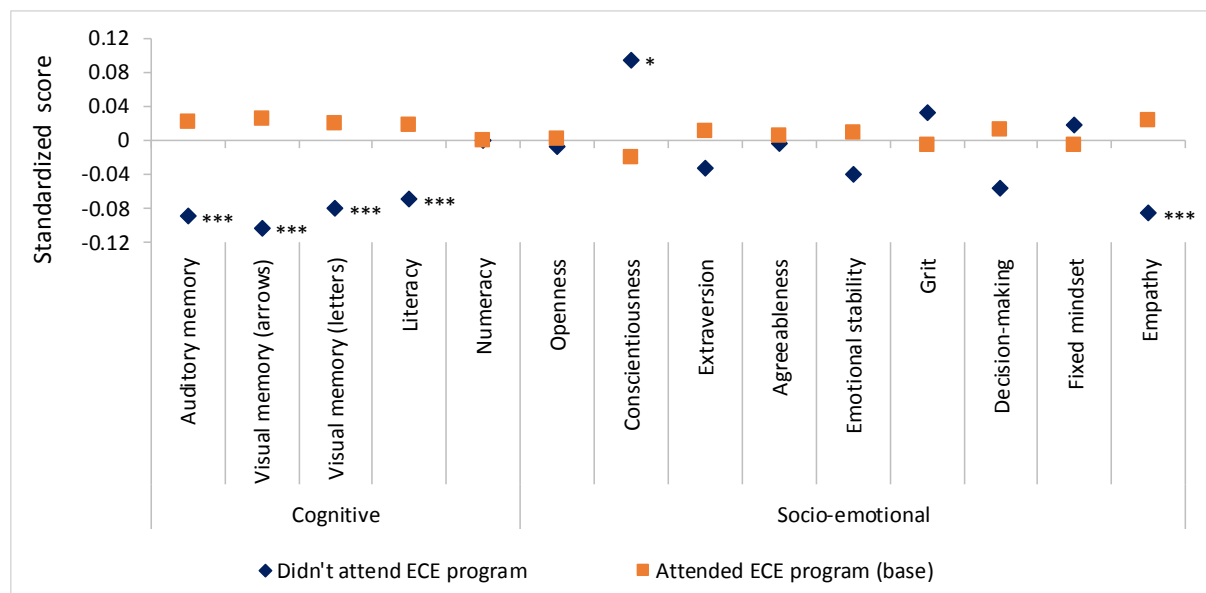
Source: Moldova Skills Measurement Survey.

Notes: Definition of skills is provided in Annex A, Tables A.1 and A.2. Significant differences from the base category: * 10%, ** 5%, ***1%. The sample excludes students (individuals who were attending a formal education program) aged less than 25 years. Upper secondary education includes general and vocational programs.

Cognitive and socio-emotional skills are correlated with educational attainment of adults but the direction of causality is non-obvious. On the one hand, individuals who have better memory, reading comprehension and calculation abilities, who are more self-disciplined (conscientiousness) and open to new ideas, who have a growth mindset and better social skills (extraversion, agreeableness, empathy), are more likely to attain higher educational attainment. On the other hand, high schools, colleges and universities are expected to further develop these skills and therefore adults with higher educational attainment tend to have a better set of skills. The analysis of the determinants of skills in a simple OLS framework shows that the level of person’s education is positively associated with the level of all cognitive and socio-emotional skills, after controlling for gender, age, mother’s education, household vulnerability at age 15, and locality (Annex B, Table B.3).

Individuals who did not attend early childhood education before primary school have significantly lower scores in memory, literacy and reading the mind in the eyes test (empathy) (Figure 5). This finding highlights how critical is the early childhood period for laying the foundations of cognitive and social skills to be further developed at school and adult life. According to the Moldova Skills Measurement Survey, participation in early childhood education is relatively high: over 80 percent of respondents reported about attending a kindergarten, creche, day-care, nursery school, or preschool before the age of 7 years, overall and in most subgroups (Annex B, Figure B.1). The exceptions are two older age groups (45-54, 55-64 years), individuals whose mothers had primary or no education, and residents of the central region. Once age, mother’s education, locality and other individual and household characteristics are controlled for, the effect of participation in ECE program in childhood on skills disappears (Annex B, Table B.3).

Figure 5: Cognitive and socio-emotional skills by participation in ECE program in childhood

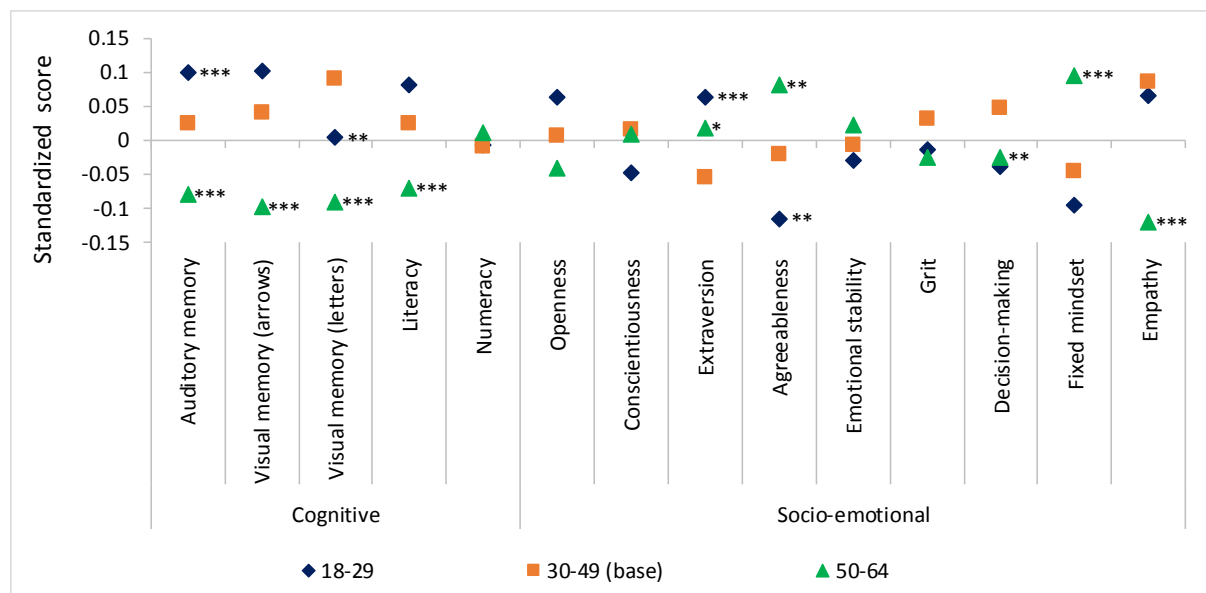


Source: Moldova Skills Measurement Survey.

Notes: Definition of skills is provided in Annex A, Tables A.1 and A.2. Significant differences from the base category: * 10%, ** 5%, ***1%. The sample excludes students (individuals who were attending a formal education program) aged less than 25 years. Upper secondary education includes general and vocational programs.

Older Moldovans perform significantly worse on memory, literacy and the empathy test and have a significantly more fixed mindset than the middle-aged (Figure 6). At the same time, no statistically significant differences are found in the average scores of many cognitive and socio-emotional skills of young and the middle-aged, except for auditory memory, visual memory (letters), extraversion and agreeableness. These findings are in line with evidence from other countries showing that cognitive skills begin to deteriorate in old age whereas some socio-emotional traits such as agreeableness, conscientiousness or emotional stability tend to improve with age (Levin et al., 2016; Del Carpio et al., 2017). A study of self-reported empathy in the US has shown that although older adults scored lower in empathy than younger adults in the cross-sectional analysis, there was no age-related decline in empathy in the longitudinal analysis, suggesting that a cohort rather than an age effect explains the cross-sectional age-differences (Grühn et al., 2008). We believe that a more fixed mindset and a lower score in the reading the mind in the eyes test (empathy) among older workers in Moldova is also due to a cohort effect: older people whose skills and attitudes were mainly formed in the Soviet system are less likely to have a growth mindset and take part in various kinds of social interactions. But these age-cohort differences in the transition context need further investigation.

Figure 6: Cognitive and socio-emotional skills by age

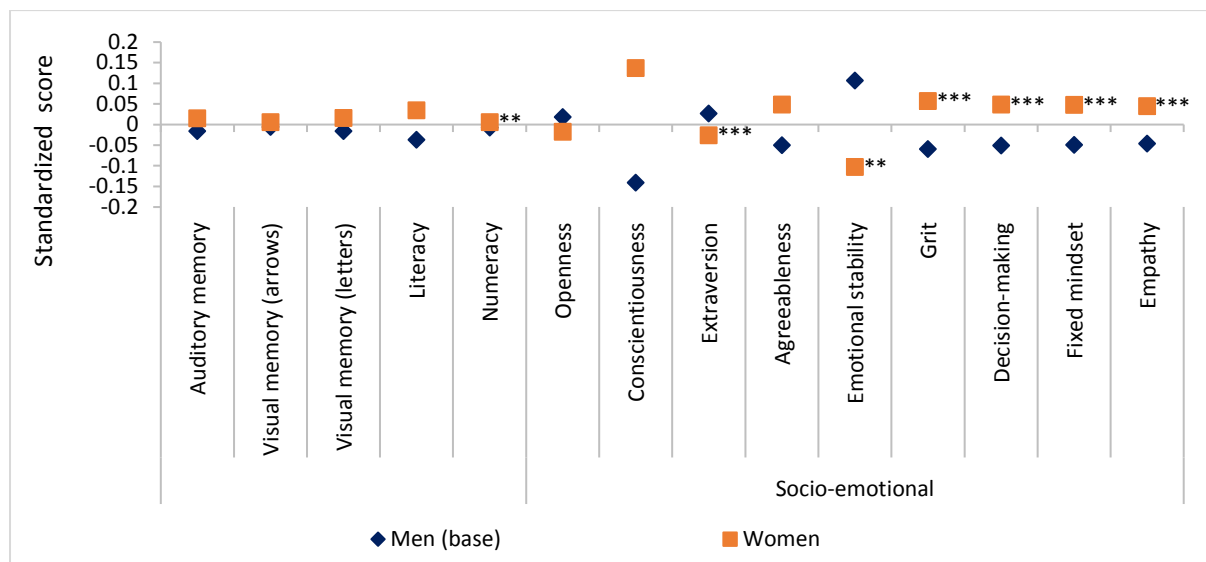


Source: Moldova Skills Measurement Survey.

Notes: Definition of skills is provided in Annex A, Tables A.1 and A.2. Significant differences from the base category: * 10%, ** 5%, ***1%. The sample excludes students (individuals who were attending a formal education program) aged less than 25 years.

Women perform significantly better in literacy, conscientiousness, agreeableness, grit, decision-making and the empathy test but they are, on average, less emotionally stable and tend to have a more fixed mindset than men (Figure 7). Gender differences in skills are significant even after controlling for many individual and household characteristics in a multivariate framework (Annex B, Table B.3). These are common findings globally, with significant effects found by psychologists in such domains of the Big Five as neuroticism (a reverse of emotional stability), agreeableness, and extraversion (Weisberg et al., 2011). Female advantage in the empathy (reading the mind in the eyes) test, which is found to be stable regardless of the language, country and the research group conducting the study, suggests that women are better than men at judging emotions (Kirkland et al., 2013). Negru (2019) explains a more fixed mindset among Moldovan women by cultural and social factors including religious beliefs (Orthodox dominance) that contribute to the predominance of traditional patriarchal society in which the role of women role is limited. This is in line with the mindset theory according to which girls and women are assumed to be more likely to hold fixed mindsets than boys and men, e.g. because parents praise girls and boys differently. However, recent empirical studies in the US find no evidence or contradictory evidence for this assumption arguing that one's mindset is not substantially influenced by one's gender (Macnamara and Rupani, 2017). Furthermore, Macnamara and Rupani (2017) found very limited evidence to support the common assumption in the mindset literature that more intelligent females are especially likely to have fixed mindsets (so called the “bright girl effect”).

Figure 7: Cognitive and socio-emotional skills by gender



Source: Moldova Skills Measurement Survey.

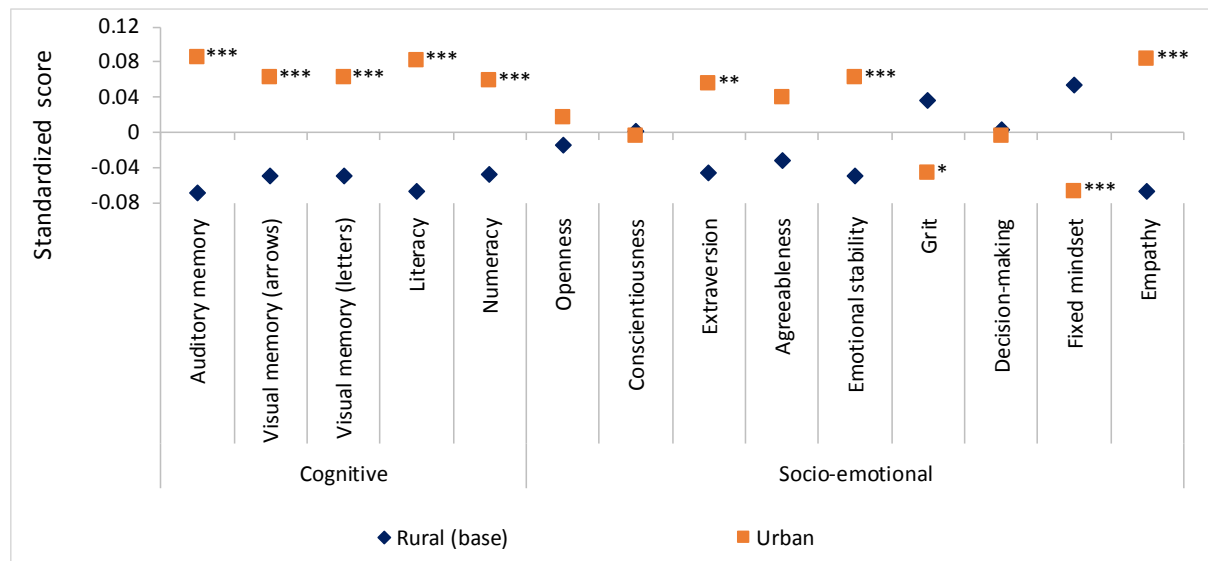
Notes: Definition of skills is provided in Annex A, Tables A.1 and A.2. Significant differences from the base category: * 10%, ** 5%, ***1%. The sample excludes students (individuals who were attending a formal education program) aged less than 25 years.

Urban residents have significantly higher scores compared to Moldovans living in rural areas in all cognitive skills, extraversion, emotional stability and empathy (Figure 8). Besides, urban residents have, on average, a less fixed mindset than rural residents do. Taking into account important relationship between socioeconomic background (family income and educational attainment of parents), school quality (effective teachers and schools challenging their students with high performance standards) and mindsets of children found in other countries (Dweck et al., 2014; Claro et al., 2016), we attribute the observed difference in mindset between urban and rural residents in Moldova to a socioeconomic advantage of urban residents and a better quality of urban schools. The same factors can be used to explain why urban residents also have a significantly higher score for the empathy test than the rural residents. However, after controlling for mother’s education, household vulnerability at age 15 and other characteristics, the difference between urban and rural residents in fixed mindset factor, empathy, literacy and numeracy becomes insignificant (Annex B, Table B.3), suggesting that other factors capture the effect of urban-rural difference.

Residents of Center and South of Moldova have significantly lower scores in cognitive skills and empathy but a higher score in a fixed mindset factor than predominantly urban residents of the Chisinau municipality (Figure 9). This is not surprising as the overwhelming majority of residents in these regions are rural and have lower educational attainment. But even after controlling for individual’s education, locality and other characteristics, adults living in Center and South are found to have on average significantly lower scores in all types of memory tests, literacy and numeracy (Annex B, Table B.3). Besides, residents of T.A.U. Gagauzia performed significantly better in the visual memory test with arrows (which shows ability to operate with spatial information) but worse in the visual memory test with rotating letters (which shows ability to operate with mental objects) and literacy compared to residents of the Chisinau municipality. This points to substantial regional disparities in school quality and learning outcomes. Outmigration of the most talented people from less

developed regions either to Chisinau or abroad is another potential explanation for the observed cross-regional differences in cognitive skills of adults in Moldova.

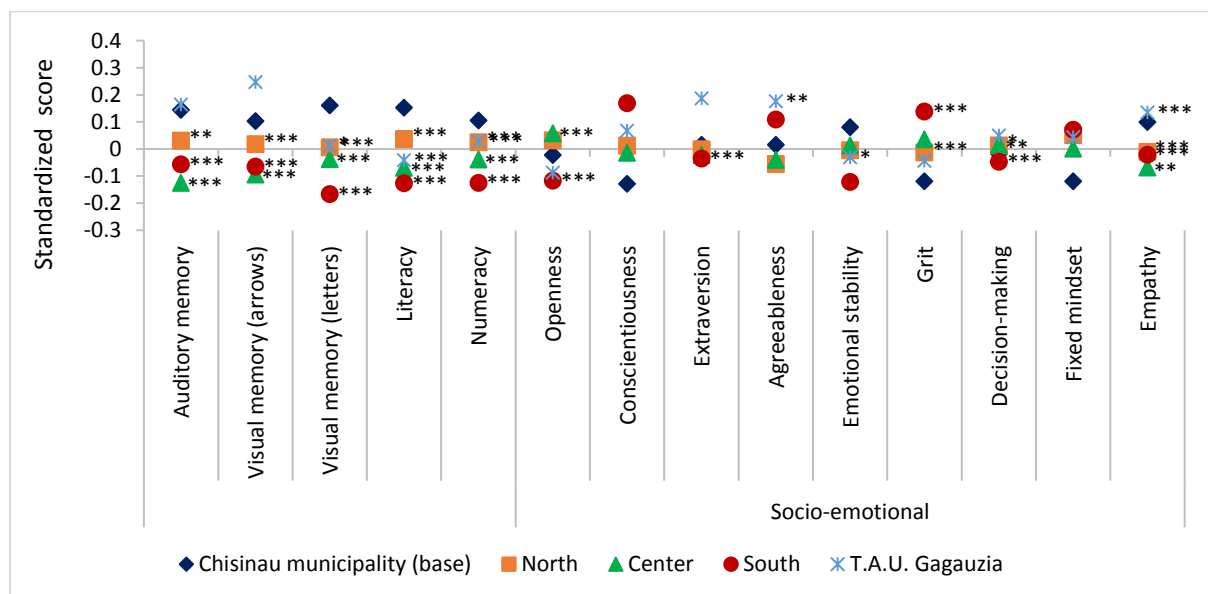
Figure 8: Cognitive and socio-emotional skills by locality



Source: Moldova Skills Measurement Survey.

Notes: Definition of skills is provided in Annex A, Tables A.1 and A.2. Significant differences from the base category: * 10%, ** 5%, ***1%. The sample excludes students (individuals who were attending a formal education program) aged less than 25 years.

Figure 9: Cognitive and socio-emotional skills by region



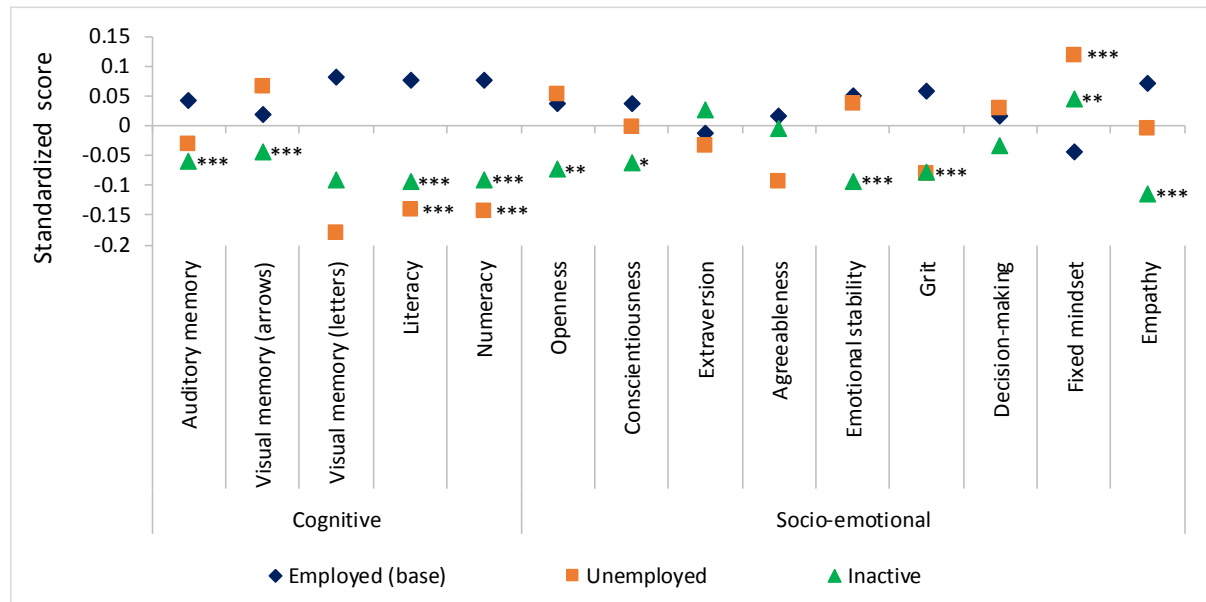
Source: Moldova Skills Measurement Survey.

Notes: Definition of skills is provided in Annex A, Tables A.1 and A.2. Significant differences from the base category: * 10%, ** 5%, ***1%. The sample excludes students (individuals who were attending a formal education program) aged less than 25 years.

Inactive individuals have significantly worse cognitive and some socio-emotional skills and have a more fixed mindset than those were classified as employed (Figure 10). At the same time, the difference between the unemployed and the employed is only in literacy, numeracy

and fixed mindset, with the unemployed having even worse scores than inactive people. Lack of basic cognitive skills and a very fixed mindset do not allow jobless people looking for a job to thrive in today's labor market. However, to understand whether these skills do exert a strong impact on labor force participation and employment of adults, it is important to test the association between skills and labor market outcomes in a multivariate framework, with other factors considered (see Section 5).

Figure 10: Cognitive and socio-emotional skills by labor force status

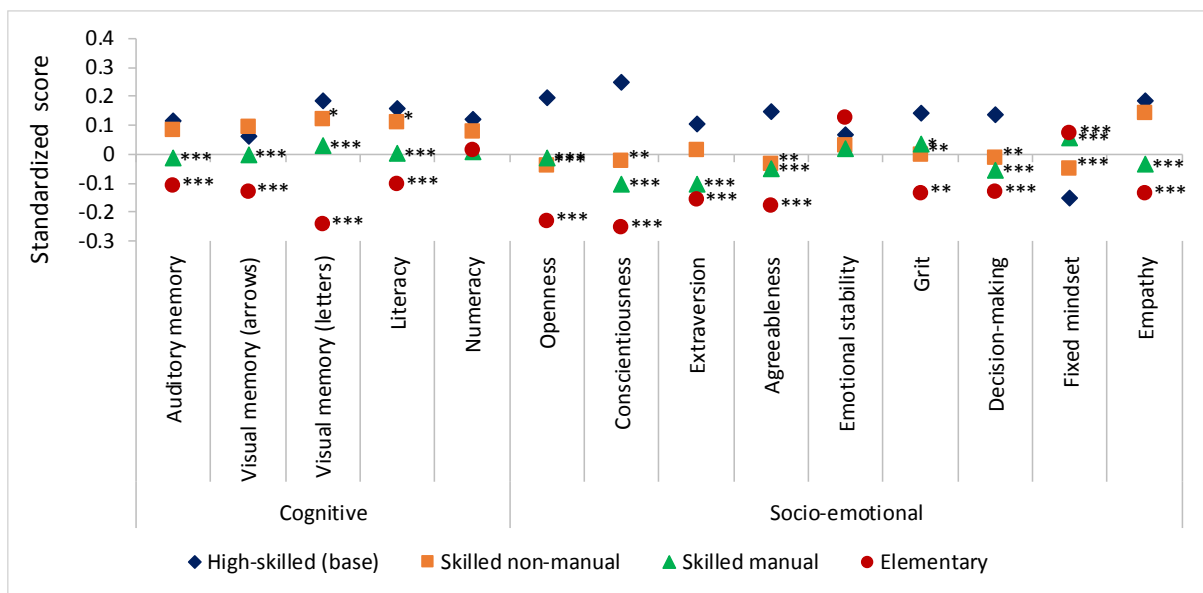


Source: Moldova Skills Measurement Survey.

Notes: Definition of skills is provided in Annex A, Tables A.1 and A.2. Significant differences from the base category: * 10%, ** 5%, ***1%. The sample excludes students (individuals who were attending a formal education program) aged less than 25 years.

As one could expect, individuals with a better set of cognitive and socio-emotional skills are more likely to end up working as managers, professionals or associate professionals, i.e. occupations defined as high-skilled (Figure 11). On the contrary, individuals working in elementary occupations have on average a low level of memory, literacy and socio-emotional skills. Interestingly, individuals working in skilled non-manual occupations (clerks, service workers, shop and market sales workers) are not significantly different from those employed in high-skilled occupations in terms of cognitive skills, extraversion, emotional stability and empathy. One of the factors that can explain this pattern is a widespread overeducation of university and college graduates (Figure 18; ETF, 2019), with a lot of higher educated individuals working in trade and other less knowledge-intensive services that usually do not require tertiary education.

Figure 11: Cognitive and socio-emotional skills by broad occupational group



Source: Moldova Skills Measurement Survey.

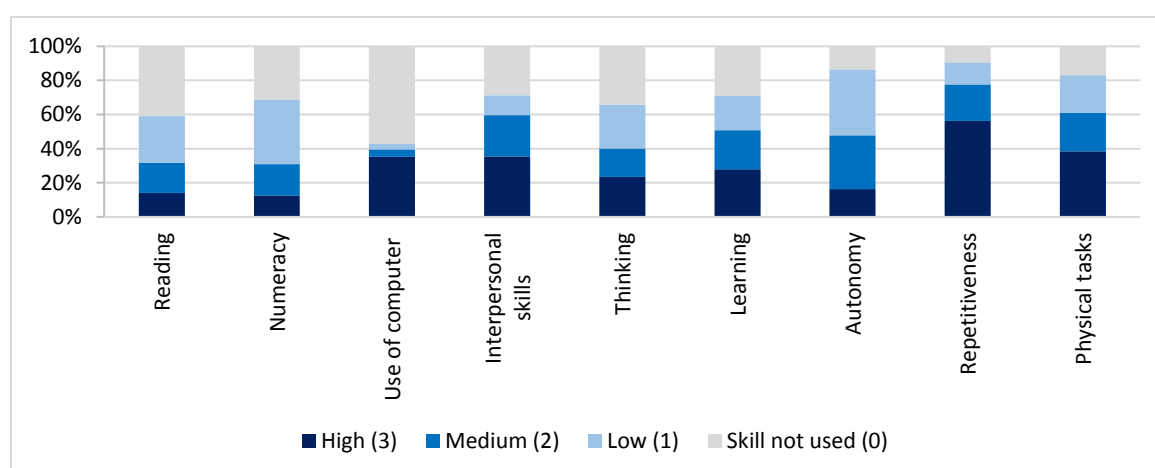
Notes: Definition of skills is provided in Annex A, Tables A.1 and A.2. Significant differences from the base category: * 10%, ** 5%, ***1%. The sample includes employed at least at some point in the last 12 months prior to the survey with exclusion of working students aged less than 25 years. “High-skilled” includes ISCO groups from 1 to 3, i.e. Managers, Professional and Associate Professionals. “Skilled non-manual” includes ISCO groups 4 and 5, i.e. Clerical support workers and Service and sales workers. “Skilled manual” includes ISCO groups 6 to 8, i.e. Skilled agricultural, forestry and fishery workers, Craft and related trades workers, Plant and machine operators.

4. Use of skills and education at work

Profile of the workforce: skills used at work

Jobs in Moldova are on average physically demanding and repetitive and often require interaction with people other than co-workers (Figure 12). Over 60 percent of individuals employed at least at some point in the last 12 months prior to the survey rate that their work was of medium to high level of being physically demanding (from 5 to 10 in a 10-point scale). Besides, roughly 4 of 10 workers have to lift or pull regularly anything weighting at least 25 kilos (see Annex B, Table B.2). 56 percent of the employed reported that their work involved carrying out short, repetitive tasks almost all the time. Nearly 60 percent of the employed have medium to high involvement into contacts with people other than co-workers, for example with customers, clients, students, or the public.

Figure 12: Intensity of using skills at work by employed adults (18-64 years)



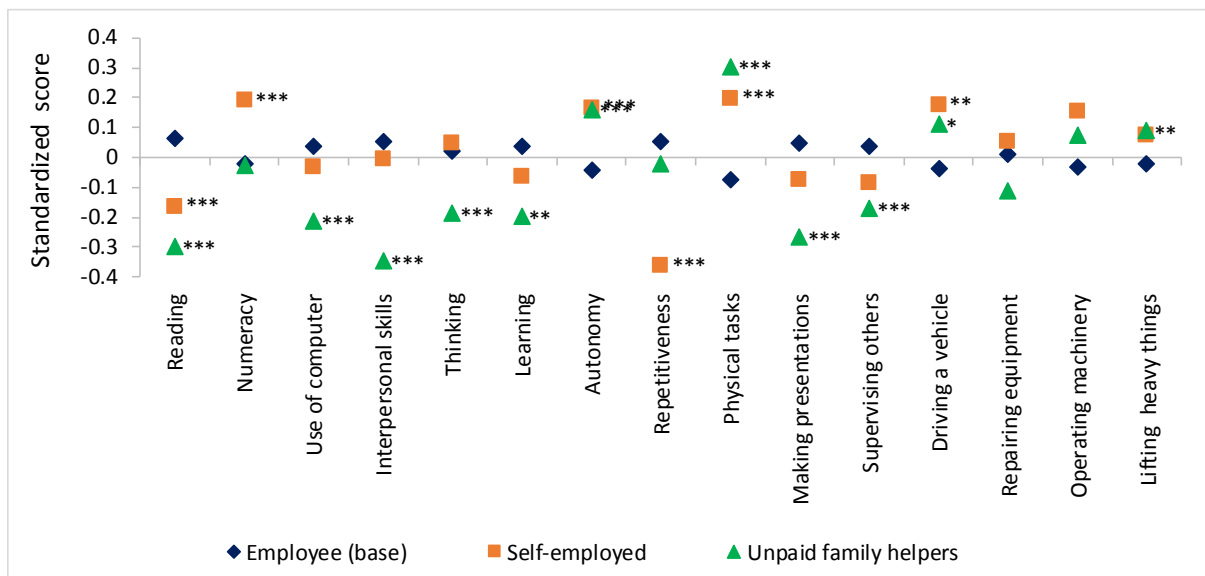
Source: Moldova Skills Measurement Survey.

Notes: Definition of skills and their levels is provided in Annex A, Table A.3. The sample includes individuals classified as employed in the last 7 days or 12 months prior to the survey.

The Moldovan economy still produces a lot of jobs that consist of manual and repetitive tasks and do not require the intensive use of computer, thinking and learning. Slightly more than one in three workers used computer at work almost every day, whereas over 57 percent of the employed did not use a computer at all as a part of their work (Figure 12). And digital skills among computer users are not advanced, as most workers reported about using computer for searching information in the Internet, some data entry, email, word processing and working with spreadsheets or databases (Annex B, Figure B.2). Roughly one in four workers reported that they needed to undertake tasks that require at least 30 minutes of thinking every day (thinking) and that their work involved learning new things every day (learning). The share of workers reporting high intensity of reading at work (reading documents of more than 25 pages) and using complex numerical skills (more advanced math) is even lower (Figure 12). This distribution of job-related skills is in line with the sectoral structure of employment in Moldova that has a large share of agriculture, trade, low-technology manufacturing and less knowledge-intensive services, whereas demand in modern services activities remains relatively small and concentrated in the Chisinau municipality (Kupets, 2019).

Even self-employed people did not report significantly higher intensity of using higher-order skills at work such as computer, thinking, learning presenting or supervising others, compared to employees (Figure 13). Furthermore, the jobs of self-employed people are on average more physically demanding than the jobs done by employees. This is mainly explained by a large share of the self-employed residing in rural areas where jobs are usually less intensive in cognitive skills but are more physically demanding (Figure 14). However, it should be noted that the household-level data on self-employment are distorted by the inclusion of individual farmers (OECD, 2011). Therefore, the segment of highly skilled entrepreneurs and employers motivated by business opportunities rather than by necessity is likely to be underrepresented in the household survey.

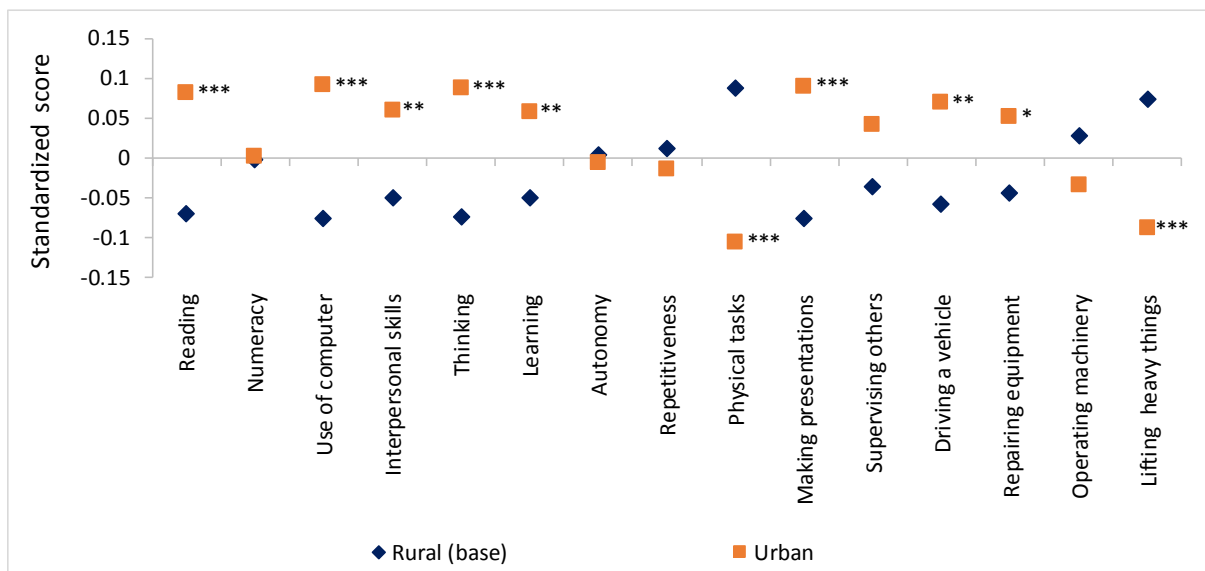
Figure 13: Skills used at work by employment status



Source: Moldova Skills Measurement Survey.

Notes: Definition of skills is provided in Annex A, Table A.3. Significant differences from the base category: * 10%, ** 5%, ***1%. The sample includes individuals classified as employed in the last 7 days or 12 months prior to the survey.

Figure 14: Skills used at work by locality

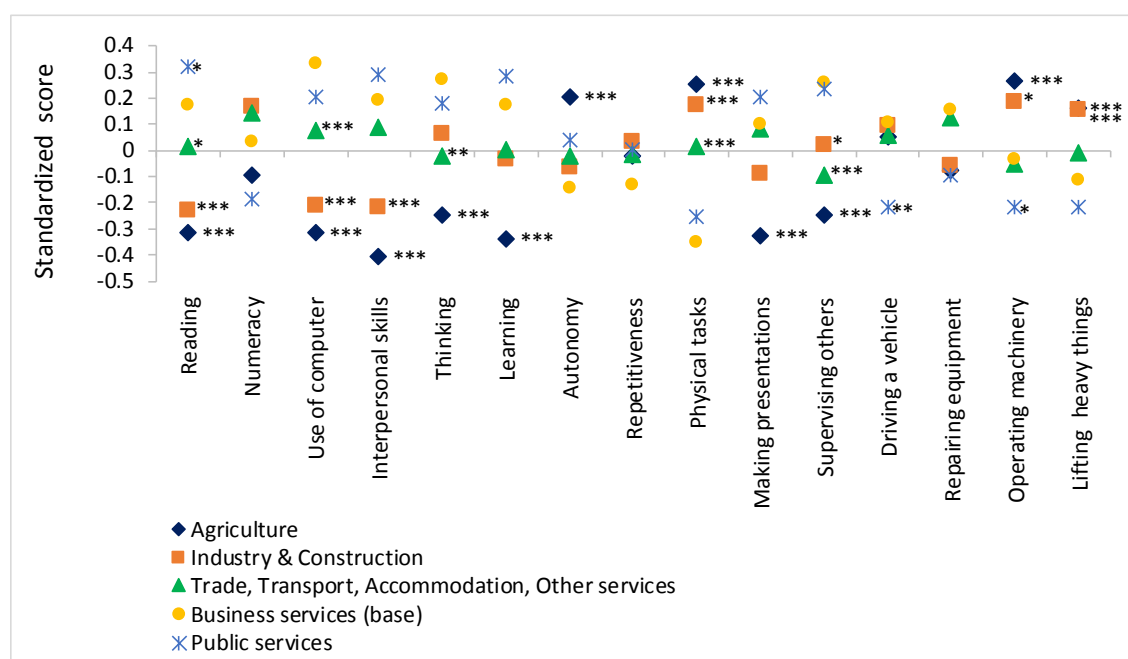


Source: Moldova Skills Measurement Survey.

Notes: Definition of skills is provided in Annex A, Table A.3. The sample includes individuals classified as employed in the last 7 days or 12 months prior to the survey.

Workers employed in various business and public services activities and in high-skilled occupations use higher-order skills more intensely than workers in traditional sectors (Figure 15, Figure 16). As expected, agricultural workers and those employed in elementary occupations have the worst composition of skills used at work. Non-manual skilled workers working in trade, accommodation, transport and other service activities use most skills at work at the average levels of intensity/complexity for the employed population. The shares of high-skilled workers and those employed in business services who use computer, think and learn at work every day (i.e. high intensity of computer, thinking and learning) are several times larger than the respective share among the lowest-skilled (elementary occupations) and agricultural workers (see Annex B, Figure B.3).

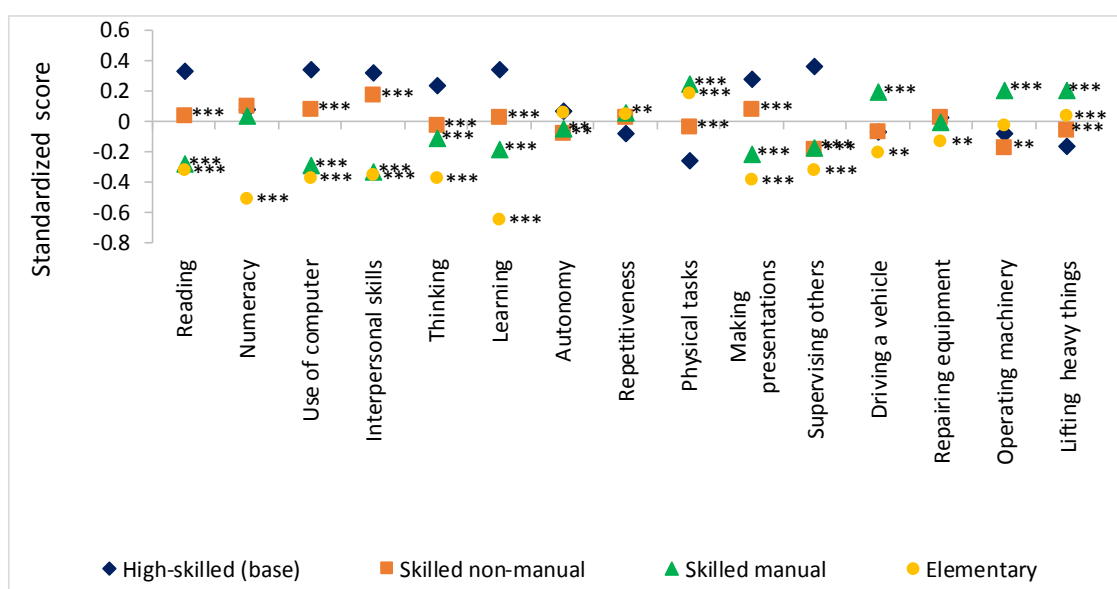
Figure 15: Skills used at work by sector



Source: Moldova Skills Measurement Survey.

Notes: Definition of skills is provided in Annex A, Table A.3. Significant differences from the base category: * 10%, ** 5%, ***1%. The sample includes individuals classified as employed in the last 7 days prior to the survey (information about sector is not available for those who were employed in the last 12 months). Public services include Public administration, Education and Human health and social work activities. Business services include Information and communication, Financial and insurance activities, Real estate activities, Professional, scientific and technical activities, and Administrative and support service activities.

Figure 16: Skills used at work by broad occupational group



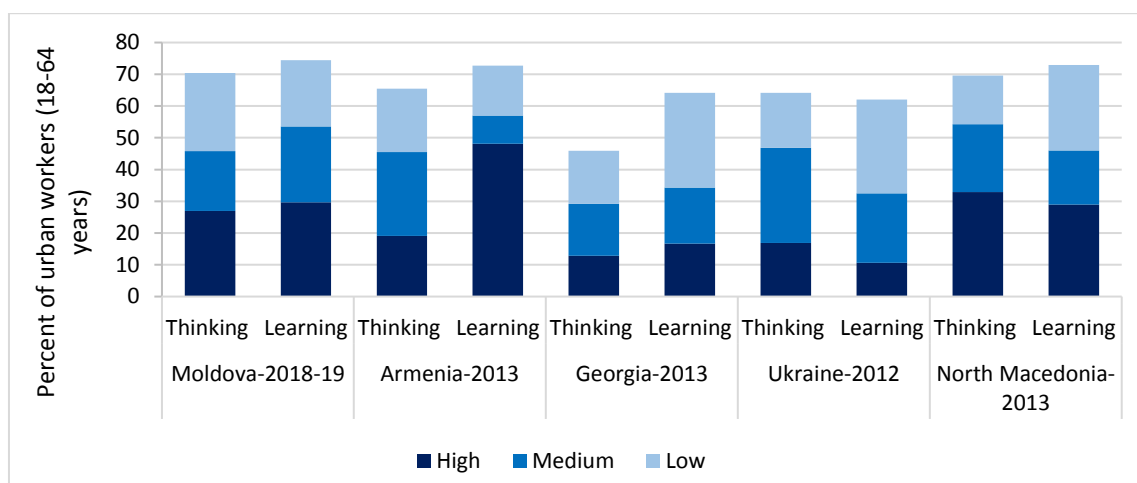
Source: Moldova Skills Measurement Survey.

Notes: Definition of skills is provided in Annex A, Table A.3. The sample includes individuals classified as employed in the last 7 days or 12 months prior to the survey. “High-skilled” includes ISCO groups from 1 to 3, i.e. Managers, Professional and Associate Professionals. “Skilled non-manual” includes ISCO groups 4 and 5, i.e. Clerical support workers and Service and sales workers. “Skilled manual” includes ISCO groups 6 to 8, i.e. Skilled agricultural, forestry and fishery workers, Craft and related trades workers, Plant and machine operators.

Moldovan urban workers are similar to their peers in other non-EU transition countries in terms of the intensity or complexity of skills used at work. Repetitiveness is on average the most frequently used skill by urban workers in Moldova, Armenia, Georgia, Ukraine and North Macedonia (see Annex B, Figure B.4): the majority of urban workers in Moldova, Armenia, Georgia and North Macedonia and nearly half of workers in Ukraine reported about carrying out repetitive tasks almost all the time. Besides, at least one in four workers in all five countries reported performing physically demanding tasks at work. On the other hand, the average scores of learning, thinking, reading and using numeracy skills at work and the shares of workers using these skills intensely are relatively low. Yet, Moldova compares favorably to other countries in the region as the shares of urban workers in Moldova undertaking tasks that require at least 30 minutes of thinking and learning new things exceed those in Armenia, Georgia, Ukraine and North Macedonia (Figure 17).

Hence, like in ECA countries with the similar level of economic development, routine and manual skills, which can be more easily automated, are more frequently used in Moldova than non-routine skills. Although “emerging economies are in the middle of a technological shift that is bringing change to the nature of work”, the adoption of advanced technologies and sophisticated computer software increases the demand for new economy skills and enhances the wage premiums for them both in advanced and emerging economies (World Bank, 2019). Raja et al. (2018) estimated that about 14 percent of the jobs in Moldova are expected to be lost due to automation, and that nearly 60 percent of the jobs are at risk of significant transformation in terms of the tasks performed. Therefore, to adapt to changes in tasks over time and to avoid job losses and livelihood disruptions, current workforce needs to acquire new skills and update the existing ones.

Figure 17: Intensity of learning and thinking at work by urban workers (18-64 years) in Moldova and ECA countries (%)



Source: Author's calculations based on Moldova Skills Measurement Survey and STEP Skills Measurement Household Surveys in Armenia, Georgia, Ukraine and North Macedonia.

Notes: Definition of skills is provided in Annex A, Table A.3. The sample includes individuals classified as employed in the last 7 days or 12 months prior to the survey.

Lack of skills as an obstacle to (better) jobs

Lack of literacy skills in Romanian as well as insufficient computer skills is reported to be a constraint to career advancement by, respectively, 8.4 and 10.5 percent of Moldovans of working age (18-64 years) (see Annex B, Figure B.5). Constraints in literacy skills in Romanian are much more frequently mentioned by ethnic minorities and those living in T.A.U. Gagauzia region. Lack of computer skills is a larger obstacle to getting a job/promotion/pay rise among workers aged 35 to 54 years, graduates of colleges (post-secondary non-tertiary education), ethnic minorities, residents of Center and T.A.U. Gagauzia, by the unemployed and inactive population excluding students. Overall, those who are already employed seem to face lower skills constraints to their career advancement compared to job seekers, but agricultural workers are the most likely to report that they do not have all the literacy and computer skills needed to advance. A shift of the Moldovan economy and employment from low-productivity agriculture to higher-productivity nonfarm jobs can seriously hurt agricultural workers lacking basic literacy and computer skills.

Nearly one in five urban residents looking for a job at the time of the survey in Moldova claimed that the lack of computer skills kept them from getting a (better) job. Although the unemployed are the most concerned that their computer skills are not as advanced as they would need to get a job, compared to employed and inactive urban residents in all ECA countries, the share of such individuals in Moldova is substantially higher (Table 2). Taking into account that surveys in other countries were conducted in 2012-2013, a larger share of unemployed (and inactive) Moldovans reporting about the lack of computer skills as an obstacle to employment could be explained by substantial task-biased changes of labor demand in Moldova since 2012. However, digitization of the Moldovan economy is rather slow, and the capacity of individuals to use digital tools and technologies is limited (Raja et al., 2018). Hence, a relatively low level of basic digital skills among jobless Moldovans might

be a relevant supply-side explanation for the observed difference between Moldova and other countries.

Table 2: Proportion of urban adults (18-64 years) in Moldova and ECA countries seeing the lack of computer skills as an obstacle to career advancement, by labor force status (%)

	Moldova- 2018-19	Armenia- 2013	Georgia- 2013	Ukraine- 2012	North Macedonia- 2013
Total	10.8	11.9	4.9	6.8	5.0
Employed	8.7	11.6	4.6	7.5	4.0
Unemployed	18.9	15.2	7.7	8.0	8.6
Inactive	12.4	10.6	3.7	5.3	5.1

Source: Author’s calculations based on Moldova Skills Measurement Survey and STEP Skills Measurement Household Surveys in Armenia, Georgia, Ukraine and North Macedonia.

Notes: Based on the question: “Has a lack of computer skills ever kept you from getting a job, a promotion, or a pay raise, or from advancing your own business/ own account activity?”.

Usefulness of education and educational mismatch

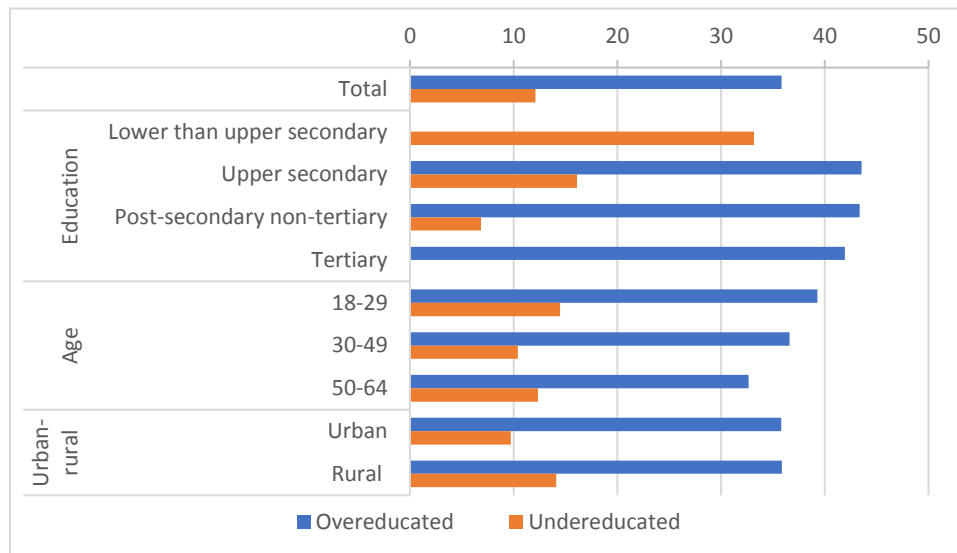
Workers engaged in elementary occupations are the most critical about the usefulness of studies during formal education for performing current work: over 40 percent of them claimed that their education was not useful for their current work, compared to 19.5 percent for the employed in total (see Annex B, Figure B.6). On the other hand, higher educated workers, those working in high-skilled jobs, employees (wage and salaried workers) and residents of T.A.U. Gagauzia and Center and are more likely to report that their education was very useful for their current work. Overall, most Moldovan workers value their education and consider it very or somewhat useful (Annex B, Figure B.6). Nevertheless, job applicants, even with tertiary education, are often not asked by employers to certify their education qualifications (see Annex B, Table B.4). This can be a sign that many Moldovan employers do not use education to screen prospective job applicants, as shown in the recent analysis of vacancies from private job portals (Kupets, 2019).

Besides, official degrees from educational institutions might be irrelevant because of widespread mismatch between actual and required education. Roughly one in three workers are classified as being overeducated for their jobs, i.e. their level of education is higher than the minimum level of formal education deemed necessary to carry out that work (self-assessment approach)⁵ (Figure 18). The incidence of overeducation is particularly high among urban residents having post-secondary non-tertiary education (51.1 percent), compared to 41.4 among university graduates). This suggests that the system of colleges inherited from the Soviet Union is not effectively aligned to the modern market needs and requires urgent rethinking. A reorientation of school graduates from pursuing education in universities to colleges due to stricter entrance criteria to universities may aggravate the

⁵ We do not use the objective method of measuring mismatch, e.g. the realized matches method that determines either the mean years of education or the mode level of education in a certain occupation and then compares it to the individual’s education, because of a relatively small sample of the employed, possible classification error for occupations at a disaggregated level and the measurement error in the years or level of required schooling. Using STEP and PIAAC data in ECA and OECD countries, Kupets (2016) finds that, consistent with the literature, the estimates of overeducation according to the self-assessment (subjective) method are higher than according to objective mean- or mode-based methods.

existing mismatches in the near future. Overeducation is the most widespread among the youngest, affecting over 39 percent of all employed aged 18-29 years. However, its incidence is also very high among prime-age (30-49 years) and older (50-64 years) workers: 36.6 percent and 32.7 percent, respectively (Figure 18).

Figure 18: Percentage of employed individuals who are over- or undereducated for their jobs (%)



Source: Moldova Skills Measurement Survey.

Notes: The sample includes individuals classified as employed in the last 7 days prior to the survey. Information about required education is taken from the question “What minimum level of formal education do you think would be required before someone would be able to carry out this work?”. If a worker’s highest educational attainment is the same as that defined by him/her as required by a given job, he/she is classified as well-matched. If an educational attainment is higher (lower) than that required by a job, he/she is classified as overeducated (undereducated). Following Kupets (2016), four levels of education have been used for comparison of actual and required education: Lower secondary and below, Upper secondary (all programs, including vocational), Post-secondary non-tertiary, and Tertiary (including bachelor, master and PhD).

Moldova has similar problems with other post-Soviet countries, where the incidence of overeducation among urban workers is also high.⁶ Using the LFS data, the ETF study (2019) finds an increasing proportion of tertiary educated individuals aged 15-64 years who work in semi-skilled occupations: from 20.4 percent in 2012 to 23 percent in 2017. Existing mismatches in the Moldovan labor market are explained by both demand- and supply-side factors. On the demand side, it is a low demand for workers with tertiary education relatively to its supply or uneven territorial distribution of employment opportunities for university graduates. On the supply side, low quality and relevance of education, preferences of young people for higher levels of education and “easy” (non-technical) fields of studies, underdeveloped system of career guidance in general secondary educational institutions, and the underestimated role of life-long learning are the main factors mentioned in the literature (ETF, 2019; Popa et al., 2013). Given a high incidence of overeducation among prime-age and

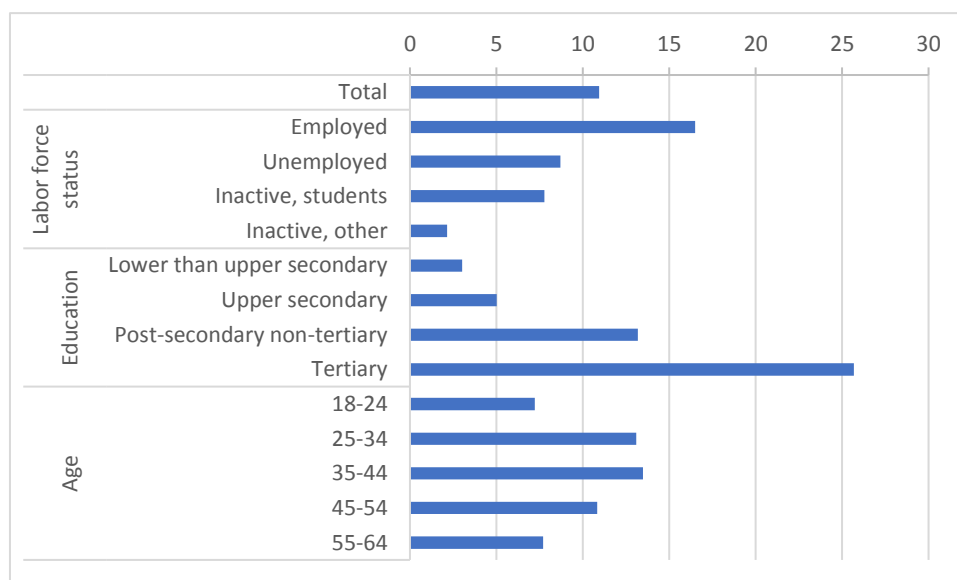
⁶ According to the self-assessment approach, the incidence of overeducation among urban workers aged 15-64 years was 29.1 percent in Armenia and Ukraine and 33.1 percent in Georgia (Kupets, 2016). The incidence of overeducation in Armenia and Georgia increases with age, with at least each third worker aged 50+ years being classified as overeducated. In Ukraine, the incidence of overeducation is the highest among young workers (15-29 years), but older workers also suffer from overeducation (29.8 percent).

older workers, the observed mismatch in Moldova can be also attributed to the skills obsolescence among workers who acquired education a long time ago and did not upgrade their skills through training, like in other transition countries in the ECA region (Kupets, 2016).

Participation in training

Training among working-age Moldovans is not widespread, especially among non-employed, lower educated and older people. According to the Moldova Skills Measurement Survey, about 11 percent of the total population reported about participating in any training courses such as work-related training or private skills training that lasted at least 5 days or 30 hours in the past 12 months. The lowest incidence of training is among inactive non-students and individuals with lower than upper secondary education (Figure 19). Young people also have a low incidence of training, but this is expected because most of them are either inactive students or just newcomers to the labor market. Employed at the time of survey comprised 84.2 percent of those who reported about participation in training, compared to 54 percent among non-participants of training. Another group overrepresented among participants of training is tertiary educated individuals: 54 percent among participants versus 19.2 percent among non-participants. The initially better educated and higher skilled employed individuals working in public services, employees working in the public sector, having labor contract a permanent or a long-term job have a substantially higher incidence of training than their peers (Annex B, Figure B.7).

Figure 19: Percentage of adults (18-64 years) reporting about participation in training in the past 12 months (%)



Source: Moldova Skills Measurement Survey.

Notes: Question about training from Module 2 “Education” is used: “In the past 12 months (i.e. since [MONTH]), have you participated in any training courses, such as work-related training or private skills training, that lasted at least 5 days/ 30 hours (not part of the formal educational system)? Do not include courses taken for personal interest/ hobbies”.

Training is usually provided by employers either as initial workplace orientation or as occupation-specific training (Table 3). But some individuals, especially who were not

employed at time of the survey, reported about taking free courses or that they paid personally. Unlike the employed, adults looking for a job or being outside of the labor force participate not only in occupation-specific training or workplace orientation, but also take courses to improve their language or computer skills, but the absolute number of such individuals is very small (Table 3).

Interestingly, only few individuals who reported about skill constraints as an obstacle to jobs received some training in the past 12 months: less than 6 percent of individuals lacking reading and writing skills in Romanian and 13.3 percent of individuals lacking computer skills. The incidence of training in the region with the highest share of such individuals – T.A.U. Gagauzia – is the lowest across macro-regions (7 percent compared to 12.6 percent in the Chisinau municipality). Furthermore, this rare training is not aimed at improving language or computer skills and is predominantly provided by employers at the workplace.

Table 3: Content and funding of training among Moldovans receiving training (%)

	Total	Current status	
		Employed	Non-employed
Content of training			
Workplace orientation	53.9	59.0	26.5
Computer skills training	4.7	3.4	12.0
Basic skills training (reading/writing/math)	2.5	3.0	0.0
Language training	4.3	1.3	20.6
Occupation-specific training	22.3	20.9	30.1
Personal development training	12.0	12.2	10.8
Who paid for training?			
Employer	50.2	55.0	24.8
Paid personally	20.0	15.5	43.8
Shared employer and personal	2.3	2.6	1.0
Course was free	27.2	26.7	30.4
N (unweighted sample)	230	191	39

Source: Moldova Skills Measurement Survey.

Notes: The sample includes individuals of working age (18-64 years) who reported about receiving training in the past 12 months. “Employed” are those classified as employed in the last 7 days prior to the survey. Questions about the first training course from Module 2 “Education” are used: “What was the content of the training programs?” and “Who paid for this training?”.

The incidence of training reported by urban working-age individuals in Moldova in 2018-2019 is higher than in Armenia, Georgia, Ukraine and North Macedonia in 2012-2013 (Table 4). This relative advantage of Moldovans is observed among working-age individuals, regardless of their labor force status, with a particularly large difference among the unemployed. However, none of these unemployed were registered at the National Employment Agency and therefore they got training provided by employer (at the previous job) or at their own expense. Vocational training is one of the primary active labor market programmes delivered by the National Employment Agency of Moldova, but it targets less than 10 percent of all registered unemployed on an annual basis and its relevance and effectiveness remain questionable (ILO, 2017).

Table 4: Incidence of training among urban adults (18-64 years) in Moldova and ECA countries by labor force status (%)

	Moldova- 2018-19	Armenia- 2013	Georgia- 2013	Ukraine- 2012	North Macedonia- 2013
Total	13.5	6.5	7.7	1.7	10.2
Employed	18.7	14.5	18.2	2.5	13.9
Unemployed	15.6	2.6	4.1	1.7	10.1
Inactive	4.3	1.5	2.2	0.4	3.9

Source: Author's calculations based on Moldova Skills Measurement Survey and STEP Skills Measurement Household Surveys in Armenia, Georgia, Ukraine and North Macedonia.

Notes: Question about training from Module 2 "Education" is used: "In the past 12 months (i.e. since [MONTH]), have you participated in any training courses, such as work-related training or private skills training, that lasted at least 5 days/ 30 hours (not part of the formal educational system)? Do not include courses taken for personal interest/ hobbies".

5. Education, skills and labor market outcomes

This section assesses the extent to which various cognitive and socio-emotional skills described in Section 3 matter for labor market outcomes of individuals, when education and other factors are controlled for. The first model estimates the probability of labor force participation (i.e. being employed or unemployed), as opposed to being inactive. The second outcome examined is the probability of employment among those who are either working or looking for a job. The third model is based on the Mincerian earnings function to analyze how different skills contribute to employees' earnings. All models are estimated for both genders and then for women and men separately to see gender differences in the effects of education and skills. Considering that an individual's educational attainment may be closely linked with the level of cognitive and socio-emotional skills, we run models with and without education in order to get the net effects of these skills on labor force participation, employment or wages. Visual memory (rotating letters) and numeracy are highly correlated with literacy, so they are not used in regressions. Grit is also excluded from the regression analysis because it is highly correlated with openness and conscientiousness. All models control for cognitive and socio-emotional skills, age, gender, ethnicity, and locality (urban-rural and region). Models for labor force participation and employment also control for marital status and presence of children under 6 years. An extended specification for earnings includes tenure, sector, occupation and the firm size.⁷ Detailed estimation results are provided in Annex B, Tables B.5-B.7. Significant effects of the levels of education (compared to the base category of Lower secondary education and below) and of standardized scores of cognitive and socio-emotional skills are summarized in Table 5.⁸

Only some cognitive and socio-emotional skills are significantly associated with higher probability of labor force participation of working-age Moldovans excluding current students (Table 5, Table B.5). At the same time, a strong effect of education is observed, especially among women: the higher level of education, the higher probability of labor force participation. After controlling for education, only auditory and visual memory and emotional stability have significant effects on the probability of female labor force participation. . If education is excluded, literacy and fixed mindset factor also become significant, whereas the effects of memory and emotional stability become larger in the magnitude (Table B.5). This suggests that educational attainment of women captures the effect of their level of literacy (i.e. reading proficiency and comprehension) and fixed mindset factor on the decision of women to join the labor force. As regards men, only tertiary education is associated with higher probability of labor force participation, and there is no difference between lower levels of education. Higher levels of literacy and empathy (measured by the reading the mind in the

⁷ To check the robustness of results in the earnings regressions, we used different samples (all employees and self-employed, only those who reported that they received monthly wage/profit, and only employees) and different dependent variables (hourly earnings, monthly earnings). Besides, we applied Heckman selection when estimated the returns to education and skills for women, using the marital status and presence of children under 6 years in the selection equation. Main results regarding the effects of education and skills are robust to changes.

⁸ It is problematic to get the net effects of skills on labor market outcomes because of the possible measurement error and endogeneity bias (Heckman et al., 2006), and multicollinearity between different types of skills. We acknowledge the possible limitations of our estimation procedure and the need to explore these issues in greater depth.

eyes test) are important for men’s participation in the labor force, and their effect do not change with exclusion of education from the model.

Table 5: Education, skills and labor market outcomes in Moldova

	Labor force participation			Employment of economically active			Hourly earnings of employees		
	Total	Women	Men	Total	Women	Men	Total	Women	Men
Upper secondary		+				+		+	
PSNT	+	+					+	+	
Tertiary	+	+	+	+		+	+	+	
Auditory memory	+	+				+	(+)	+	+
Visual memory	-	-		-		-			
Literacy	+	(+)	+	+	+	+		(+)	-
Openness	+						(+)		(+)
Conscientiousness								-	
Extraversion	-								
Agreeableness				(+)		+			-
Emotional stability	+	+							
Decision making							+		+
Fixed mindset		(-)		-		-	-	(-)	-
Empathy	+		+						

Source: Moldova Skills Measurement Survey.

Notes: Definition of skills is provided in Annex A, Tables A.1 and A.2. The results summarize findings of multivariate regressions (detailed results are provided in Annex B, Table B.5-B.7, all models with education and the latter model with job characteristics). “+” stands for a statistically significant positive effect of a given skill/education level on the dependent variable, and “-” stands for a statistically significant negative effect. Signs in parentheses are shown for variables that are significant only in reduced models not controlling for education. Visual memory (rotating letters) and numeracy is highly correlated with literacy, so they not used in regressions. Grit is excluded from the regression analysis because it is highly correlated with openness and conscientiousness. The sample excludes students (individuals who were attending a formal education program) aged less than 25 years.

Neither education nor socio-emotional skills have a significant impact on the probability of employment of active women (Table 5, Table B.6). Literacy is the only significant determinant of women’s employability among a battery of skills (in both models which control for education and not). This finding together with the previous finding on the impact of education and skills on labor force participation of women suggests that after women have decided to join the labor force, the only factor that determines their probability of employment as opposed to unemployment is their level of comprehension of instructions, text, and other information (literacy).⁹ On the contrary, more factors are important for the probability of men’s employment than for their labor force participation. Men with upper secondary or tertiary education are more likely to have a job than the least educated men or college graduates (post-secondary non-tertiary education). Besides, men with a higher score in auditory memory, literacy, agreeableness and a lower score in visual memory and fixed mindset have on average higher probability of being employed.

⁹ These results need to be interpreted with care because of a small sample of unemployed women (63 observations compared to 675 employed) and the possible identification problem.

A strong negative association between fixed mindset and the probability of employment for active working-age adults (due to men's effect) is consistent with our finding from the comparison of deviation of skill scores among the unemployed and employed from the population mean (Figure 10). There are some studies showing that job seekers with higher learning goal orientation are more likely to believe they can improve their skills when receiving negative feedback during the job search and they are more likely to respond to these adverse events with increased job search intensity (see review in da Motta Veiga and Turban, 2014). Hence, adults with a lower fixed mindset factor are expected to learn from rejections and plan job-search activities more effectively, and therefore they are more likely to find a job.

The most puzzling result is the negative relationship between visual memory (arrows) and the probability of employment for men, and the probability of labor force participation for women (Table 5). It reflects specifics of the Moldovan labor market where workers with the ability to remember and process spatial information are not widely demanded and therefore do not have advantage in the labor market. As a result, women with a higher score in visual spatial memory are less likely to join the labor force, whereas active men performing better in visual spatial memory test have a lower probability to find a job. This important issue deserves further study.

Only some cognitive and socio-emotional skills matter for hourly earnings of employees (Table 5). If education is not included in the Mincerian regression function together with a set of variables for skills, some skills such as openness for men or fixed mindset for women become significant whereas some (literacy, decision-making and fixed mindset for men) become insignificant (see Annex B, Table B.7). Employees of both genders face an expected earnings penalty for having a more fixed mindset but there is an unexpected penalty for higher literacy of men (significant negative coefficient in the extended model with education and job characteristics). Another unexpected finding is that, unlike female employees facing positive returns to higher levels of education, males do not get significant earning premiums from having diplomas.¹⁰ Insignificant returns to education are also observed in Ukraine and some other post-Soviet countries because of oversupply of university graduates and low relevance of their education along with a relatively high demand for semi-skilled workers. Besides, outmigration of skilled manual male workers from Moldova is likely to put an upward pressure on wages in the affected sectors (e.g. manufacturing, construction or transport) and without substantial changes in the high-skilled occupations. Our estimation procedure applied in this study has several limitations and interpretation is somewhat speculative. The issue of returns to various skills in Moldova should be explored in greater depth in the future.

¹⁰ In all specifications during the robustness check, coefficients on the levels of education for men (with a negative sign for upper secondary education and post-secondary non-tertiary education and a positive sign for tertiary education) appear to be insignificant. Overall, only some variables have significant coefficients in the earnings function (see Annex B, Table B.7), probably due to a low quality of reported data on earnings and hours worked and many missing variables.

6. Conclusions and policy implications

Using the new survey instrument – Moldova Skills Measurement Survey – this report assesses the skills profile of the working-age population in Moldova and examines the relationship between education, skills and labor market outcomes. This information is important to facilitate the program design aimed at addressing skills mismatches and enhancing the effectiveness of active labor market programs, including provision of targeted trainings to the unemployed and those looking to increase their productivity.

Despite widespread overeducation and quality/relevance-related problems in the Moldova’s education system, higher education is associated with better skills. Working-age population in Moldova has on average high level of cognitive abilities and skills (auditory and visual memory, comprehension of instructions and other text information, calculation abilities), and these skills are substantially better among adults with higher levels of education. Correlation between cognitive and socio-emotional skills is positive but the direction of causality is non-obvious as children with a better set of abilities and socio-emotional skills are more likely to have better learning outcomes and attain higher educational attainment, on the one hand, and those who pursue education in colleges or universities are expected to further develop their skills, on the other hand.

Attending early childhood education is associated with higher cognitive skills and emotional intelligence (measured by reading the mind in the eyes test) of adults. This association becomes insignificant when gender, age, mother’s education, socio-economic background at teenage and other characteristics are taken into account, but we want to stress the importance of early childhood education for formation of foundational cognitive skills and socio-emotional skills valued by employers (Table 6). Although the proportion of adults who attended early childhood education programs when they were of pre-school age is large in Moldova (on average, about 80 percent of working-age individuals reported about attending ECE program according to the Moldova Skills Measurement Survey), some disadvantaged groups might have a lower access. It is important to increase enrolment of children to pre-primary education, including for children aged under 3 years, provide access of disadvantaged households and underserved regions to ECE, and introduce directed skill building programs to enhance socio-emotional skills of children. Other interventions in early childhood suggested in the literature include programs to improve parenting skills and to reduce the impact of community stressors on children and families such as exposure to violence, crime, poverty and lack of opportunities (Guerra et al., 2014).

Rural residents have on average a much worse set of cognitive and socio-emotional skills compared to working-age individuals living in urban areas. This is probably due to a lower quality of education and skills development in rural areas, worse socio-economic background, a smaller number of interpersonal contacts and a worse access to information, and the specific labor market in rural areas that does not require advanced skills and high educational attainment. A first step to address the problem is to improve the quality of primary and secondary education in rural and remote areas, with components on socio-emotional skills development included in the regular school curriculum as the school age is the optimal age for development of most labor-related socio-emotional skills (Table 6). Modernization of agriculture and diversification of the rural economy (with support of the government and international donors) can improve employment prospects for college and university

graduates and therefore can contribute to improvement of the skills profile of the workforce in rural areas.

Table 6: Stages of development for socio-emotional skills (PRACTICE taxonomy)

PRACTICE taxonomy	Sub-skills (Skills, attitudes, beliefs, behaviors)	Related socio-emotional skills tested in Moldova	Optimal age of development			
			0-5	6-11	12-18	19-29
Problem-solving	Social-information processing skills Decision making Planning skills	Conscientiousness	F	O	R	
Resilience	Stress resistance Perseverance Optimism Adaptability	Conscientiousness Grit Emotional stability	O		R	
Achievement motivation	Mastery orientation Sense of purpose Motivation to learn	Conscientiousness Grit Openness to experience Fixed/growth mindset		O	R	
Control	Delay of gratification Impulse control Attentional focus Self-management	Conscientiousness		O		R
Teamwork	Empathy/Prosocial Low aggression Communication skills Relationship skills	Extraversion Agreeableness Empathy (reading the mind)		O	R	
Initiative	Agency Internal locus of control Leadership	Conscientiousness Openness to experience Fixed/growth mindset		O		
Confidence	Self-efficacy Self-esteem Positive identity	Emotional stability	F	O	R	
Ethics	Honesty Fairness orientation Moral reasoning	Conscientiousness	F	O		

Source: Guerra et al. 2014 with added fixed mindset and empathy by the author.

Notes: F (foundational) indicates that skills developed in this period form the basis for the core skill building in a following period. O (Optimal) indicates the optimal period for development of skills. R (Reinforce) indicates that skills acquired during the optimal period need intense practice in the reinforcement period to be truly learned.

The Moldovan economy produces many jobs that consist of manual and repetitive tasks and do not require the intensive use of computer, thinking and learning. This is especially the case in rural areas, agriculture and skilled and unskilled manual occupations. Workers in modern business services and high-skilled occupations have completely different skill profiles in terms of the skills used at work but their proportion is relatively small in the current workforce. To support Moldova's transition towards a new, more sustainable and inclusive development model, World Bank (2017) specifies three main policy areas: (i) *economic governance* – strengthening the rule of law and accountability in economic institutions, (ii) *service governance* – improving efficiency, quality and inclusive access to public services, and (iii) *skills development* – enhancing the quality and relevance of education and training to enable the acquisition of job-related skills. Based on the findings of the Skills Measurement Survey, we agree that the latter component (skills development) is important for

modernization of the Moldova's economy and a shift to more skill-intensive jobs. But it is also crucial to synchronize skills supply policies with demand policies which are aimed at supporting technological development, stimulating higher value-added activities and promoting creation of higher-skilled jobs, especially in rural and poor areas.

Ethnic groups, especially members of Moldova's Gagauz ethnic minority, and those living in T.A.U. Gagauzia region, report that lack of literacy skills in Romanian is an obstacle to their career advancement much more frequently than Moldovans and residents of other regions do. Another obstacle to getting a job/promotion/pay rise is lack of computer skills. It is relatively more often reported by workers aged 35 to 54 years, graduates of colleges, ethnic minorities, residents of Center and T.A.U. Gagauzia, the unemployed, agricultural workers and skilled manual workers. These are the main target groups for language and computer courses that could be provided by the government for adults to increase their employability and earnings.

While older individuals (50-64 years) have lower cognitive skills than the middle-aged, very few of them participate in the most relevant training programs (basic skills -reading, writing and math-, language training and computer skills). The survey finds that training of working-age population outside the formal education system has very low take-up rates (10.9 percent of all adults aged 18-64 years), especially among non-employed and lower-educated population. Such situation calls for remedial education and training interventions to be provided by the government to disadvantaged adults to alleviate their skills barriers to productive employment and to prepare the workforce to modern skill-intensive jobs. Barriers to more training in ECA countries are related to: high costs of training, both in terms of direct cost and opportunity costs; lack of information on training opportunities, especially among less skilled individuals and the unemployed; undersupply of training providers; and weak incentives for additional education and training (Bodewig and Hirshleifer, 2011). In promoting adult training, the primary challenge for the government is to create an enabling environment for functioning of the adult education and training system as a market and to intervene with government investment in adult learning in the existence of market failures, especially for the unemployed and disadvantaged population (Bodewig and Hirshleifer, 2011).

Actual education of workers is often higher than the minimum level of education required for a job, and employers often do not ask job applicants about any proof of education qualifications. Overeducation is widespread not only among young workers who graduated from educational institutions relatively recently but also among prime-age and older workers. The most pertinent for policy actions is overeducation of prime-age workers (30-49 years) as they have started their career path a long time ago and they could be trapped in jobs for which they are overqualified. Developing labor market information systems and connection between different stakeholders, implementing effective career guidance system and counselling services, improving the learning outcomes and skills formation in the education and training systems, and promoting life-long learning strategies are usually suggested measures to address the skills mismatch (e.g. ETF, 2019). The establishment of the Labor Market Observatory is a good step, but many resources should be invested to make it an effectively functioning platform assisting students and adult job seekers in making career choices and developing the relevant skills.

Education is rewarded with higher probability of labor force participation and higher earnings for women and with higher probability of employment for men. After controlling

for education, only some cognitive (e.g. auditory memory and literacy) and socio-emotional skills (e.g. growth mindset) are significantly associated with better labor market outcomes. It suggests that diplomas seem to signal employers about skills and competencies of working-age individuals in Moldova fairly well, especially in the case of women. College or university degree for men just extends the pool of available jobs and ensures a wide network but it does not guarantee a good job with high salary.

Individuals with a lower literacy level (comprehension of text, instructions, etc.) and fixed mindset are less likely to find (good) jobs in Moldova. Given this, it is important to develop continuing education and training programs focused not only on occupation-related skills but also on basic literacy, on the one hand, and on socio-emotional skills and mindset, on the other hand. Educational institutions, private training providers and the National Employment Agency should introduce interventions that cultivate a growth mindset in youth and adults and foster the skills that enable individuals to pursue long-term goals and to respond to adverse events (e.g. job rejections) with increased effort. These interventions should target adults with a fixed mindset who are either unemployed or discouraged in finding a (good) job in Moldova, for example lower-educated females, older individuals and rural residents. Some examples of such interventions for students are offered by Dweck et al. (2014). Noordzij et al. (2013), based on the experimental study among the unemployed, tested the learning goal orientation training aimed at approaching stressful situations as challenges and found that such training is more effective than the choice-making training. Because all these interventions deal with psychological concerns, professional psychologists need to be involved in training sessions to create the maximum impact.

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ANNEXES

Annex A: Moldova Skills Measurement Survey: methodology and definition of skills

This annex describes the design and sample of the Moldova Skills Measurement Survey and provides details on how skills are measured in the survey and aggregated for the analysis. The data collection has been supported by the World Bank-financed Skills Data Capacity Building Project implemented by the Ministry of Health, Labor and Social Protection of Moldova. The analysis has been carried out under the Labor Market Analytics Activity financed by the Swiss Agency for Development and Cooperation. IMAS collected the data in 2018-2019.

Design of Moldova Skills Measurement Survey

The Moldova Skills Measurement Survey has been developed together with local experts following skills modules included in the World Bank STEP surveys, European Skills and Jobs Survey, and the Bulgarian Longitudinal Inclusive Society Survey (BLISS). The household survey data collection was conducted separately from the Labor Force Survey but in close collaboration with the NBS to ensure representativeness of the results and sustainability of data collection. Following recommendations of the Ministry of Health, Labor and Social Protection and given a large share of rural population in Moldova, the survey was conducted not only in urban areas as World Bank STEP household surveys, but also in rural areas. The final questionnaire used in the survey was administered in Romanian and Russian.

The data were collected from 13 October 2018 to 30 March 2019. 6,283 households were initially selected and contacted in order to have 2,070 observations with completed skills modules, i.e. the response rate is 33%. 2,004 households were closed, 1,862 households refused to answer, and 347 respondents had only partially complete questionnaires.

The sampling methodology has ensured the quality of the data (operator had to return to a randomly selected household three times in the case of non-contact), but it has also caused a longer period of data collection. A long duration of the survey (varying from 32 to 155 minutes and the average of 82 minutes), repetitive questions about education and work and negative reaction of respondents to tests in the cognitive and socio-emotional skills modules are the main explanations for a lot of refusals and incomplete questionnaires. The analysis in this report uses sample weights provided by IMAS to generalize survey findings to the total population. But these sample weights were not adjusted for non-response so the presented results can be affected by the non-response bias.

At request of the team, occupations and sectors have been coded by IMAS in line with the Moldovan classifications of occupations and economic activities, which are based on ISCO-2008 and NACE Rev.2, respectively. After many iterations of cleaning the data from mistakes or data gaps and recoding of occupations, the final dataset has been provided by IMAS on May 20, 2019. Preliminary analysis of the skills modules and generation of derived variables have been performed by psychologists T. Buianina and M. Negru, respectively.

Cognitive skills

The cognitive skills module was developed after a careful analysis of the cognitive modules applied in Bulgaria, Peru, Ukraine, Colombia, Vietnam as a part of BLISS and STEP household surveys and comparison with the cognitive skills assessment commissioned by the OECD (PISA, PIAAC). It has been decided to adapt the cognitive assessment module (working memory, literacy, calculation skills) used in the Bulgarian Longitudinal Inclusive Society Survey. In addition to the instrument used in Bulgaria, a series of items were developed and introduced into the module to measure the capacity of working memory (Buianina, 2019).

Table A.1 presents cognitive skills, their definition and respective scores defined by Buianina (2019). Descriptive statistics is provided in Table B.1 in Annex B.

Table A.1: Definition of cognitive skills

Cognitive skill	Original variable	Score and corresponding value of original variable
Auditory memory (digit span)	Maximum number of items reproduced by the respondent in a series of increasingly longer number sequences (starting with two and ending with nine) in the same order	1=Low: 0-4 2=Medium: 5-6 3=High: 7-9
Visual memory (arrows, main)	Maximum number of items reproduced by the respondent in a series of arrow sequences, with the sequence, direction and number of arrows exactly as they were on the card	1=Low: 0-3 2=Medium: 4-7 3=High: 8-9
Visual memory (rotating letters, additional)	A sum of scores obtained in the letter rotation task (memorize a letter which is presented in a mirror manner or normally, under different angles of rotation) which is performed simultaneously with the memorization of arrow sequences	1=Low: 0-12 2=Medium: 13-17 3=High: 18
Semantics	A sum of correct answers to 7 multiple-choice (4-option) questions, 5 of which assess familiarity with vocabulary using synonyms and antonyms, 1 tests understanding of a Moldovan idiom, and 1 measuring comprehension of a complex sentence	1=Low: 0-4 2=Medium: 5-6 3=High: 7
Comprehension of a text	A sum of correct answers to 10 multiple-choice (3-option) questions after reading a short non-technical text. One question was excluded from the analysis because it measured the reader's attitude rather than the ability to understand the text	1=Low: 0-6 2=Medium: 7-8 3=High: 9
Comprehension of instructions	A sum of correct answers to 2 multiple-choice (4-option) questions after reading a short instruction for taking a medicine (paracetamol)	0=Lack of skills: 0 1=Low: 1 2=High: 2
Comprehension of a timetable	A sum of correct answers to 4 multiple-choice (4-option) questions after looking at a timetable for inter-city buses in Chisinau	1=Below average: 0-3 2= High: 4
Comprehension of a chart	A sum of correct answers to 3 multiple-choice (4-option) questions after looking on a chart showing the number of newborns in the Republic of Moldova in 2009-2017	1=Below average: 0-2 2=High: 3
Literacy	A sum of scores for 5 scales described above (semantics, comprehension of a text, instructions, a timetable and a chart) and two subscales for ability to read instructions and text in the comprehension tasks (takes the value of 1 if the respondent read instructions/text, and 0 if the interviewer did this)	1=Below average: 0-20 2=Average: 21-24 3=High: 25-27
Numeracy	A sum of correct answers to 3 multiple-choice (4-option) questions to test calculation abilities after looking at a picture showing an advertisement for the sale of bottled water	1=Below average: 0-2 2=High: 3

Source: Author, based on Buianina (2019) and the background questionnaire.

For comparison of the skill profiles of various subgroups (by education, gender, age, etc.), the average standardized scores of original variables are used. They show the fractional number of standard deviations by which the average value for a subgroup is above the mean value of a skill variable observed in the working-age population excluding students below 25 years (with sample weights applied). Positive standardized scores show that observed values are above the mean, while values below the mean have negative standardized scores.

Socio-emotional skills

A module on socio-emotional skills is based on the STEP survey instrument with 44 questions with responses ranked on a five-point scale (“Almost never”, “Rarely”, “Sometimes”, “Most of the time,” and “Almost always”). Following the STEP approach, seven scales (skills) are distinguished, including the Big-Five personality traits (openness, conscientiousness, extraversion, agreeableness, and emotional stability), grit, and decision-making. Scores for these seven skills are simple averages of responses in respective components (after reversal of the scale, when necessary), treating answers “Difficult to say/Refuse to answer” as missing and ignoring missing values.¹¹ Table A.2 presents these skills and the corresponding questions from the background questionnaire.

The internal consistency Alpha Cronbach coefficient for the 7 scales is 0.871 for the entire test consisting of 44 items and 2068 observations. This coefficient indicates a good internal consistency of the test. But there is high correlation between Grit and Conscientiousness ($r=0.548$) and medium to high correlation exists between Grit and Openness ($r=0.504$). Moreover, the Principal Component Analysis has shown an unsatisfactory construct validity of the test.

To improve the construct validity, it was suggested by M. Negru to remove 9 items from the test and to reclassify one item from Grit to Conscientiousness (see the right column in Table A.2). The Principal Component Analysis, using the Varimax rotation method with Kaiser Normalization, shows that the new version of the STEP test has a better internal structure in general, and most items measure the dimensions that the theoretical construct indicates (Negru, 2019). The internal consistency coefficient Alpha Cronbach is 0.865 for the new version, down from 0.871 for the original version of the STEP test. The analysis of the correlations between the newly formed scales also shows a correlation of average level between scales, especially between the scales Conscientiousness and Grit ($r=0.580$), Openness and Grit ($r=0.508$).

Besides, Negru suggested using the sum of components, instead of the simple averages usually used in the STEP data. As this approach leads to a larger number of observations with missing skills,¹² we also applied the same aggregation process as in countries with STEP surveys – taking simple averages of components and ignoring missing values. Basic results presented in Sections 3 and 5 are robust to changes in the measures – either based on the

¹¹ For example, if five components (variables) are specified and, in some observations, one of the variables is missing, in those observations the group skill variable will contain the mean of the four variables that do exist. Other observations contain the mean of all five variables.

¹² The number of observations with missing skills is large in this approach because the group variable gets a missing value once at least one of the components has a missing value (see number of observations in Table B.1 for socio-emotional, sum) .

sums or on the means of components, so only the skills scores calculated as the means of components are presented in this report.

Laajaj et al. (2018) stress that existing measures of socio-emotional skills based on self-reported questionnaires in the STEP household surveys in developing countries should be interpreted with caution because of the Acquiescence Bias, i.e. the tendency of respondents to agree with a statement when in doubt. The mediating role of enumerators and other issues such as reference biases if different groups have different standards or reference points when assessing their behavioral traits can also lead to low validity and reliability of the measures.

Table A.2: Definition of socio-emotional skills

Socio-emotional skill	Questions/components: original STEP approach	Questions/components: new approach based on Negru (2019)
Openness to experience	Are you curious, interested in learning new things?	Are you curious, interested in learning new things?
	Do you enjoy beautiful things, such as music, art or nature?	---
	Do you like to try something new in the work you do?	Do you like to try something new in the work you do?
	Are you inventive, and discover new ways of doing things?	Are you inventive, and discover new ways of doing things?
	Do you like to imagine different things?	---
	Do new, original ideas come to your mind?	Do new, original ideas come to your mind?
	Do you have a rich imagination?	Do you have a rich imagination?
Conscientiousness	Are you an organized person?	Are you an organized person?
	Do you stick to the plans you have made?	Do you stick to the plans you have made?
	Do you try to do everything on time?	Do you try to do everything on time?
	Do you get to work and appointments on time?	Do you get to work and appointments on time?
	Do you postpone your duties in order to take a rest?*	Do you finish whatever you begin?
	Do you put all things in their place?	---
	Do you get easily distracted?*	Do you put all things in their place?
Do you complete your duties on time?	Do you complete your duties on time?	
Extraversion	Do you enjoy spending time with other people?	Do you enjoy spending time with other people?
	Do you express (tell) easily what you think and feel?	---
	Are you enthusiastic and full of energy?	---
	Do you like to talk with many people at meetings?	Do you like to talk with many people at meetings?
	Are you talkative?	Are you talkative?
Are you comfortable expressing your thoughts and opinions to others?	Are you comfortable expressing your thoughts and opinions to others?	
Agreeableness	Are you sympathetic (understanding) with others?	Are you sympathetic (understanding) with others?
	Do you easily understand other people, what people think, feel ...?	Do you easily understand other people, what people think, feel ...?
	Do you trust other people?	Do you trust other people?
	Are you kind, polite to other people?	Are you kind, polite to other people?
	Are you concerned about the difficulties of other people?	---
	Do you forgive other people's mistakes?	Do you forgive other people's mistakes?
	Do you easily forgive other people?	Do you easily forgive other people?
Do you help others?	Do you help others?	

Socio-emotional skill	Questions/components: original STEP approach	Questions/components: new approach based on Negru (2019)
Emotional stability (Neuroticism)	Do you manage stress well?	---
	Do you get nervous easily?*	Do you get nervous easily?*
	Do you have sudden changes in your mood?*	Do you have sudden changes in your mood?*
	Do you get easily upset?*	Do you get easily upset?*
	Do you worry a lot?*	---
Grit	Do you stay calm in tense or stressful situations?	Do you stay calm in tense or stressful situations?
	Do you (continue to) do what you have in mind even if you see that things do not work out well?	Do you (continue to) do what you have in mind even if you see that things do not work out well?
	Do you keep doing what you intended to do even if even you face with difficulties?	Do you keep doing what you intended to do even if even you face with difficulties?
	Will you follow your goal, even if it takes a long time (a year or more)?	Will you follow your goal, even if it takes a long time (a year or more)?
	Do you finish whatever you begin?	---
	Do you finish your tasks, even if they take a long time to complete them?	Do you finish your tasks, even if they take a long time to complete them?
Decision-making	Do you keep working even when you feel that there are no more strengths?	Do you keep working even when you feel that there are no more strengths?
	Do you think carefully before you make an important decision?	Do you think carefully before you make an important decision?
	Do you think about how the things you do will affect others?	Do you think about how the things you do will affect others?
	Do you think about how the things you do will affect you in the future?	Do you think about how the things you do will affect you in the future?

Source: Author, based on Negru (2019) and the background questionnaire.

Notes: Response categories range from 1 “almost never” to 5 “almost always”. Items marked by “*” were recoded with reversed scores prior to the aggregation. Aggregation is based on simple averages of components and ignoring missing values (i.e. the group skill variable is calculated as the mean of components with non-missing values).

Besides, there are five questions of the Fixed Mindset test according to Dweck (2007), with responses on a 6-point scale, from 1 for “Strongly disagree” to 6 for “Strongly agree”. Asking questions about individuals’ views on intelligence and talent, the test measures whether a person believes that the individual cannot exceed the intellectual and personality level at which he is (demonstrating a fixed mindset) or that the individual can develop, learn and exceed his current level (demonstrating a growth mindset). The Cronbach's Alpha for Fixed Mindset Test is 0.773 showing a good internal consistency of the scale. The scale measures only one dimension – fixed mindset – pointing to a good internal validity and consistency (Negru, 2019). The score is calculated as a sum of answers to five questions and therefore it varies from 5 to 30.

Finally, the Empathy Test (Reading the Mind in the Eyes) is a new part included in the Moldova Skills Measurement Survey. This is a psychometric test of social sensitivity, or a theory of mind test (Baron-Cohen et al., 2001). The theory of mind is also referred to in the psychological literature as mentalizing, mental state attribution, or cognitive empathy. The first version of the test was developed in 1997 by Baron-Cohen et al. to quantify differences in social cognition among individuals with autism or Asperger Syndrome, and then it was revised and expanded in 2001 (Baron-Cohen et al., 2001). The test includes 36 rescaled photos so that only the area around the eyes can be seen. Each photo is surrounded by four mental state terms, and the respondent is instructed to choose the word that best describes what the person in the photo is thinking or feeling. The mental states include both basic emotions (e.g.,

happy, sad), complex emotions (e.g., revenge), cognitive mental states (e.g., thinking, scheming), and relational mental states (e.g., flirting). Responses are coded as correct or incorrect, giving a maximum possible score of 36. According to the theoretical model developed by Baron-Cohen et al., the test measures the ability of adults to judge mental states of others from expressions around the eyes. Engel et al. (2014) find that theory of mind abilities measured by the Reading the Mind in the Eyes test are a significant determinant of group performance in both the online and face-to-face conditions. Based on this result, the authors argue that “the Reading the Mind in the Eyes test does not just measure the ability to read emotions in eyes but also the ability to “read between the lines” of text-based online interactions”. The analysis of psychometric properties of the Empathy Test (Reading the Mind in the Eyes) in Moldova Skills Measurement Survey shows that the test has a good internal consistency, with Alpha Cronbach at 0.712, and that scores on the test are near-normally distributed in the general population (Negru, 2019).

Like in the case of cognitive skills, the average standardized scores for seven skills defined in line with the new approach (Table A.2), fixed mindset and empathy tests are calculated for comparison of the skill profiles of various subgroups in Section 3. Standardized scores are also used in regressions in Section 5. Descriptive statistics for socio-emotional skills is provided in Table B.1 in Annex B.

Skills used at work

Skills used at work, or job-relevant skills, are reported by individuals who were employed in the last 7 days or 12 months prior to the survey. Following the STEP instrument, the survey asks respondents about their use of various skills on the job. For a subset of skills highlighted grey in Table A.3, a score ranging from 0 to 3 was computed. When a respondent reports not using a given skill, the score is set at 0. For respondents who do use a given skill, intensity or complexity of use is defined based on the criteria developed by the STEP team, where 1 corresponds to a Low level of intensity/complexity, 2 to Medium, and 3 to High (Pierre et al., 2014). For other six skills shown in the end of Table A.3, the score is set at 1 if the respondent reported using that skill at work, and 0 otherwise.

Table A.3: Definition of the skills used at work

Job-relevant skill	Question in the background questionnaire	Score and corresponding value of original variable
Reading	Among the things that you normally read at this work, what is the size of the longest document that you read?	0=Do not read 1=Read documents of 5 pages or less 2=Read documents of 6 to 25 pages 3=Read documents of more than 25 pages
Numeracy	As a normal part of this work, do you (did you) do any of the following: Measure or estimate sizes, weights, distances; calculate prices or costs; perform any other multiplication or division; use or calculate fractions, decimals or percentages; use more advanced math, such as algebra, geometry, trigonometry, etc. ?	0=Do no math 1=Measure or estimate sizes, weights, distances; calculate prices or costs; perform any other multiplication or division 2=Use or calculate fractions, decimals or percentages 3=Use more advanced math, such as algebra, geometry, trigonometry, etc.

Job-relevant skill	Question in the background questionnaire	Score and corresponding value of original variable
Use of computer (at work)	As a part of your work do you (did you) use a computer? How often do you (did you) use a computer at work?	0=Do not use a computer/ almost never use a computer 1=Use computer less than three times per week 2=Use computer three times or more per week 3=Use computer every day
Interpersonal skills	As part of this work, do you (did you) have any contact with people other than co-workers, for example with customers, clients, students, or the public? Using any number from 1 to 10, where 1 is little involvement or short routine involvements, and 10 means much of the work involves meeting or interacting for at least 10-15 minutes at a time with a customer, client, student or the public, what number would you use to rate this work?	0=Do not have any contacts with clients 1=Involvement scale ranges from 1 to 4 2=Involvement scale ranges from 5 to 7 3=Involvement scale ranges from 8 to 10
Thinking	Some tasks are pretty easy and can be done right away or after getting a little help from others. Other tasks require more thinking to figure out how they should be done. As part of this work, how often do you have to undertake tasks that require at least 30 minutes of thinking?	0=Never 1=Less than once per month 2=Less than once a week but at least once a month OR at least once a week but not every day 3= Every day
Learning	How often does (did) this work involve learning new things?	0=Rarely 1=At least every 2-3 months or at least once a month 2=At least once a week 3=Every day
Autonomy	How much freedom do you (did you) have to decide how to do your work in your own way, rather than following a fixed procedure or a supervisor's instructions? Use any number from 1 to 10 where 1 is no freedom and 10 is complete freedom.	0=Decision freedom scale from 1 to 2 1=Decision freedom scale from 3 to 6 2=Decision freedom scale from 7 to 9 3=Decision freedom scale 10
Repetitiveness	How often does (did) this work involve carrying out short, repetitive tasks?	0=Almost never 1=Less than half the time 2=More than half the time 3=Almost all the time
Physical tasks	Using any number from 1 to 10 where 1 is not at all physically demanding (such as sitting at a desk answering a telephone) and 10 is extremely physically demanding (such as carrying heavy loads, construction worker, etc.), what number would you use to rate how physically demanding your work is?	0=Not at all physically demanding 1=Physical demand scale ranges from 2 to 4 2=Physical demand scale ranges from 5 to 6 3=Physical demand scale ranges from 7 to 10
Making presentations	As part of this work, do you (did you) have to make formal presentations to clients or colleagues to provide information or persuade them of your point of view?	0=No 1=Yes
Supervising others	As a normal part of this work do you direct and check the work of other workers (supervise)?	0=No 1=Yes
Driving a vehicle	As part of this work, do you drive a car, truck or three-wheeler?	0=No 1=Yes
Repairing equipment	As part of this work, do you (did you) repair/maintain electronic equipment (for example,	0=No 1=Yes

Job-relevant skill	Question in the background questionnaire	Score and corresponding value of original variable
	cell phones, computers, printers, other electronic equipment)?	
Operating heavy machinery	As part of this work, do you (did you) operate or work with any heavy machines or industrial equipment (for example, machines/equipment in factories, construction sites, warehouses, repair shops or machine)?	0=No 1=Yes
Lifting heavy things	As part of this work, do you regularly have to lift or pull anything weighting at least 25 kilos?	0=No 1=Yes

Source: Author, based on the background questionnaire.

For comparison of the skill profiles of various subgroups (by education, gender, age, etc.), the average standardized scores of skill variables showing the level of intensity/complexity of using skills at work are used. They show the fractional number of standard deviations by which the average value for a subgroup is above the mean value of a skill variable observed in the working-age population classified as employed in the last 7 days or 12 months prior to the survey (with sample weights applied). Descriptive statistics for the skills used at work is provided in Table B.2 in Annex B.

Annex B: Sample, methodology and detailed results of the analysis

This annex describes the methodological issues, provides descriptive statistics and presents the detailed estimation results.

Sample and methodology

The initial sample includes 2,070 individuals aged 18 to 64 years who participated in the Moldova Skills Measurement Survey and who have completed modules on cognitive and socio-emotional skills. The sample was restricted later depending on the population of interest.

In order to avoid possible biases and have more homogeneous sample of adults, cognitive and non-cognitive skills of working-age population and their effects are analyzed for a sample of working-age individuals excluding students younger than 25 years (169 observations). Students were defined as those who were enrolled in education according to the question “Are you currently attending a formal education program (formal education)?”.

Skills used at work are analyzed among 1,220 individuals who were employed in the last 7 days or 12 months prior to the survey, but sector (economic activity) is known only for those employed in the last 7 days whereas some job characteristics are reported only by employees (i.e. wage and salaried workers).

When we analyze the determinants of employability, only active individuals are considered. Determinants of earnings are analyzed for a subsample of employees and self-employed individuals who reported information on earnings, pay period and hours worked.¹³ Hourly labor earnings at the main job, net of taxes and social security contributions, are estimated based on the hours worked during the last week assuming that last week was a typical workweek, and that net profits of the self-employed are not shared with other investors. However, in the final model presented in the report we do not include self-employed individuals in view of numerous problems with reporting profits and working hours, especially those working in agriculture and the informal sector.

Employed, unemployed, the labor force and inactive individuals are classified in line with the standard ILO criteria with the use of filter questions about activity in the reference week. Occupation, sector, working hours and other job characteristics correspond to the main job if a respondent reported about having several jobs.

¹³ Main questions used are: “How much was your net payment/ take home cash (after any payroll taxes and social security deductions) for the last pay period?” (for employees), “How much did you personally get from this business in the last work period (excluding any taxes and social security benefits)?” (for self-employed), and “HOURS IN LAST 7 DAYS= DAYS IN LAST 7 DAYS multiplied by HOURS PER DAY” (at the main job).

Tables with descriptive statistics

Table B.1: Descriptive statistics of cognitive and socio-emotional skills

Skill	Mean	SD	Median	Min	Max	N
Cognitive						
Auditory memory	5.7	1.5	5	0	9	1901
Visual memory (arrows)	5.1	3.0	4	0	9	1901
Visual memory (rotating letters)	13.6	4.8	16	0	18	1901
Semantics	4.9	1.8	5	0	7	1901
Comprehension of a text	7.4	1.5	8	2	9	1901
Comprehension of instructions	1.5	0.7	2	0	2	1901
Comprehension of a timetable	3.5	0.7	4	0	4	1901
Comprehension of a chart	2.7	0.5	3	0	3	1901
Literacy (overall)	21.6	4.1	22	6	27	1901
Numeracy	2.5	0.8	3	0	3	1901
Socio-emotional (sum)*						
Openness	19.3	3.1	20	9	25	1764
Conscientiousness	27.6	3.9	28	11	35	1861
Extraversion	14.2	2.9	14	5	20	1873
Agreeableness	25.9	3.6	26	12	35	1855
Emotional stability	12.2	2.9	12	4	20	1877
Grit	19.9	2.8	20	9	25	1842
Decision-making	12.0	1.9	12	3	15	1824
Fixed mindset	19.1	5.3	20	5	30	1728
Empathy (Reading the Mind in the Eyes)	17.6	5.2	18	4	32	1899
Socio-emotional (average)*						
Openness	3.8	0.6	3.8	1.5	5	1899
Conscientiousness	3.9	0.6	4.0	1.6	5	1899
Extraversion	3.5	0.7	3.5	1.3	5	1899
Agreeableness	3.7	0.5	3.7	1.7	5	1899
Emotional Stability	3.0	0.7	3.0	1.0	5	1899
Grit	4.0	0.6	4.0	1.8	5	1899
Decision-making	4.0	0.7	4.0	1.0	5	1897

Source: Moldova Skills Measurement Survey.

Notes: The sample excludes students (individuals who were attending a formal education program) aged less than 25 years. The table shows statistics for the values of original variables, not the scores corresponding to the low, medium or high level. * Socio-emotional skills are defined in line with the new approach suggested by Negru (see Table A.2).

Table B.2: Descriptive statistics of skills used at work

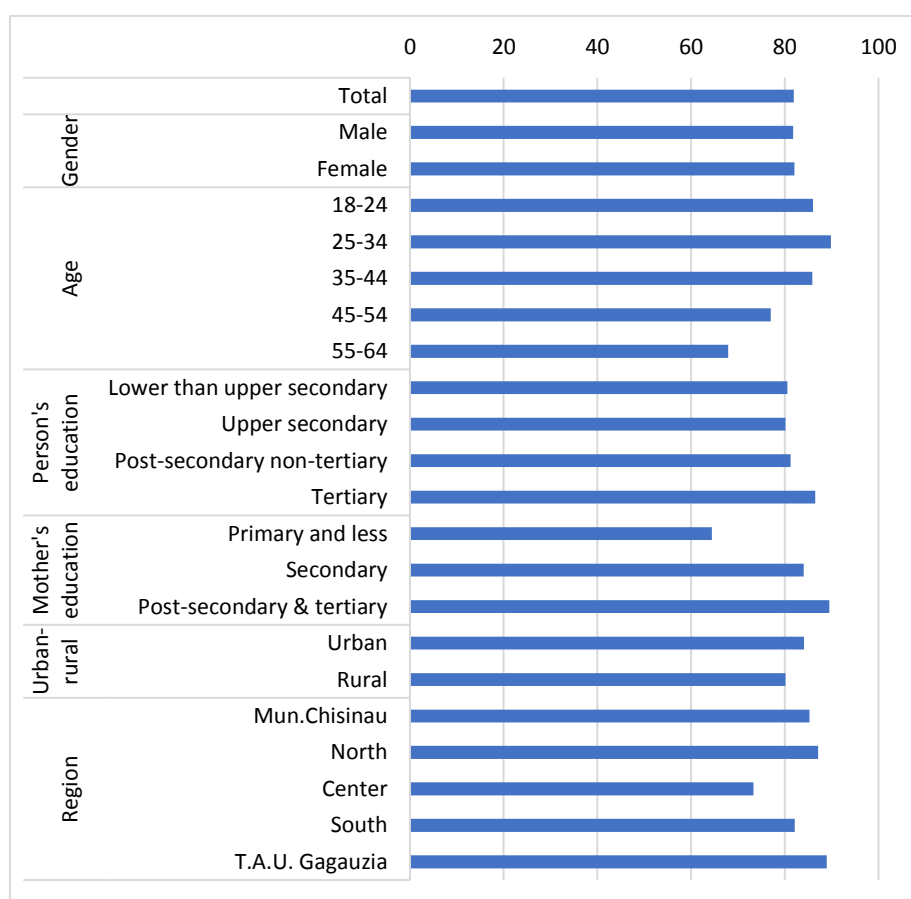
Skill	Mean	SD	Median	Min	Max	N
Reading at work	1.05	1.07	1	0	3	1218
Numeracy at work	1.12	0.99	1	0	3	1216
Use of computer at work	1.18	1.41	0	0	3	1220
Interpersonal skills	1.66	1.23	2	0	3	1215
Thinking	1.29	1.17	1	0	3	1207
Learning	1.50	1.18	2	0	3	1212
Autonomy	1.51	0.92	1	0	3	1211
Repetitiveness	2.24	1.00	3	0	3	1202
Physical tasks	1.83	1.12	2	0	3	1218
Making presentations	0.38	0.49	0	0	1	1216
Supervising others	0.41	0.49	0	0	1	1220
Driving a vehicle	0.19	0.40	0	0	1	1220
Repairing equipment	0.09	0.29	0	0	1	1218
Operating heavy machinery	0.08	0.28	0	0	1	1219
Lifting heavy things at work	0.39	0.49	0	0	1	1219

Source: Moldova Skills Measurement Survey.

Notes: The sample includes individuals classified as employed in the last 7 days or 12 months prior to the survey.

Additional figures and tables

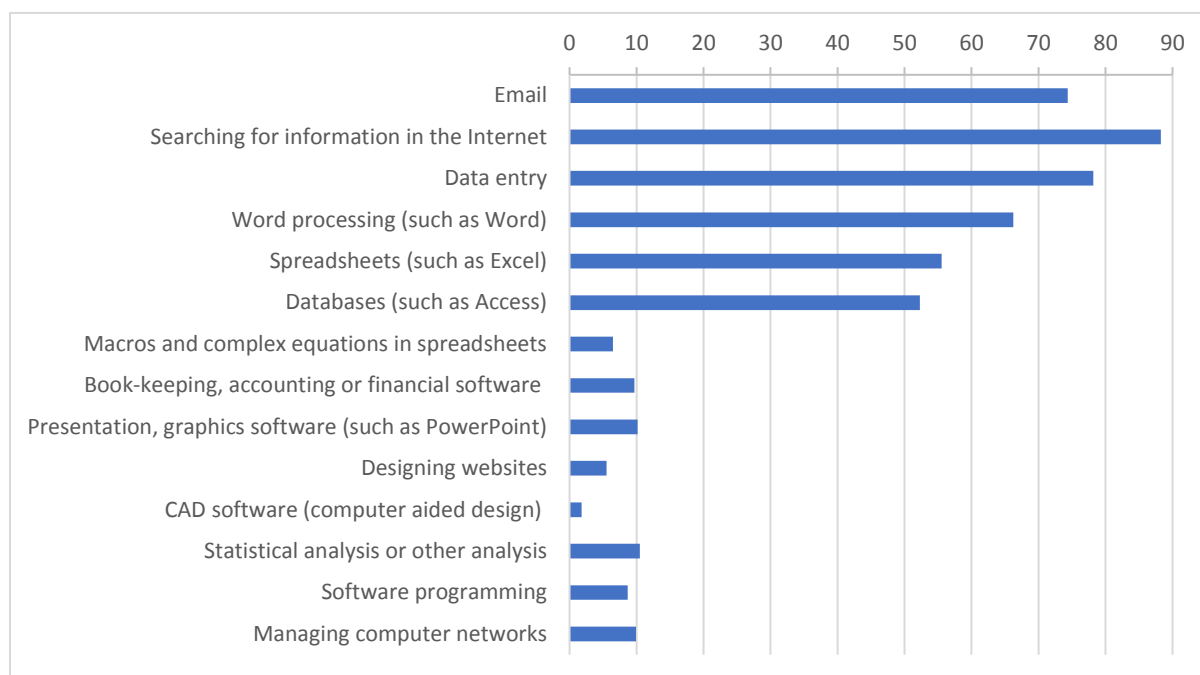
Figure B.1: Percentage of individuals reporting about attending preschool institution before the age of 7 years (%)



Source: Moldova Skills Measurement Survey.

Notes: The sample includes all individuals aged 18 to 64 years.

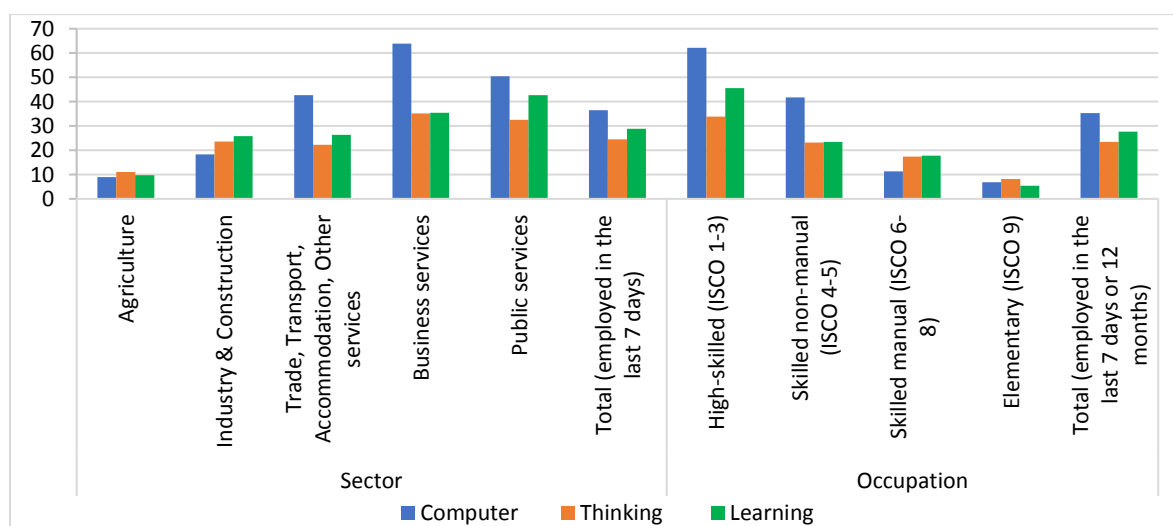
Figure B.2: Percentage of employed workers who reported about the use of computer at work by type of computer activity (%)



Source: Moldova Skills Measurement Survey.

Notes: The sample includes individuals classified as employed in the last 7 days or 12 months prior to the survey and who reported about any use of computer at work (44.2% of the total employed population).

Figure B.3: Percentage of workers with a high intensity of using computer, thinking and learning at work by sector and occupation (%)

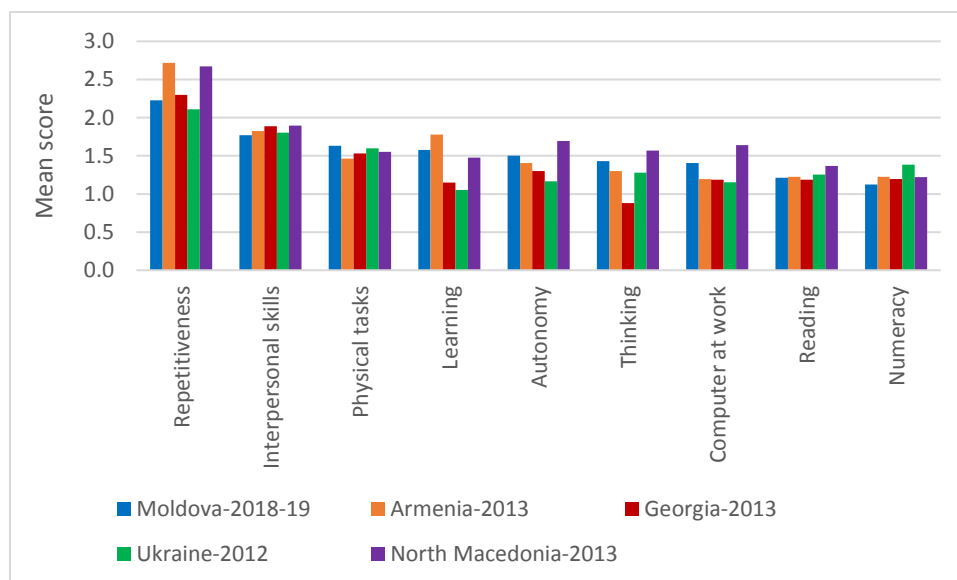


Source: Moldova Skills Measurement Survey.

Notes: The sample includes individuals classified as employed in the last 7 days prior to the survey for sector (information about sector is not available for those who were employed in the last 12 months) and employed in the last 7 days or 12 months for occupation. Public services include Public administration, Education and

Human health and social work activities. Business services include Information and communication, Financial and insurance activities, Real estate activities, Professional, scientific and technical activities, and Administrative and support service activities.

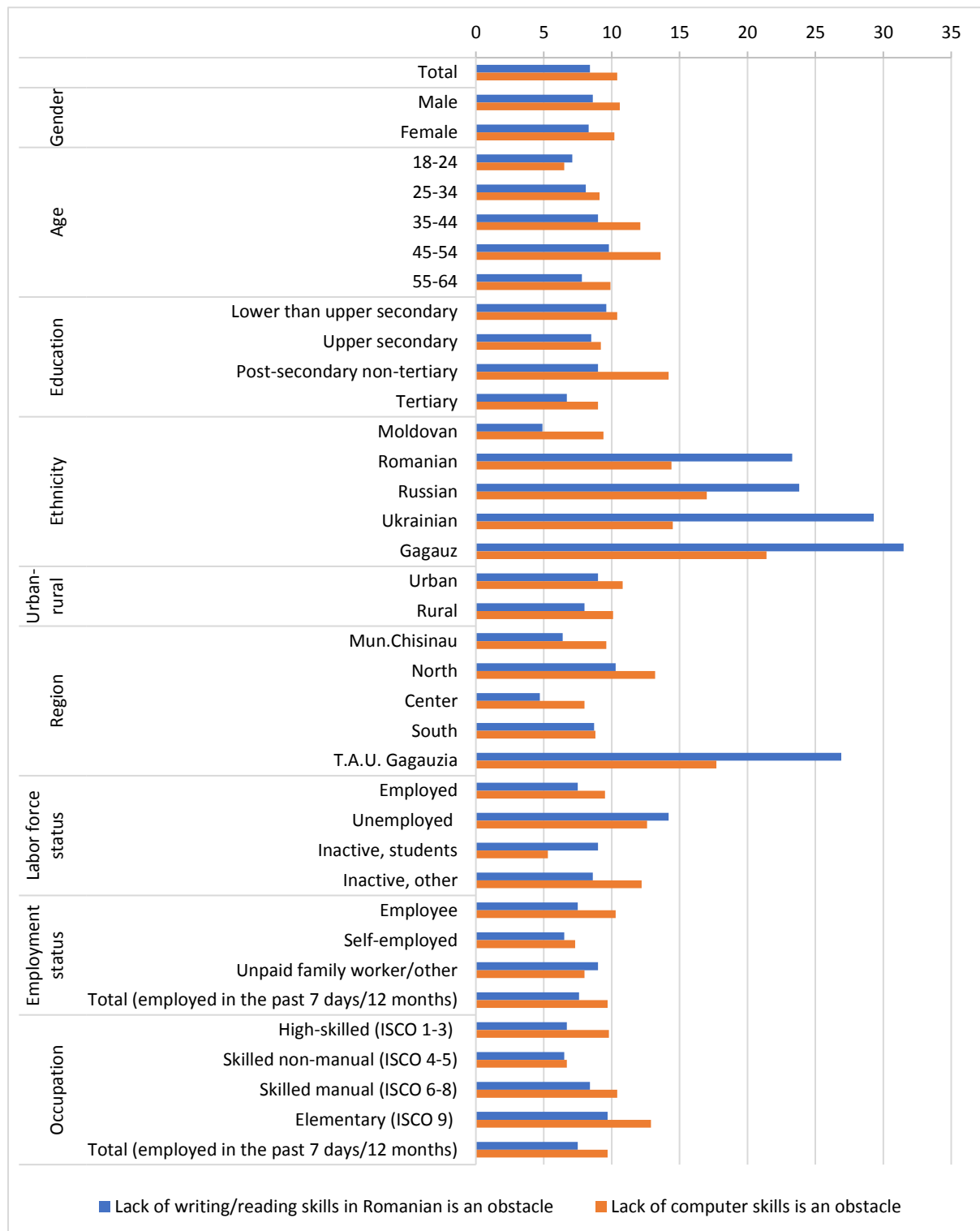
Figure B.4: Skills used at work by urban workers (18-64 years) in Moldova and ECA countries



Source: Author's calculations based on Moldova Skills Measurement Survey and STEP Skills Measurement Household Surveys in Armenia, Georgia, Ukraine and North Macedonia.

Notes: Definition of skills is provided in Annex A, Table A.3. The sample includes individuals classified as employed in the last 7 days or 12 months prior to the survey.

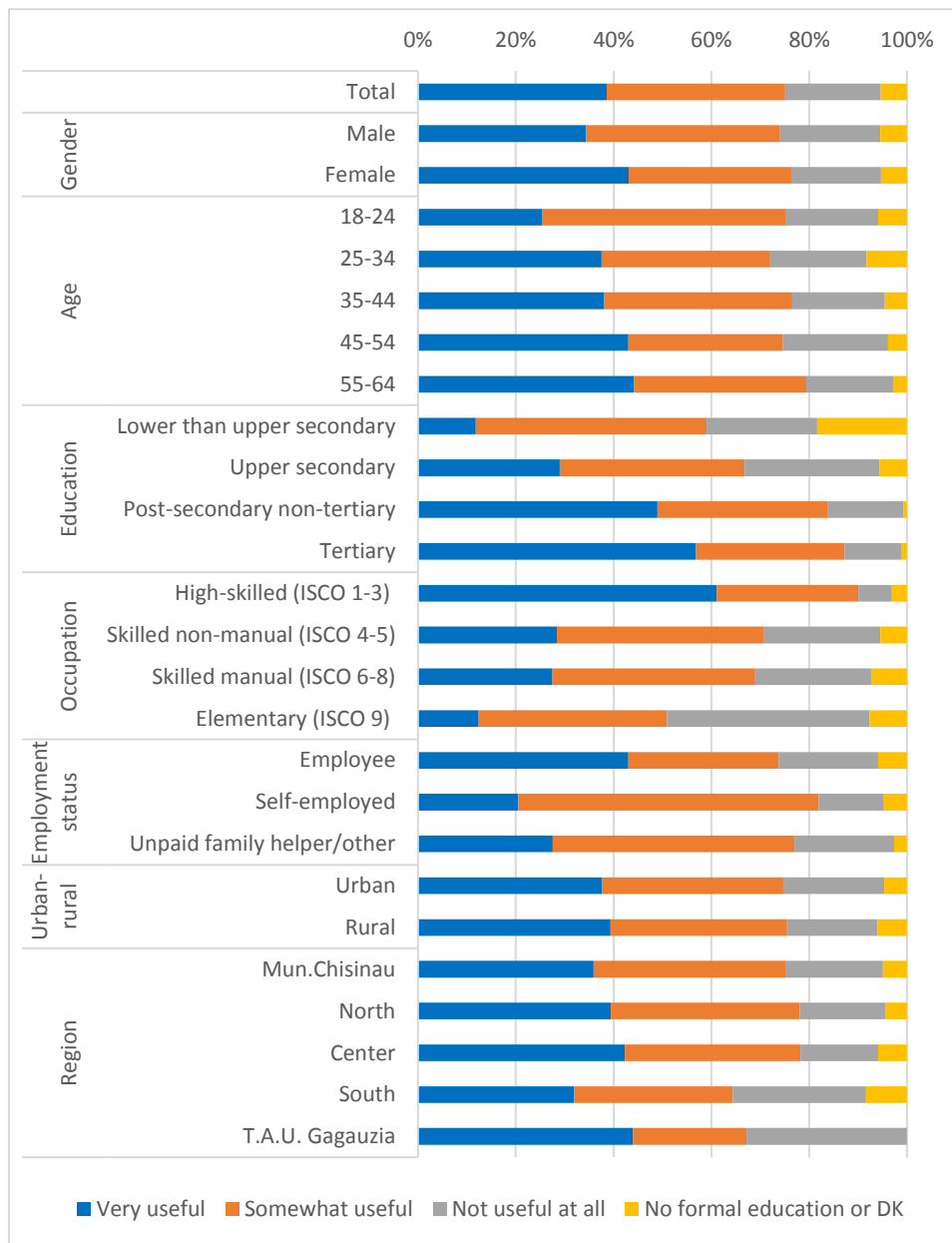
Figure B.5: Percentage of working-age population reporting that the lack of literacy or computer skills has prevented from getting a job/promotion/pay rise (%)



Source: Moldova Skills Measurement Survey.

Notes: The sample includes all individuals of working age (18-64 years). Based on questions: “Has a lack of reading and writing skills in [OFFICIAL LANGUAGE] ever kept you from getting a job, a promotion, or a pay rise, or held you back from advancing your business/ your own account activity?” and “Has a lack of computer skills ever kept you from getting a job, a promotion, or a pay raise, or from advancing your own business/ own account activity?”.

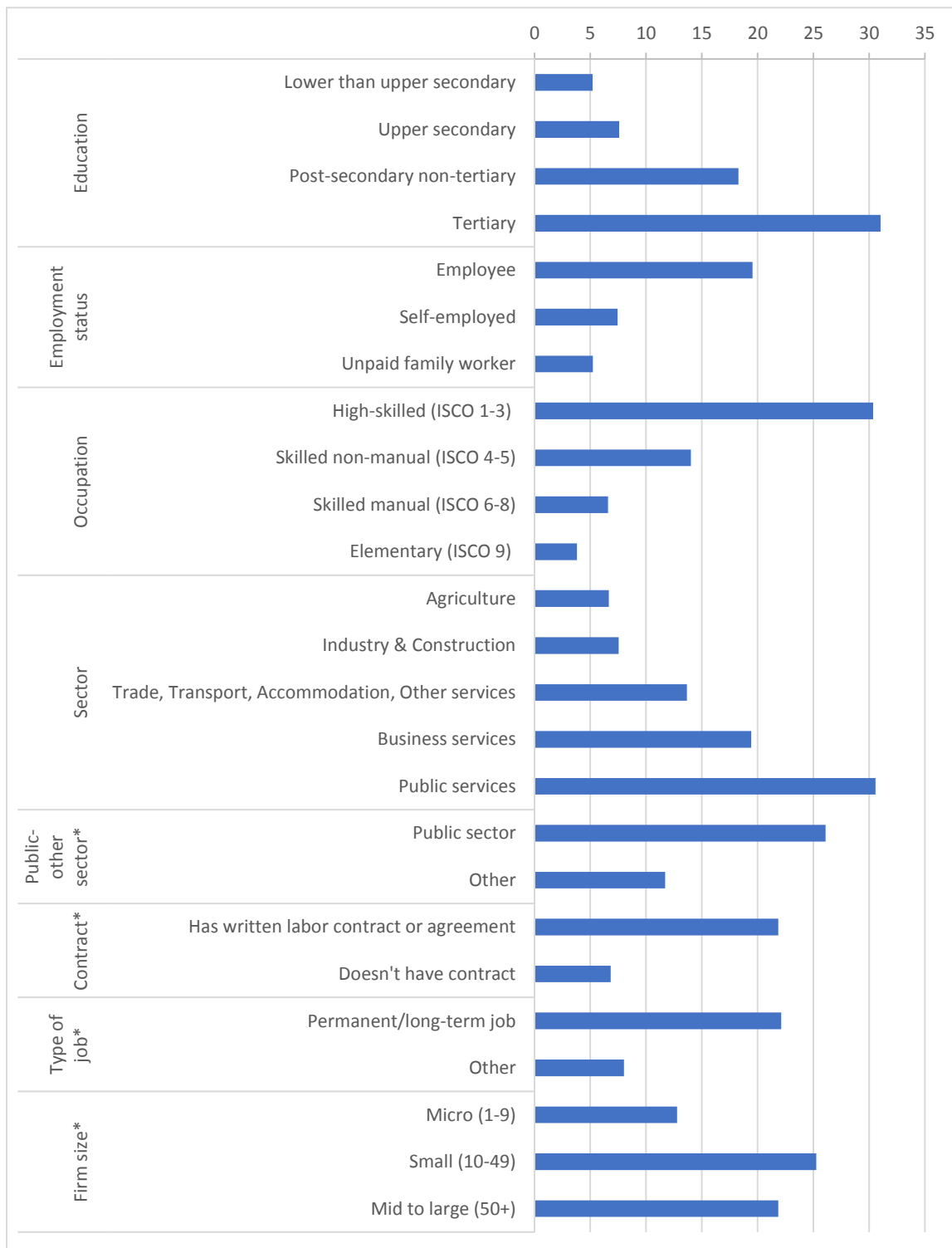
Figure B.6: Percentage of employed individuals reporting how useful their education is for performing work (%)



Source: Moldova Skills Measurement Survey.

Notes: The sample includes individuals classified as employed in the last 7 days prior to the survey. Based on the question: “How useful were your studies during your formal education for performing this work?”.

Figure B.7: Percentage of employed individuals reporting about participation in training in the past 12 months (%)



Source: Moldova Skills Measurement Survey.

Notes: The sample includes individuals classified as employed in the last 7 days prior to the survey. * The sample includes only employees. Question about training from Module 2 “Education” is used: “In the past 12 months (i.e. since [MONTH]), have you participated in any training courses, such as work-related training or private skills training, that lasted at least 5 days/ 30 hours (not part of the formal educational system)? Do not include courses taken for personal interest/ hobbies”.

Table B.3. Determinants of cognitive and socio-emotional skills

Variables	Auditory memory	Visual memory (arrows)	Visual memory (letters)	Literacy	Numeracy	Openness	Conscientiousness	Extraversion	Agreeableness	Emotional stability	Grit	Decision-making	Fixed mindset	Empathy
Upper secondary	0.058** (0.025)	0.050* (0.030)	0.158*** (0.045)	0.158*** (0.024)	0.132*** (0.038)	0.102** (0.048)	0.017 (0.077)	0.170*** (0.046)	0.128*** (0.046)	0.020 (0.031)	0.143** (0.068)	0.121** (0.052)	-0.102*** (0.030)	0.150*** (0.030)
Post-secondary non-tertiary	0.104*** (0.028)	0.103*** (0.032)	0.263*** (0.044)	0.197*** (0.036)	0.146** (0.058)	0.192*** (0.068)	0.181** (0.090)	0.214*** (0.062)	0.158*** (0.052)	0.023 (0.041)	0.206*** (0.061)	0.172** (0.071)	-0.124*** (0.037)	0.227*** (0.035)
Tertiary	0.209*** (0.033)	0.145*** (0.032)	0.367*** (0.044)	0.347*** (0.036)	0.232*** (0.050)	0.280*** (0.063)	0.171* (0.088)	0.267*** (0.051)	0.253*** (0.062)	0.113** (0.049)	0.172** (0.066)	0.197*** (0.063)	-0.323*** (0.042)	0.369*** (0.039)
Female	0.028 (0.024)	0.014 (0.022)	0.042 (0.039)	0.085*** (0.028)	0.018 (0.032)	-0.012 (0.046)	0.249*** (0.055)	-0.043 (0.047)	0.080* (0.040)	-0.217*** (0.030)	0.120*** (0.033)	0.104** (0.040)	0.075*** (0.018)	0.092*** (0.025)
Age	-0.017*** (0.006)	-0.011 (0.008)	0.016* (0.009)	-0.014 (0.009)	0.006 (0.009)	-0.016 (0.010)	0.004 (0.021)	-0.033*** (0.008)	-0.003 (0.010)	-0.003 (0.008)	0.003 (0.015)	0.005 (0.013)	0.008 (0.007)	0.014 (0.009)
Age ²	0.000* (0.000)	0.000 (0.000)	-0.000* (0.000)	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	0.000*** (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000** (0.000)
Attended ECE	0.035 (0.029)	0.038 (0.031)	0.015 (0.039)	0.010 (0.030)	-0.033 (0.042)	-0.014 (0.077)	-0.138* (0.079)	0.038 (0.068)	0.013 (0.080)	0.056 (0.042)	-0.061 (0.055)	0.044 (0.051)	0.053* (0.028)	-0.013 (0.032)
Mother's education, secondary	0.003 (0.024)	0.057** (0.028)	0.034 (0.037)	0.062** (0.027)	0.023 (0.036)	-0.055 (0.067)	0.030 (0.077)	-0.083 (0.072)	0.097 (0.076)	0.032 (0.047)	0.013 (0.068)	0.072 (0.052)	-0.004 (0.033)	0.073** (0.035)
Mother's education, PSNT & tertiary	0.027 (0.029)	0.106*** (0.031)	0.026 (0.038)	0.120*** (0.030)	0.034 (0.038)	0.071 (0.085)	0.080 (0.107)	-0.029 (0.077)	0.157 (0.102)	0.085* (0.047)	-0.005 (0.092)	0.125 (0.076)	-0.151*** (0.039)	0.136** (0.056)
Mother's education, unspecified	-0.084* (0.044)	-0.088 (0.059)	-0.135 (0.099)	-0.155** (0.062)	-0.294*** (0.084)	-0.239* (0.129)	-0.064 (0.143)	-0.143 (0.129)	0.016 (0.143)	-0.015 (0.072)	-0.082 (0.159)	-0.000 (0.132)	0.137*** (0.052)	-0.084 (0.068)
Middle SES at age 15	0.071*** (0.022)	-0.023 (0.038)	-0.010 (0.051)	-0.028 (0.028)	-0.002 (0.062)	-0.041 (0.064)	0.080 (0.090)	0.011 (0.061)	-0.020 (0.068)	-0.004 (0.034)	-0.096 (0.077)	0.098 (0.068)	0.073** (0.037)	0.033 (0.034)
High SES at age 15	0.070** (0.031)	-0.040 (0.045)	-0.058 (0.063)	-0.071** (0.031)	-0.010 (0.080)	0.061 (0.065)	0.273*** (0.101)	0.115 (0.071)	0.094 (0.078)	0.006 (0.045)	0.102 (0.081)	0.167* (0.096)	0.083** (0.039)	0.006 (0.039)
1 shock at age 15	-0.042 (0.031)	-0.031 (0.028)	-0.122*** (0.026)	-0.073*** (0.026)	-0.070 (0.055)	0.009 (0.068)	0.025 (0.064)	-0.021 (0.049)	0.033 (0.060)	-0.019 (0.049)	0.047 (0.053)	-0.005 (0.051)	0.031 (0.041)	0.050 (0.034)
Two and more shocks at age 15	0.001 (0.026)	-0.015 (0.029)	-0.114** (0.048)	-0.142*** (0.034)	-0.163** (0.077)	-0.106* (0.062)	-0.167*** (0.062)	0.048 (0.058)	-0.026 (0.054)	-0.132*** (0.050)	-0.021 (0.060)	-0.011 (0.054)	-0.012 (0.043)	-0.017 (0.027)
Ethnicity Moldovan	-0.064** (0.026)	-0.057 (0.034)	-0.082 (0.050)	-0.024 (0.030)	-0.127** (0.053)	0.032 (0.095)	-0.085 (0.093)	-0.137* (0.077)	-0.060 (0.069)	0.037 (0.054)	-0.115* (0.065)	-0.010 (0.076)	-0.031 (0.032)	-0.161*** (0.038)
Urban	0.041* (0.023)	0.020 (0.035)	-0.044 (0.043)	0.020 (0.029)	0.000 (0.040)	0.032 (0.051)	0.026 (0.063)	0.082* (0.043)	0.024 (0.057)	0.086*** (0.032)	-0.040 (0.050)	-0.034 (0.056)	-0.036 (0.028)	0.035 (0.037)

Variables	Auditory memory	Visual memory (arrows)	Visual memory (letters)	Literacy	Numeracy	Openness	Conscientiousness	Extraversion	Agreeableness	Emotional stability	Grit	Decision-making	Fixed mindset	Empathy
North	-0.065 (0.039)	-0.057 (0.047)	-0.130** (0.057)	-0.057 (0.036)	-0.050 (0.056)	0.121 (0.073)	0.201** (0.099)	0.063 (0.059)	-0.023 (0.077)	-0.025 (0.042)	0.117 (0.076)	0.045 (0.076)	0.110** (0.050)	-0.051 (0.044)
Center	-0.185*** (0.039)	-0.136** (0.057)	-0.151** (0.065)	-0.128*** (0.044)	-0.091* (0.050)	0.168 (0.101)	0.183 (0.117)	0.082 (0.056)	0.012 (0.082)	0.013 (0.049)	0.155* (0.084)	0.059 (0.076)	0.037 (0.055)	-0.054 (0.047)
South	-0.123*** (0.044)	-0.109** (0.051)	-0.267*** (0.057)	-0.182*** (0.043)	-0.185*** (0.054)	0.022 (0.088)	0.366*** (0.089)	0.046 (0.054)	0.148* (0.082)	-0.089 (0.059)	0.253*** (0.070)	0.006 (0.091)	0.074 (0.044)	-0.028 (0.061)
T.A.U. Gagauzia	0.017 (0.049)	0.126** (0.050)	-0.158* (0.084)	-0.147*** (0.042)	-0.122 (0.078)	0.032 (0.102)	0.188 (0.151)	0.120 (0.097)	0.179* (0.103)	0.033 (0.081)	-0.035 (0.108)	0.091 (0.123)	0.057 (0.060)	-0.019 (0.071)
Constant	0.385*** (0.128)	0.326** (0.162)	-0.139 (0.218)	0.265 (0.193)	0.007 (0.296)	0.185 (0.223)	-0.445 (0.386)	0.529*** (0.199)	-0.374 (0.264)	-0.045 (0.203)	-0.121 (0.290)	-0.516** (0.243)	-0.248 (0.185)	-0.254 (0.201)
Observations	1,882	1,882	1,882	1,882	1,882	1,880	1,880	1,880	1,880	1,880	1,880	1,878	1,715	1,880
R-squared	0.165	0.137	0.115	0.213	0.073	0.046	0.043	0.046	0.048	0.064	0.039	0.029	0.155	0.185

Source: Moldova Skills Measurement Survey.

Notes: The sample excludes current students below 25 years. The table shows OLS regression results after “svy: reg”. Dependent variables are standardized scores for respective cognitive and socio-emotional skills. *** (**/*) significant at 1% (5%, 10%) level. SES stands for socio-economic status of household at age 15.

Table B.4: Application to jobs and the need to prove education or experience by education

	Total	Lower than upper secondary	Upper secondary	Post-secondary non-tertiary	Tertiary
Share of working-age individuals who applied to a job in the past 5 years	27.2	26.5	28.6	21.5	30.6
Of them, share of job applicants who needed to prove education or work experience	54.1	48.5	45.8	61.2	65.9
Of those who were asked to provide some proof, % reporting method (multiple responses allowed)					
Official proof / degree from educational institution	71.7	48.8	76.6	74.7	79.5
Official proof/ certification from training institution	63.3	49.2	66.0	69.6	66.0
References from previous work	43.5	45.0	48.3	49.9	33.6
Test/Exam	50.7	53.0	52.9	35.9	55.8

Source: Moldova Skills Measurement Survey.

Notes: The sample includes all respondents of working age (18-64 years).

Table B.5: Determinants of the probability of labor force participation for working-age individuals: marginal effects

Variables	Not conditional on education						Conditional on education					
	All		Women		Men		All		Women		Men	
	dy/dx	SE	dy/dx	SE	dy/dx	SE	dy/dx	SE	dy/dx	SE	dy/dx	SE
Education												
Upper secondary							0.051	0.041	0.090**	0.037	0.001	0.048
Post-secondary non-tertiary							0.111**	0.046	0.197***	0.049	-0.006	0.058
Tertiary							0.188***	0.047	0.223***	0.045	0.135**	0.059
Cognitive skills												
Auditory memory	0.085**	0.038	0.119***	0.040	0.055	0.060	0.067*	0.038	0.101**	0.041	0.042	0.059
Visual memory	-0.049	0.030	-0.094**	0.037	-0.018	0.047	-0.049*	0.029	-0.091**	0.038	-0.017	0.045
Literacy	0.105***	0.038	0.101**	0.050	0.104**	0.043	0.080**	0.036	0.076	0.048	0.083*	0.044
Socio-emotional skills												
Openness	0.036**	0.017	0.014	0.016	0.041	0.026	0.033*	0.017	0.013	0.015	0.034	0.025
Conscientiousness	0.006	0.012	0.028	0.018	-0.013	0.013	0.006	0.012	0.024	0.017	-0.011	0.013
Extraversion	-0.036	0.024	-0.016	0.022	-0.049	0.034	-0.043*	0.023	-0.024	0.023	-0.050	0.032
Agreeableness	-0.004	0.016	-0.013	0.023	0.004	0.020	-0.007	0.016	-0.018	0.023	0.006	0.020
Emotional stability	0.050***	0.018	0.065**	0.029	0.037	0.028	0.049***	0.017	0.059**	0.028	0.036	0.027
Decision making	-0.007	0.016	0.009	0.025	-0.012	0.031	-0.006	0.016	0.012	0.024	-0.012	0.030
Fixed mindset	0.012	0.033	-0.051*	0.027	0.070	0.054	0.038	0.037	-0.019	0.030	0.092	0.057
Empathy	0.102***	0.030	0.044	0.033	0.150***	0.046	0.084***	0.030	0.015	0.035	0.140***	0.046
Female	-0.104***	0.023					-0.104***	0.022				
Age	0.040***	0.007	0.055***	0.009	0.022**	0.011	0.038***	0.007	0.052***	0.009	0.020*	0.010
Age squared	0.000***	0.000	-0.001***	0.000	0.000**	0.000	0.000***	0.000	-0.001***	0.000	0.000**	0.000
Has spouse/partner	-0.014	0.024	-0.041	0.032	0.030	0.029	-0.021	0.023	-0.043	0.029	0.028	0.029
Has at least one child under 6 years	-0.027	0.046	-0.053	0.047	0.061	0.089	-0.026	0.049	-0.051	0.049	0.062	0.087
Other ethnicity	0.105***	0.030	0.084	0.047	0.100**	0.048	0.099***	0.029	0.086*	0.045	0.088*	0.048
Urban	-0.011	0.030	-0.008	0.035	-0.014	0.039	-0.033	0.029	-0.031	0.035	-0.030	0.039
Region (base: Chisinau municipality)												
North	-0.015	0.049	-0.043	0.056	0.009	0.067	-0.012	0.049	-0.035	0.056	0.012	0.066
Center	0.005	0.059	0.021	0.058	0.001	0.073	0.002	0.059	0.026	0.055	-0.003	0.072
South	0.032	0.051	-0.028	0.047	0.099	0.077	0.036	0.051	-0.013	0.047	0.097	0.078
T.A.U. Gagauzia	0.009	0.070	-0.005	0.069	-0.057	0.121	0.026	0.070	0.032	0.070	-0.047	0.116
N	1728		1130		598		1728		1130		598	

Source: Moldova Skills Measurement Survey.

Notes: The sample excludes current students below 25 years. The table shows marginal effects at mean values after “svy: probit”. Dependent variable is a dummy equal to 1 if the person is in the labor force (i.e. employed or unemployed), and 0 otherwise. *** (**/*) significant at 1% (5%, 10%) level. Standardized scores are used for skills.

Table B.6: Determinants of the probability of employment for active working-age individuals: marginal effects

Variables	Not conditional on education						Conditional on education					
	All		Women		Men		All		Women		Men	
	dy/dx	SE	dy/dx	SE	dy/dx	SE	dy/dx	SE	dy/dx	SE	dy/dx	SE
Education												
Upper secondary							0.058	0.037	-0.008	0.050	0.104**	0.045
Post-secondary non-tertiary							0.048	0.036	0.004	0.048	0.066	0.076
Tertiary							0.088**	0.040	0.041	0.045	0.118**	0.048
Cognitive skills												
Auditory memory	0.048	0.033	0.012	0.022	0.096*	0.054	0.043	0.032	0.006	0.021	0.088*	0.053
Visual memory	-0.092***	0.030	-0.027	0.027	-0.152***	0.059	-0.092***	0.029	-0.027	0.026	-0.149***	0.055
Literacy	0.112***	0.024	0.067**	0.030	0.146***	0.038	0.104***	0.025	0.063*	0.031	0.134***	0.039
Socio-emotional skills												
Openness	-0.008	0.012	0.004	0.018	-0.024	0.018	-0.008	0.012	0.004	0.018	-0.023	0.018
Conscientiousness	0.009	0.013	0.008	0.011	0.009	0.018	0.010	0.012	0.008	0.010	0.011	0.017
Extraversion	0.001	0.014	0.003	0.014	-0.002	0.025	-0.002	0.014	0.001	0.014	-0.005	0.024
Agreeableness	0.023*	0.013	-0.009	0.019	0.055**	0.025	0.019	0.012	-0.012	0.018	0.046*	0.025
Emotional stability	-0.012	0.014	0.011	0.016	-0.042	0.024	-0.010	0.014	0.009	0.015	-0.037	0.023
Decision making	-0.017	0.015	0.000	0.018	-0.033	0.024	-0.015	0.015	0.002	0.017	-0.029	0.022
Fixed mindset	-0.059**	0.024	-0.027	0.025	-0.091**	0.043	-0.048**	0.022	-0.019	0.026	-0.075*	0.040
Empathy	-0.005	0.025	0.013	0.025	-0.022	0.041	-0.017	0.023	0.007	0.025	-0.039	0.039
Female	0.054***	0.019					0.054***	0.019				
Age	0.006	0.006	0.006	0.005	0.007	0.011	0.005	0.006	0.006	0.005	0.007	0.011
Age squared	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Has spouse/partner	-0.002	0.024	-0.018	0.020	0.003	0.044	-0.007	0.024	-0.020	0.019	-0.002	0.044
Has at least one child under 6 years	0.002	0.035	-0.007	0.035	0.014	0.070	0.007	0.032	-0.007	0.034	0.024	0.068
Other ethnicity	0.051	0.033	0.048	0.044	0.042	0.051	0.047	0.033	0.051	0.044	0.029	0.050
Urban	-0.031	0.021	-0.001	0.021	-0.069*	0.037	-0.038*	0.022	-0.008	0.021	-0.072*	0.040
Region (base: Chisinau municipality)												
North	-0.095***	0.024	-0.037	0.035	-0.143***	0.037	-0.093***	0.025	-0.036	0.034	-0.143***	0.038
Center	-0.069***	0.023	-0.022	0.040	-0.115***	0.031	-0.069***	0.024	-0.025	0.042	-0.112***	0.032
South	-0.101***	0.033	-0.001	0.032	-0.205***	0.059	-0.103***	0.034	-0.003	0.032	-0.217***	0.061
T.A.U. Gagauzia	-0.126*	0.067	-0.067	0.067	-0.202	0.129	-0.117*	0.064	-0.053	0.059	-0.192	0.134
N	1096		683		413		1096		683		413	

Source: Moldova Skills Measurement Survey.

Notes: The sample excludes current students below 25 years. The table shows marginal effects at mean values after “svy: probit”. Dependent variable is a dummy equal to 1 if the person is employed, and 0 if he/she is unemployed. *** (**/*) significant at 1% (5%, 10%) level. Standardized scores are used for skills.

Table B.7: Determinants of hourly earnings of employees

Variables	Not conditional on education and job characteristics			Conditional on education but not on job characteristics			Conditional on education and job characteristics		
	All	Women	Men	All	Women	Men	All	Women	Men
Education									
Upper secondary				0.072 (0.120)	0.337*** (0.079)	-0.080 (0.185)	0.070 (0.125)	0.419*** (0.082)	-0.165 (0.134)
Post-secondary non-tertiary				0.194* (0.098)	0.516*** (0.103)	-0.140 (0.212)	0.181* (0.105)	0.569*** (0.109)	-0.152 (0.152)
Tertiary				0.485*** (0.103)	0.739*** (0.091)	0.292 (0.208)	0.469*** (0.109)	0.765*** (0.094)	0.268 (0.174)
Cognitive skills									
Auditory memory	0.226** (0.087)	0.240** (0.094)	0.268* (0.153)	0.146 (0.093)	0.163* (0.082)	0.187 (0.171)	0.107 (0.070)	0.132* (0.075)	0.166* (0.098)
Visual memory	-0.057 (0.106)	-0.076 (0.110)	-0.083 (0.172)	-0.066 (0.093)	-0.067 (0.105)	-0.082 (0.152)	-0.029 (0.083)	-0.034 (0.085)	0.006 (0.135)
Literacy	-0.051 (0.179)	0.293* (0.151)	-0.381 (0.240)	-0.125 (0.167)	0.183 (0.147)	-0.405* (0.218)	-0.225 (0.178)	0.198 (0.144)	-0.645*** (0.180)
Socio-emotional skills									
Openness	0.074* (0.041)	-0.000 (0.042)	0.170* (0.089)	0.052 (0.042)	-0.029 (0.045)	0.145 (0.091)	0.016 (0.043)	-0.047 (0.044)	0.067 (0.109)
Conscientiousness	-0.018 (0.035)	-0.059* (0.034)	0.009 (0.058)	-0.008 (0.035)	-0.047 (0.031)	0.018 (0.058)	-0.016 (0.031)	-0.051** (0.025)	-0.006 (0.046)
Extraversion	-0.000 (0.052)	-0.033 (0.054)	0.002 (0.076)	-0.020 (0.049)	-0.061 (0.054)	-0.001 (0.069)	-0.003 (0.045)	-0.062 (0.050)	0.082 (0.059)
Agreeableness	-0.043 (0.033)	0.066 (0.068)	-0.142** (0.065)	-0.052 (0.035)	0.048 (0.059)	-0.139** (0.057)	-0.047 (0.030)	0.062 (0.057)	-0.131* (0.068)
Emotional stability	0.006 (0.060)	0.050 (0.069)	0.005 (0.099)	-0.004 (0.058)	0.056 (0.065)	-0.011 (0.097)	0.009 (0.049)	0.068 (0.063)	-0.017 (0.082)
Decision making	0.065 (0.046)	0.078 (0.051)	0.049 (0.075)	0.070 (0.048)	0.075 (0.051)	0.055 (0.074)	0.077* (0.042)	0.051 (0.052)	0.112* (0.062)
Fixed mindset	-0.172** (0.079)	-0.217*** (0.075)	-0.131 (0.117)	-0.098 (0.072)	-0.123* (0.070)	-0.078 (0.117)	-0.151** (0.074)	-0.106 (0.065)	-0.248** (0.108)
Empathy	0.046 (0.054)	0.069 (0.080)	0.001 (0.091)	-0.019 (0.054)	-0.021 (0.073)	-0.053 (0.093)	0.006 (0.048)	-0.021 (0.071)	0.002 (0.092)

Variables	Not conditional on education and job characteristics			Conditional on education but not on job characteristics			Conditional on education and job characteristics		
	All	Women	Men	All	Women	Men	All	Women	Men
Gender	-0.234*** (0.075)			-0.252*** (0.080)			-0.228*** (0.075)		
Age	-0.009 (0.017)	-0.044** (0.018)	0.014 (0.025)	-0.018 (0.016)	-0.056*** (0.017)	0.007 (0.025)	-0.014 (0.018)	-0.047*** (0.015)	0.017 (0.025)
Age squared	-0.000 (0.000)	0.000** (0.000)	-0.000 (0.000)	0.000 (0.000)	0.001*** (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000** (0.000)	-0.000 (0.000)
Other ethnicity	0.052 (0.103)	0.014 (0.116)	0.086 (0.155)	0.042 (0.102)	0.031 (0.118)	0.045 (0.155)	0.082 (0.100)	0.042 (0.129)	0.159 (0.155)
Urban	0.010 (0.065)	-0.030 (0.087)	0.065 (0.097)	-0.026 (0.061)	-0.043 (0.080)	0.035 (0.099)	0.069 (0.060)	-0.047 (0.075)	0.210* (0.121)
Region (base: Chisinau municipality)									
North	-0.207** (0.100)	-0.297*** (0.089)	-0.152 (0.168)	-0.208** (0.091)	-0.325*** (0.082)	-0.131 (0.176)	-0.249** (0.097)	-0.321*** (0.080)	-0.214 (0.148)
Center	-0.181** (0.080)	-0.103 (0.091)	-0.277** (0.130)	-0.233*** (0.071)	-0.163** (0.078)	-0.308** (0.130)	-0.193** (0.096)	-0.113 (0.083)	-0.285** (0.125)
South	-0.301** (0.135)	-0.314** (0.128)	-0.267 (0.201)	-0.319** (0.128)	-0.312** (0.121)	-0.279 (0.218)	-0.264* (0.136)	-0.331*** (0.122)	-0.070 (0.184)
T.A.U. Gagauzia	-0.235 (0.156)	-0.142 (0.194)	-0.365 (0.342)	-0.185 (0.160)	-0.050 (0.187)	-0.352 (0.330)	-0.138 (0.175)	-0.076 (0.202)	-0.274 (0.302)
Observations	596	388	208	596	388	208	565	372	193
R-squared	0.155	0.197	0.173	0.205	0.292	0.215	0.302	0.356	0.435

Source: Moldova Skills Measurement Survey.

Notes: The sample includes employees reporting earnings and hours of work, except for working students below 25 years. The table shows coefficients after “svy: reg” where dependent variable is the logarithm of hourly earnings. Standard errors in parentheses. *** (**/*) significant at 1% (5%, 10%) level. Standardized scores are used for skills. Job characteristics include tenure, sector (4 dummies), occupation (3 dummies), and firm size (2 dummies). The model also includes constant.