LABOR MARKET OUTCOMES IN GEORGIA: THE EFFECT OF EDUCATION ON THE PROBABILITY OF PARTICIPATING IN THE LABOR FORCE, BEING EMPLOYED AND GETTING HIGH RETURNS

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ABSTRACT

The scope of this research is to study labor market outcomes in Georgia, concentrating on the effect of education on the probability of an individual participating in the labor force, being employed and get high returns. The research is based on the database of the Integrated Household Survey of Georgia for 2004-2009. The research question addressed in this work is: how does education affect on the probability of an individual participating in the labor force, being employed and get high returns in the labor market of Georgia. The related hypotheses are stated and tested in the thesis. Dpobit and Ordinary Least Square models are used for estimation. The main research findings are that education level has a significant effect on the probability of an individual participating in the labor market and being hired at the labor market. However, the returns on education and on potential experience are low in the country, which can be explained by the low quality of education system, low wage level in the labor market and by the structural changes followed the collapse of the Soviet Union. Besides an education level, gender and a region, where an individual lives, plays an important role on determining labor market outcomes and returns on education. The research contributes in the literature, as this is the first empirical research, which studies the labor market outcomes and the returns on education in Georgia, which went a big structural changes during the last two decades.

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INTRODUCTION

Georgia is one of the former Soviet Union countries. It is still in the process of transition from a centralized into a market economy. The massive structural changes during the first decade of the process of transition worsened a socio-economic situation in the country. Even though a rapid transformation is taking place and the economy is growing, GDP growth rate achieved 6.3% in 2010 (National Statistics Office of Georgia, 2010), in recent years, the country is still facing a high unemployment rate. Thus, in Georgia unemployment appears to be one of the most serious social problems, which need to be addressed, therefore the government officials are constantly looking for the ways in order to find the proper solutions and implement fine tune policies, which will lead a higher employment in the country.

The question, which attracts the attention of many scholars while working on employment/unemployment related issues, is the education level of the individuals, who are participating in a country's labor force. Education is linked to employment/ unemployment issue in a sense that it gives knowledge to individuals, improves their skills and prepares them better to participate in the labor force, to get a job in a competitive labor market and take a challenge of working at a position, which requires high skills. Thus, the higher the individuals' level of education is the higher the chances of employment for them should be which on its turn positively affects an individuals' motivation to advance their productive capacities and to participate in the labor force.

Since the "human investment revolution" (Bowman, 1966) education is considered as an "investment good" (Bowman, 1966), which is expected to give the return on the cost forgone for

attaining it in future. Thus, an individual's behavior regarding the demand or lack of demand on a particular level or type of education can be related to the expected returns of the investment in education (Bowman, 1966). According to Mincer, a higher education level lowers the risk of an individual to be unemployed, thus increases a probability of being employed (Mincer, 1990). Besides increasing the probability of being employed, according to the human capital theory, an attaining a higher education will maintain an individual to get high paid job in future, have a better health and a better nutrition (Schultz, 1963).

The estimation of rate of returns on education started in the early sixties by Becker (Psacharopoulos, 1981). The first comparative study with the sample of several countries in this field was carried out by Psacharopoulos in 1973 (Psacharopoulos, 1981), which appears to be an important contribution in the literature of rate of returns on education. The second wave of the literature on the rate of returns on education starts with the Mincer's publication (1974), which defines and estimates of an individual's "earning function" (Mincer, 1974).

Besides individual returns, education, as a public good, has social returns too in the sense that if more individuals are educated and get corresponding higher wages, the level of average income will rise in the country by even more than the sum of the individual effects, because of the positive externality of education (Bowman, 1966). The belief that expanding education promotes economic growth has been a fundamental principle, which made education the relevant field for policy makers too. Thus, the theoretical literature states that investment in education has high individual as well as social returns. The social returns on education are beyond the scope of this research. It will only concentrate on the individual returns.

The scope of this research is to study the labor market outcome of Georgia in the period between 2004-2009 years. The research will rely on the human capital theory and investigate the effect of education on the probability of individual participating in the labor force, being employed and get the high returns, taking into consideration other factors, such as family size, gender, marital status, health condition and the region where an individual lives. The emphasis is put on the role of education as according to the human capital theory education is positively related to employment and the higher the investment in it in terms of years of schooling is the higher the returns on it are.

Studying the case of Georgia is interesting and important in several aspects. The country faces a high level of unemployment, thus studying the effects of different factors on the labor market outcomes may provide useful information for policymakers, who are working on finding the fine tune policies to address the related issues. As the cost of education has increasing trend in terms of tuition fees in recent years, studying the expected returns on education is becoming more and more important.

This thesis contributes in the literature in the sense that no empirical research, which studies the role of education in Georgian labor market and the related issues, has been done so far. Thus, this research will fill this gap in the literature. Besides, taking into consideration the fact that Georgia is one of the representatives of the former Soviet Union countries, which faced structural changes in the process of transition from planned into market economy, studying the case of Georgia is becoming even more interesting. It will provide an insight of the role of education in labor market outcomes for the transition countries, as former Soviet Union countries are similar in system of education, composition of labor force, wage distribution and wage level.

The research question this paper addresses is the following: how does education affect on the probability of an individual participating in the labor force, being employed and getting high returns on it in Georgia? Based on the human capital theory and the country characteristics the following hypotheses are tested in this research:

1. The individuals with higher education degree are more likely to participate in the labor force of Georgia;
2. The individuals with higher education degree (more years of schooling) are more likely to be hired at the Georgian Labor Market;
3. The individuals with higher education degree are less likely to be self-employed;
4. Region, where an individual lives has important effect on the probability of individual participating in the labor force and being employed in the labor market;
5. Returns on education and experience are low in Georgia. This hypothesis contradicts to the human capital theory. The reason of stating such hypothesis is the system of education in Georgia, which provides low quality education, a high unemployment rate, the composition of the labor force and low wage level in the country.

To do research the paper will use database generated from the Integrated Household Survey of Georgia, which is conducted by the National Statistics Office of Georgia. The data is cross sectional and covers 2004- 2009 periods. This is the largest dataset based on which main indicators of the country's social statistics are calculated. The data is representative.

To analyze the labor market outcomes of Georgia, a labor force participation rate and employment/unemployment rate is estimated. The research will also provide the distribution tables of economic activity of the labor force by regions, the distribution of education level of the population, the distribution table of the education levels by economic status. In order to answer

the research question corresponding equations are estimated using dprobit regression model and ordinary least square (OLS) regression model in STATA.

The paper has the following structure: chapter 1 reviews a related literature, chapter 2 discusses the database used for the research, chapter 3 discusses the research methodology, chapter 4 reports the research results and analyses them, and the last section is the conclusion of the research.

CHAPTER 1: LITERATURE REVIEW

1.1. Education as an investment

The role of education in the labor market has been widely studied in the literature in the last several decades. The theoretical as well as the empirical literature suggests that education has a considerable role in the labor market. More years of schooling improves the chances of being employed, reduces duration of unemployment, has higher individual returns in terms of earnings, besides as a public good education has also social returns. The topic of the role of education in labor market is very broad, that is why the following chapter will review only the theoretical and empirical literature, which is directly related to this research.

Before the "human investment revolution in economic thoughts" (Bowmen, 1966), education was considered as a "consumption good" and demand on it depended on tuition fee, preferences, income and "ability" to study. However, human capital theory, which is established by Becker (1964), states that education is an investment good. Thus, like any other kind of investment, attaining the education has its costs and benefits. The costs of education include the expenditures on studies in terms of tuition fee and the opportunity cost in terms of forgone income, which individuals will earn if they devote time to working instead of studying. The benefits of attaining education include gained knowledge, increased productivity, higher probability of being employed and earning a high income in the future.

The estimation of rate of returns on education started in the early sixties. Based on the two approaches, which are used in the literature, two waves of scholars are distinguished in the

literature to estimate the rate of return on education. The first wave of scholars (Blaug, 1992) are estimating the rate of return on education by using "elaborate type" method, which compares costs of attaining the education to the benefits, which it will bring in the future. The second wave of scholars (Blaug, 1992) are studying the rate of return on education by estimating the earning equation, which is the function of a years of schooling, potential experience and experience in square.

1.2. The first wave of studies on the returns on education

Schultz's (1963) and Becker (1964), using the "elaborate type" method of estimation for studying rate of returns on education, started the first wave of empirical studies in the literature (Blaug, 1992). The theoretical framework for the estimation of the returns on education through the elaborate type of method does not differ from the methods of estimation the returns on any other kind of investment. The "elaborate type" method compares a stream of benefits of attaining higher education to a stream of costs forgone for attaining it (Schultz's, 1961); Becker, 1964). According to this method, individuals should invest in education if benefits from education are higher or equal to the cumulated cost of investment in education (Becker, 1964).

To find out returns on education, the earnings of individuals, who attained higher education, are compared to the earnings of an individual who did not attain it (Schultz's, 1963; Becker, 1964). The difference between the earnings of these two groups will indicate the size of returns on education. Besides education ability, the place of living, a social class, age, family size, gender and the wealth of an individual may be related to the earning differences of the individuals with different level of education. Therefore, in order to isolate the returns on education the earnings of

the individuals with different level of education but otherwise a ceteris paribus conditions should be compared.

Because of the data limitation, as it is very difficult to get data of individuals who has exactly the same characteristics and differ only in terms of years of schooling, isolation of returns on education is very difficult (Blaug, 1992). Therefore, to control other conditions, scholars of the first wave of literature compared the earnings of those individuals who had different levels of education but are in the same age group. Not including the variables, such as ability, the place of living, a social class, family size, gender and the wealth of an individual would have caused a problem of omitted variable bias (Schultz's, 1963; Becker, 1964). To deal with this problem of a biased estimator of education, the estimator of education is reduced by 40% (Blaug, 1992).

Pasachachulous (1972) estimates the rate of returns on education for 25 developing and developed countries by elaborate type method. The sample of study covers the following countries: United States, Canada, Mexico, Venezuela, Colombia, Chile, Brazil, Great Britain, Norway, Sweden, Denmark, Netherlands, Belgium, Germany, Greece, Israel, India, Malaysia, Japan, Philippines, Nigeria, Ghana, Kenya, Uganda and New Zealand. In order to adjust bias of earnings differential Psachachulous reduced the estimator of the effect of education by 40 % (Psachachulous, 1972). The results report that the rate of returns on education is higher in less developed countries compared to more developed countries (Psachachulous, 1972). The author explains this by the fact that the "former group of countries has still unexploited opportunities for increases in national income via investing in educational. Developing countries seem to subsidize their higher education systems more heavily than more advanced countries" (Psachachulous, 1972).

1.3. The second wave of studies on the returns on education

The second wave of studies starts by the work of Jacob Mincer on the estimation of rate of returns on education. His work contributed greatly to the studies of rate of returns on education. To estimate individual returns on education, Mincer (1974) introduced the following earning function:

$$LnY = \beta_0 + \beta_1 * S + \beta_2 * Ex + \beta_3 * Ex^2$$

(Mincer, 1974)

where the variable LnY denotes log of wages, the variable S is years of schooling an individual attains, the variable Ex denotes the potential experience, which is derived from individual's age and years of schooling and equals age-6-schooling and a variable Ex^2 is the experience in square. Thus, according to the Mincer equation, earning is the function of years of schooling, potential experience and potential experience in square. Including potential experience in the equation is based on the assumptions that working may contribute in skills upgrading of an employed individual (Minser, 1974). Including experience in square in the equation imposes a restriction on human capital investment, meaning that "the returns to on-the-job investments falls over working life, as the period over which they can be used becomes shorter" (Rosen, 1972). Mincer equation relates theoretical literature to survey data, as having the data on schooling, earnings an age of individuals, rate of returns on education can be studied by the estimation of the Mincer equation with the Ordinary Least Square regression (OLS).

1.4. The possible biases of estimator of education and the ways to deal with them

Even though the Mincer equation is widely used in recent literature to study rate of returns on education, it is still criticized that the model cannot give the best estimators of rate of returns on education (Griliches, 1970). In the Mincer model, schooling is considered as an exogenous variable, while human capital theory considers it as being an endogenous variable (Harmon, Walker, Westergaard-Nielsen, 2001). Thus, if education is endogenous variable, it will be difficult to determine the direction of causality between education and earnings.

The other problem the Mincer equation may face is bias of estimator of schooling. The reason of bias may be either the variables, which are not included in the equation or an individuals' choice of selection into higher education and labor market participation (Cahuc & Zylberg, 2004. A decision about the duration of schooling may be related to the factors such as age, ability, the place of living, a social class, family size, gender and the wealth of an individual. If variables, which are related to years of schooling, are omitted from the equation, they will become the part of an error term, thus years of schooling will be correlated with unobserved error term. The correlation of error term and independent variable will cause the bias of estimator of an independent variable, as the estimated parameter will incorporate the returns to "other variables", which are part of the error term, as well as the returns to education. In this case the estimator of rate of returns on education will be overestimating the effect of education (Cahuc & Zylberberg, 2004).

The other bias, which the estimator of education may face, is a selection bias, which relates to the assumption that individuals decide to study the fields, in which they are mostly interested

and are more efficient. However, the field itself may not have high returns in terms of wages, thus in such case the OLS estimator of education will underestimate the rate of returns on education (Cahuc & Zylberberg, 2004).

Some approaches were used in order to address above mentioned problems of biases of coefficient of years of schooling. Griliches (1970) used IQ test results as proxy for ability measure and introduced interaction variable ability-schooling in the model of earnings to catch the effect of ability on returns to education (Gronau, 2005). In this case ability of an individual is controlled and the coefficient of education captures only the effect of education. Griliches' approach can be addressed for solving the omitted variable bias problem, but finding a good proxy for ability is not always possible. In order a variable to be used as a proxy it should satisfy certain assumptions. A strong instrumental variable should be correlated with schooling and be independent from unobserved factors in the error term, otherwise it cannot correct the bias of coefficient of independent variable (Staiger and Stock, 1997). To deal with this problem Griliches (1970) estimated a potential bias of proxy of ability as being 10% (downward bias), which is an acceptable in interpreting the results of empirical studies until today (Gronau, 2005). The other method to correct bias of ordinary least square (OLS) estimator of education is to use OLS regression method with the data, which includes in the research only the individuals, who have a very similar ability, for example like twins (Ashenfelter & Rouse, 1998).

1.5. Estimation of Mincer equation, evidences of different countries

The rate of returns on education has been evaluated for various country cases in the literature. Cahuc and Zylberg in their book "Labor Economics" (2004) discuss the empirical

results of the study of private returns on education in fifteen European countries for the period of 1994-1995. The following countries are included in the sample: Greece, Switzerland, Spain, Finland, Norway, Italy, Ireland, UK, France, Sweden, Portugal, Netherlands, Germany, Denmark and Austria. The male group and the female group are estimated separately. The results report that one more year of schooling increases returns on education on average by 7.9% for women and 7.2% for men in the sample countries. The estimates differ in different countries. For women education has the highest return in United Kingdom with coefficient estimator of 11.8% and the lowest return in Sweden, with coefficient estimator of 3.8%. Cahuc and Zylberg (2004) explain comparatively lower returns to education in Scandinavian countries by the existence of a "centralized collective bargaining", which affects negatively on wages of individuals with different levels of qualification.

Xu Zhang (2002) estimates the rate of returns on education for the case of urban China. The study is based on the 2002 database of Chinese Household Income Project. The author uses two approaches, ordinary least square (OLS) and instrumental variable (IV), for estimation the rate of returns on education. The OLS estimates of returns on education are lower than IV estimates of returns on education. The overall returns on education from the OLS regression is 7%-8%, while the estimate of IV approach is 16% (Xu Zhang, 2002). The rate of returns differs between the rural and the urban areas. The results report that returns in education are 30-40% less in the rural areas of China compared to the urban ones.

Bartolo (1999) studies returns to education for the case of Canada, Italy and US. The research is based on the individual data integrated with family information from Canada, US and Italy. The model explains 23% of variations in earnings in case of US, 14% in case of Canada and 19% in case of Italy. The coefficient estimate for schooling varies from 4% to 7% in these

countries, the coefficient of potential experience is 3-4% and the coefficient estimate of experience in square is very small (0.1% – 0.07%) with negative sign.

The comparison analysis of returns on education in Russia and Ukraine has been carried out for the years of 1986- 2004 (Gorodnichenko & Peter, 2004). As former Soviet Union countries, both Russia and Ukraine have inherited similar institutions and starting conditions. Thus, they had a similar structure of wage, education system, labor force composition and returns to education before the collapse of Soviet Union (Gorodnichenko & Peter, 2004). The research is based on the Russian and Ukrainian Longitudinal Monitoring Surveys covering a period from 1985 to 2002. To observe the returns on education in these countries the authors estimate the Mincer equation. Except years of schooling, potential experience and potential experience in square, the variables of gender and capital are included in the model. For the case of Russia the model explain 18% of the variation of earnings, while for the case of Ukraine the model explains 13% of the variation in wages.

As to the coefficient estimates, in case of Russia rate of returns on education is 9.5% and in case of Ukraine, the estimator equals 4.5 % (Gorodnichenko & Peter, 2004). In both countries returns on the potential experience is low compared to the evidences of the other countries, the indicator equals 3% in case of Russia and 1.9% in case of Ukraine. Gender gap is high. Women earn 41% less compared to men in Ukraine, and gender gap is 47% in Russia. Earnings of the individuals, who are living in capital appears to be higher in both countries compared to the individuals who are living in the other regions. In case of Ukraine returns for living in Kiev is 30% and in case of Russia the returns on living in Moscow is 68% for 2002 (Gorodnichenko & Peter, 2004).

There is a lack of literature on the labor market outcomes and the rate of returns on education or potential experience for the case of Georgia as well as for the cases of the former Soviet Union countries, which experienced the same structural reforms as Georgia did. This research is the first, which studies this issue for the case of Georgia, thus, it will fill the gap and contribute in the literature.

CHAPTER 2: DATA DESCRIPTION

The research is based on the database of Integrated National Household Survey of Georgia. The survey for getting the data is conducted quarterly by the National Statistics Office of Georgia. The survey framework covers whole territory of the country, which includes the following regions: Kaxeti, Tbilisi, Mcxeta-Mtianeti, Shidaqartli1, Qvemoqartli, Samcxe-javaxeti, Ajara, Guria, Imereti, Samegrelo and Mckheta-mtianeti. The survey coveres the households, who are living at the addresses, which were selected based on the random sample selection procedure. Sample weights (p-weights) are included in the database and in order the results to be representative of the population they are included while doing cross tabulations and estimation. The data is cross-sectional and covers the period of 2004-2009.

The sample size for the 2004-2007 covers 3600 households and for the 2008-2009 it covers 7000 households. The sample size is selected so that various parameters could be estimated with satisfactory statistical precision not only on the level of whole country but also on the level of the above mentioned regions. The original database covers sample of the household members, who are fifteen years old and above. The upper age limit is not defined, because of country specifics, as the rate of economic activity for the Georgian population in the post retirement age is high (Labor Force Statistics, 2009).

For the research purposes I set upper limit at age 75, as in case of Georgia as there is not developed a good pension system, people are not leaving jobs after retirement age. The sample size for the model, which estimates the effect of education on the probability of an individual participating in the labor force, being hired or self-employed, is 244494 observations and covers the individuals, who are between 15-75 years old. The sample for estimating the Mincer (1974)

equation covers the individuals who are hired at the labor market, the number of observation in this case equals 40900.

The variables of the dataset contain the information about household members, age, years of schooling, education degree obtained, gender, health condition, economic activity, incomes and bonuses, employment status, regions, urban. Required binary and categorical variables are generated from mentioned variables. Table 3.1 provides definition of the variables from the database and table 3.2 provides the definition of generated variables:

Table 2.1: description of variables from the database

Variable Name	Description
Wage	Amount of money an individual earns monthly on average: a metric variable;
Schooling	Number of years of schooling an individual has completed, its value varies from 4 to 21;
Age	Age of an individual: a metric variable
Family size	Number of members in the household: a metric variable;
Gender	Gender of individual: binary variable, having two categories: female and male;
Married	Marital status of an individual: a binary variable, receiving a value 1 if an individual is married and 0 otherwise;
Urban	The area where and individual lives: a binary variable, receiving value 0 if an individual is living in a rural area and value 1 if an individual is living in an urban

	area;
Regno	The region, where and individual lives: a categorical variable, with the value from 0 to 11. 0-Kakheti, 1-Tbilisi, 2-Shidaqartli, 3-Qvemoqartli, 5-Samcxejavaxeti, 7-Ajdara, 8--Guria, 9- Samegrelo, 10- Imereti, 11-Mcxetamtianeti;
Economically Active	Labor force participation: a binary variable, 0 - not participating, 1 – participating;
Education	Completed level of education: a categorical variable. It has 8 categories: illiterate, primary, secondary, high school, Primary professional, secondary professional, Bachelor's degree , Master's degree, Academic degree;
Chronic disease	Health condition: a binary variable, receiving value 1 if an individual has any of these or other diseases: diabetes, Hypertrophy, Rheumatism, Goitre, Disabled, Sharp decrease of vision, Sciatica, Neurosis, Epilepsy, Schizophrenia and value 0 otherwise;
Employed	Economic status: a binary variable, 0 -unemployed, 1 - employed;
Hired	Employed at the labor market, hired: a binary variable, 1 – hired, 0 not hired;.
Self-employed	Self- employed: a binary variable, 1- if an individual is an owner of personal enterprise during the accounting period, in order to generate profit or family income or a person working for free in family enterprise/holding, 0 otherwise;
Unemployed	Not employed: a binary variable, 1 – unemployed, 0 - otherwise.

Source: the questionnaire of the Integrated National Household Survey of Georgia;

Table 2.2: variables, generated from the data base of National Statistics Office of Georgia

Variable Name	Variable description
Lnwage	Logarithm of market wages;
Potential experience	Potential experience: equals age - schooling – 6;
Potential experiencesq	Potential experience in square divided by 100;
Capital	The capital: a dummy variable, 1 -if the region is capital, 0 otherwise;
Year dummies	Dummy variables for each year;

Source: variables are generated based on the Integrated Household Survey database

CHAPTER 3: METHODOLOGY

3.1. The research question and related hypotheses

The following chapter discusses the research methodology. This thesis studies the role of education in labor market outcomes in Georgia addressing the research question: how does education affect the probability of an individual participating in the labor force, being employed and get high returns in Georgian labor market?

The following hypotheses are tested in the research: 1. The individuals with higher education degree are more likely to participate in the labor force of Georgia; 2. The individuals with more years of schooling are more likely to be hired at the Labor Market of Georgia; 3. The individuals with higher education degree are less likely to be self-employed; 4. Region, where an individual lives, plays an important role on the probability of an individual participating in the labor force and being employed in the labor market; 5. Returns on education and experience are low in Georgia. This hypothesis contradicts to the human capital theory. The reason of stating such hypothesis is the system of education in Georgia, which provides low quality education, a high unemployment rate, the composition of the labor force and low wage level in the country.

3.2. One-way and two-way tables

In order to answer the research question, first step is to do a general research of labor market characteristics in Georgia. For this reason one way and two way tables are generated in STATA, which report the information about the labor force participation rate, the unemployment and employment rate, the share of employed, hired and self-employed individuals in each region of the country, the education level of labor force participants.

In order to observe a labor force participation rate one-way table of the variable economically active is provided. In order to observe what the percentage of individuals with each level of education is, a one-way table of education distribution is generated. The two-way table, where labor force participation is row variable and economic status is column variable, provides the information about the share of individuals with different employment status (unemployed, hired, self-employed) in the labor force participants. To get the information about the education level of unemployed, hired and self-employed individuals, the two way table is generated, where the economic status is the row variable and education level is a column variable.

3.3. The effect of education on the probability of an individual participating in the labor force

In order to observe the effect of higher education and the other factors on the probability of an individual participating in the labor force the equation 1 is estimated:

$$P(part = 1|X) = \Phi(\beta_0 + \beta_1 P_1 + \beta_2 P_2 + \beta_3 H + \beta_4 B + \beta_5 M + \beta_6 PHD + \beta_7 px + \beta_8 X + \varepsilon) \quad (1)$$

where, the dependant variable, ***part***, which means labor force participation, is a binary one, with the outcome 1 if an individual participates in the labor force and the outcome 0 if an individual does not participate in the labor force. Φ is the cumulative function of the following standard normal variables:P_1– primary professional degree, P_2 - secondary professional degree, B- Bachelor's degree, M- Master's degree, PHD-academic degree, px- potential experience, with three categories: low, considerable and high and X is the vector of the dummy variables,

including male, married, capital, urban, year, chronic disease and metric variable family size, potential experience in square.

As one of the research interests is to observe the effect of different levels of education on the probability of participating in the labor force, the model is estimated by the dropit regression. The coefficient estimate of each independent variable will give the predicted probability of an individual, with this characteristic, participating in the labor force. In order standard errors to be heteroskedasticity robust, the option robust is used while estimation. The output of estimation of equation (1) reports the results based on which we can either accept or reject hypothesis 1 that the individuals with a higher education degree are more likely to participate in the labor force of Georgia. The independent variables are tested jointly and model fit is checked.

3.4. The effect of education on the probability of an individual being hired

In order to observe the effect of higher education and the other factors on the probability of an individual being hired at the labor market of Georgia, the equation 2 is estimated:

$$P(hired = 1|X) = \Phi(\beta_0 + \beta_1 P_1 + \beta_2 P_2 + \beta_3 H + \beta_4 B + \beta_5 M + \beta_6 PHD + \beta_7 px + \beta_8 X + \varepsilon) \quad (2)$$

where, the dependant variable, hired, which means to be employed at labor market, is a binary one, with outcome 1 if an individual is hired and outcome 0 if an individual is not hired at the labor market. Φ is the cumulative function of the following standard normal variables : P_1– primary professional degree, P_2-secondary professional degree, H-high school, B -Bachelor's degree, M- Master's degree, PHD -academic degree, px - potential experience, with three categories: low, considerable and high and X is the vector of the dummy variables, including male, married, capital, urban, year, chronic disease and metric variables family size, potential experience squared.

As one of the research interests is to observe the effect of different levels of education on the probability of an individual being hired in the labor market, the model is estimated by the dropit regression. The coefficient estimate of each independent variable reports the predicted probability of an individual, with this characteristic, being hired in the labor market. In order standard errors to be heteroskedasticity robust, the option robust is used while estimation. The output of estimation of equation (2) reports the results based on which we can either accept or reject hypothesis 2 that individuals with a higher education degree are more likely to be hired at Georgian labor market. The independent variables are tested jointly and model fit is also checked.

3.5. The effect of education on the probability of an individual being self-employed

In order to observe the effect of higher education and the other factors on the probability that an individual will be self - employed the equation 3 is estimated:

$$P(Selfeml = 1|X) = \Phi(\beta_0 + \beta_1 P_1 + \beta_2 P_2 + \beta_3 H + \beta_4 B + \beta_5 M + \beta_6 PHD + \beta_7 px + \beta_8 X + \varepsilon) \quad (3)$$

where, dependant variable, self - employed, is a binary one, with outcome 1 if an individual is self-employed and outcome 0 if an individual is not self-employed at the labor market. Φ is the cumulative function of the following standard normal variables: P_1– primary professional degree,P_2-secondary professional degree, *H* - high school, B- Bachelor's degree, *M* - Master's degree, PHD-academic degree, px- potential experience, with three categories: low, considerable and high and X is the vector of the dummy variables, including male, married, capital, urban, year, chronic disease and metric variables family size and potential experience in square.

As one of the research interests is to observe the effect of different levels of education on the probability of being self-employed, the model will be estimated by the dropit regression. The coefficient estimate of each independent variable shows the predicted probability of an individual, with this characteristic, being self-employed. In order standard errors to be heteroskedasticity robust, the option robust will be used while estimation. The output of estimation of equation (3) reports the results based on which we can either accept or reject the hypothesis 3 that individuals with higher education degree are less likely to be self-employed. The independent variables are tested jointly and model fit is checked.

The output of the estimation of equation (1), equation (2) and equation (3) reports also information for testing hypothesis 4, that region, where an individual lives, plays an important role in determining an economic status of an individual. The individuals who are living in the capital are more likely to be hired in the labor market, while those ones who are living in the other regions of the country end up to be either self-employed or even unemployed. The coefficient estimate of the variable capital in case of equation (1) shows the predicted probability of an individual living in the capital participating in the labor force. In case of equation(2) it shows a predicted probability of an individual living in the capital, being hired in the labor market and in case of equation (3) it shows a predicted probability of an individual living in the capital being self-employed.

3.6. The Mincer equation and rate on returns on education

Thus, previous equations reports the estimates to answer the first part of the research question about the effect of education on the probability of an individual participating in the labor

force and being employed. In order to answer the second part of the research question, about the prediction that an educated individual will get high returns in terms of wage, the next step is to study individual returns on education in Georgia. In order to answer the question, the Mincer equation (4) is estimated for the case of Georgia:

$$E(Lnwagehired|X) = \beta_0 + \beta_1 S + \beta_2 X + \beta_3 X^2 (4) \text{ (Mincer, 1974)}$$

where dependent variable is log of wage of individuals who are hired in the labor market, as we wonder market returns on education. Log of wage (4), is the function of S - the years of schooling, X - potential experience, which equals age– S- 6 and experience in square, which points that potential experience is a concave function and over time it has negative returns.

The equation 4 is estimated by the ordinary least square regression (OLS). In order to get heteroskedastisity robust standard errors, robust option of the OLS regression is run. The estimation of Mincer equation reports how much of the variation of lnwages can be explained by years of schooling, potential experience and experience in square. Using lnwage instead of wage changes interpretation of coefficients, thus estimates shows proportional percentage change of lnwage because of unit change of any of the independent variable in ceteris paribus condition.

The hypothesis that the independent variables are jointly different from 0 is tested by the Wald test. The estimation of the equation (4) gives the necessary information for either rejecting or accepting the hypothesis 5 that returns on education and potential experience is low in Georgia. As it is stated in the introduction, in case of Georgia the other factors such as gender, family size, region were an individual lives and marital status have effect on the change of the wage rate. In order to check the effect of these factors, on the variation of wages in the country,

the following variables will be added to the model: family size, male, married, capital, urban, year dummies, chronic.

CHAPTER 4: RESULTS AND ANALYSES

4.1. Labor market outcome

According to the criterion of the National Statistics Office of Georgia (Geostat), labor force participants are individuals "15 years old and above, who are working or are looking for a job and offer their labor for production of the services or products" (Labor Force Statistics, 2009). Based on this criterion, a labor force participation rate in Georgia in 2009 is 66.3%. The estimation results report that for the mentioned period 16.9% of labor force participants are unemployed, 29.1% are in the category of hired, 54% are in the category of self-employed.

Thus, the country faces a high unemployment rate, but more attention grabbing is a very high share of self-employed individuals among the labor force participants. The issue is that the individuals in the self-employed category are either "owners of the personal enterprises during the accounting period or individuals working free in family enterprise/holding"(Labor Force Statistics, 2009). The estimation shows that 72% of self-employed individuals do not generate any income. These are the individuals, who would like to get a regular job but because of a lack of job opportunities, they end up being self-employed in their own household or agriculture in and work free. This means that even though these individuals officially are considered as employed according to the National Statistics Office of Georgia (Labor Force Statistics), unofficially they are unemployed. Thus, the problem of unemployment is more severe in the country than official unemployment rate indicator shows. The distribution of the economic activity of the labor force by regions reports the share of unemployed and employed individuals in each region of Georgia, which yields interesting results. The statistics are reported in table 5.1:

Table 4.1: the distribution of economic activity of the labor force by regions

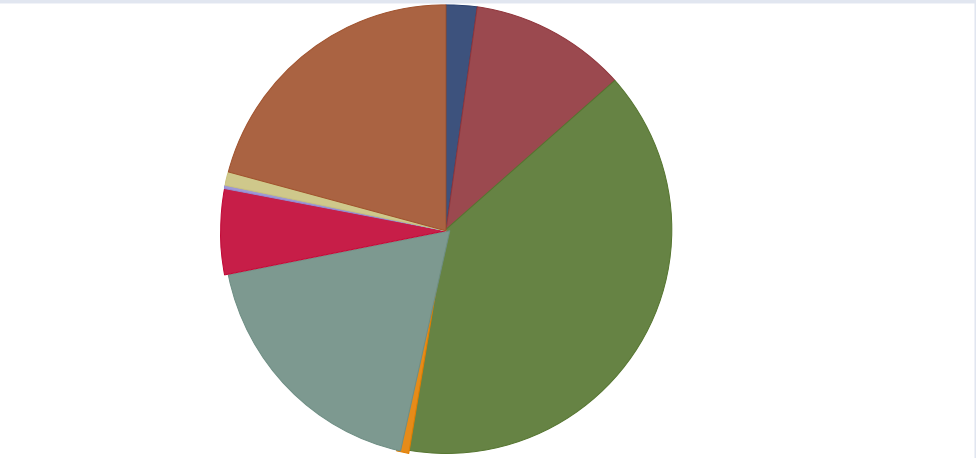
Region / Emplment	Kakheti	Tbilisi	Samcxe Javakheti	Adjara	Qvqartli	Shqartli	Guria	Mcxeta mtianeti	Samegrelo	Imereti
Unemployed	6.8%	38.6%	2%	12.5%	6.4%	6.7%	1.%	2.3%	8.5%	15%
Hired	8%	40%	2.5%	8.7%	9%	5.2%	2.%	2.2%	7.3%	15%
Self-employed	12.9%	6.3%	7.8%	9.3%	11.8%	7.8%	5.%	2.2%	14%	22.2%

Source: calculations are based on the data of Integrated Household Survey of Georgia, 2009

While analyzing the results reported on the table 4.1, the distribution of the population in the country should be taken into consideration, (see graph A.1 in the appendix). Thus, relating outcomes of table 4.1 and Graph A.1, the more populated the region is the higher the unemployment rate in this region. The most of the unemployed people are living in the capital (Tbilisi) of the country and in the regions of the West Georgia: Adjara, Samegrelo and Imereti. Most of those individuals who are hired are living in Tbilisi, Imereti and Kakheti. Other regions face a lack of job opportunities, the only places to work in rural areas, especially in villages, are schools or small medical centers. The West part of the country seems to be better off in terms of employment, the share of hired individuals as well as self - employed ones are higher there compared to the East regions of the country.

The other important statistics for analyses is the education level of Georgian population. Graph 5. 2. shows the share of individuals with different level of educations in the country**:**

Graph 4. 1: The share of individuals with deferent levels of education



Thus, the illiteracy rate in Georgia is close to zero (0.2%), which means that almost everyone in the country is able to read and write. The individuals, whose maximum level of education is below high school degree, represent 15.5% of the population. A share of individuals, whose maximum level of education is high school level represent 41%. A share of individuals, who obtained a primary professional, secondary professional or higher education degree, is almost 44%, which means that overall education level in the country is high.

Knowing that education level in the country is high, it is interesting to observe what the share of unemployed, hired, self-employed and non-participants in the labor market is. Table 5.2 reports the results of the distribution of labor force by the economic status of an individual:

Table 4.2: the distribution of education by economic status

	Participants in the labor force			Non participants
Employment / Education level	Unemployed	Hired	Self-employed	
High school	8%	10%	44.2%	37.8%
Primary professional	4.7%	10.7%	45.5%	39.1%
Secondary profess	11.5%	22.3%	39.7%	26.5%
Bachelor's degree	5.9%	24.5%	17.4%	52.2%
Master's degree	18%	44.4%	17.7%	19.9%
PHD	5.1%	15.1%	42.4%	37.4%

Source: database of Integrated Household Survey of Georgia, 2009

Thus, the outcome on table 4.2 shows that among those, who completed high school or primary professional education, approximately 60% are participating in the labor force and most of them are self-employed. The situation is different in case of the individuals with the secondary professional education degree. Individuals with this level of education are mostly nurses, teachers for nursery school, primary school or music school, mechanical engineers. The labor force participation rate in this group is high, but majority of the individuals with this degree are self-employed. The participation rate in the group of individuals with Bachelor's degree is low. The reason of this may be a negative expectation of individuals, that they can get a job even if they look for it. The participation rate is highest in the group of individuals with Master's degree.

Majority of individuals from this group are hired in the labor market, but unemployment is also high.

The results so far showed, that in the group with higher levels of education participation rate, as well as the share of individuals hired in the labor market is high, but the group of individuals with PHD deviates from this trend. In the group of individuals with PHD, the non-participation rate is high as well as self-employment rate is high. The estimation shows that from this group among the individuals who are self-employed only 17% earn salary. The explanation of this outcome may be that those individuals who are self-employed are working as private tutors and do not report their income. Unfortunately, the data does not give the opportunity to study the reasons of such outcome for PHD graduates in the country more deeply.

Tables 4.1, 2.2 and Graph A.1, 4.1 present the results, which is useful to understand a general picture of the labor market of Georgia: unemployment rate in each region of the country, labor force participation rate, the share of individuals with different levels of education and the share of individuals in each category of economic activity. In order to observe the role of education and other factor in labor market outcomes of Georgia, a more deep research is carried out. Number of equations is estimated in order to answer research question and test the hypothesis, which are introduced in the methodology section.

4.2. The estimation results of equation (1), equation (2) and equation (3)

In order to test the first hypothesis that the individuals with higher education degree are more likely to participate in the labor force of Georgia, the equation 1 is estimated by the robust dprobit regression model. This hypothesis, as well as hypothesis 2, that the individuals with higher education degree are more likely to be hired at the Georgian labor market, are based on the

human capital theory, that education as an investment has positive effect on the labor force participation, labor market outcome and wage an individual gets for performed work. The results of estimation of equation (1) are reported in the first column of table 3:

*Table 4.3: the results of estimation equation (1), equation (2) and equation (3)**;***

	Equation (1)	***Equation (2)***	***Equation (3)***
Variables	***Participation***	***Hired***	***Self- Employed***
High school	.088 **	.056 **	.068 **
	(.002)	(.003)	(.003)
Primary professional	.084 **	.122 **	.043 **
	(.006)	(.010)	(.009)
Secondary professional	**.163** **	**.17**4 **	.024 **
	(.002)	(.005)	(.004)
Bachelor's degree	.084 **	**.308** **	**-.092** **
	(.004)	(.007)	(.005)
Master's degree	**.263** **	**.353** **	**-.106** **
	(.001)	(.005)	(.004)
PHD	.088 **	**.131** **	**.072** **
	(.008)	(.012)	(.010)
Potential experience	**.193** **	.067 *	.141 **
	(.001)	(.001)	(.002)
Family size	-.044 **	-.016 **	-.038 **
	(.001)	(.001)	(.001)

Male	**.171** **	.039 **	.080 **
	(.001)	(.001)	(.002)
Married	.0006	-.007 *	.064**
	(.003)	(.001)	(.003)
Urban	**-.220** **	.075 **	**-.357** **
	(.002)	(.001)	(.002)
Capital (Tbilisi)	**-.077** **	.015 **	**-.196** **
	(.003)	(.002)	(.003)
Chronic disease	**-.195** **	-.063 **	-.086 **
	(.002)	(.001)	(.003)
Potential experience sq	-.008**	-.005* *	-.003**
	(.0001)	(.00008)	(.0001)
Year dummies	No	No	No
Wald chi2 (14)*	52160.04	36089.13	54358.54
Pseudo R squared	0.2053	0.19	0.22
Log pseudo likelihood	-124138.22	-89535.08	-129285.74
Observations	***244494***	***244494***	***244494***

*Notes: Robust standard errors in parentheses. * Significant at 5%;**significant at 1% .The reference categories are, primary education, female, not married, other regions of Georgia except Capital, individual without any of the chronic disease, low experience. He equation was estimated initially by including year dummies, but coefficients were insignificant. Than the year dummies were dropped and the estimation results reported on the table does not include the.*

Thus, the first column of the table 4.3 reports the output of estimation of equation 1, the second column reports the estimation results of equation 2 and the third column reports the estimation results of equation 3. The output reports dependant variables for these there equations, estimates of each independent variable, number of observations, log likelihood, Wald chi-square,

pseudo R square and robust standard errors. The model predicts the effect of different levels of education, potential experience, family size, marital status, area and region, health condition and gender on the on the probability of individual participating in the labor force in case of equation (1), being hired in case of equation (2) and being self-employed in case of equation (3). The standard errors are heteroskedastisity robust in the all three cases.

The number of observations used for analyses is ***244494***. He log pseudo likelihood points how fast the model converges. The Wald Chi square with a probability value of 0.0000 indicates that the model is statistically significant at 5% as well as at 1% level and it fits the data. All coefficients except marital status are significance at 5% as well as 1% level. Each level of education has positive effect on the predicted probability of individual participating in the labor force. The size of effect is highest in case of secondary education, which increases predicted probability of individual participating in the labor force by 16% and in case of Master's degree, which increases a predicted probability of an individual participating in the labor force by 26%. The variables of different education level are jointly significant, which gives a possibility to accept the hypothesis (1) that education has positive and significant effect on the probability of an individual participating in the labor force.

The coefficient of potential experience is also positive and significant. It shows that considerable potential experience increases the predicted probability of an individual participating in the labor force by 19%, but potential experience in square points that over time the effect becomes negative. This can be explained by the fact that the more experienced an individual has the higher is the chance to get a job, which increases the incentive of an individual to participate in the labor force. But over time, with older ages the chances of getting job also decreases in Georgia, as in the market demand is mostly on the young labor force, who got

education more recently, because skills and knowledge of older individuals, who got education during the Soviet Union system cannot meet the requirements of marker demand.

The coefficient of male yields an interesting result. It is positive and significant and shows that in case of male the probability of an individual participating in the labor market increases by 17%. One of the reasons of such gap between female and male groups can be the cultural factor, as man in Georgia is expected to keep his family as well as his parents in their old ages.

The coefficient of the variable urban has negative and significant effect, as well as coefficient of chronic disease. The size of both of these coefficients is high. However, the sign of coefficient of urban grabs the attention. It means that living in urban areas decreases the predicted probability an individual participating in the labor force by 22%. This can be explained by the fact that, while the number of jobs is higher in the urban areas, the competitiveness is also high and it is difficult to get a job, besides the possibility of being self-employed is also low in the urban area compared to the rural ones. This decreases people's expectation of getting a job in urban areas, which may negatively affect on their incentive to participate in the labor force and look for a job.

To test hypothesis 2, that the individuals with higher education degree (more years of schooling) are more likely to be hired at the Georgian labor market, the equation (2) is estimated by the robust dprobit model. The results of estimation are reported in the second column of table 4.3. The outcome variable is hired, which is binary variable (0/1), getting value 1 if an individual is employed at the labor market. Thus, the coefficients of independent variables predict the probability of an individual being hired in the labor market of Georgia. The Wald Chi square 36089.13 with a probability value of 0.0000 indicates that model is statistically significant at 5%

as well as at 1% significance level and it fits better than model without independent variables. The standard errors are heteroskedastisity robust. Coefficient of each independent variable is significant at 5% as well as at 1% significance level.

The coefficient of each level of education is significant and positive, which means that each level of education has positive effect on the predicted probability of individual being hired in the labor market. The higher the education level is the higher the size of coefficient of it is which means that the predicted probability of being hired at the labor market increases with more years of schooling. The exception is the coefficient of variable PHD, the predicted probability of being hired for an individual with PHD degree is 13%, which is even lower than the predicted probability of an individual with secondary professional degree being hired. This points to the fact that demand on PHD graduates is low in the country. This can be explained by the fact that the school for PHD programs in the country gives a low quality education. Those graduates who complete PHD program in abroad rarely return to the country. The predicted probability of being hired in Georgian labor market for those individuals, who completed master's degree program is highest and equals 35%. The estimated results and testing the significance of variables of different education level give the opportunity to accept the hypothesis 2 that the individuals with more education are more likely to be hired.

To test hypothesis 3, that individuals with more education are less likely to be self-employed, the equation 3 is estimated by the robust dprobit model. The results of estimation are reported in the column 3 of table 4.3. The dependant variable is self - employed, which is a binary variable (0/1), getting value 1 if an individual is self-employed. The category of "self-employed" is defined in the data section. The coefficient of the each independent variable predicts the probability of an individual with that characteristic being self-employed. The Wald

Chi square 54358.5 with a probability value of 0.0000 indicates that model is statistically significant at 5% as well as at 1% significance level and it fits the data. The standard errors are heteroskedastisity robust. Coefficient of each independent variable is significant at 5% as well as at 1% significance level.

The estimation of equation 3, shows that higher the level of an individual a lower the probability of being self-employed is. In case of high school degree the predicted probability of being self-employed increases, the same is the result for PHD graduates. This is logical outcome in the sense that individuals with high school degree are mostly occupied in the casual work or working in their household or agriculture. As to the PHD graduates, this can be explained by the fact that they work as private tutor to prepare high-school graduates for university entrance exams or are involved in the independent research. The coefficients of Master's degree and Bachelor's degree are negative, which means that predicted probability of individuals being self-employed decreases with BA or MA degree.

The factors such as living in the urban area, in the capital of the country, poor health condition, have negative effect on the predicted probability of being self-employed. The size of coefficient of urban and size of coefficient of capital are high. The predicted probability of individual being self-employed is decreasing by 35% if an individual is living in the urban area and the same indicator decrease by 19% if an individual is living in the capital of the country.

The estimation of the equation (1), equation (2) and the equation (3) give the possibility to test hypothesis 4, that and area and region, where an individual lives, plays an important role in determining an economic status of an individual. The predicted probability of an individual participating in the labor force decreases if an individual lives in the capital or urban area. The

predicted probability of an individual being hired increases if an individual is living in urban area or capital, but the size of effect is not large. The predicted probability of being self -employed decreases significantly if an individual lives in urban area or in the capital. Such results give the opportunity to accept the hypothesis 4. %.

4.3 The results of the estimation of the Mincer equation

Thus, the estimation of the equation (1), the equation (2), the equation (3) answered the first part of the research question, about the effect of the education and other factors on the probability of individual participating in the labor force and being employed. In order to answer the second part of the research question, about the returns on education in Georgia and to test hypothesis 5, that the returns on education and experience is low in Georgia, the equation (4) is estimated. The results of estimation are reported on the table 4.4:

Table 4. 4: the results of the estimation of the Mincer(1974) equation for the case of Georgia

Variables	Lnwagehired
Schooling	.054**
	(.001)
Potential experience	003 *
	(.001)
Potentialexperiencesq	-.023**
	(.002)
Dummies	
Year	Yes
Constant	4.329**
	(0.289)
R squared	0.18**

F statistics	1242.24*
Observations	**40900**

*Notes: Robust standard errors in parentheses. * significant at 5%;**significance at 1%;Including year dummies;*

In order standard errors to be heteroskedastisity robust, the equation (4) is estimated by the robust option of the ordinary least square model. The coefficients are jointly significant, as F statistics 1242.24 with probability value.000 shows. The hypothesis whether the coefficients of independent variables are different from zero or not was tested by Wald test, which report that the coefficients of predictors are jointly different from zero. R square 0.18 with probability value 0.000 shows that the model is significant and fits with the data at 5% as well as 1% level of significance. The model explains 18% variation of wages, which is comparable with the results of the other countries.

The coefficient of schooling is significant at 5% as well as 1% significance level. The size of the coefficient tells measured impact of schooling on change of wage rate, the interpretation of which is that one more year of schooling increases rate of wage by 5%. As we cannot control the ability, which may be the part of standard error, in order estimate of schooling be perfectly efficient, the Griliches (1970) approach, who estimated a potential bias of proxy of ability as being 10%, will be used and report the effect of education on wage as 4.5%. the result is comparable with the education estimate of the other developed as well as developing countries, which are discussed in the literature review section.

The coefficient estimate of potential experience is significant at 5% significance level . Potential experience square points to the fact that over the years wage rate will decrease. The size of effect of potential experience is very low in case of Georgia, compared to the developed countries, but it is similar to the former Soviet Union countries. The low effect of potential

experience can be explained by the structural changes in the countries, which is followed by the change of market demand on the type of labor force. .

In order to check the effect of other factors such as gender, family size, place of living (capital, urban), marital status and health condition of an individual, the corresponding variables are added to the Mincer equation and extanded equation is estimated by the robust option of OLS. The results of the estimation of the extended Mincer(1974) equation are reported in table 4.5:

Table 4.5: The results of the estimation of extended earning equation for the case of Georgia

Variables	**Lnwagehired**
Schooling	.050**
	(.001)
Potential experience	.005**
	(.001)
Potential experience squared	-.027**
	(.002)
Family size	-.052**
	(.005)
Gender	.596**
	(.009)
Married	.017**
	(.010)
Urban	.191**
	(.010)
Capital	.311**
	(.011)
Chronic disease	-.131**
	(.016)

Constant	3.866**
	(.040)
Dummies	
Year	Yes
R squared	0.35*
F –statistics	1521.38*
Observations	**40900**

*Notes: Robust standard errors in parentheses. * Significant at 5%, significance at 1%; Includes year dummies;*

The F statistic of 987.07 with probability value 0.000 points that the coefficients of independent variables in the extended Mincer model are jointly statistically significant. The errors are heteroskedasticity robust. Adding the explanatory variables in the model resulted higher indicator of R square of 0.35 with probability value 0.000. Thus, model explains 35% of variation of the wage rate, which can be considered reasonable taking into consideration that cross sectional data is used for analyses.

The measured effects of the predictors, which were included in the original Mincer equation, are the same. It appears that gender and place of living highly contribute in the variation of wage rate. The coefficient of gender is positive and statistically significant. The size of the coefficient is high, showing that being male increases rate of wage by 60%. The coefficient urban is also statistically significant and has positive effect on the wage rate. The size of coefficient is high, meaning that living in urban areas gives 19% higher returns compared to living in the rural areas. The size of the estimator of capital is also high. An individual return on living in Tbilisi, the capital of the country, is 31% higher compared to an individual return for those, who are living in other regions of the country. Thus, to sum up, besides the education level

and potential experience, the gender, living in capital or urban area, have a significant effect on the variation of wage rate.

The estimated effect of education on the wage rate in Georgia is comparable with the cases of the other countries, as its estimated affect varies between 3-10% as it is reviewed in the literature. In order to determine whether 4.5% return on education is low or not for the case of Georgia, it is important to know what the wage level in the country is and what the earnings of individuals with different level of education are. For this reason, the share of low, medium and comparatively high-income earners is estimated for the different education groups. The sample includes the individuals, who are hired in the labor market, because it shows the level of market wage in the country. The three wage categories are distinguished. The category, income below 200$, represents a low wage group, which includes the individuals, who earn below the 50% of the average wage in the country. The wage group $200-$500, covers the individuals, who earn the range of 50% up and 50% below of the country's average wage and the third group includes the individuals, who earn above the average wage plus 50% of average wage. The graph 5.3 provides the results of the estimation the distribution of wages by the levels of education:

Graph 4.2: The distribution of education level by wage groups in the labor market

Based on the database of Integrated Households Survey of Georgia

The results on the Graph 4.2 report that the individuals, who earn below the $200 has the highest share in each education group. The share of individuals with middle and comparatively high wages is higher in the higher education groups. The share of individuals with comparatively high earnings is higher in Master's degree group compared to the other groups, but the indicator itself is low even for this group, showing that only 13% of the individuals, who have master's degree, earn the income above average wage+50% of average. Based on the results reported on graph 4.2, we can conclude that wage level in the country is low even for the individuals, who have higher education. Thus, if the return on education for one more year of schooling is 4.5%, as it is predicted by the estimation of the Mincer equation, such change will not change an individual's wage level much.

Thus, to sum up the results of the estimation of Mincer equation and results reported on graph 5.5, the education do not have high returns in Georgia. One explanation of this issue can be that the quality of education is low in the country and labor force does not satisfy the demand from labor market. The other issue is that the wages paid in the labor market of Georgia are low.

CONCLUSION

The research paper studied the labor market outcome in Georgia during the 2004-2009, concentrating on the effect of education on the probability of an individual participating in the labor force, being employed and getting high returns. The research question the thesis addressed is the following: how does education affect the decision of participating in the labor force, on the probability of being employed and earning a high salary in Georgia? The first three hypothesis in the beginning of the research state that the individuals with higher level of education are more likely to participated in the labor force and being hired, but less likely to be self-employed. The hypothesis state that on the probability of participating, being hired or self-employed significantly depends on the factor where an individual lives, in Capital or in other regions and in urban or in rural areas. The hypothesis 5 states that education and potential experience has low returns in terms of wages in Georgia, as wage rate highly depends on the other factors too such as where an individual lives, gender, marital status , family size.

The research provides the interesting findings. Overall education level in the country is high, as the estimation shows almost 85% of individuals have high school and higher education degree. Still unemployment rate is high in the country, it has increasing trend during 2004-2009 and achieved 16.9% in 2009. Among the employed individuals, the category of self-employed is attention grabbing. It represents more than 50% of the labor force. Besides the individuals, who have small businesses, this category includes mostly the individuals, who are living in the rural areas and because of lack of job opportunities are occupied working in their households or agriculture. That is why 72% of self-employed individuals do not have any earnings. This makes an unemployment problem more severe than the official picture is, as those individuals are considered formally as employed but their state more suits to the state of unemployed individual.

Considering such self-eamloyed individuals in the employed category contributes also in the lower indicator of unemployment rate in the regions compared to the capital. The unemployment rate in the capital achieves 40% and the indicator is high also in the west Georgia.

The thesis estimated separatly dprobit models for probability of participating in the labor force, for the probability of being hired and for the probability of being self-employed. All the models fit the data. The estimation results show that the predicted probability of an individual participating in the labor market increases with the level of education. The highest effect has master's degree, which increases the predicted probability of participating in the labor force by 26%. The predicted probability of an individual being hired increases with education level. The Bachelors degree as well as Maters degree has a significantly high effect in this case, the former increases the predicted probability of an individual being hired by 30% and the later by 35%. The predicted probability of an individual being self- employed is low for more educated people. Based on the estimation results the hypotheses 1, the hypotheses 2 and the hypotheses 3 were accepted.

The estimation of Mincer equation shows that returns on education as well as on experience are low in Georgia as it was expected. The corresponding indicators are 4.5% in case of education and 2% in case of potential experience. The issue is that quality of education in the country is low, besides because of structural changes, which are taking place during the last two decades in the country, the labor market demand and labor supply diverged and are not matching well. One more explanation of such outcome can be that overall wage level in the labor market of Georgia is low, only 8% of hired individual get the wage above the $500, which is very small number.

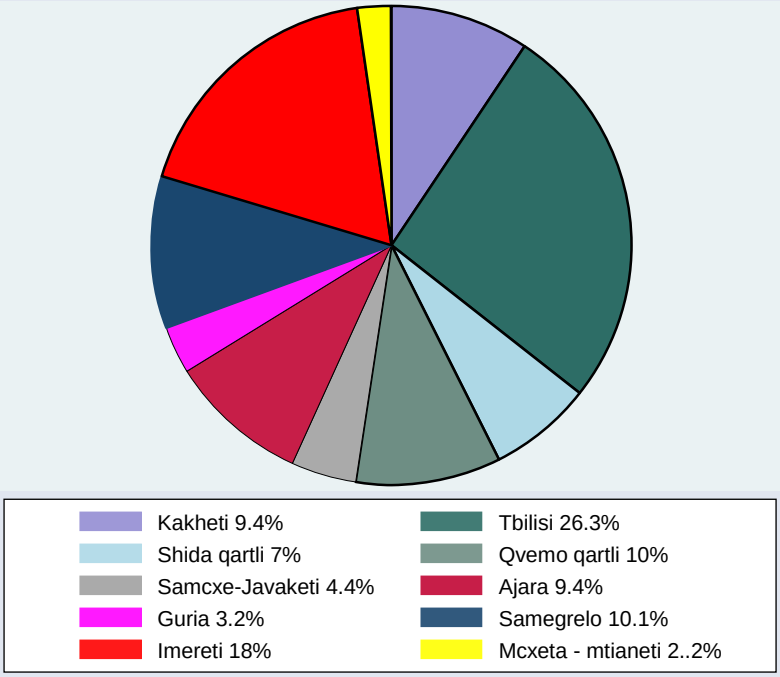
One more interesting finding is the effect of gender and region, where an individual lives, on the labor market outcomes. The males are more likely to participate in the labor force, being hired and being self-employed. Besides, the wage rate for male individuals increases by 60%. These gender gap points to the discriminatory character of Georgian labor market. In determining economic status of individuals, the regional variable plays an important role. Individuals living in the urban areas are more likely to be hired at the labor market, individuals living in the rural areas are more likely to be self-employed. This can be explained by the fact that rural areas face lack of job opportunities, thus the chances of being employed in the former sector is very low, that is why in order to "survive" individuals have to be self-employed.

Finally, it can be concluded that overall effect of education on labor market outcome is positive and statistically significant, from this point of view there is link the theory of human capital and real evidences in the country. Individual with higher education have better chances in the labor market compared to the individuals with lower level of education, but still the returns on is very low.

Due to data limitations, including the variable of ability in the survey was not possible. The possible continuation of the research is doing instrumental variable estimation of returns on education in Georgia, by using the date of birth of an individual as a proxy for ability.

APPENDIX A

Graph A.1: The share of population in the regions of Georgia in 2009



Estimation is based on the database of Integrated Household Survey of Georgia

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