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The Analysis of Investment in Higher Education 
Influenced by Macroeconomic Factors

Abstract
Political, economic and social reforms that started in Lithuania in the beginning of 
1990 influenced essential changes in all spheres of social lives, as well as business and 
the field of paid work: the decline of manufacturing inevitably influenced the number 
of employed people and the growth of unemployment. Structural changes in society’s 
employment were the outcome of privatization and economic modernization 
processes. New employment groups according to the economic status such as 
employers, self-employed and employees emerged. The demand of skilled employees 
increased. Because of the changes in the labor market, the requirements for skills and 
competences were altered, which encouraged individuals to make a decision to invest 
in education. The purpose of the paper is to identify the macroeconomic indicators 
affecting the investment in higher education and to determine their interdependence 
with the indicators of educational system. In order to determine relation between the 
indicators of labor market and educational system it is necessary to estimate the 
strength of correlation between them. Analysis of macroeconomic indicators and 
educational system showed that the research of investments in higher education is an 
important issue. Analysis of statistical data leads to the conclusion that salary and 
opportunity to find a job directly depends on education. Lots of people want to 
aquire higher education and this fact is changing the structure of the labor market. 
The number of people with higher education will increase rapidly, but the number of 
jobs with such high qualification will not increase enough. Therefore potential 
students will be motivated on economic basis, but not psychological incentives or 
prestige. Examining the effectiveness of investment in education it is necessary to do 
the investigation, which could be used to predict what expectations individuals have 
from investments in higher education. It is important to examine the relation between 
education and increase in salary and their dependency. The research is relevant in 
Universities analyzing the market, their attitude and the possibility of providing 
financial resources for education.

Key Words
higher education, investments, macroeconomic, indicators

JEL classification: J21, J24, E24, E60

Introduction

In this paper the term “higher education” refers to ISCED 97 Level 5: Tertiary education 
(first stage) [7]. Environmental impacts have affected the investments in higher 
education [2]; therefore it is necessary to analyze the environment in which the 
decisions are made. Various processes affect the population. Lithuanian and foreign
Researchers analyzed the relation between investment in higher education and economic growth: [11], [4]; [6]; [8]; [1], [5], [12] and others. It was noted that none foreign or Lithuanian researcher provided the coherent model for the evaluation of the labor market and educational system, which could help to establish the benefits of investments in higher education for the individual and the state.

Salary may depend on the chosen specialty. Properly chosen specialty ensures higher income in the future. Thus the choice should be determined not only by psychological factors. It is necessary to analyze macro-economic situation in the country before making the decision to invest or not.

The decision to study or not can be influenced by parents, the media, friends, relatives. Investment rate of return depends on the investor's age, marital status and gender. Women tend to choose the fields of study that lead to the future work in lower-salary sectors of the state economy more frequently. Therefore the decision to invest in higher education or not is influenced by the requirements in labor market, the structure of the educational system, the financial capacity of an individual, his/her desires and abilities.

1. Macro-economic factors influencing investment in higher education

Investment in higher education is directly related to the labor market [10]; the analysis of demand and supply in labor market. It is very important to carry out the analysis of country's macro-economic situation, to examine the labor market, determine highly demanded specialties and only then to make the investment.

The labor market can be defined as a place or a procedure where the employer interacts with the job seeker in order to agree on the working conditions, time, salary, social benefits and guarantees, etc. The labor market, a constituent of the market economy [3], [12], in addition to its main function – the allocation of labor among economic activities, occupations, territories, enterprises – performs two socio-economic functions: distributes income in a form of salary and hereby encourages work activities, formally sets equal possibilities to everyone to exercise the right to employment and professional development.

It is necessary to take into account all the main factors and their indicators, while analyzing the labor market. Figure 1 shows the assessment model of macro-economic factors and investment in higher education. Before making the decision to invest in higher education or not, every individual has to assess whether the investment will be effective. Completed tertiary education is not always helpful and efficient. Higher education is not effective if:

- Acquired specialty is inappropriate, not demanded in labor market;
- An individual with a degree has an unqualified job (brain waste);
- An individual is unable to adapt to the labor market with his/her skills.
In order to determine the relation between labor market and educational indicators it is necessary to establish the strength of this relation. Thus, the correlation analysis is performed.

The purpose of this paper is to identify the effect of macro-economic factors on investment in higher education. To reach this objective, the analysis of strength of relation between the labor market and education indicators was carried out. Since the variables were measured on the interval scale, a statistical monotonic relation was characterized by Spearman rank correlation coefficient. Spearman's rank correlation coefficient is non-parametric measure of statistical dependence between two variables. The main advantage of non-parametric measures over parametric ones is the absence of assumptions about the distribution of the observations. Spearman rank correlation is appropriate for both continuous and discrete variables, including ordinal ones. For very small samples the results of Spearman correlation should be interpreted with caution, because small sample size can result in a very strong correlation that is not statistically significant. The strength of relation was calculated for the following variables:

- State and local government expenditures on higher education;
- State and local government expenditure on higher education compared to GDP;
- Unemployed persons with higher or college education;
- Employed persons with higher or college education;
- Total number of unemployed;
- Total number of employed;
- Specialists with higher and college education;
- Number of emigrants with higher education compared to the total number of emigrants (who did not declare their departure);
- Emigrants with higher or college education;
- State budget allocations for higher education per student;

Relation analysis of labor market and educational system indicators aims to confirm or deny the dependency of investments in higher education on selected indicators.

2. Macro-economic factors affecting the investment in higher education: the case of Lithuania

The political, economic and social reforms, which began in Lithuania in the beginning of 1990, led to significant changes in all spheres of public life, as well as business and the field of paid work: production decline inevitably had an effect on the decrease in the number of employees and the growth of unemployment. Structural changes in society's employment were the outcome of privatization and economic modernization processes. New employment groups according to the economic status such as employers, self-employed and employees emerged. The demand for skilled professionals began to increase. Due to the changes in the labor market, the requirements for skills and competences were altered, which encouraged individuals to make a decision to invest in education.

The different groups of population involved in this process are affected by various factors. Salaries may vary depending on the chosen specialty, thus properly chosen specialty will ensure higher incomes in the future. Women more frequently choose the fields of study that lead to the career in lower-salary sectors of the state economy. Lower salary can be related to another very important reason – family responsibilities. Women, going on maternity leave, lose their skills.

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<td>22686</td>
<td>22705</td>
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<td>113831</td>
<td>113745</td>
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<td>114528</td>
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<td>24578</td>
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<tr>
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<td>9146</td>
<td>9043</td>
<td>9515</td>
<td>9946</td>
<td>10909</td>
<td>9474</td>
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<tr>
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<td>14605</td>
<td>15105</td>
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<td>17849</td>
<td>19470</td>
<td>17957</td>
<td>16834</td>
<td>15930</td>
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<tr>
<td>Total number of students</td>
<td>167196</td>
<td>187018</td>
<td>193928</td>
<td>195635</td>
<td>200515</td>
<td>206290</td>
<td>196415</td>
<td>182081</td>
<td>169848</td>
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</table>

Source: [9]

Therefore when making a decision to invest in higher education it is important to analyze the situation in country's economy and labor market. The decision to study or not can be influenced by parents, the media, friends, relatives. Investment rate of return depends on the investor's age, marital status and gender. Decision is influenced by the requirements in labors market, too. The demand for skilled professionals is increasing in
Lithuania; also the number of students is growing. Lithuanian labor market is specific, different from many European countries, since most of the women have work experience and women make up a larger share of students compared to men. The distribution of students is presented in Table 1.

As the results in Table 1 show the total number of students has increased till 2009 – 2010, and then started to decline. More and more individuals are choosing university education over college. The number of highly educated shows the development level of country’s higher educational system, the need of higher education and the motivation of students. Women are more likely to acquire higher education compared to men. In all time periods the number of women is higher than men (in 2010 – 2011 women students accounted for 59 percent of total number of students, men - 41 percent). In 2010 – 2011 the number of women students was 1.43 times higher than men. The individuals, acquiring higher education, expect that it will make it easier to compete in the labor market, provide an opportunity to receive higher salary. Women enter the labor market having better education than men, but it does not have a significant impact on the achievements of employed women's and men's in the working sphere.

The analysis of literature revealed that the main factors allowing competing in the labor market are education, professional qualification, additional professional skills (good knowledge of foreign languages, computer literacy, entrepreneurial skills, communication skills, and willingness to work).

Assessment of these factors suggests that an individual’s competitiveness in the labor market and the probability of getting a job depends directly on the level of education. As shown in Figure 2, the smallest part in the total number of unemployed are individuals with higher and college education (in 2012 individuals with higher and college education accounted for only 15.4 percent of total number of unemployed).

Fig. 2 Unemployed and employed, by education, compared with total number of the unemployed and employed, thousands of individuals.

![](chart)

Source: [9]

After analyzing the data of 2003 – 2012, it can be concluded that university and high school graduates (this term here refers to ISCED 97 Level 4 Post-secondary non-tertiary education [7]) have no trouble in finding a job (in 2012 40.4 per cent of all employed were individuals with higher and college education).
Employees with higher education have greater demand in the labor market. Therefore, the young and older people acquire the necessary education even if they have to pay a large part of the funds necessary to get an education by themselves. Expenditure on education in state and local government budgets amounted to 6271 million LTL in 2012, or 5.9 percent of country's GDP. During the study period, funds for higher education and funding for research and development in the field of education were the highest in 2008. The decline in 2010, 2011 was due to the economic crisis and the decline in the number of students.

### Tab. 2 Expenditure on education in state and local government budgets

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<tr>
<th></th>
<th>2005</th>
<th>2006</th>
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<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
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<tr>
<td>Total funds allocated for education, million LTL</td>
<td>3919</td>
<td>4470</td>
<td>5129</td>
<td>6278</td>
<td>6221.7</td>
<td>5912.9</td>
<td>6271</td>
</tr>
<tr>
<td>Funds for education compared to GDP, %</td>
<td>5.4</td>
<td>5.4</td>
<td>5.2</td>
<td>5.6</td>
<td>6.8</td>
<td>6.2</td>
<td>5.9</td>
</tr>
<tr>
<td>Funds for higher education, million LTL</td>
<td>898.6</td>
<td>965.7</td>
<td>1058</td>
<td>1259</td>
<td>1189.5</td>
<td>1158.3</td>
<td>1063.6</td>
</tr>
<tr>
<td>Funds for research and development in education, million LTL</td>
<td>4.8</td>
<td>4.9</td>
<td>5.2</td>
<td>259.6</td>
<td>223.3</td>
<td>140.2</td>
<td>150.9</td>
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*Source: [9]*

The increasing demand for higher education shows the growth of educational prestige. One of the main reasons for this phenomenon is competition in the labor market and the dependence of availability of jobs on the level of education. The fact that salary depends on education was approved by the Lithuanian Department of Statistics. The Department of Statistics carries out the investigation on the structure of earnings by occupation, education and gender every four years. Survey information is collected at the individual level (employees) from the local units and enterprises, institutions and organizations. Recent data provided by the Statistics of Lithuania is for the year 2010. The average salary was 1988 LTL. The salaries of employees from different occupational groups but having the same level of education were unequal.

### Fig. 3 The structure of average monthly salary by education 2002 – 2010 in Lithuania, LTL

![Average monthly salary by education 2002 – 2010 in Lithuania, LTL](image)

*Source: [9]*

As shown in Figure 2, salaries tended to increase in all cases. Maximum salary is paid for individuals with tertiary education.
According to the census data of the Statistics Lithuania on May 16, 2011 there were 3 million 53.8 thousand people in Lithuania. 10 years ago the country's population was 3.48 million, 1989 – 3.67 million. In the beginning of 1990s Lithuania, as the independent country, had a population of 3.7 million. Comparing these figures, it can be stated that over two decades Lithuania lost about a quarter of its population – 700 thousand people. Most of the population was lost due to increased emigration. The increase of emigration from the country means that not just lower education and low-skilled individuals are leaving the country, but also the specialists with higher education. Since 2005, the number of highly qualified emigrants and emigrants with university or college education has been annually increasing Lithuania. In 2007 a quarter (25.8 percent) of all individuals who have emigrated from Lithuania had higher or college education. During the economic downturn the increased number of skilled unemployed individuals compared with the overall number of emigrants in 2011 – 2012 reached 35 – 40 percent. Such tendencies are reinforced by rising unemployment and an increasing number of people, experiencing difficulties in repaying housing loans and consumer credits. The loss of skilled labor force will become more and more difficult to compensate with the new generation of qualified professionals, as it is likely that the high price of higher education will reduce possibilities of large part of young people to acquire higher education. This tendency will be reinforced with the fact that a part of young people, able to pay for their education, will leave to study at foreign universities, and then get the job there. In this case, retrieving the emigrants, even with improvement in the economic situation in the country, will be very difficult.

It is difficult to accurately assess the number of emigrants in Lithuania because not all individuals who emigrated declared their departure. The structure according to the declared place of residence is shown in Figure 4.

**Fig. 4 The number of emigrants (based on the declared place of residence), individuals**

![Graph showing the number of emigrants from 2005 to 2012](source: [9])

The number of emigrants in 2010 rose 3.78 times compared to 2009, but in 2011 and 2012 the scale of emigration started to decline. Countries with high emigration numbers can face labor shortage. Emigration is driven by various reasons, but one of the main incentives – economic motive (a desire for higher standard of living). In order to reduce the emigration, it is necessary to ensure the opportunity to have higher incomes to the
residents of Lithuania, hereby removing the reason for emigration that government can affect.

The strength of relation between indicators of labor market and the educational system in terms of strength of connection. As the study variables are interval and relatively short period is analyzed, the relation strength is measured using Spearman’s coefficient. The results of correlation analysis are presented in Table 3.

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Note: 1. State and local government expenditure on education: higher education; 2. State and local government expenditure on education compared to GDP (higher education); 3. Number of unemployed with higher or college education; 4. Number of employed with higher or college education; 5. Total number of unemployed; 6. Specialists (with higher education); 7. Number of emigrants with higher education compared to total number of emigrants, who did not declare their departure; 8. Emigrants with higher education, who did not declare their departure; 9. State budget allocations for higher education per student; 10. Total number of employed

Source: authors’ own calculations

Relations are statistically significant (p <0.05) (** marked values indicate that p <0.01, * marked values indicate that p <0.05). The performed correlation analysis revealed that the selected indicators of the labor market and the education system have a monotonic relation, characterized by Spearman rank correlation coefficient. State and local government expenditure on higher education have a statistically significant correlation with the number of employed with higher education (0.968) and with the number of emigrants with higher education (0.948). The more funds government allocates to higher education, the more individuals are seeking to acquire it. State and local government expenditure on education compared to GDP is correlated with the number of unemployed with higher education (0.928), the total number of unemployed (0.954) and there is a strong statistically significant inverse relation with the total number of employed (-0.982). The dependence between increasing expenditure on education compared to GDP and graduate unemployment means that: 1) the state allocates the funds on not demanded specialties and 2) the market is already saturated with skilled specialists. Number of specialists with higher education has a strong statistically significant correlation with the number of emigrants with higher education (0.895). The number of emigrants with higher education is correlated with the number of unemployed with higher education (0.920) and the total number of unemployed (0.894). This suggests that emigration is directly dependent on the situation in the labor market;
if an individual who has tertiary education, cannot find a job in accordance to his/her qualification in Lithuania, he/she will search for a job abroad.

Conclusions

Performed analysis of the labor market and the educational system revealed that the research of investment in higher education is an important issue. Statistical analysis of the data suggests that the salary, opportunities in the labor market directly depends on education. The determination of a large part of population to study is going to rapidly change the structure of the labor market – the number of people with higher education has grown substantially, but the number of jobs which would require a high level of qualification will not increase so rapidly. Thus, potential students will base their decision to study on economical basis rather than psychological, such as prestige, self-realization, and incentives.

Examining the effectiveness of investment in education, it is relevant to perform researches, which can be used today to predict the individuals’ expectations for investments in education. It is important to examine whether education and salary increase are related, and dependent on each other. This kind of research is relevant in the University, analyzing the market, students’ attitude to education, mood, and the availability of certain financial resources for education.

References


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