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MISMATCH IN THE ARMENIAN LABOR MARKET: CONSEQUENCES FOR EMPLOYMENT AND WAGES

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MISMATCH IN THE ARMENIAN LABOR MARKET: CONSEQUENCES FOR EMPLOYMENT AND WAGES

VARDAN BAGHDASARYAN, PhD
Manoogian Simone College of Business and Economics
American University of Armenia

SEVAK ALAVERDYAN, PhD
Manoogian Simone College of Business and Economics
American University of Armenia

Key Findings

- Having studied in VET compared to higher education increases probability of not working by the acquired specialization by 20%. On top of that studying art and humanities, social science or engineering increases chances of being horizontally mismatched.

- Women in the labor market tend to be more over-qualified (30%) than men (20%). Also they are less often under-qualified (3%) than men (14%). Over-qualification results in wage penalty (and the opposite is true for under-qualification), resulting in contributions to the gender wage gap. Horizontal mismatch instead has no effect on wage.

- One level increase in computer skills (on a scale from 1 to 4) and one level increase in English (foreign other than Russian, on the same scale) increases the probability of being employed by 3-4 percentage points. Knowledge of English increases the wage by 15% (each level on average).

- The main reason for inactivity in the labor market is childcare (or pregnancy), which comprises around 47% of all responses received by economically inactive women of age 20-50. The main reason for inactivity for young people (ages 20-30) is again childcare (50%), followed by intention to continue education (16%).

Introduction

The Armenian labor market can be characterized by persistent high levels of unemployment and simultaneously, a lack of qualified labor in certain industries. Intuitively, this can be explained by the inadequacy of skills supplied by the existing labor force, and the skills demanded by the current employers. This study contributes to the literature on the skill mismatches in the labor market using the case ofArmenia.The purpose isto understand what individual factors and choices are associated with the mismatch in the labor market and how that mismatch affects labor market outcomes.

There is a vast literature on skill mismatch in developed countries (Brunello and Wruuk, 2019). While usually used as one term, there is a distinction between skill and qualification mismatch. The latter then can be of two types - horizontal (when the type/field of education is inappropriate for the job) and vertical mismatch (when level of education or qualification is less or more than required for the job) (ILO, 2014). Skill mismatch instead can be categorized in three groups - a) job specific technical skill mismatch, b) basic skill mismatch (e.g. literacy and numeracy), and c) portable skill mismatch or soft skill mismatch (e.g. skills that are important across qualifications, like teamwork and communication skills) (ILO, 2018). So the skill mismatch is a multidimensional phenomenon with obvious complications in its measurement. In our study we address both the horizontal and vertical mismatches, defined as:

- **Horizontal skill mismatch** - when the field of education is inappropriate for the job. We measure it with a binary mismatch variable, which is equal to 0 (well-matched) if the respondents confirm that their training/education is appropriate for the job they are implementing now, and is equal to 1 otherwise. Additionally, those who do not have education/training and work in a position that doesn't require training are also considered well matched.
- **Vertical skill mismatch or over(under) qualification** in its general sense means that a person's level of qualification exceeds (does not meet) their job requirements. We measure it by using response on the type of training/education required for the current job of the employee and his actual training/education level reported. The employed individuals are categorized in three groups – well matched, underqualified and overqualified.

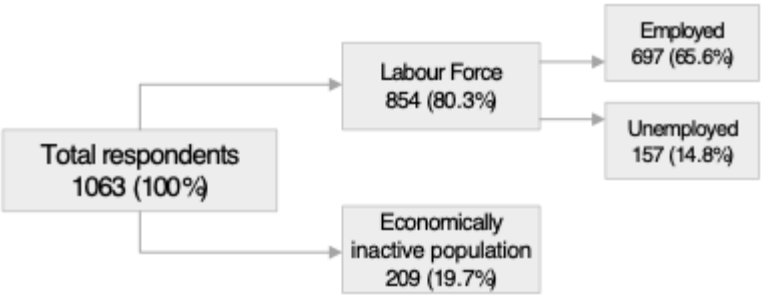
Our study contributes to the literature on skill-mismatch in post-communist countries. Kupets (2015) used a self-assessment approach to measuring vertical education–job mismatch in Armenia, Georgia, Macedonia, and Ukraine, and found that substantial skill shortages coexist with widespread and persistent overeducation of workers. The author argues that policymakers need to understand how different types of workers and firms are affected by overeducation and skill shortages to make informed decisions. In this regard we zoom into the Armenian context and collect detailed information about educational background and skills deployed at work, while also trying to objectively measure cognitive abilities of the survey participants.

Data and background information

The analysis is based on a dataset collected in late November 2020 using computer-aided telephonic interviews by the Avedisian Center for Business Research and Development at the American University of Armenia. The study focused on a relatively young population (from 20 to 50 years old), targeting three marzes of the country – Yerevan (capital), Shirak and Aragatsotn marzes. Overall 1063 respondents proportionally distributed among three marzes participated in the survey, which provides the statistical estimates with 95% confidence level and 3% margin of error.

Around 80 percent of respondents are part of the labor force (Table 1). This number is larger than the one reported by the Statistical Committee of RA for the same age group of 20-50 years old (68%). This difference can be partially explained by the fact that we focus disproportionately on Yerevan and cover only two marzes - Shirak and Aragatsotn. Unemployment is around 15%, which is again lower than the official reported figure (20%), most probably due to the same reasons.

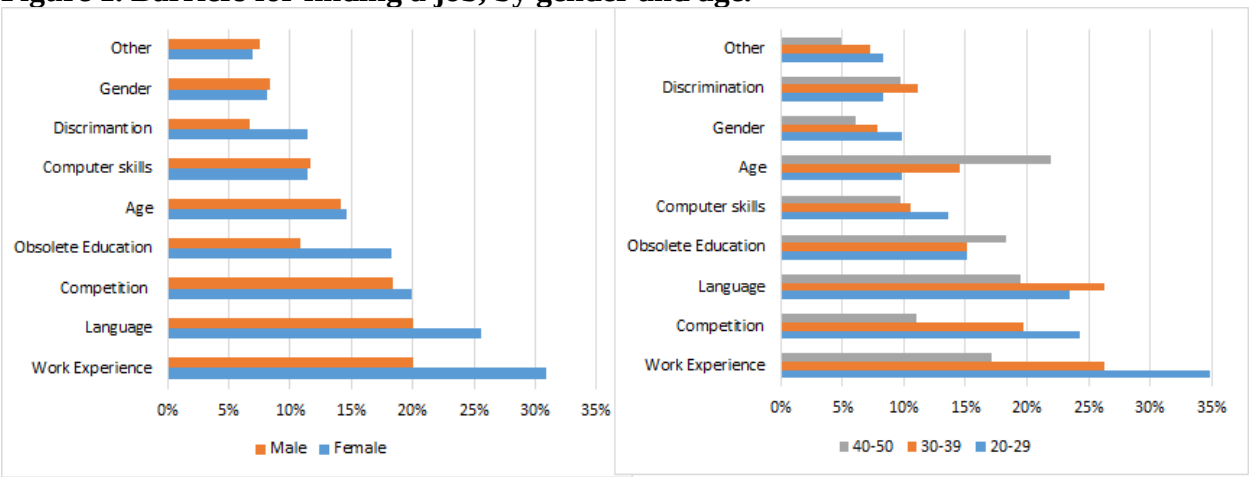
Table 1. Structure of Labor Resources, survey data



The overwhelming majority of employed respondents (83%) have a status of employee. The next largest group are employers (around 9%).

In terms of obstacles to finding a job, the unemployed report quite different perceptions and experiences by gender and age groups (Figure 1). Young people and females mostly report absence of work experience and lack of knowledge of foreign languages. Interestingly the language is not a lesser barrier for younger groups. Non-working women report more often an obsolete education or profession to be a major barrier for finding a job.

Figure 1. Barriers for finding a job, by gender and age.

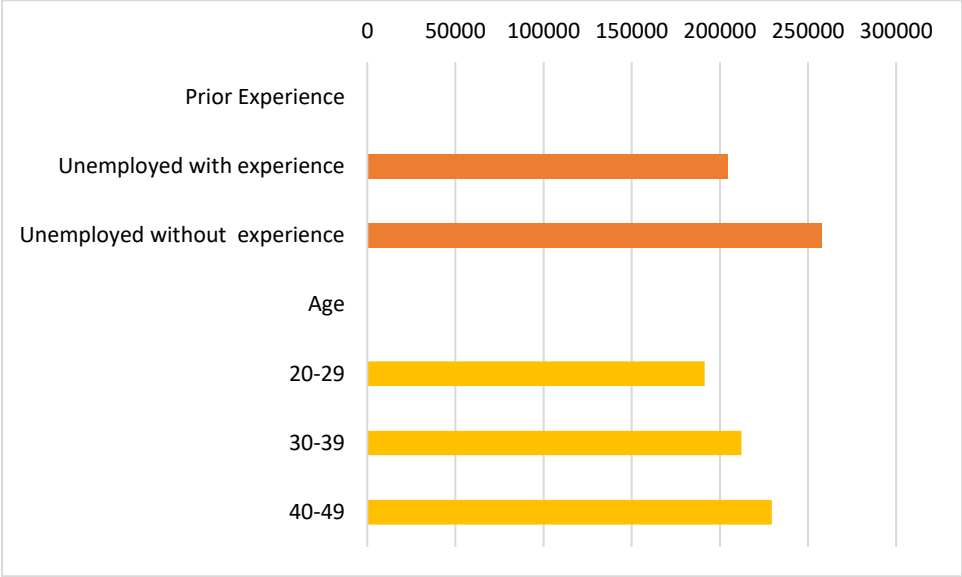


Around ⅓ of unemployed report to have turned down a job offer during the last unemployment spell. The main two reasons were low remuneration (46%) and long working hours (16%).

In the survey we explicitly ask about the wage (reservation wage) the person is ready to accept to start a job. The average reservation wage for the respondents is 208,000 AMD. This number is quite close to the actual average wage observed in the survey - 194,000 AMD. But this reservation wage differs by gender. Interestingly, and in contrast with the stylized fact of women having a higher reservation wage, unconditional average reservation wage is

considerably higher for men (262,000 AMD compared with only 183,000 AMD for women). As one would expect, those who downturned a job offer during the unemployment spell also have a higher reservation wage compared to the remaining respondents. The reservation wage in general has a decreasing pattern when the unemployment spell is increasing. Interestingly, unemployed people without prior experience have a considerably higher reservation wage (Figure 2). There is a slight increasing pattern when considering reservation wage by age groups (Figure 2).

Figure 2. Reservation wage by job search duration, gender and reasons for declining job offer



The main reason for inactivity in the labor market is childcare (or pregnancy), which comprises around 35% of all responses received by economically inactive respondents. The second and the third reasons are family, household chores (9.5%) and intention to continue education (7%) respectively. Around 6.6% have lost hope of finding a job. Among other reasons the respondents mention health issues, plans connected with work abroad and crisis situation due to COVID and war.

Skill mismatch, labor market outcomes and employment characteristics

Horizontal skill mismatch or educational mismatch refers to the cases when the field of education is inappropriate for the job. According to this definition of horizontal mismatch, 43% of employed respondents are mismatched. Next, probit regression is used to explore the employment characteristics related to horizontal mismatch. Analysis suggests that having studied in vocational education and training (VET) compared to higher education increases the probability of not working by the acquired specialization by 20%. On top of that, studying art and humanities, social sciences and engineering increases chances of being horizontally mismatched. Gender and marital status are also significantly affecting the probability of horizontal match. Females are less likely to be mismatched, while divorced respondents are more likely to be mismatched. These results can be explained by the outside options. Females may decide either to work at an occupation which corresponds to their field of study and stay out of the labor force otherwise. Divorced individuals may accept jobs from mismatched occupations, which they would not accept otherwise.

Throughout the study we refer to vertical skill mismatch or over(under) qualification/education to the cases when a person's level of qualification exceeds (does not meet) their job requirements. The employed individuals are categorized in three groups – well matched, underqualified and overqualified. Overall, 9% of employees are under-qualified and 25% are over-qualified. Further, using regression analysis we evaluated the effect of personal characteristics (gender, age, marital status) and transversal skills (knowledge of computer, knowledge of foreign languages) on the incidence of skill mismatch. The regression results show that after controlling for above-mentioned factors, women are more likely to be under-qualified and more likely to be over-qualified. Possessing more computer skills is associated with higher probability of over-qualification, whereas knowledge of English decreases the probability of under-qualified match in the labor market.

After observing the confounding factors of skill mismatches, wage regression is concocted to evaluate the effect of mismatches on wages. The results of simple Mincerian equation estimation demonstrate that under-qualified are getting higher wages, whereas the over-qualified are receiving lower wages (though not statistically significant). Knowledge of English increases the wage by 15% (each level on average). We also observe a persistent gender gap

when controlling for confounding factors (such as working hours' duration, firm size, occupation) and individual characteristics and skills. According to the results, women of the same age, educational level, same knowledge of computers and foreign language, within the same broad occupational group, working same weekly hours as men are on average getting a wage 40% less than men (Table 2).

Table 2. Skills, mismatch and wages

VARIABLES	Spec 1	Spec 2	Spec 3	Spec 4
Education level	0.042	0.042	0.076**	0.062
	(0.030)	(0.031)	(0.034)	(0.038)
Under-qualified (mismatch)			0.368***	0.360**
			(0.139)	(0.152)
Over-qualified (mismatch)			-0.100	-0.130
			(0.097)	(0.109)
Horizontal Mismatch	-0.037	-0.022		
	(0.075)	(0.075)		
Computer skills, self-evaluation (1 - no skills, 5 - programming)	0.100	0.099	0.092	0.073
	(0.063)	(0.064)	(0.064)	(0.071)
English knowledge level, self-evaluation (0 - no skills, 4 - native)	0.141***	0.146***	0.156***	0.169***
	(0.044)	(0.043)	(0.042)	(0.044)
Female	-0.491***	-0.498***	-0.383***	-0.374***
	(0.100)	(0.099)	(0.098)	(0.105)
Age	-0.002	-0.005	-0.001	-0.000
	(0.006)	(0.006)	(0.006)	(0.006)
Hours worked			0.011***	0.012***
			(0.003)	(0.003)
Employer size				0.072**
				(0.032)
Aragatsotn	-0.010	-0.009	0.042	0.136
	(0.288)	(0.290)	(0.274)	(0.302)
Shirak	-0.474***	-0.475***	-0.459***	-0.460***
	(0.103)	(0.103)	(0.100)	(0.114)
Constant	12.117***	12.096***	11.356***	11.220***
	(0.346)	(0.355)	(0.409)	(0.462)
Observations	478	475	502	449
Occupation level controls	YES	YES	YES	YES
R-squared	0.221	0.223	0.239	0.261

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Returns at skills actually deployed at job and cognitive skills

We have also estimated returns to actually deployed skills. These are grouped into 4 categories: Reading, writing, work with numbers, and work with computer. As expected, for all the skills, those using the skill get on average higher wages, but the magnitude of the returns to the skills differ. The returns to reading skills vary between 47,000 (Articles in professional journals) to 79,000(Read letters, memos or e-mails). Return to writing skills varies between 17,000 (Fill in forms) and 113,000 (Reports). Preparing charts, graphs and tables has the highest return to deploying the skill (112,000) among the numerical skills used. Figure 3 presents returns to numerical and computer skills deployed at work in more details.

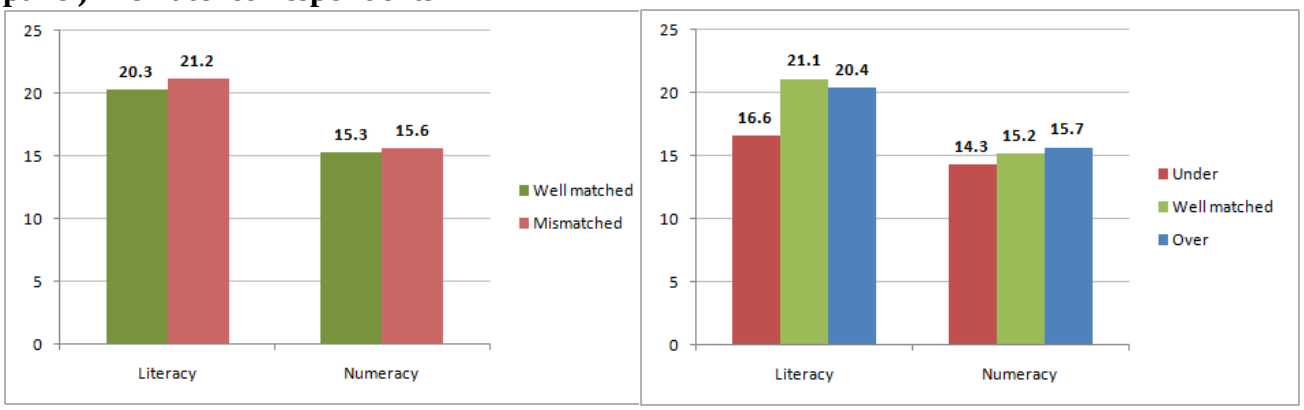
Figure 3. Average wages (AMD) for numerical (top panel) and computer skills (bottom panel) used.

Within the frames of the study the literacy and numeracy of the respondents were assessed using a methodology similar to the one deployed by OECD Adult skill survey (PIAAC). While the quiz was online and required additional time contribution, only subset of surveyed participants took part in it. Totally, 211 numeracy and 178 literacy completed quizzes' results were matched with the 1063 participants of the survey. The maximum possible grade for the numeracy quiz is 30, and 40 for the literacy quiz. The highest average literacy score is obtained by the respondents who studied Business and Law (24.9), and the lowest for the Services (13.6). In case of the numeracy test, those studied Natural science, math and statistics have the highest average test score (17.9), while the lowest is again the Services (11.5). It is interesting to note that the average test results of those without education sometimes exceeds the average test scores of some fields of studies.

In both literacy and numeracy tests women outperform men, though the difference in numeracy tests is not significant. This means that the observed gender wage gap cannot be attributed to the cognitive abilities accessed by these tests. Hence, this unexplained wage difference should be coming from other sources, like occupational segregation, women opt out from competitive jobs, as well as the gender discrimination cannot be ruled out.

The average test (literacy and numeracy) scores of employed respondents are higher compared to unemployed in both of the tests. The difference is more pronounced in the numeracy test. While there is no difference between the scores of horizontally mismatched and matched respondents, vertically under-qualified respondents have lower literacy and numeracy scores (Figure 4).

Figure 4. Literacy and Numeracy level for horizontally (left panel) and vertically (right panel) mismatched respondents



POLICY COMMENTS

Since many features of Armenian labor market are quantified and evaluated for the first time within this study, these findings may have important policy implications. For the entire job search channel, the horizontally well-matched employees get on average higher wages, compared to the mismatched employees of the same search channel. However, in the case of vertical mismatch, for the search channel through family members and relatives, we observe significantly higher average wages for under qualified employees compared to overqualified and well- matched employees which found their job through this channel. This may be a result of nepotism.

Around 15% of unemployed reported searching for job through the state employment agency (SEA) as well, while less than 1% of employed respondents reported that they found their job through public employment agencies, which may potentially indicate inefficiency of SEA in matching unemployed individuals to the jobs. Moreover, those who found jobs through SEA get on average lower wages than those who found job through referrals, advertisements in internet or newspapers.

Interestingly, and in contrast with the stylized fact of women having a higher reservation wage (stated wage at which unemployed would agree to take a job offer), the unconditional average reservation wage is considerably higher for men. The reservation wage in general has a decreasing pattern when the unemployment spell is increasing. Interestingly, those not employed without prior experience have considerably higher reservation wages. This may be attributed to the biased expectations and false perceptions of the wages in the labor market.

Computer skills and English increase probability of being employed. One step increase in computer skills (on scale from 1 to 4) and one step increase in English (foreign other than Russian, on the same scale) increases the probability of being employed by 3-4 percentage points. When looking at the barriers to finding job, lack of foreign language and computer literacy skills are among the top, together with lack of experience. But if with the age, obviously, the lack of experience becomes less of a barrier, there is no such a tendency for foreign language and computer literacy. They are not reported to be less of a barrier for young

respondents (in their 20s) to find jobs compared with older ones (in their 40s). These results may help to design training programs for unemployed job seekers.

Finally, the main reason for inactivity in the labor market is childcare (or pregnancy), which comprises around 47% of all responses received by economically inactive women of age 20-50. The main reasons for inactivity of young people (ages 20-30) are childcare (50%) and the intention to continue education (16%). These statistics may be helpful to design policies for increasing the labor force participation rate with a high efficacy and magnitude.

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