

RETURNS TO FIELDS OF STUDY IN
MOLDOVA: DO EXPECTATIONS
MEET REALITY?

by

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Abstract

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The main goal of this paper is to investigate whether Moldovan young people choose their future specializations in such a way that creates an excess supply of unclaimed specialists on the Moldovan labor market and, as a consequence, the actual returns do not coincide with expected ones while the latter possibly act as the main motivation when making the choice. In order to analyze possible imbalances the likelihood of being employed given the specialization, expected and actual returns to selected fields of study, and job correspondence to the specializations are explored. The findings show that graduates from economics and law – the most popular specialties – are less likely to be employed than other, and their reservation wages are lower than the wages of specialists from other fields. Statistically significant differences in both actual income and probability to obtain a job which corresponds to specialization between “business, economics and law” and other fields were not found either. Thus, the results do not justify a higher demand for education in and higher expected returns to this field of study.

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Chapter 1

INTRODUCTION

Governments worldwide try to guide the number of graduating students of different specialties to promote a healthy labor market. For example, the USA Bureau of Labor Statistics publishes labor projections forecasting future demand and wages of different specialists to inform people about the situation on the labor market. These publications help applicants make “rational” decisions about their future specialties. In the former Soviet Union university graduates were allocated to government-planned jobs in return for free education. Such policy tried to achieve adequate number of specialists in different areas.

Unfortunately, nowadays in many countries the number of graduates exceeds the number of vacant positions in certain domains while there is lack of employees in other domains. Newly qualified specialists facing high competition cannot find jobs to apply their fresh knowledge. Government expenditures on higher education are aimed towards the formation of educated population and creation of highly skilled specialists who can positively affect the economic growth. Governments which cannot provide all citizens with free tertiary education offer limited number of student grants or scholarships for talented young people. All other students can get higher education on a tuition fee basis. It would seem that such a policy should regulate the number of graduates: a student pays money for education if he is confident in his aptitudes and understands the importance of the education in his future well-being. However, the provision of higher education may be inefficient if the allocation of graduates among fields of study is inadequate (i.e., surplus of students in some fields and shortage in other ones), and labor market is rigid (i.e., labor market does not adapt to changes in society and economy). In such circumstances graduates increase the unemployment rate

due to the demand and supply disequilibrium of specialists in particular fields. In case of severe shortage of experts in some fields it is necessary to attract them from abroad (which can lead to money outflow). In the case of surplus of specialists in certain fields the labor market becomes imbalanced which leads to higher unemployment rate and more unemployment benefits that the government has to pay, thus reducing funding available for more productive use by the government. Moreover, with an increase of unemployment the level of labor force migration also goes up (DaVanzo, 1978) which is also associated with extra losses of earlier invested public funds. Thus, inadequate allocation of students among specializations can bring too many costs.

This paper investigates whether young people's expectations about returns to specialization affect their choice of fields of study in Moldova and whether their expectations coincide with the reality. The problem described above is very acute in Moldova and this research could be useful for the Ministry of Education of Moldova to optimize the number of student seats in higher education institutions for different fields of study.

The Moldovan government expenditures in education aim towards development of human capital, increasing employment rate and improving social integration¹. According to the Law of Education of Moldova every citizen of the country has the right for education and the government must respect this right and provide people with access to education. Human resources are extremely important for the economic growth of Moldova. Educated people with a high intellectual and physical potential, who can adapt to changes in economic situation, represent the main factor of the economic growth model based on competitiveness and quality. Workforce productivity has a direct impact on the economic growth (Romer, 1986; Romer, 1990).

¹ Source: Ministry of Education of Moldova, 2011

James et al. (1989) wrote that “while sending your child to Harvard appears to be a good investment, sending him to your local state university to major in Engineering, to take lots of math, and preferably to attain a high GPA, is an even better private investment.” Nowadays, in Moldova (as well as in many other countries) economics and law are the most popular and demanded specialties among the university applicants. The wages of employed economists and lawyers are, on average, higher than wages of the most other specialists (National Bureau of Statistics of the Republic of Moldova, 2010). Thus, the applicants can be motivated by expected high wages and prospective future. Statistics shows that in 2010 about 1/3 of university students graduated from economics and 16% from law departments. Moreover, 90% of graduates from economic science and 88% from law paid tuition fee for their studies (Figure 1).

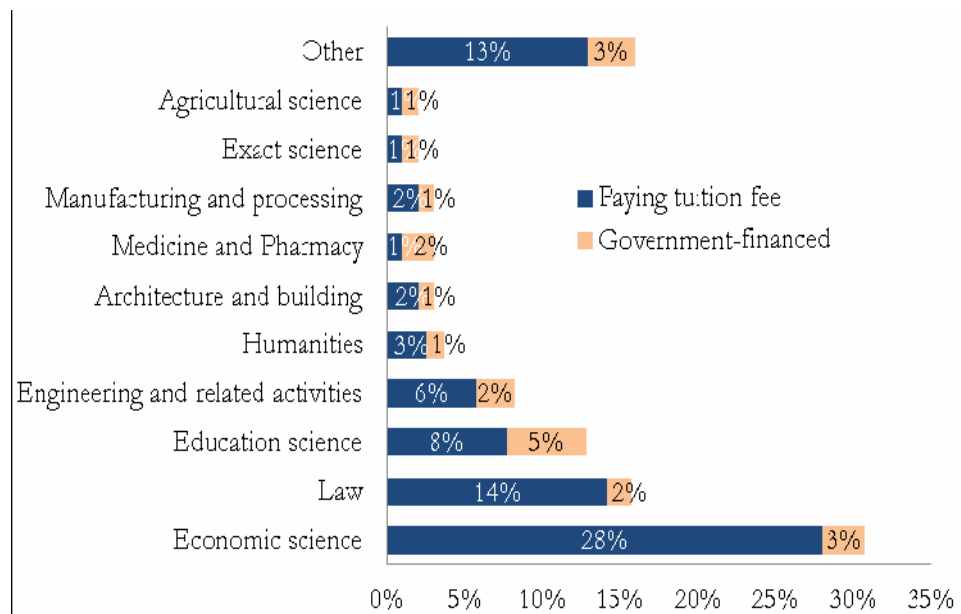


Figure 1. Graduates from higher education institutions by fields of study

Poverty, sharp population division on poor and rich people, low wages of unskilled and state-enterprise workers in Moldova motivate young people to apply for relatively high-paid specialties such as economics and law. However, usually Moldovan university entrants are uninformed about the most and the least required professions on the labor market. Consequently, their choice is based not on the labor market demand but on expected high wages. However, since the labor market in Moldova is rigid (Vaculovschi, 2009), wages do not reflect labor demand. Moreover, very often Moldovan young people choose their future professions driven by fashion and prestige.² Vacancies registered at National Employment Agency (2011) show that economists and lawyers are the least required professions in the Moldovan labor market (7% and 0.2%, respectively), while tailors (Figure 2), technicians and engineers are the most demanded (35% and 25%, respectively). The registered in 2011 average monthly earnings are \$564, \$291, \$303 and \$240 for workers in financial intermediation, public administration, industry, and other social and private services, respectively.³ Moreover, the AXA Employer Brand Perception Survey (2011) showed that 83.1% of students from economic departments cannot find jobs, indicating an oversupply of graduates in legal and economic specialties, and deficit of technical specialists.

² The issue was described and discussed in different mass media publications, for example in such sources like “*Noi MD*”, “*KP MD*”, “*eNews.md*”, “*Aquarelle*” and many other.

³ Source: NBS of Moldova. The earnings in Moldovan leus are converted to dollars according to the official average exchange rate is National Bank of Moldova

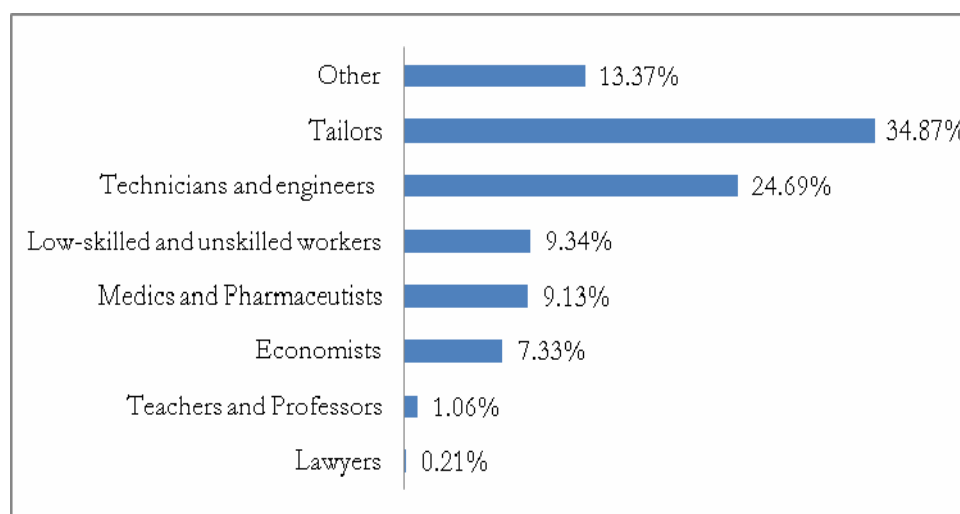


Figure 2. Officially registered vacancies

According to the National Employment Agency of Moldova (2011) only 27% of total labor demand is for people with higher and specialized secondary education, and the great majority (73%) is for graduates from high and vocational schools. At the same time, 26% of the labor supply is offered by people from the first educational group and while 74% comes from the second group. Although structurally supply and demand match in terms of the levels of education, it should be taken into account that the total labor supply is larger than the number of workers demanded. Moreover, 33% of unemployed are people with higher and secondary specialized education (20% and 13%, respectively), 49% - people with secondary and vocational education (25% and 24%, respectively), and only 18% with no or incomplete secondary⁴ (Figure 3). Thus, the picture described above can be caused by a mismatch between demanded and supplied specializations among people with higher education.

⁴ Author's own calculations based on the statistics provided by NBS of Moldova

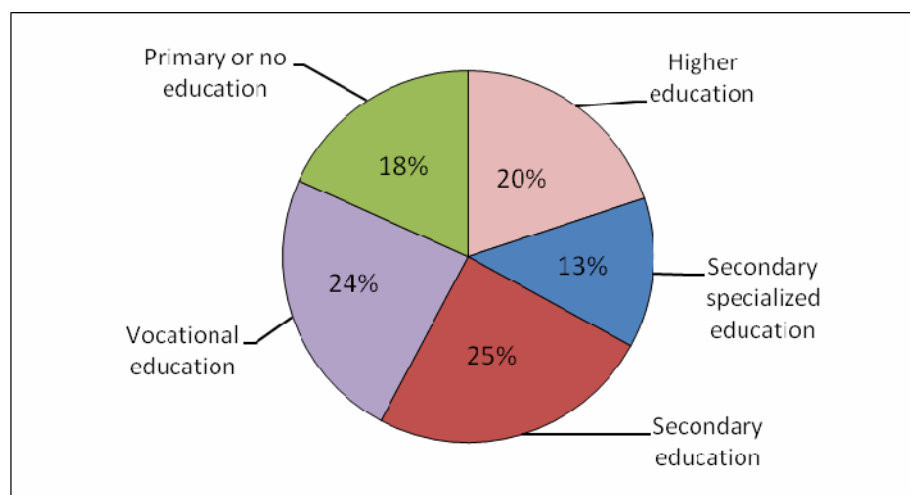


Figure 3. Unemployment by level of education

The probit model will be used to estimate the likelihood of employment for the specialists of different fields. The variable of interest is employment status of respondents with different specializations and levels of education. The results will show whether the Moldovan labor market is oversaturated with specialists from the certain fields due to wrong expectation of young people about return to fields of study. It is expected that an excess supply of economists and lawyers leads to higher unemployment among these specialists relative to others. Also we will use Mincer equation to compare expected and actual individual returns to higher education in certain fields of study to see whether higher expected wages of specialists from certain fields motivate the choice of profession among young people and what happens in the reality. It is expected that the wages of employed economists and lawyers in both cases are, on average, higher than wages of specialists from other domains. The probability of working in certain sector of economic activity and job correspondence given the specialization also will show whether the choice of specialization is based on right expectations. It is expected that the likelihood of job match and employment in the corresponding sector for economists and lawyers is lower than for specialists from other domains.

This paper has the following structure. The next section, Chapter 2, presents the literature review on graduate unemployment, job mismatch and investment in education. Chapter 3 provides methodology. It followed by data description in Chapter 4. The estimated results are described in Chapter 5. The closing Chapter 6 contains conclusions, possible explanations of the results and recommendations.

Chapter 2

LITERATURE REVIEW

The objective of this literature review is to examine works studying unemployment among university graduates, returns to fields of study, and job mismatch. The section is divided into three main parts. In the first part the issue is presented from the theoretical point of view. The second part discusses empirical studies of the impact of fields of study on graduate unemployment and income. Finally, we will focus on main findings for Moldova.

2.1 Theoretical Background

Endogenous model of growth says that human capital, innovation and knowledge are main determinants of economic growth. National economic growth is affected by investment in human capital and, as a consequence, by individual's employability and productivity (Romer, 1986). According to the theory extra investments in education creates positive externalities and spillover effects on economic growth. Knowledge and skills, which are products of investment in education, improve "quality of human effort" and increase level and quality of production (Schultz, 1961; Becker, 1964). Romer (1990) emphasizes that human capital is "a fundamental source of economic productivity" and investment in human capital give individuals knowledge and skills which can be easily converted into goods and services. However, optimal investment in education can be achieved under a number of assumptions. There is a very important assumption in human capital theory: labor market is perfect, i.e. people with higher level of education can easily enter the market. Besides, under the assumption that the supply of human capital is restricted unemployment among higher educated people is very low. However, in real world this assumption is likely to be violated.

The macroeconomic return to education falls if economy is not able to integrate the majority of qualified people (Pritchett, 1996).

Romer (1987) using a production function with many different specialized inputs examined the effect on the growth rate due to increase in returns to specialization ignoring the increase in returns to investments in knowledge, and supporting the old idea that “a decentralized competitive equilibrium with externalities could exist despite the presence of aggregate increasing returns”. He found that the final good production increases with an increase in degree of specialization, i.e. the number of different specialized inputs.

There are many studies that criticize human capital theory. The idea about surplus of higher educated people turned attention in the early 1970s due to unfavorable economic situation. For example, in India where the high unemployment rate was observed among engineers. Teichler and Kehm (1995) studied the impact of higher education on employment and the expansion of higher education has been criticized because it had led to “over-education” and graduate unemployment. At the same time, Teichler and Kehm (1995) emphasize the fact that an increase in the number of educated people is potentially favorable for economic and cultural development.

Blaug (1985) argues that the expansion of education leads to distorted distribution of income and inequalities in society. According to the credentialism theory supported by the author, education can bring high individual returns, but it fails to improve the live of the whole society. Employers prefer workers with higher levels of education even if in fact the work does not require a lot of knowledge. Spence (1973) in his job-market signaling model showed that employees who “buy” more education give a signal to the employers about their higher productivity even if education did not affect the employees’ productivity. Thus, education becomes only a “credential” or “privileged status”, which helps

employers to select workers, ignoring however real abilities and skills (Clogg, Eliason and Wahl, 1990; Clogg and Sullivan 1983).

2.2 Empirical Evidence

There are many research papers on empirical analysis of graduate unemployment in developing countries. Most of them are based on Labour Force or Household Surveys. Naderi (2005) used education-activity match index, which measures how worker's level of education and field of study correspond to the current occupation, to evaluate the relationship between educational mismatch and unemployment in Iran. The results showed that Iranian economy suffers from underutilization of human capital due to over-education. Moreover, he showed that there is a high degree of heterogeneity in educational match among different groups of specializations. The highest match coefficient (0.933) was obtained for employees from the Education and Teacher Training Group, and the lowest one (0.306) for people from the Transport and Communication Group. In Business Services the match coefficients are also relatively high (0.629). Finally, the regression analysis provided by Naderi indicates that there is a positive relationship between the job mismatch and unemployment status.

Graduate unemployment among young specialists in different fields of study was investigated for Greece by Ilias Livanos (2010). The paper describes the problem of low employment rate in public sector which requires specialists in Humanities and Sociology and oversupply of considered to be prestigious professions like physicians and lawyers in the Greek labor market. The author used logistic regression to investigate the effect of level of education and fields of study on the probability of being employed. Two specifications of the model were used: i) with focus on level of education; ii) with focus on fields of study. The results showed that level of education does not affect the likelihood to be employed. This is called "a paradox of the Greek labour market" which does not reflect the

negative relationship between level of education and unemployment as in many other countries. The analysis of the probability of being employed given the specialization showed that specialists graduated from “Sociology, Humanities, and Agricultural Studies” are less likely to get jobs. And graduates from Computer Science, Medicine and Law are more likely to be employed.

Standard Bank (2006) explored empirically the graduate unemployment in South Africa. The researchers applied the Heckman two-step procedure to estimate probabilities of being employed depending on the level of education. The results showed that the probability to be employed is increasing with the level of education. The authors concluded that the graduate unemployment in South Africa is “relatively small”. The results vary for students from different fields of studies. Graduates from business, commerce and management studies represent the major part of total tertiary unemployment, and the minor part comprises graduates from education, training and development studies.

Expected wage is one of determinants of specialization choice. Brunello et al. (2001) studied the variability of expected earnings and expected probabilities of being employed across fields of study, and compared actual and expected returns in European countries. The authors found that expected wages are significantly different across fields of study and, on average, are substantially higher than actual returns. Moreover, the average expected wage of students from economics and business majors is significantly higher than average actual wage of the whole sample. Another study conducted by Beffy et al. (2012) also showed a statistically significant, but quantitatively small effect of expected wage on allocation of students among fields of study.

Mathias and To (2011) used the Mincer regression to estimate the returns to different specialties. Their findings showed that the returns are heterogeneous and investment in specific skills gives lower return than investment into general

skills. The authors explain this phenomenon by a higher job mismatch among people with occupation-specific skills. People with specific education are under the risk not to find the appropriate job which will pay appropriate returns on their education (Decreuse and Granier, 2007). The specialization risk is much higher in markets with higher competitiveness (Singh, 2007).

A Mincer-type regression including different fields of study also was used by Yeo Khee Yong et. al. (2007) to explore the contribution of specialization to return to higher education in Singapore. He found that rates of returns for technical fields of study such as Engineering Sciences and Health Sciences are higher than the rates for such field as Humanities and Social Sciences. Yong explained this tendency by country industrialization process and high demand for skilled technicians.

2.3 Findings for Moldova

Empirical analyses of returns to education show that people with higher level education have higher wages in Moldova. In 2006 the rate of return was 9.5% per additional year of education, *ceteris paribus* (Bozu, Caragia and Gotisan, 2006). However, wages differ significantly across sectors of economic activity. The employees in financial sector have the highest wages, and in education and healthcare sectors the wages are extremely low (ETF, 2009).

It was also found that people with higher education can easier find a job than those with lower level of education. However, in most cases their jobs do not correspond to their degree and field of study. Job mismatch analysis showed that for 32% of graduates the first job didn't correspond to their fields of study (ETF, 2009). This labor market outcome was explained by the mismatch between supply and demand of higher education in such fields as business, law and social sciences, and for low quality of education in engineering and industry fields.

Most findings for Moldova are based on descriptive analysis. According to the study by CIVIS (2008) most vacancies in Moldova are available in the industrial sector (40%), in agricultural sector (15%) and trade (12%). The highest labor demand exists for service workers (31%), low-skilled workers (27%), operators, machinists for installations and locksmiths (26%). At the same time only 8% of job openings are available in legal and financial sectors. The CIVIS researchers conclude that the educational system in Moldova does not respond to the needs of the labor market.

Tatarciuc (2006) investigated the factors which determine the labor supply and one of them is the professional structure of the population. She argues that after the Bologna Process implementation in Moldova in 2005 the educational system became less efficient. Partially, it is due to the fact that the term of the university education was reduced to 3 years (which is not sufficient to get advanced qualification). In addition, this term reduction facilitated imbalances in the labor market given that one can obtain the higher education faster while the quality and usefulness of such education decreased. Tatarciuc counted up the numbers of the most frequent job proposals and posted CV's on different web-sites with job advertisements. The results showed that specialists in law, banking and assurances, as well as human resources are in the least demand, while the most job-seekers are looking for the job offers in such domains as Banking, Economics, Management, Bookkeeping, IT/Programming, Jurisprudence and Trade. Tatarciuc argues that "youth prefer the higher education to the specialized secondary education. However, the vocational education represents a real possibility to succeed in labour market with a really required profession".

The goal of this paper is to further explore the graduate unemployment in the Moldovan labor market and to examine whether young people's expectations about future returns to education and specialization affect this unemployment.

This study will contribute to the existing research by answering the question whether inadequate allocation of students among different majors is caused by wrong expectations on returns to specialization.

Chapter 3

METHODOLOGY

As it was mentioned before, theory says that investments in human capital may lead to excess supply of overeducated people (Teichler and Kehm, 1995). For estimation the probability of being employed given the education level and specialty it will be used the probit model with *employment status* of a respondent as the variable of interest (Livanos, 2010). The sample used in the estimations excludes “out-of-labor-force” respondents.

The model is following:

$$\mathbf{Probability}(Emp=1) = f(Field, Educ, Age, Gen, Area) \quad (1)$$

Such factors as field of study (*Field*), level of education (*Educ*), *Age*, gender (*Gen*) and residence area (urban or rural) can affect the likelihood of employment (Standard Bank, 2006). Thus, this model will show whether field of study is associated with higher or lower likelihood of employment among young specialists keeping other factors constant. However, there is collinearity between some levels of education and some fields of study in the data. For example, people with primary and secondary education or without any education do not have any specializations, and certain groups of specializations correspond to certain levels of education. At the same time, there are also specializations that can be get at the same levels of education. Thus, all three model specifications were considered, i.e. with levels of education only, with fields of study only, and with both.

The next stage considers the expected returns to education as a motivator for the choice of the field of study. Traditionally, the estimation of individual returns to

the field of study and level of education relies upon Mincer regression (see, Mathias and To, 2011). In order to see whether higher expected wages of specialists from certain fields affect the choice of profession among young people a similar regression will be used. However, instead of the $Wage$ will be use the minimum accepted monthly net remuneration for the first job (reservation wage) of the respondents who graduated in 2007 or 2008 with different levels of education, and instead of experience (Exp) the variable which answers the question whether the respondent work during her formal education is included.

$$\ln W_i = a_{0i} + a_{1i}Age_i + a_{2i}Age_i^2 + a_{3i}Exp_i + a_{4i}Educ_i + a_{5i}Field_i + V_i \quad (2)$$

Where:

$\ln W_i$ – logarithm of reservation wage;

$Educ_i$ – level of education;

$Field_i$ – field of study;

Exp_i – experience gained during studying;

V_i – idiosyncratic error term, which captures other characteristics;

The coefficient of the *field of study* will show how the specialization reflects the reservation wage for the first job after graduation. In this case we will also consider three model specifications similar to those mentioned above.

The other step is to investigate whether young people's expectations regarding future returns on specializations meet reality. In order to see this we will use the similar regression with the logarithm of actual income of people with different specializations as the dependent variable.

$$\ln Inc_i = b_0 + b_{1i} Age_i + b_{2i} Age_i^2 + b_{3i} Educ_i + b_{4i} Field_i + V_i \quad (3)$$

And the last stage the mismatch between the actual job and the field of study among young specialists is considered:

$$\mathbf{Probability}(Match=1) = \mathbf{f}(\text{Field, Age, Gender, Area}) \quad (4)$$

The variable *Match* is a dummy variable with value 1 if the respondent reported that his first job corresponded to the specialization and 0 otherwise. First job in this context means a first job after graduation which lasted more than 3 months. This model shows the probability of the first job correspondence to a given specialization.

Chapter 4

DATA DESCRIPTION

“Inter-sectoral Mobility and Transition from school to work” Survey will be used to estimate the probability of being employed with a given specialization and the probability of job correspondence to a field of study. Moreover, this data set allows investigating whether high expected wages motivate young people to get certain specialties.

This survey (SLMT) is provided by the Center of Sociological Investigations and Marketing Research CBS AXA (2009). The total number of the respondents is 1144. The survey is divided into three main parts. The first part is “Personal information and geographic mobility”. It contains such important information as the level of education, specialty and occupational status, residence area, gender and age of the respondent. The second part is “Transition from education to employment”. This part is restricted to the 18-34 years old respondents and includes 488 observations. It consists of questions regarding the first job of the respondents: reservation wage of newly-qualified specialists, and economic activities of the employed young specialists. The third part is “Sectoral and occupational labor force mobility”. It provides the number of job changes, changes of economic sectors, changes of professions and reasons for the last dismissal. In general, this survey is going to answer the question regarding probabilities of being employed and job correspondence with given specialization.

Description of the variables included in the model:

1) *Employment status*

There are 17% of the unemployed, 15% of retirees, 22% of students and housewives, and 45% of the employed in the whole sample. About 16% of respondents from age group 18-34 are unemployed, 42% are employed, and 40% are “out-of-labor force” respondents, particularly, students and housewife. The rest 2% of the respondents did not answer the question.

In comparison to the Moldovan population, in 2009 65% of people were economically inactive, 33% were qualified as employed and only 2% unemployed. However, the dependence rate – number of people dependants per 100 people of working age – was 50.6 in 2009⁵. In our sample, if we consider only people who are not out of the labor there are 73% of employed and 27% of unemployed in the subsample with 633 observations. Among 246 of economically active 18-34 years old respondents 71% are employed and 29% – unemployed (Table 1).

2) *Reservation wage*

This variable answers the question “what is the minimum monthly net remuneration the respondent would accept for the first job in Moldova”. First job in this context means a first job after graduation which lasted more than 3 months. The observations of this variable represent a subsample of 417 respondents of age 18-34 who graduated in 2007 or 2008 from institutions of different educational levels (Table 6). The reservation wage can reflect expected earnings to specialization. People with higher expected returns to their education possibly set higher reservation wages for which they would like to “sell” their skills. The average reservation wage is 3,354 MDL (about \$322)⁶, while the actual

⁵ Source: European Training Foundation, 2009. Moldova Country Report

⁶ Source of the official average exchange rate is National Bank of Moldova

gross average monthly salary is 2,530 MDL (about \$243)⁷. The average wage of the respondents who graduate from “Social sciences, business and law” is 3,178 MDL (about \$305) which is lower than average wage in the sample. Among females the reservation wage is, on average, 2,890 MDL (\$278) and among males – 3,870 MDL (\$372).

4) *Income*

The average income of the sample is 1,863 MDL (about \$179) which is lower than both average reservation wage in the sample (Table 6) and actual gross average monthly salary in Moldova. The average income among economists and lawyers is 2,240 MDL (\$215). Women’s average earnings are 1,741 MDL (\$167) and men’s – 1,988 MDL (\$191).

5) *Match*

This is a dummy variable with value 1 in case the respondent’s first job corresponded to his/her specialization and 0 if did not. 51% of the 260 respondents said that their first jobs corresponded to their fields of study (table 2). First job in this context means a first job after graduation which lasted more than 3 months. Among young respondents who graduated from economics, law or business 67% reported that their first job corresponded to their field of study. For graduates with a major in education science this indicator is 77%, in services – 78%, and in agriculture and veterinary science – 48%. People with basic level of education reported that their job does not correspond to field of study.

6) *Level of education*

There are 8 levels of education in the questionnaire: 1) less than primary (1%); 2) primary (5%); 3) gymnasium (12%); 4) secondary general (21%); 5) secondary vocational (17%); 6) secondary specialized (22%); 7) graduate (20%); and 8) post-graduate education (2%). The data was grouped into three categories, i.e.

⁷ Source of the gross average monthly wage is National Bureau of Statistics of Moldova

secondary general or less (39%), specialized and professional education (39%) and higher and postgraduate education (22%). This distribution in general corresponds to education composition of Moldovan population found in other studies. For example, according to the ETF country report (2009), in 2007 7% of Moldovans had primary education or less, 23% were with lower secondary education, 24% – with general upper secondary, 20% – secondary vocational, 13% – post-secondary non-tertiary education and 13% with tertiary education⁸. If we consider subsample of 633 economically active respondents, 28% of the respondents have primary, secondary or no education, 47% – specialized and professional education, 25% – higher and postgraduate education. Among 417 respondents who reported their first reservation wages 41% have no education or only basic one, 34% are graduates with specialized and professional education, and 25% are people with higher and postgraduate education (Table 3).

7) *Field of study*

The majority of the respondents do not have any specialization (39%), 17% are graduates from “Engineering, manufacturing and construction”, 7% are from “Social sciences, business and law”, 7% - “Services”, 8% - “Education science”, and 7% are from “Agriculture and veterinary science”. If we consider only economically active respondents, 28% do not have any specialization, 23% graduated from “Engineering, manufacturing and construction”, 9% – “Services”, 8% from “Social sciences, business and law”, 8% – “Education science” and 8% from “Agriculture and veterinary science”. However, among young people there are about 11% of economists and lawyers, 19% (16% among graduates 2007-2008) of engineers and manufacturers (Table 4).

⁸ Source: European Training Foundation, 2009. *Moldova Country Report*

8) *Male*

There 64% of females and 36% of males in the whole sample. However, according to the statistics, in 2009 there were 48% of men and 52% of women⁹. Among 633 economically active respondents 40% are males and 60% are females. In the subsample of 18-34 years old respondents there are also 40% of males and 60% of females. However, after the adjustment to population weights, the proportions became 50% and 50% in both cases. There are 66% of males and 34% females graduated in 2007-2008 (Table 5).

9) *Age*

The age in the whole sample ranges from 18 to 86 years. The average age of all respondents is 41 years. This age group in 2009 represented 78% of Moldovan population and the average age of this cohort in the population was 36 years¹⁰. The mean age in the subsample of economically active population (633 observations) is 39 years. For the respondents asked about their transition from school to work, the age varies from 18 to 34 years. These individuals represent 43% of the whole sample (488 observations). The average age in this subsample is 25 years, and 26 for economically active respondents (Table 6).

The data sets described above will help to answer the main questions of the paper: the likelihood of being employed in Moldova with given specialization, the probability that the job will correspond to the field of study, and whether young people's expectations about their future return on specialization meet reality.

⁹ Source: National Bureau of Statistics of the Republic of Moldova, 2009

¹⁰ Source: National Bureau of Statistics of the Republic of Moldova, 2009

RESULTS

5.1 Probability of being employed

The results for model estimating probability of being employed for people who are 18-76 years old and are not out of the labor force presented in table 7. The model specification which includes level of education without field of study (column 1) shows that a higher level of education increases the probability of being employed relatively to basic education and no education, keeping other factors constant. In particular, specialized and vocational education increases the probability of employment by 7.3% (at 10% level of significance) while respondents with tertiary education are 23.9% more likely to be employed than individuals with only school certificates. Both model specifications that contain field of study (columns 2 and 3) show that people with specialization in “Education” are 17% more likely to be employed than specialists from “Social sciences, business and law”. Also specialists from “Agriculture and veterinary sciences” and “Health and social welfare” have higher probability to be employed than economists and lawyers (14% and 13%, respectively). Thus, this suggests that in general business, economics or law degree does not increase one’s probability of being employed. In fact, specialists with a degree in three other fields are more likely to be employed. In general, at the highest level of education fields are relatively less important while at the intermediary level of education the difference in employment is driven by specialization.

In all the three specifications the area of residence is statistically significant and shows that urban respondents are more likely to find jobs than rural residents. Neither age nor gender does not affect the probability to be employed at this age interval.

Table 8 presents results of the same regressions but only for 18-34 years old people. Young people with tertiary education are more likely to be employed than individuals with only basic level or without education. For any educational level (column 2), on average, 18-34 years old economists and lawyers have about 33% higher probability than engineers and manufacturers. Young respondents from urban areas are also more likely to be employed than rural residents. Moreover, at 10% level of confidence 1 additional year of age increases the probability by 1.08% among 18-34 years old respondents (column 3). However, we should consider the results for this group of respondents with caution because of small number of observation.

5.2 Expected return to education and specialization.

If we control for education only, the reservation wage of people with tertiary education is higher than of those with basic or no education (Table 9, column 1). This result is however driven by the expectations among females (Table 11, column 1).

Once we add fields of studies to the regression the following results are obtained. Specialists from “Social sciences, business and law”, on average, have higher reservation wages than those from “Agriculture and veterinary sciences”, but lower than from “Humanity and arts” and “Services” (Table 9, columns 2 and 3). Since in the specification with both field and level of education the coefficients of all the levels are statistically insignificant, basically it is the field that determines the reservation wage not the level of education (Table 9, column 3). Also statistically significant differences in reservation wage across other fields of study were found¹¹.

¹¹ The results are not presented in this paper and available upon request.

As for other control variables, on average, males set higher reservation wages than females (in all the 3 specifications). Moreover, those people who get some work experience during the studies expect lower wages than graduates without any experience. After 25 people have, on average, lower reservation wages (Table 9, columns 2 and 3).

There is a substantial difference in results between males and females. Level of education matters only among females (Table 11, column 1). Among males reservation wages of economists and lawyers are, on average, higher than of specialists from “Agriculture and veterinary sciences” and “Engineering, manufacturing and construction”, but lower than specialists with “Services” degree (Table 10, columns 2 and 3). Reservation wages of women-economists and women-lawyers are, on average, lower than for females from “Humanity and arts”, “Sciences, mathematics and computing”, “Engineering, manufacturing and construction”, “Health and social welfare” and “Services” (Table 11, columns 2 and 3). We should consider the separate results for males and females with caution due to small number of observations.

In general reservation wages of people with business, economics or law degree are not higher than of people with other specialties.

5.3 Actual return to education and specialization.

The results for model estimating actual returns for people who are not out of the labor force presented in table 12. Controlling for level of education only showed that higher level of education increases income (column 1). There is no statistically significant difference in actual income across fields of study relatively. In the specification with both field and level of education the coefficient of the specialized and professional education is statistically insignificant which means that almost the entire premium for actual income in any field is observed only at

the top level (column 3). People with no specialization, on average, have lower income than economists and lawyers. The separate results for males and females showed the same picture (Table 13 and Table 14). On average males have higher income than females and people from urban areas have higher returns than those from rural regions.

5.4 Job correspondence

Table 15 presents the results for model estimating job correspondence to field of study. In both specifications which include level of education, the probability of job correspondence does not differ significantly between people with tertiary education and specialized and vocational education (columns 2, 3). There is no significant difference in probability to get correspondent job between “Social sciences, business and law” and other fields of study. Thus, graduates from economics, business and law are not more likely to get jobs which correspond to their specializations.

However, there are differences in the probability across some other fields (Table 16). The likelihood of job correspondence for specialists from “Sciences, mathematics and computing” is lower than “Services” and “Health and social welfare” (at 10% level of significance). Teachers are more likely to get consistent jobs than specialists in “Sciences, mathematics and computing” and “Agriculture and veterinary sciences”. The correspondence probability having specialization in “Services” is also higher than in “Sciences, mathematics and computing and “Agriculture and veterinary sciences”, and it is higher at 10% level of significance than in “Engineering, manufacturing and construction”. An additional year of age increases, on average, the probability to get a job which corresponds to specialization by 2%.

Chapter 6

CONCLUSIONS

This paper focuses on the investigation of the relationship between choice of fields of study, possibly based on expected returns, and actual returns to the fields. Since graduate unemployment and job mismatch in Moldova can be consequences of irrational choice of specialization, the probability of being employed and job correspondence to field of study are also explored in this study.

The findings show that likelihood of being employed for economists and lawyers is lower than for specialists with a degree in “Education”, “Services” and “Agriculture and veterinary sciences”, and no difference with other fields. This can imply that there is an excess supply of economists and lawyers which lower their probability to be employed relatively to other specializations. Also there is a positive effect of level of education on employment probability.

In terms of the reservation wage, specialists from all fields of study (except “Agriculture and veterinary sciences”) either do not significantly differ from “Social sciences, business and law” or have higher reservation wages. Such a result possibly means that economists and lawyers do not expect wages higher than other specialists, or due to the low probability of being employed they have to lower their reservation wage.

The estimations did not show statistically significant differences in actual returns across fields of study. However, there is a positive effect of level of education on actual earnings.

One possible explanation of the insignificance across fields of study in actual returns is mismatch between job and field of study. According to the estimated

results there are statistically significant differences in probability of job correspondence across some fields of study, which is a possible indicator of inadequate allocation of students among fields of study. However, it is not observed significant difference between “Social sciences, business and law” and other fields. This can indicate that usually jobs of economists and lawyers correspond to their fields, but to find the job in general for them is more difficult than for other specialists.

This study reveals that labor market outcomes do not justify a higher demand for education in “business, economics and law”. Neither wage, nor probability of employment, nor probability of working according to the received degree is higher for the graduates with a degree in this field. The most interesting result is a lower reservation wage among future economists and lawyers. It seems that actual situation in the labor market becomes more evident to them during studies while initially they may base their choice of specialization on some unrealistic hopes.

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Table 1. Sample composition by the Employment status

	All respondents	18-34 years old
Employed	73%	71%
Unemployed	27%	29%
Total observations	633	246

Table 2. Sample composition by the Job correspondence

Correspondence	
Yes	51%
No	49%
Total obs.	260

Table 3. Sample composition by the Level of education

	All respondents	18-34 years old	Graduates 2007-2008
Primary, secondary, and no education	28%	30%	41%
Specialized and professional	47%	40%	34%
Higher and postgraduate	25%	28%	25%
Total observations	633	246	417

Table 4. Sample composition by the Field of study

	All respondents	18-34 years old	Graduates 2007-2008	Reported job match
No specialization	28%	32%	40%	30%
Education	8%	5%	5%	6%
Humanity and arts	4%	4%	4%	4%
Social sciences, business and law	8%	11%	10%	12%
Sciences, mathematics and computing	3%	4%	4%	6%
Engineering, manufacturing and construction	23%	19%	16%	17%
Agriculture and veterinary sciences	8%	5%	5%	4%
Health and social welfare	6%	5%	4%	5%
Services	9%	11%	8%	11%
Other	4%	3%	4%	5%
Total observations	633	246	417	260

Table 5. Sample composition by Gender

	All respondents	18-34 years old	Graduates 2007-2008	Reported job match
Male	40%	40%	34%	49%
Female	60%	60%	66%	51%
Total observations	633	246	417	260

Table 6. Descriptive statistics of other variables included in the model

Variable	N	Mean	St. div.	Min.	Max.
Age	633	39.00	12.04	18	76
18-34 years old	246	26.49	4.67	18	34
Reservation wage	417	3,354	2,360.72	100	15,000
Actual income	633	1,864	1,665.22	100	14,000

Table 7. Probability of being employed*. All respondents

VARIABLES	(1) Employment	(2) Employment	(3) Employment
age	0.00175 (0.002)	0.00132 (0.0015)	0.0017 (0.002)
male	-0.0349 (0.036)	-0.013 (0.037)	-0.0239 (0.039)
level of education			
Primary, secondary, or no education	(base)		(base)
Specialized and professional	0.0730* (0.040)		0.008 (0.078)
Higher and postgraduate	0.239*** (0.0361)		0.179*** (0.058)
field			
No specialization		-0.124* (0.070)	
Education studies		0.173** (0.070)	0.174*** (0.057)
Humanity and arts		0.032 (0.110)	0.045 (0.115)
Social sciences, business and law		(base)	(base)
Sciences, mathematics and computing		0.101 (0.092)	0.121 (0.077)
Engineering, manufacturing and construction		-0.069 (0.073)	0.017 (0.078)
Agriculture and veterinary sciences		0.084 (0.079)	0.140** (0.064)
Health and social welfare		0.076 (0.089)	0.127* (0.0725)
Services		-0.006 (0.084)	0.0847 (0.075)
Other		-0.187 (0.119)	-0.156 (0.136)
urban	0.182*** (0.0352)	0.212*** (0.0359)	0.196*** (0.0353)
Observations	633	633	633

Robust standard errors in parentheses

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

* The marginal effects are computed at means of the independent variables

Table 8. Probability of being employed*. 18-34 years old respondents.

VARIABLES	(1) Employment	(2) Employment	(3) Employment
age	0.00730 (0.00618)	0.010 (0.007)	0.0108* (0.00646)
male	-0.0604 (0.0588)	-0.002 (0.0645)	-0.00331 (0.0637)
level of education			
Primary, secondary, or no education	(base)		(base)
Specialized and professional	-0.0350 (0.0685)		0.0142 (0.120)
Higher and postgraduate	0.167** (0.0682)		0.200** (0.0788)
field			
No specialization		-0.138 (0.092)	
Education studies		0.092 (0.094)	0.136 (0.111)
Humanity and arts		0.069 (0.109)	0.0938 (0.133)
Social sciences, business and law		(base)	(base)
Sciences, mathematics and computing		-0.039 (0.145)	-9.03e-05 (0.161)
Engineering, manufacturing and construction		-0.325*** (0.108)	-0.236 (0.145)
Agriculture and veterinary sciences		-0.062 (0.132)	0.0290 (0.145)
Health and social welfare		0.053 (0.100)	0.128 (0.112)
Services		0.005 (0.111)	0.114 (0.116)
Other		-0.351* (0.207)	-0.401* (0.226)
urban	0.261*** (0.0566)	0.284*** (0.0609)	0.255*** (0.0565)
Observations	246	246	246

Robust standard errors in parentheses

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

* The marginal effects are computed at means of the independent variables

Table 9. Expected return to education and specialization. All respondents

VARIABLES	(1) Reservation wage	(2) Reservation wage	(3) Reservation wage
age	0.160 (0.103)	0.208** (0.104)	0.178* (0.104)
age2	-0.00339* (0.00202)	-0.00422** (0.00205)	-0.00368* (0.00205)
male	0.397*** (0.0820)	0.394*** (0.0811)	0.335*** (0.0773)
level of education			
Primary, secondary, or no education	(base)		(base)
Specialized and professional	-0.0508 (0.0927)		-0.198 (0.140)
Higher and postgraduate	0.297*** (0.101)		0.137 (0.120)
field			
No specialization		-0.0347 (0.112)	
Education studies		0.138 (0.185)	0.148 (0.190)
Humanity and arts		0.336 (0.204)	0.358* (0.201)
Social sciences, business and law		(base)	(base)
Sciences, mathematics and computing		0.178 (0.219)	0.269 (0.214)
Engineering, manufacturing and construction		-0.108 (0.152)	0.0621 (0.155)
Agriculture and veterinary sciences		-0.454* (0.254)	-0.268 (0.267)
Health and social welfare		0.196 (0.214)	0.336 (0.214)
Services		0.151 (0.155)	0.354** (0.165)
Other		0.405** (0.171)	0.398** (0.174)
first_exp	-0.228** (0.0882)	-0.223** (0.0889)	-0.239*** (0.0891)
urban	-0.0684 (0.0790)	-0.0384 (0.0785)	-0.0709 (0.0793)
Constant	5.957*** (1.280)	5.298*** (1.313)	5.667*** (1.294)
Observations	417	417	417
R-squared	0.093	0.106	0.124

Robust standard errors in parentheses

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

Table 10. Expected return to education and specialization. Males

VARIABLES	(1) Reservation wage	(2) Reservation wage	(3) Reservation wage
age	0.233 (0.157)	0.218 (0.162)	0.184 (0.165)
age2	-0.00494 (0.00313)	-0.00459 (0.00319)	-0.00395 (0.00325)
level of education			
Primary, secondary, or no education	(base)		(base)
Specialized and professional	-0.205 (0.146)		-0.0621 (0.196)
Higher and postgraduate	0.183 (0.165)		0.251 (0.190)
field			
No specialization		-0.147 (0.168)	
Education studies		0.206 (0.451)	0.115 (0.458)
Humanity and arts		0.136 (0.532)	0.262 (0.508)
Social sciences, business and law		(base)	(base)
Sciences, mathematics and computing		-0.0865 (0.331)	-0.0135 (0.342)
Engineering, manufacturing and construction		-0.347* (0.202)	-0.197 (0.198)
Agriculture and veterinary sciences		-0.792** (0.338)	-0.612* (0.369)
Health and social welfare		-0.0645 (0.390)	0.0619 (0.377)
Services		0.254 (0.223)	0.373* (0.215)
Other		-0.347 (0.546)	-0.463 (0.545)
first_exp	-0.222 (0.148)	-0.239 (0.154)	-0.250 (0.155)
urban	-0.0992 (0.117)	-0.112 (0.119)	-0.141 (0.122)
Constant	5.546*** (1.912)	5.845*** (2.042)	6.139*** (2.031)
Observations	157	157	157
R-squared	0.103	0.139	0.155

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

Table 11. Expected return to education and specialization. Females

VARIABLES	(1) Reservation wage	(2) Reservation wage	(3) Reservation wage
age	0.129 (0.142)	0.163 (0.144)	0.138 (0.144)
age2	-0.00272 (0.00274)	-0.00330 (0.00279)	-0.00287 (0.00279)
level of education			
Primary, secondary, or no education	(base)		(base)
Specialized and professional	0.0831 (0.123)		-0.377* (0.206)
Higher and postgraduate	0.370*** (0.134)		-0.0223 (0.171)
field			
No specialization		0.117 (0.170)	
Education studies		0.238 (0.221)	0.295 (0.231)
Humanity and arts		0.520** (0.218)	0.521** (0.217)
Social sciences, business and law		(base)	(base)
Sciences, mathematics and computing		0.438 (0.296)	0.553** (0.275)
Engineering, manufacturing and construction		0.296 (0.230)	0.491** (0.230)
Agriculture and veterinary sciences		-0.0663 (0.361)	0.127 (0.368)
Health and social welfare		0.474* (0.248)	0.635** (0.259)
Services		0.259 (0.218)	0.516** (0.237)
Other		0.667*** (0.181)	0.695*** (0.179)
first_exp	-0.182 (0.111)	-0.175 (0.114)	-0.201* (0.113)
urban	-0.0628 (0.111)	-0.00527 (0.111)	-0.0379 (0.111)
Constant	6.201*** (1.784)	5.598*** (1.815)	6.070*** (1.807)
Observations	260	260	260
R-squared	0.040	0.065	0.083

Robust standard errors in parentheses

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

Table 12. Actual return to education and specialization. All respondents

VARIABLES	(1) Income	(2) Income	(3) Income
age	0.0126 (0.0161)	0.0129 (0.0166)	0.0168 (0.0166)
age2	-0.000291 (0.000197)	-0.000300 (0.000202)	-0.000348* (0.000202)
male	0.160** (0.0639)	0.154** (0.0691)	0.141** (0.0689)
level of education			
Primary, secondary, or no education	(base)		(base)
Specialized and professional	0.215*** (0.0772)		0.114 (0.148)
Higher and postgraduate	0.397*** (0.0978)		0.397** (0.156)
field			
No specialization		-0.289** (0.144)	
Education studies		-0.0246 (0.167)	-0.0816 (0.173)
Humanity and arts		-0.182 (0.215)	-0.166 (0.223)
Social sciences, business and law		(base)	(base)
Sciences, mathematics and computing		-0.234 (0.208)	-0.220 (0.211)
Engineering, manufacturing and construction		0.0171 (0.142)	0.152 (0.145)
Agriculture and veterinary sciences		-0.102 (0.164)	0.00920 (0.169)
Health and social welfare		0.0725 (0.182)	0.160 (0.179)
Services		0.0125 (0.164)	0.170 (0.165)
Other		0.240 (0.198)	0.298 (0.191)
urban	0.318*** (0.0656)	0.323*** (0.0677)	0.292*** (0.0672)
Constant	6.794*** (0.317)	7.089*** (0.364)	6.741*** (0.326)
Observations	633	633	633
R-squared	0.113	0.115	0.128

Robust standard errors in parentheses

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

Table 13. Actual return to education and specialization. Males

VARIABLES	(1) Income	(2) Income	(3) Income
age	0.00426 (0.0256)	0.00157 (0.0252)	0.00622 (0.0253)
age2	-0.000221 (0.000312)	-0.000181 (0.000305)	-0.000236 (0.000307)
level of education			
Primary, secondary, or no education	(base)		(base)
Specialized and professional	0.188 (0.125)		0.104 (0.255)
Higher and postgraduate	0.331** (0.164)		0.392 (0.255)
field			
No specialization		-0.312 (0.237)	
Education studies		-0.486 (0.332)	-0.567 (0.347)
Humanity and arts		-0.400 (0.418)	-0.333 (0.450)
Social sciences, business and law		(base)	(base)
Sciences, mathematics and computing		-0.385 (0.373)	-0.367 (0.383)
Engineering, manufacturing and construction		-0.0846 (0.223)	0.0800 (0.238)
Agriculture and veterinary sciences		-0.0681 (0.249)	0.0637 (0.263)
Health and social welfare		-0.111 (0.347)	-0.00665 (0.331)
Services		0.111 (0.278)	0.291 (0.284)
Other		0.947*** (0.244)	0.874*** (0.261)
urban	0.282*** (0.102)	0.284*** (0.109)	0.263** (0.107)
Constant	7.204*** (0.500)	7.555*** (0.542)	7.163*** (0.494)
Observations	252	252	252
R-squared	0.090	0.116	0.129

Robust standard errors in parentheses

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

Table 14. Actual return to education and specialization. Females.

VARIABLES	(1) Income	(2) Income	(3) Income
age	0.0190 (0.0200)	0.0103 (0.0227)	0.0140 (0.0229)
age2	-0.000331 (0.000243)	-0.000232 (0.000277)	-0.000278 (0.000280)
level of education			
Primary, secondary, or no education	(base)		(base)
Specialized and professional	0.257*** (0.0938)		0.131 (0.179)
Higher and postgraduate	0.461*** (0.116)		0.394** (0.197)
field			
No specialization		-0.268 (0.179)	
Education studies		0.143 (0.195)	0.0800 (0.201)
Humanity and arts		-0.0354 (0.248)	-0.0513 (0.252)
Social sciences, business and law		(base)	(base)
Sciences, mathematics and computing		-0.113 (0.249)	-0.110 (0.249)
Engineering, manufacturing and construction		0.201 (0.184)	0.295 (0.181)
Agriculture and veterinary sciences		-0.184 (0.223)	-0.0921 (0.228)
Health and social welfare		0.202 (0.207)	0.269 (0.207)
Services		-0.0291 (0.205)	0.101 (0.203)
Other		0.174 (0.222)	0.232 (0.217)
urban	0.357*** (0.0837)	0.382*** (0.0851)	0.345*** (0.0855)
Constant	6.556*** (0.396)	6.994*** (0.495)	6.668*** (0.447)
Observations	381	381	381
R-squared	0.132	0.139	0.152

Robust standard errors in parentheses

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

Table 15. Job correspondence*

VARIABLES	(1) match	(2) match	(3) match
age	0.018** (0.008)	0.020** (0.008)	0.020** (0.008)
male	-0.085 (0.054)	-0.057 (0.076)	-0.043 (0.078)
level of education			
Primary, secondary, or no education	-0.447*** (0.070)		-0.413*** (0.117)
Specialized and professional	(base)		(base)
Higher and postgraduate	0.069 (0.074)		0.100 (0.090)
field			
No specialization		-0.485*** (0.107)	
Education studies		0.129 (0.138)	0.148 (0.170)
Humanity and arts		-0.087 (0.182)	-0.098 (0.185)
Social sciences, business and law		(base)	(base)
Sciences, mathematics and computing		-0.250 (0.158)	-0.214 (0.147)
Engineering, manufacturing and construction		-0.079 (0.121)	-0.019 (0.141)
Agriculture and veterinary sciences		-0.231 (0.178)	-0.179 (0.174)
Health and social welfare		0.100 (0.151)	0.178 (0.177)
Services		0.128 (0.126)	0.218 (0.154)
Other		0.177 (0.137)	0.243 (0.164)
urban	0.063 (0.072)	0.074 (0.074)	0.055 (0.076)
Observations	260	260	260

Robust standard errors in parentheses

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

* The marginal effects are computed at means of the independent variables

Table 16. Job correspondence*. Difference across fields of study

VARIABLES	(1) match	(2) match	(3) match
age	0.0205** (0.00831)	0.016** (0.00608)	0.016** (0.00608)
male	-0.0569 (0.0761)	-0.0436 (0.058)	-0.0436 (0.058)
field			
No specialization	(base)	-0.60*** (0.111)	-0.230* (0.133)
Education studies	0.483*** (0.0546)	(base)	0.369** (0.159)
Humanity and arts	0.369*** (0.0977)	-0.211 (0.177)	0.158 (0.193)
Social sciences, business and law	0.438*** (0.0736)	-0.127 (0.136)	0.242 (0.153)
Sciences, mathematics and computing	0.259** (0.121)	-0.369** (0.159)	(base)
Engineering, manufacturing and construction	0.399*** (0.0817)	-0.203 (0.131)	0.166 (0.147)
Agriculture and veterinary sciences	0.274** (0.132)	-0.351** (0.176)	0.018 (0.193)
Health and social welfare	0.464*** (0.0604)	-0.028 (0.152)	0.341** (0.170)
Services	0.506*** (0.0570)	-0.0007 (0.130)	0.368** (0.147)
Other	0.496*** (0.0497)	0.047 (0.140)	0.416*** (0.159)
urban	0.0720 (0.0736)	0.055 (0.057)	0.055 (0.057)
Observations	260	260	260

Robust standard errors in parentheses

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

* The marginal effects are computed at means of the independent variables