

CHANGES IN HIGHER EDUCATION PUBLIC FUNDING DURING ECONOMIC AND FINANCIAL CRISIS

Vesna Skrbinjek

International School for Social and Business Studies, Slovenia
vesna.skrbinjek@mfdps.si

Dušan Lesjak

International School for Social and Business Studies, Slovenia
dusan.lesjak@mfdps.si

Abstract:

European higher education systems are at stake, since global economic and financial crisis emerged in 2009. The aim of the paper was to test the research question: How did higher education funding change in response to the crisis (compared with pre-crisis period)? We observed changes in higher education funding during crisis through three indicators in comparative perspective to pre-crisis period. We found that we cannot provide any clear patterns, since there are different responses to the crisis resulting from different funding traditions. Nevertheless, we also found significant differences in expenditures on tertiary education as % of GDP between two groups of countries. Countries that invested high levels of funding on tertiary education before the crisis did also increase their investment during the crisis. On the other hand, we found no significant differences between groups of countries regarding two other indicators, namely the annual expenditures for public and private tertiary education institutions per student and financial aid to students.

Keywords: higher education funding, higher education budget, economic crisis, financial crisis, higher education benefits

1. INTRODUCTION

In the efforts to establish one European Higher Education Area (EHEA) and European Research Area (ERA) higher education (HE) systems are becoming more compatible and comparable due to Bologna process. Although HE systems are facing many similar challenges across Europe, not limited to global economic and financial crisis, considerable diversity between and within systems are remaining. In terms of HE funding there is no “one size fits all” formula because each funding system has unique features that cannot be funded with uniform standards.

HE participation creates economic and non-economic benefits at microeconomic and macroeconomic level. According to human capital theory HE fosters economic growth and innovation. Individuals with more years of schooling not only receive higher future revenues, but they have better employment opportunities, are more satisfied with their profession and less likely to be unemployed (Bloom et al., 2007, p. 296).

Recent globalisation effects have become more apparent as the financial and economic crisis emerged in 2007 in USA and spread to nearly all world economies. European countries were no exceptions, but there were some countries that were affected more than others (e.g. Eastern and South Eastern European and Baltic countries).

In most European countries HE remains in public interest and therefore is (for now) mostly publicly funded, resulting from great public benefits and (also) public responsibility. On average 82.7 % funds allocated to higher education institutions (HEIs) in EU are from public sources in 2010 (European commission, 2013, p. 44). Nevertheless, the financial and economic crisis “put more pressure on overall public budgets, requiring governments to prioritise allocations among education and other key public sectors, such as health and social security” (OECD, 2013, p. 213). Gradually, the increasing pressure on public budgets by other public beneficiaries and rising costs of HE has led to the need of embedding income diversification (obtaining other funding sources) and cost-sharing (Estermann & Bennetot Pruvot, 2010; Johnstone & Marcucci, 2011).

Our research is initially based on results from the MakeLearn 2013 conference (Skrbinjek & Lesjak, 2013) when we observed changes in TE public funding through two aspects. Firstly, changes of expenditures on TE relative to other public expenditures and expenditures on education. We found that expenditures on TE decreased at slower pace than expenditure for education. Secondly, we also observed changes in funding HE through literature review. This paper contributes a further update on funding changes faced by HE systems in Europe. The purpose of this paper is to answer the main research question *How did HE funding change in response to the crisis (compared with pre-crisis period)*, using quantitative methods.

2. HE BENEFITS

From an economic point of view, to achieve a high level of education is a key factor in an individual's life (private benefits), which also causes effects on the labour market and fiscal returns (European Commission, 2010b, p. 15). In the decades after World War II, economists addressed issues related to the eligibility of public and private expenditure on education (Bloom et al., 2007, p. 293) resulting in recognition of human capital theory. Individuals with more years of schooling not only receive higher future revenues, but they have better employment opportunities, are more satisfied with their profession and less likely to be unemployed (Bloom et al., 2007, p. 296). It also allows them to enjoy life more fully, appreciate the cultural and literary achievements and are better informed and more active citizens (ibid), which indicates a range of non-economic benefits. On the other hand public economic benefits address benefits for society as a whole, through higher tax revenues, whereas the return of HE outweighs the costs.

At macroeconomic level understanding the full range of external benefits (externalities) that HE creates in society is crucial to government policy and wider public when it comes to decisions on the HE funding (IHEP, 1998, p. 11) and supporting the objectives of the development of HE which promotes and fosters innovation and economic growth (Bevc, 1999, p. 258). Externalities refer to benefits associated to greater social cohesion, higher levels of tolerance, civil engagement, less crime and better health, since graduates are more likely to vote, have longer life expectancy, greater life satisfaction, better general health and lower incidence of obesity (Brennan et al., 2013, p. 22).

HE is considered as a commodity that contains both features of public and private good. In the case of public good, the benefits of education acquired are of public nature, while the benefits to the individual are private nature (Duru-Bellat, 2012, p. 6). Although clear dividing cannot be determined, we proposed a typology of HE benefits in terms of economic value and perspective. At the microeconomic level, the economic benefits apply to both private and social benefits (in the narrow sense), whereas non-economic benefits are subject to an individual or his family. At the macroeconomic level, we separated the economic contribution of education to economic development and non-economic benefits through external benefits or externalities (Table 1). The dashed lines in the table indicate a less strict distinction between benefits, meaning that they are more interconnected.

Table 1: Typology of HE benefits

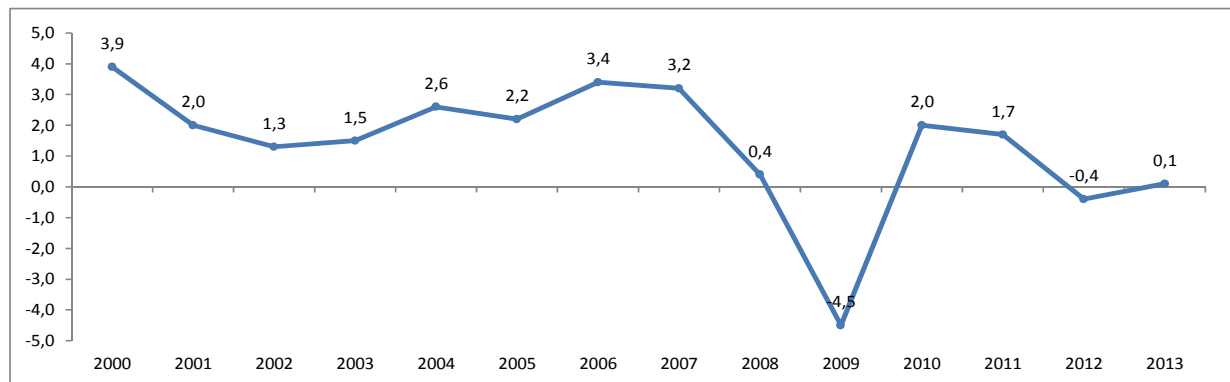
	Economic	Non-economic
Mikroeconomic	Private	Private
	Public (in narrow sense)	
Makroeconomic	Economic growth/development	Externalities

Brennan et al. (2013) noted that HE makes a considerable difference to all stakeholders included. ESF (2008) observes that the economic impact corresponds in terms of “constructing knowledge societies or just and fair societies or critical societies”, making individuals more knowledgeable and employable, which imply great benefits to individuals and society. Through this evidence, individuals and society should invest in higher education and bear the costs of HE funding.

3. THE ECONOMIC AND FINANCIAL CRISIS

The emergence of financial and economic crisis in 2007 in USA had global impact, with an one or two years delay.

Figure 1: Real GDP growth rate, EU 27, 2000-2013



EU 27 GDP started to shrink in the end of 2008 and reached a 4.5 % fall in 2009. Some European countries were affected more than others. Poland, for example was the only country that remained positive GDP growth during crisis, while Greece, Spain, Portugal, Italy and Cyprus are still struggling to prevent negative growth. The economies of Baltic countries (Latvia, Lithuania and Estonia) contracted the most in 2009 (-17.7 %, -14.8 % and -14.1 %, respectively), but had a positive growth from 2011 onwards. On the other hand Czech Republic, Ireland, Slovenia and Finland are still in recession.

We can observe that in most affected countries unemployment rates increased drastically, especially in Greece and Spain that reached 27.3 % and 26.1 % unemployment rate in 2013, respectively. Latvia, Lithuania and Estonia managed to reduce unemployment rate from 17.5 %, 13.8 % and 13.5 % in 2009 to 11.9 %, 11.8 % and 8.6 %, respectively (Eurostat, 2014b). Only Germany recorded a drop in unemployment rates from 7.8 % in 2009 to 5.3 % in 2013, while Poland experienced increase in

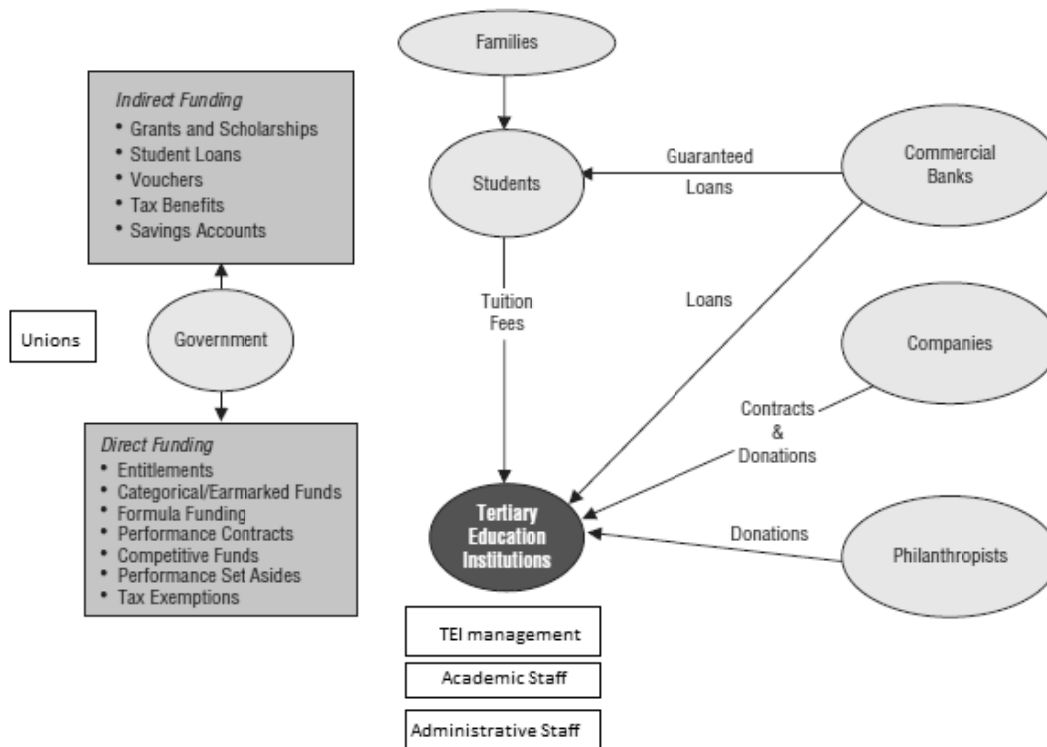
unemployment rate of 2.2 percentage points (Eurostat, 2014b). Unemployment rate has also increased during 2008-2013 in Cyprus (12.2 p. p.), Portugal (8.0 p. p.), Bulgaria (7.4 p. p.), Ireland (6.7 p. p.) and Slovenia (5.7 p. p.) (Eurostat, 2014b).

4. HE FUNDING

HE funding is characterized by increasing complexity and interconnectedness compared with lower levels of education. The concept of HE funding comprises (Bevc, 1999, p. 153):

- funding sources,
- financial flows and
- stakeholders.

Figure 2: Schematic representation of tertiary education financing



Source: Salmi, 2009, str. 303.

Financial sources are important in creating incentives for the operation of HEIs (Jongbloed, 2011, p. 178), especially their amount and the allocation mechanism (Lepori et al., 2007, p. 85). Sources can be private or public in respect to perceived benefits (see previous chapter) while allocation mechanisms are an important aspect of achieving HE objectives and contribute to efficient HE governance.

There are two important funding flows from government. Governments can provide *direct public expenditure* to HEIs for education and teaching-related research and *indirect* through social transfers and transfers to other private entities (Salmi & Hauptman, 2006, p. 7). Direct public expenditure accounts for the largest share of funds allocated to finance public and government dependent private HEIs, through four main funding mechanisms, e.g. negotiations, formulas, contracts and incremental funding (Lesjak & Marjetič, 2010, p. 92). In fact, no country uses only one of the above mechanisms but different combinations of all mechanisms as a reflection of their unique features.

HE funding policy directly relates to the social dimension of HE, mostly through student aid (see File et al., 2013; Lesjak & Marjetič, 2012), while on the other hand students, with support of their families and commercial banks, provide tuition fees which vary from country to country, ranging from high (UK) to low or no (Scandinavian countries). Donations represent a marginal share in funding HEIs.

The most important stakeholders which are engaged in funding streams are government, HEIs, students and their families. Less obvious but also important influence on government's decisions on HE funding have unions. On the other hand commercial banks can guarantee loans to students and HEIs, companies and philanthropies can donate funds and HEIs management can manage funds.

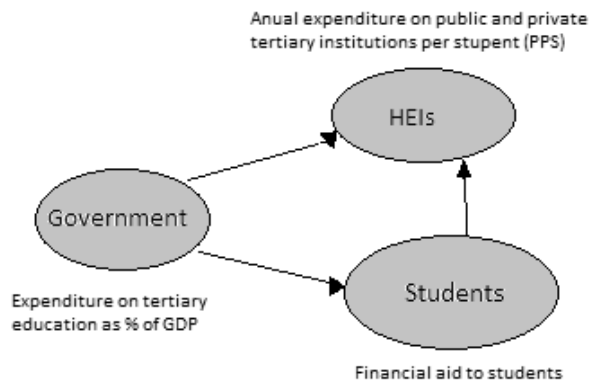
5. RESEARCH METHODOLOGY AND DATA

From Eurostat database we obtained data from 30 European countries¹ focusing on Tertiary education (TE)² finance indicators, namely:

1. Indicator 1: Expenditure on TE as % of GDP
2. Indicator 2: Annual expenditure on TE (public and private institutions) per student
3. Indicator 3: Financial aid for students, as % of total public expenditure for TE

Figure 2 shows how each indicator is connected in HE funding system.

Figure 3: Indicators on HE finance and funding flows



Our aim was to test the differences between groups of countries during the period 2009-2010 compared to pre-crisis year 2008 according to above indicators that reflect 3 angles of the issue. Therefore, we ranked countries according to TE funding in 2008 for each indicator and used an independent samples t-test to test if there are significant differences between countries that invested high expenditures on TE compared to countries that invested low expenditures on tertiary education during crisis period (2009-2010). The median was used to distinguish two groups, the top half and the bottom half. For countries in the top half we considered to have the highest investments in TE and for countries in the bottom half the lowest according to 2008 for each indicator respectively.

Our major limitation during research was the shortfall of recent available data from any statistical database. Therefore, our results are limited to provisional data on TE, which is considered to be a good proxy for HE data. We used quantitative statistic method, t-test for independent samples, to test the differences on HE funding between different time periods in respect to different investment to HE in 30 European countries.

6. FINDINGS AND DISCUSSION

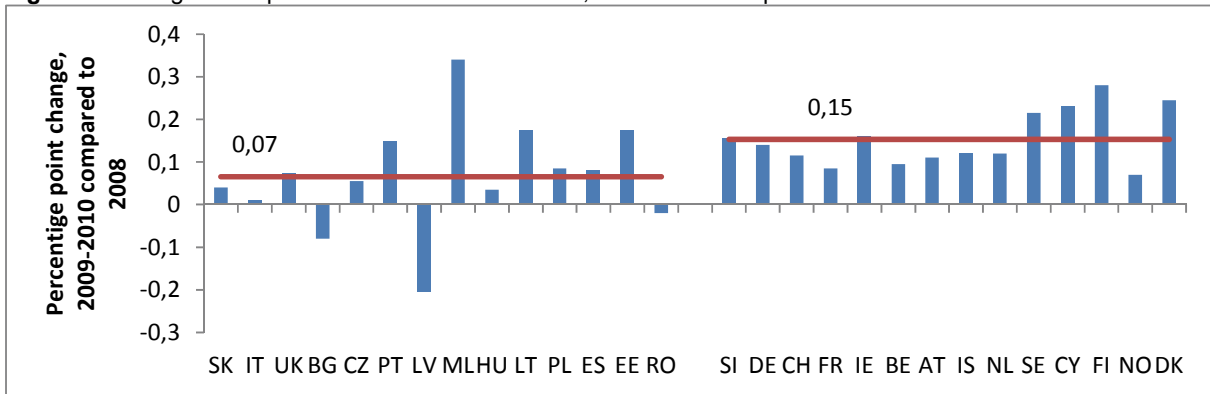
6.1. Expenditure on TE as % of GDP (indicator 1)

Figure 3 shows changes in expenditure on TE as % of GDP during 2009-2010 compared to 2008, where countries that invested the lowest percentage of GDP on TE in 2008 (on average 0.97 % GDP) are on the left side of the figure and countries that invested the highest shares are on the right side (on average 1.54 % BDP). The median of 1.14 % GDP represents the cut point.

¹ We included members of EU 27 (without Croatia) and Norway, Iceland and Switzerland.

² Tertiary education corresponds to post-secondary education and refers to ISCED 5 and 6, including undergraduate, postgraduate and vocational education, while HE excludes vocational education and training, after secondary education.

Figure 4: Changes in expenditure on TE as % of GDP, 2009-2010 compared to 2008



Source: Eurostat, 2014c.

As we can see, there are some differences between two groups of countries and the t-test for independent samples shows statistically significant difference (equal variances assumed, t-test: 2,278, sig. 0,031). Average percentage point change was lower for countries that have invested the lowest percentage of GDP on TE compared to countries that invested the highest.

The responses of countries that invested the lowest shares of GDP on TE differ, especially in Latvia compared to Malta. Latvia recorded severe cuts to TE budget because of the crisis and on the other hand Malta was less weakened by the crisis and continued to increase investment on TE. None of the countries that invested the highest share of GDP on TE decreased investments in TE during 2009-2010. Although Cyprus is considered to be severely affected by the crisis, it continued to invest high % GDP on TE during 2009-2010, which indicates that some countries remained investment on TE in the early years of the crisis.

6.2. Annual expenditure on tertiary education (public and private institutions) per student (indicator 2)

Annual expenditure on private and public TE institutions per student (in Purchasing Power Standards - PPS) shows a different picture (Figure 4). Average percentage point change in expenditure on TE per student was -0.86 for countries that invested the lowest amounts and 0.18 for countries that invested the highest amounts before the crisis. Although there are differences in average change between groups of countries, standard deviation is much higher in countries that invested low expenditures per student than in countries that invested high expenditures per student. It can be argued that some countries that invested low expenditures per student in 2008 have invested even less funds in tertiary education during crisis, but some countries did the opposite.

Poland for example increased expenditures on TE per student, but we should also note that Poland was less affected by the crisis during that time. On the other hand Latvia did major changes in their HE funding, resulting in various cuts in TE per student. On the other hand Slovenia continued to invest in TE despite the effect of financial crisis on banking sector.

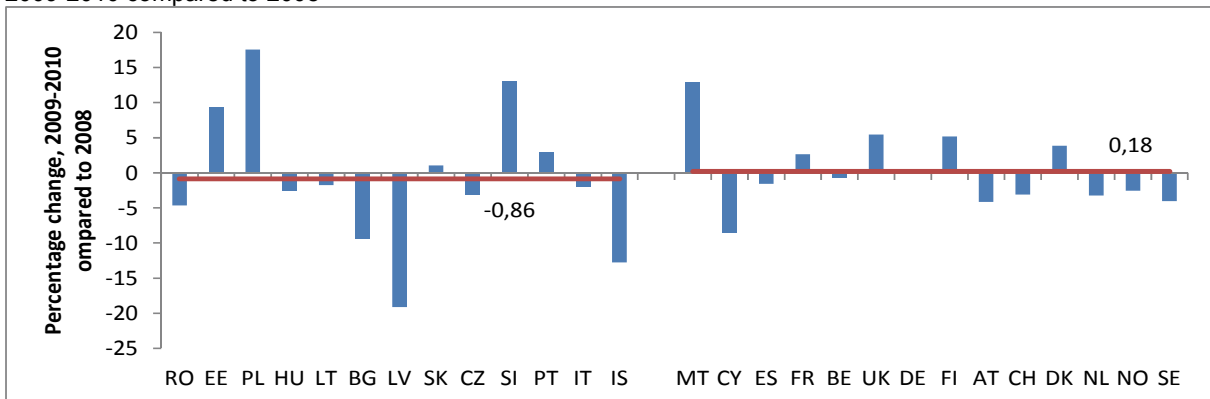
On the other hand, indicator 1 showed that Cyprus has increased investment in TE as % GDP, but decreased expenditures on TE per student. The same can we observed for Scandinavian countries (Norway, Sweden), Austria and Denmark which can be related to enrolment trends.

Expenditure on TE per student is influenced with enrolment trends, which have a great impact on this indicator. In most more affected countries students choose to delay graduation, postponing the entry into insecure labour market or opted to equip themselves with more knowledge and skills before trying to enter the world of work (OECD, 2013, p. 15).

We also find no statistical significant differences between groups of countries for this indicator, t-test: 0,340, sig. 0,737 (equal variances not assumed). Countries that invested the highest expenditures per

student also responded differently, but as we already mentioned, the variability within the group is less evident.

Figure 5: Changes in annual expenditure on private and public tertiary education institutions per student (PPS), 2009-2010 compared to 2008



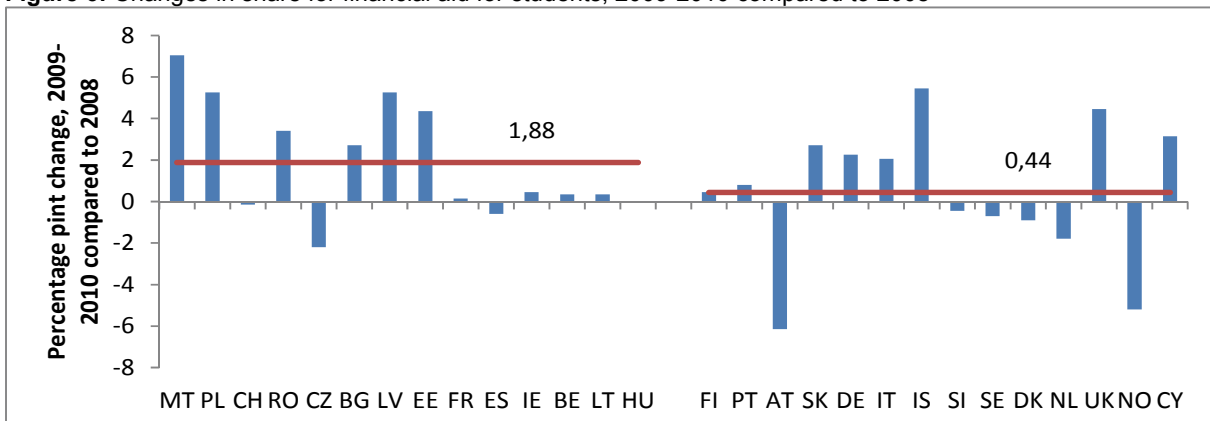
Source: Eurostat, 2014c.

6.3. Financial aid for students, as % of total public expenditure for TE (indicator 3)

The last indicator focuses at indirect public funding (Figure 5). There is no statistically significant differences (t-test: -1,253, sig. 0,221, equal variances not assumed) between groups of countries when considering funds allocated for student aid (Figure 5). It is interesting to see, that countries that have allocated the lowest share of public expenditure to student aid in 2008 have increased this share during the crisis period. This interpretation can be subject to criticism, since the increase can be a result of a decrease in direct public funding to tertiary education.

On average, share for student aid had increased in countries that allocated fewer funds for indirect support before crisis (1.88 p. p.), while in countries that allocated greater share the response was diverse. Czech Republic decreased the share the most in first group, Austria and the Netherlands in the second.

Figure 6: Changes in share for financial aid for students, 2009-2010 compared to 2008



Source: Eurostat, 2014c.

Comparing figures 4 and 5 can be useful. In Bulgaria, Romania and Latvia increase in share for student aid is inversely proportional to expenditures per student, meaning that student aid has mainly remained at same levels. Similarly, countries that allocated the highest shares for student aid responded differently. Some countries decreased student aid, e.g. Austria, but others, e.g. Island and UK have increased financial aid to students. UK has deliberately increased funds for indirect funding

to propose a new funding model based mainly on providing demand-side funding (Skrbinjek & Lesjak, 2013).

6.4. Synthesis

According to each indicator, we conducted Table 2 where we highlighted countries that experienced increases or decreases in at least two indicators. In the first group are countries with low investment in TE and in the second group countries with high investments in TE according to each indicator.

Poland and Estonia from the first group experienced increases in TE funding according to all 3 indicators. Bulgaria, Latvia and Romania decreased % of GDP for TE and also expenditure on TE per student, while Czech Republic decreased expenditure on TE per student and % on student aid.

In the second group, all countries increased expenditures on TE as % of GDP, while Finland increased TE funding according to other two indicators as well. Denmark and France also increased expenditure on TE per student, while Cyprus and Germany increased % on student aid. On the other hand Austria, the Netherlands, Norway and Sweden decreased expenditures on TE per student and % on student aid.

Table 2: Changes in indicators on TE funding, 2009-2010 compared to 2008

indicators	changes	First group – low investment	Second group – high investment
Indicator 1: Expenditure on TE as % of GDP	↑	CZ EE ES SK HU IT LT MT PL PT RO UK	AT BE CH CY DE DK FI FR IE IS NL NO SE SI
	↓	BG LV RO	
Indicator 2: Annual expenditure on TE (public and private institutions) per student	↑	EE PL PT SK SI	DK FI FR MT UK
	↓	BG CZ HU IS IT LT LV RO	AT BE CH CY ES NL NO SE
Indicator 3: Financial aid for students, as % of total public expenditure for TE	↑	BE BG EE FR IE LT LV MT PL RO	CY DE FI IS IT SK PT UK
	↓	CZ CH ES	AT DK NL NO SE SI

Note: ↑ - increase (green), ↓ - decrease (red)

We can observe that countries with low investment on TE tend to reduce overall budget on TE but protect funds allocated to student aid, while countries with high investments in TE tend to protect the overall budget on TE.

7. CONCLUSION

HE is increasingly becoming globalised and therefore not resistant to global economic shocks. We observed changes in HE funding during crisis (2009-2010) through three indicators in comparative perspective to pre-crisis period. Yet again (see Skrbinjek & Lesjak, 2013), we found that we cannot provide any clear patterns, since there are different responses to financial crisis within each group of countries. Nevertheless, we found significant differences in expenditures on TE as % of GDP between two groups of countries. Countries that invested high levels of funding on TE before the crisis did also increase their investment during the crisis. This assumption supports the theory on human capital and positive benefits that HE has on society and economy. On the other hand, countries with low investments to TE, dare to cut direct expenditure on TE more than indirect support to students, supporting the social aspects of the students.

When we look at other two indicators (the annual expenditures on TE (public and private institutions) per student and financial aid to students), there are no statistically significant differences between groups of countries that allocated the highest investment on TE compared to countries that invested the lowest. Indicator on TE expenditure per student can be influenced by increase in student numbers, exceeding stable or slight increases in funding, especially in countries where labour market is most

affected by the crisis. Financial aid to students is also an indicator that must be interpreted with caution. Share of financial aid to students could be higher if amount of funding to student aid remains stable and cuts are made only for direct funding. Therefore, we must look at the “whole picture” to see the actual differences, which is beyond our purpose in this paper.

At the point when updated data will be available, more research can be done to explain the countries' responses to financial and economic crisis. Perhaps the next step will be to extend the period of observation from 2011 onwards, when data will be available, as many countries have managed to maintain TE budgets after the onset of the crisis, but few years later, these countries have experienced the need for consolidation of public finance or other pressures leading to reduce public funding on TE like Netherlands, Czech Republic, Slovenia and Italy.

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