FINANCIAL HEALTH OF LITHUANIAN STATE UNIVERSITIES

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Abstract. The problem of assessment of university's financial health is investigated in the publication. This subject is relevant from both theoretical and practical approach. According to authors' knowledge, it is one of the first works of Lithuanian authors that analyses the financial health of Lithuanian state universities. The aim of performed research is to assess the financial health of Lithuanian state universities. The research is carried out according to publicly announced financial reports of 2011-2016 of fourteen Lithuanian universities. The financial health of universities is assessed calculating Financial health index (FHI), which consists of four indices: primary reserve ratio, viability ratio, return on net assets ratio and net operating revenues ratio. These indices allow evaluating different aspects of financial health of universities. The four ratios are weighted and combined to determine FHI. FHI statistic indices (mean, minimum, maximum) are calculated applying SPSS software. With reference to FHI of each university, universities are divided to four groups that reflect different level of financial health. The level of FHI of different years and average FHI meanings showed that financial health of most universities was satisfactory in analysed period.

Key words: university, financial ratios, university financial health, financial health index.

JEL code: I22, I23, H83

Introduction

Universities undoubtedly are high in the social scale in the life of each state. Not only they provide education and fulfil scientific research but also influence economic, social and cultural development of the country. As the reform of higher education is being proceeded, optimization of higher school net is widely discussed in Lithuania. Present universities are assessed according their capability to present qualitative studies and ability to fulfil scientific research of high level, as well as present possibilities of efficient financial support. On purpose to use the finances for higher education effectively, the necessity to investigate financial health of universities appears. It is important to consider not only qualitative characteristics of universities (academic reputation, quotation indices etc.) but also assess the ability of universities to manage resources, fulfil financial obligations, generate surplus etc.

Foreign scientific references show much consideration to issues of financial health of universities. Certain aspects of financial health analysis and aspects of assessment are investigated in scientific publications prepared by Gallifa, Gassiot (2011), Tahey, Saluzo, Prager, (2010) Fischer, Gordon, Greenlee, Keating (2004), Gordon, Greenlee (2008), Tugas (2012). Most research on financial health of universities can be found in the works of the scientists from the USA. Fischer, Gordon, Greenlee, Keating (2004) investigated financial state of those private universities of the USA that had higher level of autonomy and lesser of governmental support than in other countries. Greenlee, Keating (2004) fulfilled the research of structure and changes in financial statements of universities. Peruso (2010) investigated methodical issues of financial health assessment in private universities. Greenlee, Keating (2004), applying on financial reports of USA universities, prepared Composite financial index calculating methods and fulfilled empiric investigation according to the practice of USA universities.

Lithuanian authors pay insufficient attention to the issue of financial health of universities. Although, after the implementation of the accounting reform of public sector, which allows to analyse and compare the financial state of universities and other public sector subjects (arranged since 2010), there is a research on aspects of sufficiency and efficiency of own and borrowed resources (tangible, intangible, financial) missing. There is a lack of works dealing with the

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methods of calculating and comparing financial health in Lithuanian universities with the best indices of other universities. Thus, the differences of accountability (structure of financial statements, titles of items) limit the direct application of evaluation indices of the financial health of foreign universities (especially of the ones from the USA).

The main problem of the article can be reflected in the question: how to assess the financial health of Lithuanian universities paying attention to the peculiarities of financial accountability of Lithuanian public sector? The purpose of the article is to assess financial health of Lithuanian universities. The following tasks are set: 1) to investigate theoretic issues of the assessment of financial health of universities; 2) to calculate the Financial health index of Lithuanian universities on the grounds of assessment methods of financial health; 3) to divide Lithuanian universities into groups according to their level of financial health.

The research methods are as follows: analysis of scientific literature, grouping, comparing, specifying and generalizing of information, analysis of statistical data.

Research results and discussion

1. Theoretic issues of the analysis of financial health of universities

Scientific works deal with the appearance of the necessity of financial health analysis of universities and other subjects of a public sector and possibility to fulfil it is interrelated with the reform of accounting and financial accountability of a public sector. The states, which started public sector accounting reform, had to graduate from the cash basis to the accrual-based accounting (Tikk, Almann, 2011). The authors, who investigate the issues of the accountability of a public sector (Steiss, Nwagwu, 2001; McKinney, 2004; Finkler, 2005 et al.), emphasize that information in financial statements becomes more comprehensive and easier understandable when it is formed applying accrual-based accounting. With reference to this information it is possible not only analyse and assess financial health of a public sector subject but also compare it with the results of financial health of other subjects. The analysis of financial health can reveal fiscal problems and provide with information that is necessary in fulfilling corrections. It can help to reveal weak and strong sides of financial management of a subject of a public sector. It is useful in assessing the efficiency of financial resource usage.

The analysis of the works of foreign authors (Tahey, Saluzo, Prager, Mezzina, Cowen, 2010; Fischer, Gordon, Greenlee, Keating, 2004; Gordon, Greenlee, 2008; Tugus, 2012; Fichtenbaum, 2016) show that there is no unanimous attitude towards the analysis of financial health of universities. Different indices and their combination of financial health analysis as well as different methods containing information particularities are presented in the article.

The authors, who investigate the issues of the analysis of university's financial health, refer to the groups of indices that are calculated while assessing financial status of private universities: Liquidity ratios, Operating performance ratios, Debt and Leverage ratios.

Scientists from the USA (Tahey, Salluzo, Prager, Mezzina, Cowen 2010) propose to apply the Composite Financial Index (CFI) method for calculating university's financial health. The CFI has been useful in helping boards and senior management understand the financial position their institutions enjoy in the marketplace and has proved valuable in assessing future prospects, functioning as an "affordability index" of a strategic plan (Tahey, Salluzo, Prager, Mezzina, Cowen 2010). The main questions that CFI helps to answer to: are resources sufficient and flexible enough to support the mission?; are debt resources managed strategically to advance the mission?; does

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asset performance and management support the strategic direction?; do operating results indicate the institution is living within available resources? While analysing scientific works it is noticeable that there are no unanimous opinion due to the number of indices that CFI consists of and the level of assessment. Tahey, Saluzo, Prager, Mezzina, Cowen (2010) calculate CFI applying four indices. Moody's rating agency apply the method of three CFI indices for private university assessment. The analysis of scientific works allows to state that the choice of the indices of university's financial health is determined by the peculiarities of accounting and financial accountability of a public sector of a certain state. That is why the presented indices have to be calculated according to the structure of financial statements.

2. Research methodology

The purpose of the research is to assess the financial health of Lithuanian state universities. Financial health of Lithuanian state universities is assessed calculating Financial Health Index (FHI). The calculations are fulfilled according to financial statements of Lithuanian state universities: statement of financial position and statement of activities. The stages of a research: 1. FHI indices are calculated; 2. the indices are converted to strength factors along a common scale; 3. The strength factors are then multiplied by specific weighting factors; 4. FHI is calculated; 5. According to the level of FHI assessment, Lithuanian universities are divided into four groups; 6. Statistical indicators of FHI are calculated (mean, maximum, minimum).

FHI consists of four indices: Primary reserve ratio (PRR), Viability Ratio (VR), Return on Net Assets Ratio (RNAR), Net Operating Revenues Ratio (NORR) (Table 1).

Table 1

FHI ratios

Ratio	Formula
PRR	Expendable Assets/ Expenditure
VR	Expendable Assets/Debt
RNAR	Change in Net Assets/Net Assets
NORR	Net Surplus (Deficit)/Revenue

Source: author's calculations based on Fischer, Gordon, Greenlee, Keating (2004); Tahey, Saluzo, Prager Mezzina, Cowen (2010); Tugas (2012)

These ratios compare the university's operating commitments (Primary Reserve Ratio) and its obligations (Viability Ratio) against its expendable wealth. They measure the ability of the university on a short-term basis to live within its means (Net Operating Revenues Ratio) and the ability of the university to generate overall return against all net resources (Return on Net Assets Ratio).

The works of foreign authors (Tahey, Salluzo, Prager, Mezzina, Cowen 2010) present a formula of Expendable Net Assets calculation:

$$\text{Expendable Net Assets} = \text{Total Net Assets} - \text{Permanently Restricted Net Assets} - (\text{Property, Plant, and Equipment} - \text{Long} - \text{Term Debt}) \quad (1)$$

Since net assets is not divided into unrestricted net assets in the statement of financial position of Lithuanian public sector, restricted net assets formula is modified. Expendable net assets are calculated according to the formula:

$$\text{Expendable Net Assets} = \text{Net Assets} - \text{Strategical Inventories} - \text{Long Term Assets} + \text{Long Term Debt} + \text{Financing} \quad (2)$$

According to Tahey, Salluzo, Prager, Mezzina, Cowen (2010) the calculated indices are converted to strength factors. The strength factors with related ratios were as follows: PRR (0.133), VR (0.417), RNAR (0.02), and NORR (0.013). According to Tahey, Salluzo, Prager, Mezzina, Cowen (2010) the floor for negatives values is -4 and the highest meaning is 10. FHI is calculated according to a formula:

$$FHI = PRR * 0.35 + VR * 0.35 + RNAR * 0.2 + NORR * 0.1 \quad (3)$$

The weight of indices has been chosen according to the research of foreign authors (Tahey, Salluzo, Prager, Mezzina, Cowen, 2010; Salluzo, Tahey, Prager, 2002). The level of FHI is assessed according to this scale of assessment (Table 2).

Table 2

FHI scale of assessment

FHI meaning	Level of assessment	University status
-4 – 0.99	Unsatisfactory level	Unstable
1 – 2.99	Satisfactory level	Low stability
3 – 9.99	Good level	Stable condition
10	Very good level	High stability

Source: author's calculations based on Tahey, Salluzo, Prager, Mezzina, Cowen (2010)

According to Salluzo, Tahey, Prager (2002) the FHI meaning larger than 3 reflects a stable condition of university's financial health.

Limitations of the research. Although, Lithuanian universities, as other subjects of a public sector, have an obligation to declare financial statements publicly, not all universities declare them. Eight from fourteen state universities declared financial statements for the years 2010-2016. One university presents statements for the period of 2011-2016, two universities for 2012-2016 and two universities for 2014-2016. Such limitation of data accessibility does not allow fulfilling thorough analysis of all universities' financial health for the years 2010-2016.

3. Research results and discussion

With reference to universities FHI calculating results FHI assessment scale, Lithuanian state universities are classified into four groups (Table 3).

Table 3

Classification of Lithuanian universities according to FHI meanings

Year	Universities/FHI			
	-4 – 0.99	1 – 2.99	3 – 9.99	10
2011 (N 8)	ASU	KTU, VU, VGTU	VDU, LEU, LSU, LKA	-
2012 (N 9)	VDU, ASU	LSU, LKA, KU	KTU, VU, VGTU, LEU	-
2013 (N 11)	VDU, ASU, LSU, ŠU	VU, VGTU, LKA, KU	KTU, LEU, VDA	-
2014 (N 13)	KTU, LKA, ŠU	LSU, KU, VDA, LMTA	VDU, VU, VGTU, ASU, LEU, LSMU	-
2015 (N 14)	ŠU, MRU	VDU, KTU, VU, LEU, LKA, VDA, LMTA, LSMU	VGTU, ASU, KU, LSU	-
2016 (N 14)	MRU	VDU, KTU, VU, VGTU, LEU, LSU, ŠU, VDA, KU, LSMU	ASU, LKA, LMTA	-

Source: author's calculations

Where:

VDU - Vytautas Magnus University; KTU - Kaunas University of Technology; VU - Vilnius University; VGTU - Vilnius Gediminas Technical University; ASU - Aleksandras Stulginskis University; LEU - Lithuanian University of Educational Sciences; LSU - Lithuanian Sports University;

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MRU - Mykolas Romeris University; LKA - General Jonas Žemaitis Military Academy of Lithuania; ŠU - Šiauliai University; VDA - Vilnius Academy of Arts; KU - Klaipėda University; LMTA - Lithuanian Academy of Music and Theatre; LSMU - Lithuanian University of Health Sciences.

As it can be seen from the data presented in Table 3, FHI has ranged from an unsatisfactory level to a good one in an analysed period of time. Most universities a good level of FHI achieved in 2011 when financial health was stable of 50 per cent of all universities. A good level of FHI was achieved by the smallest number of universities (27.27 %) in 2013. While analysing the changing results of FHI, it can be seen that financial health of seven universities (VU, VGTU, LEU, KU, VDA, LSMU, LMTA) was of a low stability and stable condition. Especially bad financial health was detected in Mykolas Romeris University. Negative meaning of FHI of this university means that the status of the university is unstable. During the analysed period, the highest average level was in Lithuanian University of Educational Sciences. The average meaning of FHI (3.31) of this university shows its stable financial health. Average meanings of FHI of other universities do not reach 3 and ranged from an unsatisfactory to satisfactory level. In order to show the changes of FHI of all universities during the analysed period, statistical FHI indices are presented in Table 4.

Table 4

Statistical FHI indices

Year	Mean	Min	Max
2011 (N 8)	2.45	0.05	5.27
2012 (N9)	2.34	0.24	3.98
2013 (N 11)	1.31	-1.22	3.83
2014 (N 13)	2.27	-1.31	4.45
2015 (N 14)	1.99	-1.56	4.09
2016 (N 14)	1.94	-0.80	4.77

Source: author's calculations based on Lithuanian state universities annual financial statements

Calculated means of FHI show that average level of university's financial health was low during the analysed period; what is more, it changed within 1.31-2.45 limits. The worst result was in 2013 when FHI mean dropped to 1.31. Such level of the index was determined by unstable university's financial health, when 3 universities from 11 had negative FHI meanings. The best result was in 2011. Even though FHI average meaning was the highest, it did not exceed desirable level, i.e. 3, and university status was assessed satisfactory. Table 3 presents minimal FHI means. These means show that FHI means of all universities having publicly announced financial statements were positive only in 2011 and 2012. General Jonas Žemaitis Military Academy of Lithuania had the highest FHI meaning in analysed period of time. In 2016 FHI increased more than twice and reached 4.77. On purpose to present FHI of every university and compare it to other universities, Fig.1 reflects average FHI meanings of Lithuanian universities.

As it can be observed from the presented figure, only Lithuanian University of Educational Sciences had an average FHI meaning that was higher than 3 during the analysed period. Presented results show that two universities had negative FHI meanings. During the analysed period average FHI of most universities reflects low level of stability. FHI means of each university reflect only an average level. FHI of each university changed differently during the analyzed period.

Source: author's calculations based on Lithuanian state universities annual financial statements

Fig. 1. Average FHI meanings of Lithuanian universities

FHI changes were insignificant in several universities (for example, MRU, LMTA); however, some universities (for example, VDU, ASU, LEU and others) had a wide range of FHI. For instance, FHI of Šiauliai University was negative in 2015 and reached 1.55, and increased to 1.73 in 2016. Such fluctuation had impact on average FHI meaning. In carrying out further and more detailed analysis, FHI of each year, its changes and reasons have to be assessed.

Conclusions, proposals, recommendations

- 1) In the article, the financial health of Lithuanian universities is assessed calculating FHI, which gives an opportunity not only to assess the most prominent financial results of each university but also to fulfil the comparative analysis of universities, rate them according FHI level and identify stable and unstable financial health of each university.
- 2) According to university's FHI calculating in the period of 2011-2016 years, the universities are divided into four groups; it can be noticed that the financial health of more than 45 per cent of all universities was stable only in years 2011 and 2014. The results of FHI calculating showed sufficiently complicated financial situation of universities in 2016 when the stability of university's financial health was low in more than 70 per cent of universities.
- 3) Analysis of FHI statistic indices showed that financial health of Lithuanian universities was satisfactory in a period of 2011-2016 years though it was getting worse during the analysed period (with an insignificant exception in 2014). The worst status was in 2013 when the average level of FHI reached only 1.31. The best results of financial health were in 2011, when the average meaning of FHI was equal to 2.45. Although average FHI meaning of all universities did not reach desirable level (3), the average FHI levels were higher than desirable level in several universities. It proves the stable financial health of these universities.
- 4) Calculations showed general tendencies of university's financial health changes. It is purposive to carry out more intensive analysis in the next stage of research, where changes of FHI indices and reasons of the phenomena would be investigated. It would allow to reveal the main reasons of low university's financial health and make a decision on financial health improvement.
- 5) The assessment of university's FHI reveals only the financial status of an institution. The received results should be analysed together with the results of other spheres of university's activities. The assessment of financial health should become concurrent part of university's annual assessment. Universities should present not only general comments on financial

statements but also calculate relative indices that show their ability to use resources efficiently, implement obligations, generate surplus etc.

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