



Effectiveness of higher education – overview and recommendations



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Policy brief

Methodology preparation and expert consultation services for the assessment of the returns on higher education

Task 6

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Introduction

For much of history, higher education institutions (HEI) have been seen as serving the public good and given unquestioned freedom to operate their own budget and freely use the resources made available to them. The emergence of a new funding environment, where accountability and assessment of the outcome and the performance is much more apparent, is making HEIs concerned about constructs of expenditures with efficiency and effectiveness in mind, which signals the need for radical change.

Evaluating the efficiency and effectiveness of higher education (HE) is one way of determining whether it is achieving the goals set by the state. Since HEIs are major recipients of state funding, there is growing interest in examining whether this expenditure is cost-effective and is bringing sufficient benefit to the society and the economy. State funding is essentially an investment aimed at producing individuals who will go on to repay that investment through their contribution to the economy.

Education is at the core of the Europe 2020 strategy. Hence, it has become crucial to improve the quality of public finances in light of the need for budget consolidation across the EU. It is especially important to scrutinise public expenditure efficiency when public resources are under pressure. Close attention is necessary to identify areas of higher education that may contribute to future growth and increase the value of public spending. Measuring efficiency and effectiveness is part of the effort to proactively manage costs and demonstrate value for money, but it is also an attempt to embed a continuous commitment to efficiency in HE policy making.

This Policy Brief presents main ideas about effectiveness and efficiency in higher education and summarises recent assessment on returns on HE in Lithuania putting it in a wider context of reforming the HE system. It is important to understand that HE cannot be reformed just changing one component in the system – making a shift in the mechanism involving thousands of people and having long-term benefits need careful analyses and an holistic approach. Calculating returns on HE is the first step towards further improvements in the system. However, as also indicated in recommendations, it is expected to not rush with policy changes, but rather shift the system step by step.

1. Efficiency and effectiveness in higher education

Although the importance of performance metrics is generally recognised, terms such as efficiency, effectiveness and outputs are used inconsistently. This may lead to similar inconsistency in policy making at HE level. Efficiency and effectiveness differ from each other in that **efficiency** describes how well something is done while **effectiveness** refers to the overall usefulness. Efficiency is the analysis of inputs and outputs, while effectiveness refers to the objectives achieved from the relationship between these inputs and outputs.¹ HE efficiency and effectiveness address the overall performance of those who go through HE and how they contribute back to the state.

HE efficiency is essentially all about inputs and outputs – how much does the state invest and how much does the state get back. These metrics are an important consideration because the resources needed to put a single student through 3 to 4 years of HE could instead be used to meet different societal needs. Whether this is an efficient and effective use of these resources must, therefore, be an important consideration when deciding upon policies in the education sector.²

The most basic HE **input** is of course the students – an essential resource to produce perhaps the main type of output – graduates. However, other variables may also be considered HE inputs. Teaching staff, their qualifications and the ratio of staff to students, the years needed for a student to gain higher education, for instance, could also be evaluated, as they are a necessary dimension of tertiary education.¹ Finally, whatever inputs are chosen, their monetary value must be calculated. This may be more difficult depending on which inputs are chosen.

Outputs, on the other hand, deal with the end results of tertiary education – graduation or dropping out. These measures should be viewed holistically, as a state funded student who drops out, even if he/she compensates the state for the funds provided, has still taken up a space that could have been awarded to someone who would have completed the full course and graduated.

Effectiveness in HE is achieved through relationship between inputs and outputs, specifically when the cost for the inputs is minimised and the gain from the outputs is maximised.¹

HE may be said to be effective when the relationship between inputs and outputs allows the achievement of the overall objectives – that is, the state's desired outcomes. For instance, does increasing state funding have a positive effect on the labour market and productivity; does achieving HE efficiency promote employability in the labour market?¹ Effectiveness can

¹ Aubyn M. et al. (2009). Study on the efficiency and effectiveness of public spending on tertiary education, available at: http://ec.europa.eu/economy_finance/publications/publication16267_en.pdf

² Münich D. et al. (2014). Mechanisms and methods for costbenefit / cost-effectiveness analysis of specific education programmes, available at: http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0CCUQFjAB&url=http%3A%2F%2Fwww.eenee.de%2Fdocs%2FEENE%2FAnalytical_Reports%2FEENE_AR19.pdf&ei=nvQsVc6rGMuNaMiUgOgB&usq=AFOjCNFYfBLuvzZKpoUeNbaHwbuEFTVoAQ&sig2=Cz47salZU0c6G_ID-CG5pw&bvm=bv.90790515.d.d2s

only be measured when there is a clear understanding of which objectives need to be achieved through HE efficiency.

In terms of Europe wide policy development, the EU 2020 perspective focuses on improving graduation rates and shortening the time required to complete higher education while still maintaining the same academic standards. The **EU 2020 objective** specific to HE is that at least 40% of 30–34 year olds should complete some form of higher education. This is the general threshold common to all EU member states, though individual countries have the option to set national threshold levels by raising or lowering the 40% bar. Lithuania has chosen to keep the threshold level at 40%.³

In fact Lithuania surpassed the 40% threshold in 2009 and has been steadily increasing the percentage of target age graduates since then. In 2012, it was one of 16 EU member states to have achieved the 40% goal, and its tertiary education attainment rate was still growing.⁴ By 2013, Lithuania was well above the EU average (Lithuania: 51,3%; EU average 37%) and behind only Ireland and Luxemburg in the percentage of the target group graduating with a HE diploma⁵.

On the national policy stage **The Lithuanian National Development Plan 2014–2020** mentions the need to modernise the infrastructure of HE institutions and redistribute the flow of new students from social sciences to natural and technical sciences in order to respond to labour market demands. The high number of graduates with a HE diploma is listed among the strengths in the national SWOT⁶ analysis.

The **impacts of policies and spending** of the HE system are quantified using advanced measuring tools, such as cost benefit analysis (CBA) or cost effectiveness analysis (CEA). Such advanced tools are used to determine the efficiency and effectiveness of HE in a country, based on the chosen inputs, outputs and objectives for HE. However, these tools are expensive and time consuming, diminishing their popularity. Studies have shown an infrequent use of cost benefit analysis and cost effectiveness analysis in the EU member states. The reluctance to use advanced tools may also be attributed to another EU-wide problem – a lack of relevant expertise.⁷

Unfortunately for policy makers, there is no single fit-for-all method that could help quantify the effectiveness of the education sector. However, data compiled by the European Commission on the effectiveness and efficiency of public spending on tertiary education

³ European Commission. (2015). Strategic framework – Education & Training 2020, available at: http://ec.europa.eu/education/policy/strategic-framework/index_en.htm

⁴ European Commission. (2015). EUROPE 2020 target: tertiary education attainment, available at: http://ec.europa.eu/europe2020/pdf/themes/28_tertiary_education_02.pdf

⁵ European Commission. (2015). Europe 2020 targets - State of play, available at: http://ec.europa.eu/europe2020/europe-2020-in-your-country/lietuva/progress-towards-2020-targets/index_en.htm

⁶ Seimas of Republic of Lithuania. (2012). Del 2014–2020 metu nacionalines pazangos programos patvirtinimo (For approval of the 2014–2020 national progress programme), available at: http://www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id=439028&p_query=&p_tr2=2

⁷ Münich D. et al. (2014). Mechanisms and methods for costbenefit / cost-effectiveness analysis of specific education programmes, available at: http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0CCUQFjAB&url=http%3A%2F%2Fwww.eenee.de%2Fdms%2FEENE%2FAnalytical_Reports%2FEENE_AR19.pdf&ei=nvQsVc6rGMuNaMiUgOgB&usq=AFQjCNFYfBLuvzZKpoUeNbaHwbuEFTVoAQ&sig2=Cz47salZU0c6G_ID-CG5pw&bvm=bv.90790515.d.d2s

shows that some countries achieve better results than others.⁸ The UK and Ireland, the Benelux countries and the Nordic countries have all displayed better efficiency ratings, with the UK and Netherlands being the most efficient. The level of efficiency correlates with contextual features such as a high level of autonomy.⁷

State spending on tertiary education as a percentage of GDP only has a positive impact on labour market productivity growth when that spending is adjusted for efficiency.**Error! Bookmark not defined.** Efficient state spending on HE has been found to minimize the relative unemployment risk of graduates – it is the efficiency of spending, rather than the amount spent, that produces this effect. The benefits of efficient state spending on employability and labour productivity growth are greatest when a student has just graduated with a HE diploma.

When **funding to a HE institution is allocated according to its outputs**, rather than its inputs or its historical or cultural significance, HE efficiency tends to increase. This leads to HE institutions receiving funding based on their overall impacts. A university might attract a very high number of students and produce a high number of education programmes, but if it is not displaying good output results, then the state is potentially wasting funds that could be better allocated elsewhere in the HE sector.

Higher education systems are reported to be more efficient when tertiary education institutions have **general autonomy and flexibility**, particularly with regard to personnel policy and financial autonomy. Increased levels of autonomy, along with appropriate mechanisms to ensure accountability, can help increase education and research productivity. Institutional autonomy to hire and dismiss staff and set wages is positively correlated with HE efficiency levels. It also helps to reduce stagnation in HE institutions.

Finally, evaluation systems have shown to have a positive impact on the efficiency of HE.⁹ Countries that have evaluations done by independent or stakeholder groups display better HE efficiency results. These groups are generally much more interested in the efficiency and effectiveness of HE than in simple statistics and are more likely to employ more advanced HE measuring tools (CBA and CEA) capable of indicating the causes and impacts of spending and policies.

Any institutional reform of tertiary educational systems should first focus on evaluating the efficiency and effectiveness of HE, though this should be done mindfully rather than as a matter of form.

⁸ Aubyn M. et al. (2009). Study on the efficiency and effectiveness of public spending on tertiary education, available at: http://ec.europa.eu/economy_finance/publications/publication16267_en.pdf

⁹ Aubyn M. et al. (2009). Study on the efficiency and effectiveness of public spending on tertiary education, available at: http://ec.europa.eu/economy_finance/publications/publication16267_en.pdf

2. Returns on higher education

1. The critical questions

Worldwide there is much discussion about the **perceived versus real value of higher education**. Policy makers over the past years have focused largely on access to higher education, and now a renewed force on access plus completion is pushing the doors of higher education to open wider than at any time in history. There is a demand from society to produce more highly qualified and highly skilled individuals to meet the needs of the current and future labour market.

The questions are: how much higher education do we need, and for what purpose do we need it? What is the added value for various levels of higher education? With public institutions in mind, what is the return on investment for taxpayers to subsidise postsecondary education? Are graduates actually *learning* in higher education, or are they just doing seat time? Are we to be concerned with the number of people with university degrees who are either unemployed or underemployed, or is this just a normal phenomenon of a large system?

It seems clear that individuals and societies must decide whether benefits obtained from the allocation of resources for higher education exceed those obtained from alternative uses. Hence, the decisions about investments in higher education and its forms of funding must be based on a thorough evaluation of the benefits for individuals and for society as a whole, including both market and non-market impact of education that are perceived as desirable.

2. Estimation of returns of investment on higher education

Most economic analyses of the value of education have focused on the contribution of higher education to increased earning capacity in the labour market. The estimation of average monetary returns to education has generated a vast amount of empirical literature. However, less is known about possible variations of the effects by selection into higher education, a critical omission considering education's expressed role as a key mechanism for integrating disadvantaged individuals. Studies on the causal relationship between higher education and earnings through the analysis of the main econometric problems in the recent literature lead to **four key conclusions**.

First, higher education improves the chances of employment, reduces the duration of unemployment and positively influences income through higher labour market earnings. **Second**, rates of return are far from homogeneous as the size of the direct effect of higher education on earnings varies among individuals and demographic groups; apparently, higher education affects individuals and groups who are less likely to pursue a college education more than traditional college students. **Third**, an emergent literature reveals that not only education, but the abilities of individuals impact on their market performance; hence, people's competencies, both cognitive and non-cognitive, appear to have a marked effect on labour market performance and, consequently, on estimates of returns to education. **Fourth**, existing evidence on returns to higher education needs to be examined with care since estimates are often not directly comparable because of differences in sample coverage and methodology.

The conclusion is that rates of returns is an interesting instrument for approaching the analysis of public and private investment on higher education but it cannot be used alone for taking political decisions. Rates of return provide valuable information, which is relevant, but partial.

3. Rates on return on higher education in Lithuania 2015

The broader aim of the assessment of rates of return on higher education in Lithuania was to understand what are real cost and benefits of higher education – what is the balance of inputs and outputs as well as how does it influence educational quality. Three separate types of returns were calculated – private financial return, public financial return and private non-financial return. The standard methodologies recommended by experts were adjusted and simplified due to the scarcity of relevant data as well as the sample of individuals was neither big nor diversified to use the standard models. Assessments were provided by MOSTA using SODRA+ED database as basic source of data.

The studies show that the highest rate of return (43%) is for individuals of years after graduation, who have completed their vocational. This means their earnings, as well as educational benefit is the highest. On the opposite, college graduates have lower return on their education (26%) – they have not enough knowledge or experiences on the labour market. It can also be explained with a fact that university graduates have broader knowledge than graduates from college or vocational education institution, which means that a year after university students might have difficulties while searching for a specific place in the labour market. The main message is that **rates on return are higher for those completing vocational and college studies than for those completing university education.**

In all cases the annual **return on education is higher for women** (average 7%) than men. Higher returns for women are often found in the literature – as average wages for men are in general higher, the result suggests that higher education is more valuable for women than for men because poorly educated women tend to work in jobs with lower wages than poorly educated men.

Of **vocational training**, the highest financial returns observed for graduates who have completed the **health care** and **transport services** and professional qualifications. The lower financial returns observed for those who have acquired the social security services and qualifications.

First college and university level studies have the highest return on graduates with **technological** and **physical sciences** field of study, the lowest – arts and humanities field. However, monitoring the results of the second-level graduates have a high degree of social return on graduates – possibly a master's degree education to those awarded by the greater advantage than the same area of the lower-level graduates.

Also, an impact assessment of higher education on employment was carried out. Having completed higher education increases the **likelihood of employment** of 13.6 times compared with the level of secondary education and 3.56 times compared to the level vocational education.

In general, the results of returns on higher education in Lithuania look similar to other European countries. In Lithuania, higher education does improve the chances of employment, and positively influences individual earnings. However, returns are not homogeneous as the size of the returns differs widely depending on the type/level of higher education completed and on personal characteristics such as gender. Additionally, estimation of returns for Lithuania is based on one cohort data only, so the figures indicate initial earnings advantages due to higher education rather than the complete advantages triggered by higher education completion.

3. Policy recommendations

- The Lithuanian government should consider the implementation of a **general funding model** for allocating public funds on HEIs. A model based on inputs and outputs should stimulate performance providing incentives to institutions and individuals for increasing the efficiency and effectiveness of the system.
- The decisions about the investment in higher education and its financing must be based on a **complete evaluation of all the benefits** for individuals and for society as a whole, including both market and non-market impacts of education that are perceived as desirable.
- Even if two main exercises developed under recent assessment of returns on higher education (estimation of rates of return and probability of unemployment) present valuable information, however the results **cannot be considered enough consistent for taking further policy decisions**. Information from only one year, especially in a situation of economic difficulties, only provides a snapshot, useful but limited.
- For further developments the Lithuanian government should **continue with application of the methodologies** on assessing rates on higher education: improve the available data mostly in the sense of extending the series of data to several years. It is recommended to repeat the same exercise every year and after several years (at least four or five) authorities will have solid information for decision making.
- Methodologies for analysing the returns of higher education should consider all the benefits of higher education and not only monetary benefits. **Graduate and employers surveys** should be developed because they provide critical information about the labour market, but also about how universities are preparing people as citizens and workers.

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