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INCOME AND FINANCIAL STABILITY OF UNIVERSITY: SECTORAL APPROACH

Abstract. The article synthesizes methodological approaches to assessing the financial stability of universities, identifies ambiguity in the choice of evaluation indicators. Approaches to understanding and assessing financial stability are identified: strategic, according to which financial stability is achieved through the ability of universities to diversify revenues, expand their own sources of funding, optimize costs, reduce dependence on public funding by making flexible financial decisions; current, which characterizes the ability of universities to balance revenues and expenditures, maintain a sufficient level of solvency and create a positive current financial space. Conceptual tools of financial stability of universities based on an integrated approach are formulated.

The peculiarities of the influence of the sectoral aspect of the university activity and the corresponding potential of income formation on its financial stability are investigated. The results of the study are based on a sectoral approach to the distribution of universities (classical, technical, and economic), due to the specifics of contingent formation in relevant specialties, public financing priorities, their competitiveness in the market of educational services, the ability of universities to diversify and expand their funding. The assessment of financial stability is carried out in terms of the income approach, the ability of universities to generate income, cover costs and create a positive financial space. Technical and classical universities have the highest share of public funding due to priority specialties according to the government policy. Today the tuition fee at Ukrainian universities is much lower compared to public funding, so the growing share of fee-paying students does not have a positive effect on the financial stability of universities. According to the results of the analysis, it was found that the net financial results of universities do not depend on the sectoral and regional affiliation, status, size of the university. However, the ability to make effective financial decisions within the autonomy of universities, balance income and expenditure, form a sound financial structure, find additional sources of income to meet current and strategic financial obligations of the university are the preconditions for financial stability of universities.

Keywords: income, financial stability, university, high education institutions, financial results.

JEL Classification I21, I22

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Матвійчук В. І.*кандидат економічних наук, доцент,**Донецький національний університет імені Василя Стуса, Вінниця, Україна;**e-mail: v.matviichuk@donnu.edu.ua; ORCID ID: 0000-0002-1032-3060***ДОХОДИ І ФІНАНСОВА СТІЙКІСТЬ УНІВЕРСИТЕТІВ: ГАЛУЗЕВИЙ ПІДХІД**

Анотація. Синтезовано методичні підходи до оцінки фінансової стійкості університетів, визначено неоднозначність до вибору групи оціночних показників. Виокремлено підходи до розуміння і оцінки фінансової стійкості: стратегічний, відповідно до якого фінансова стійкість досягається за рахунок здатності університетів диверсифікувати доходи, розширювати власні джерела фінансування, оптимізувати витрати, зменшувати залежність від бюджетного фінансування шляхом ухвалення гнучких фінансових рішень; поточний, який характеризує здатність університетів збалансовувати доходи і витрати, підтримувати достатній рівень платоспроможності і формувати позитивний фінансовий простір. Сформульовано понятійний інструментарій фінансової стійкості університетів, заснований на комплексному підході.

Досліджено закономірності впливу галузевого аспекту діяльності університету та відповідного потенціалу формування доходів на його фінансову стійкість. Результати дослідження базуються на галузевому підході до розподілу університетів (класичні, технічні та економічні), що обумовлено специфікою формування контингенту за відповідними спеціальностями, пріоритетами бюджетного фінансування, їхньою конкурентоспроможністю на ринку освітніх послуг, спроможністю університетів диверсифікувати і розширювати власні джерела фінансування. Оцінку фінансової стійкості здійснено в аспекті дохідного підходу, здатності університетів генерувати доходи, покривати витрати і формувати позитивний фінансовий простір. Технічні і класичні університети мають вищу частку бюджетного фінансування за рахунок пріоритетних спеціальностей і вартості навчання студентів на бюджетній формі навчання. Наразі контрактна вартість навчання в українських університетах є значно нижча порівняно із бюджетним фінансуванням, тому зростання частки студентів-контрактників позитивно не впливає на фінансову стійкість університетів. За результатами аналізу було виявлено, що чисті фінансові результати університетів не залежать від галузевої та регіональної належності, статусу, масштабу ЗВО. Проте здатність ухвалювати ефективні фінансові рішення в межах автономії університетів, збалансовувати доходи і витрати, формувати надійну фінансову структуру, знаходити додаткові джерела доходів для виконання поточних і стратегічних фінансових зобов'язань університету і є умовою забезпечення фінансової стійкості університетів.

Ключові слова: доходи, фінансова стійкість, університети, заклади вищої освіти, фінансові результати.

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Introduction. One of the key challenges for modern universities is the problem of financial stability. It is due to changing approaches to financing higher education institutions, reducing state funding, the formal impacting of performance on their financial capacity and access to public funding. Violation of the financial stability of universities caused by the reduction of the enrollees and changes in their structure, the formation of insufficient (small) groups, exceeding the growth rate of nominal casts of educational services over the prices, reducing the financial capacity of householders, and as a result — limited capacity of universities to cover current costs. Under such conditions, universities face challenges related to the need to diversify sources of financing. It involves the formation of a sound financial structure, the search for additional sources of income to meet current and strategic financial obligations for execution of the mission of university.

The challenge of modern universities is the ensuring of an acceptable level of financial stability by balancing income and cost, diversifying incomes, optimizing costs in the context of increasing financial autonomy of higher education institutions (HEIs). Nowadays the activities of Ukrainian universities are implemented in the context of changing approaches to financing higher education

institutions, reducing state funding, declining the number of enrollees, changing their structure, pricing policy, reducing the financial capacity of householders and insufficient level of investments in university development. Unfortunately, without sustainable public funding today it is incredibly difficult for state universities in Ukraine to achieve financial stability, and the main factor until recently was the establishment of dumping prices in the most HEIs, because only leading, innovative, or leading universities can afford to set a real tuition fee. Under such conditions, universities face challenges related to the need to diversify sources of financing. It involves the formation of a sound financial structure, the search for additional sources of income, good cost management to meet current and strategic financial liabilities for execution of the mission of university.

The investigation of the income impact on the universities' financial stability is relevant issue from the standpoint of funding sources, sectoral aspect and other factors that determine their size, diversification and positive income growth.

Research analysis and problem statement. The problem of evaluation the universities' financial stability is covered by the research of foreign and domestic scientists. F. Di Carlo, G. Modugno, T. Agasisti, G. Catalano (2019) proposed a methodological approach to assessing the financial stability of Italian universities [1]. T. Estermann, E. B. Pruvot (2011) studied the financial stability of European universities, the key determinant of which was chosen the income diversification [2]. D. Popov, A. Isard (2019) proposed a methodological approach to assessing the financial stability of British universities [3]. R. Yelland (2007) based the assessment of financial stability on a strategic and tactical approach, considering risk management [4]. Z. Cernostana (2018) examined the financial stability of the universities based on of the structure of funding sources, proposed an integrated approach to the assessment of financial stability, and arguing that financial performance is a momentum indicator, unlike the financial stability which is dynamic characteristic [5]. O. A. Laktionova, V. V. Koval, O. V. Slobodyanyuk, L. A. Prystupa (2020) consider financial stability from the standpoint of a strategic approach that ensures the development of the university by ensuring current capacity to reach solvency and creating a prospective financial space [6]. Yu. M. Kovalenko, L. O. Vitrenko (2020) investigated the tendencies of changing the mechanism of financing HEIs in Ukraine from the standpoint of the budget method, which provides the ability of the university to generate income, make expenditures to achieve goals and increase financial autonomy of the institution [7].

The problem of ensuring the financial stability of Ukrainian universities has not received sufficient scientific attention and requires further research to determine the impact of income on its level taking into account sectoral capacities and specificity of university.

The purpose of the article is to determine the patterns of influence of the sectoral aspect of the university and the corresponding potential for income generation on its financial stability.

Research methods. The article was written using such research methods as analysis and synthesis for systematizing theoretical and methodological approaches to assessing the financial stability of universities; statistical, coefficient, dynamic analysis and method of comparison for assessing the financial stability of universities.

The research methodology is based on a sectoral approach to the formation of a sample of universities, which includes three groups:

- classical universities (Vasyl' Stus Donetsk National University, Ivan Franko National University of Lviv, Sumy State University, Taras Shevchenko National University of Kyiv, Odesa I. I. Mechnikov National University);
- economic universities (SHEI KNEU named after V. Hetman, VTEI KNTEU, West Ukrainian National University (till 25.08.2020 — economic), Simon Kuznets Kharkov National University of Economics, University of Customs and Finance;
- technical universities (National University «Yuri Kondratyuk Poltava Polytechnic», Vinnytsia National Technical University, NTU «KhPI», Odesa National Polytechnic University, Igor Sikorsky Kyiv Polytechnic Institute).

The financial stability of universities is assessed and compared by sectoral based on the dynamics of their income, funding structure, efficiency analysis according to marginal income and net financial result, income per student and income per teacher.

Results of the research. Financial stability of university ensures its ability to invest in educational and research activities. This is one of the key financial criteria of its viability, without which the mission and strategic objectives could not be achieved.

World practice shows the ambiguity of approaches to assessing financial stability. T. Estermann, E. B. Pruvot (2011) based on the EUDIS project [2] studied the financial stability of European universities through the prism of income diversification, balancing their structure, autonomy of universities, their ability to provide financing for academic and strategic objectives. The main source of income for European universities is public funding, but the growth of the share of additional sources is provided by contracts for research and education from the private sector, charitable contributions, rental income, financial and investment activities.

The methodology for assessing the financial stability of universities in Scotland [8] is based on the structure of income, the ratio of income to borrowing, liquidity, capacity to pay and creditworthiness. Such an approach characterizes the university's ability to have sufficient liquidity to ensure current financial stability. In Great Britain [3], indicators aimed at determining the level of financial stability and dependence on borrowing (liquidity, the ratio of reserves to income, the ratio of net assets to cost, the percentage of external borrowings in income, surplus to income) are used to assess financial stability.

The financial stability of university is achieved through the reimbursement of economic costs and investment in infrastructure (physical, human, intellectual) aimed at implementing the institution's strategy, achieving operational stability (balancing income and expenses), investment activities and risk management [4, p. 35].

According to Italian researchers F. Di Carlo, G. Modugno, T. Agasisti, G. Catalano [1], the financial stability of universities is ensured by the ability to receive budget funding and generate alternative sources of income from the provision of additional educational and other services. The level of financial stability characterizes the ability of universities to optimize costs, diversify incomes, provide sufficient and sustainable public funding. This approach is aimed at a comprehensive assessment of universities. It takes into account the marginal income from operating and commercial activities, assesses the ability of the university to raise funds for current activities, the implementation of future research, estimates the cost of different categories of staff. A feature of this approach is the focus on indicators of current financial stability and its limited internal use for management decisions. L. Lapovsky (2014) considers the financial stability of universities as the ability to change business models through funding policies, mass courses, development of partnerships, increasing operational efficiency, promotion of online courses to reduce operating costs [9]. O. A. Laktionova, V. V. Koval, O. V. Slobodyanyuk, L. A. Prystupa (2020) investigate strategic financial stability as the ability of the university to form financial spaces for operational and investment activities to improve the resource base, increase wages of educational staff, to implement of programs of material incentives as a tool for professional development of staff [6]. S. A. Belyakov (2009) connects the level of financial stability with the maturity of financial liabilities, prompt response to changes in market conditions and the ability to finance new programs [10]. Yu. Yu. Kharchuk (2018) investigates the relationship between economic security and financial stability, offers details of analytical accounting of income and cost of university, as an information source of their financial support [11]. L. M. Dokienko (2020) defines the current financial stability as a case characteristic of the activity at the time of evaluation [12].

Comparison of the methodological approaches to assessing the financial stability of universities by domestic and foreign scholars shows the ambiguity of approaches to the choice of indicators based on public or internal (management) information about HEIs, which limits the analysis by external stakeholders.

Thus, it is possible to distinguish two approaches to understanding of the financial stability:

- strategic approach is based on the strategic priorities of the university, the ability to diversify income and increase them from their own sources to increase the level of financial autonomy, reduce dependence on public funding and provide flexibility in financial decision-making;

- tactical approach is aimed at implementing operational plans for the operation of universities, ensuring the balance of income and cost in the current period, maintaining a sufficient level of liquidity and ability to pay for the implementation of operating costs, the formation a positive financial space.

Thus, the financial stability of the university should be considered as the ability of university to form a positive financial space for financial support of strategic areas of development, operational activities, the ability to respond flexibly to changes in higher education, to diversify and increase its own income, fund research. According to the hypothesis, the sectoral specifics of the implementation of educational and scientific activities determines the contingent of students and performance indicators affect the funding potential and so the financial stability of the university.

The main indicator of the financial stability of universities is income. Since the absolute income indicator is influenced by the scale of the university, it is advisable to assess financial stability based on a dynamic income indicator. Therefore, for estimating the income of the university, it is proposed to use indicators of the average growth rate by university, group of universities and in general. This makes it possible to determine the type of financial stability: sufficient — above the sectoral average, insufficient — below (*Fig. 1*).

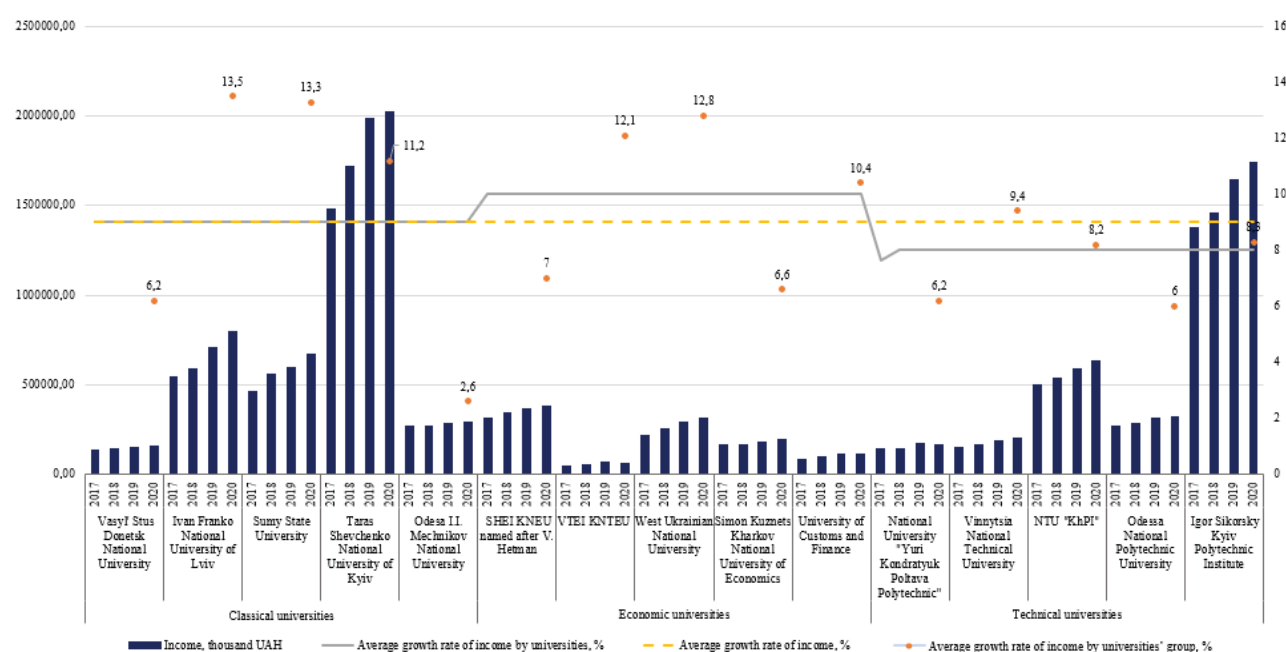


Fig. 1. Dynamics of universities' income

Source: compiled by the authors on the basis [13—27].

It should be noted that this distribution is quite conditional, as the financial stability of the university is affected by a set of indicators. *Fig. 1* illustrates that the average growth rate of income by universities for 2017—2020 is 9 %, if analyzed by groups, the difference between them is ± 1 p.p.: Technical Universities — 8 %, Classical — 9 %, Economic — 10 %. The highest growth rates are shown by the leading Ukraine Classical Universities (Ivan Franko National University of Lviv — 13.5 %, Sumy State University — 13.3 %, Taras Shevchenko National University of Kyiv — 11.2 %) and Economic Universities (West Ukrainian National University — 12.8 %, VTEI KNTEU — 12.8 %). These and other universities (University of Customs and Finance, Vinnitsia National Technical University, NTU «KhPI», Igor Sikorsky Kyiv Polytechnic Institute) can be attributed to the group of universities that have a sufficient level of financial stability. All other universities, where the average growth rate is lower than the sectoral average, have insufficient financial stability. The main factors influencing the amount of income of the university are the special status of university, the structure of specialties from the standpoint of priorities of formula state funding, pricing policy (tuition fees of state funding students and private financing student), the prestige of specialties and competitiveness of university, type of university (central / regional), etc.

European experience shows that the ability to diversify the income of the university has a positive effect on financial stability, in particular the growth of the share of non-budget funding. However, in Ukraine the most reliable source today is public funding because the public coverage of tuition cost is much higher than one that financed by private payments. Therefore, the main criterion that makes it possible to classify universities as sufficiently financially stable is the level of public funds allocations for the group: Classical University — at least 65 %, Economic University — at least 45 %, Technical University — at least 71 % (Fig. 2).

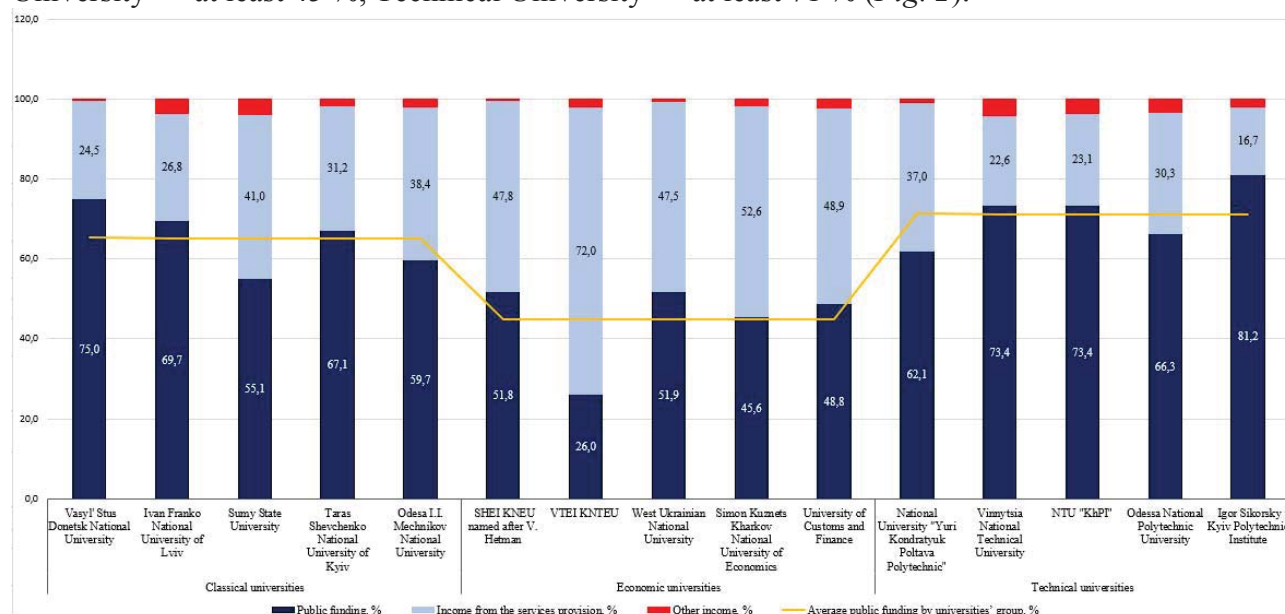


Fig. 2. The structure of universities' income in 2020

Source: compiled by the authors on the basis [13—27].

In 2020 the lowest level of public funding is observed foreconomic universities. This is due to the established priorities of the Ministry of Education and Science of Ukraine in formula funding for certain specialties (economic specialties have a coefficient of 1) [26]. Thus, these universities are at risk in terms of their ability to ensure a sufficient level of financial stability, because even despite the increase in fee — payingstudents. It does not allow to obtain sufficient income adequate to public funding. VTEI KNTEU is a separate structural unit of KNTEU, so in 2020 it did not participate in a wide competition during the entrance campaign in certain specialties, so the share of public allocations was 26 % only.

The average level of public funding in classical universities is much higher — 65 %. The insufficient level of financial stability is observed Odesa I. I. Mechnikov National University — 59.7 %, due to the structure of specialties / educational programs of universities.

The highest level of General budget funding in technical universities is 71 %. The leader is I. Sikorsky Kyiv Polytechnic Institute, which has 81.2 % of budget funding in its income structure. It increases the university's dependence on government policy, which can lead to a violation of financial stability and shortfall in expected income. Y. Kondratyuk Poltava Polytechnic National University received the lowest share of public funding among technical universities.

One of the indicators that characterize the financial stability of universities in terms of income approach is the income of the university per teacher, which reflects the effectiveness of the university both in terms of raising funds and financing their activities. The average value of this indicator by sectoral approach is shown on Fig. 3.

Technical universities have 491 thousand UAH of income per person of teaching stuff. It is the highest rate of income among the universities, the value of which was significantly influenced by the results of Igor Sikorsky Kyiv Polytechnic Institute, which amounted to 814 thousand UAH. By excluding the university from the sample, the average will be 410 thousand UAH, which is a guideline for a sufficient level of financial stability for technical universities. The value of the

indicator is due to the predominance in the structure of public financed students due to the priority of technical specialties in the funding policy of government in Ukraine. In addition, such universities attract funding and have income from innovation and research, which increases their effectiveness from the standpoint of this indicator.

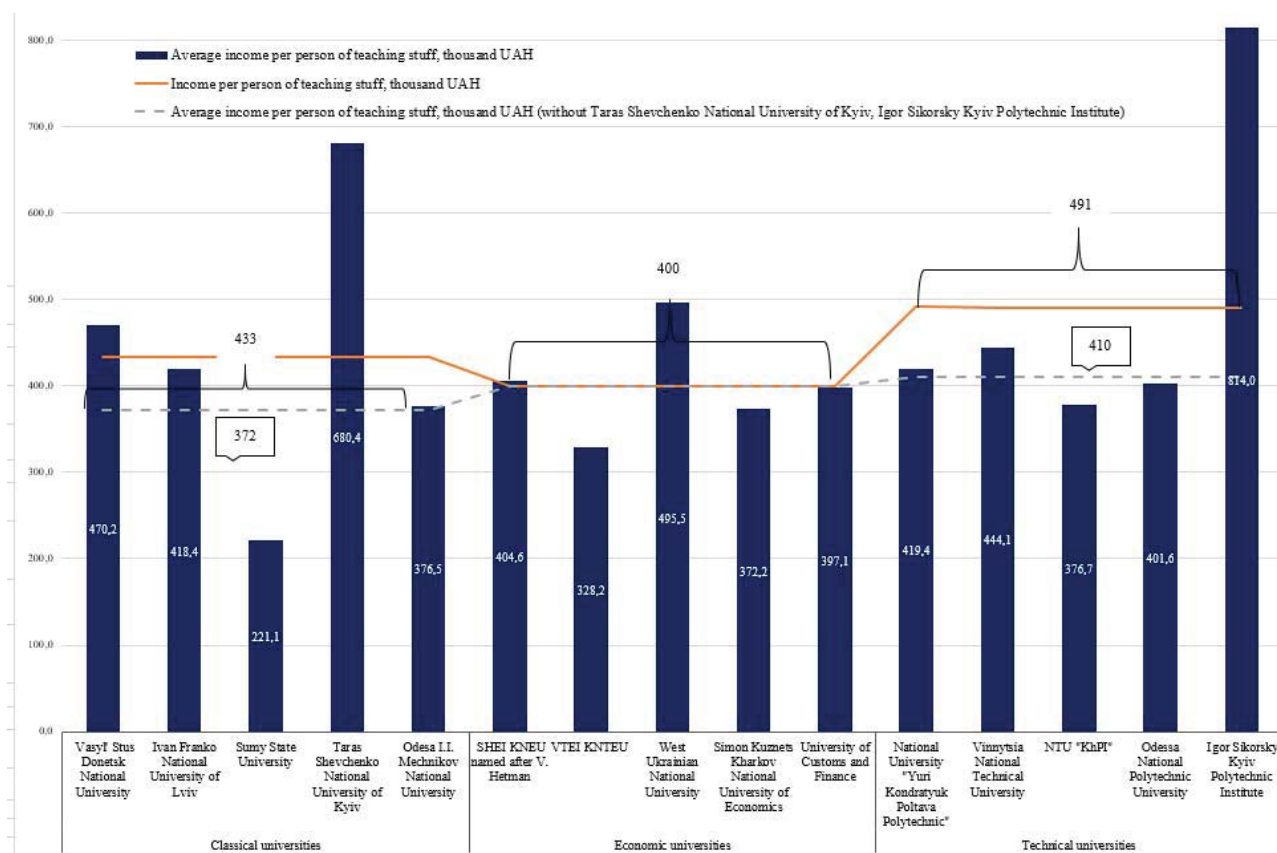


Fig. 3. Incomes of universities per 1 teacher in 2020

Source: compiled by the authors on the basis [13—27].

Classical universities have 433 thousand UAH of income per person of teaching staff. However, by excluding the leading university — T. Shevchenko National University of Kyiv from the sample, the income per teacher of which is 680.4 thousand UAH, this figure decreases significantly, and it will be 372 thousand UAH.

Economic universities have 400 thousand UAH of income per person of teaching staff. It is the lowest average value of the indicator, which is explained by the predominance of fee-paying students in the structure of the university contingent. Their payment is less than the public coverage. In addition, such universities, compared to the above, have much less potential for research funding.

Thus, the main factors influencing this indicator are the structure of the university's income, the qualitative component and the optimal structure of the teaching staff.

The rate of income of the university per 1 student shows the relationship between the number of students and the amount of income generated by the university from all activities (Fig. 4).

The highest average is received by technical universities. It is 51 thousand UAH due to Igor Sikorsky Kyiv Polytechnic Institute, whose income per 1 student is 75.3 thousand UAH (45 thousand UAH excluding the last one from the sample). Among classical universities, the highest value of the indicator is 73.7 thousand UAH in T. Shevchenko National University of Kyiv, which significantly affected the average value of the indicator for classical universities, which is 49 thousand UAH (43 thousand UAH excluding the last one from the sample). The lowest average value of the indicator in this group is 26 thousand UAH. VTEI KNTEU has 14 thousand UAH, which is due to the high share of fee-paying students, which on 01.10.2020 is 93 %.

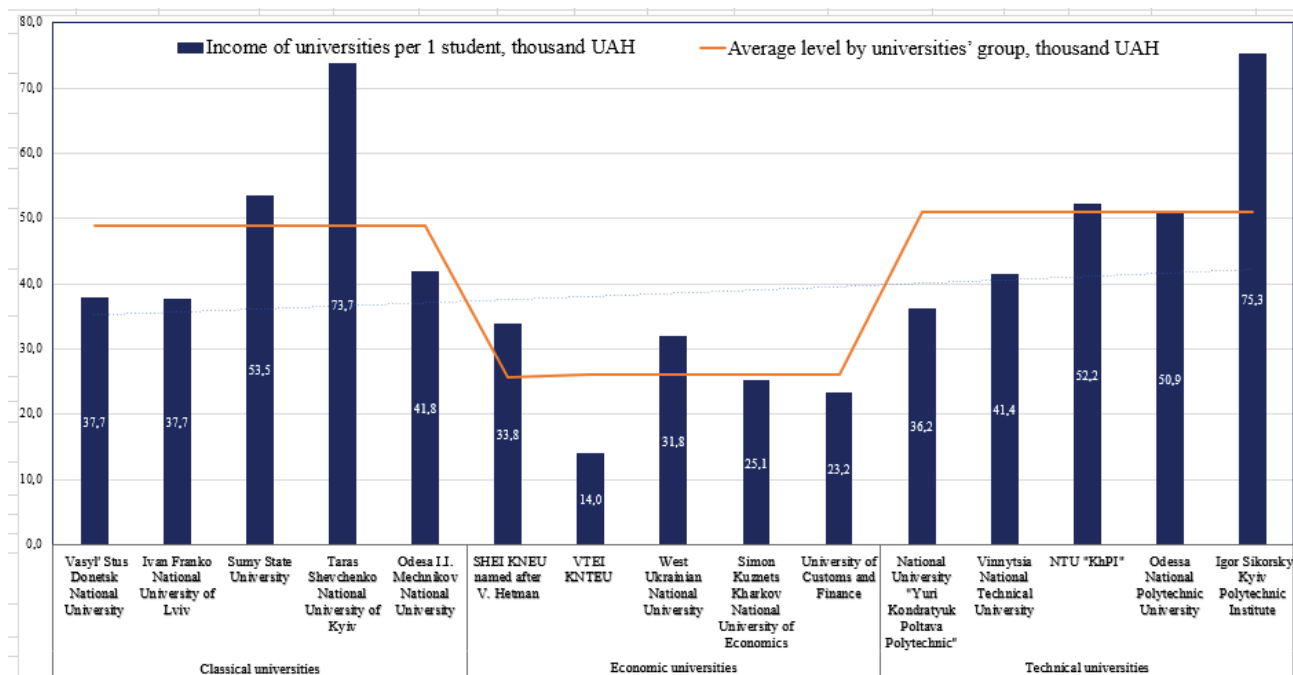


Fig. 4. Income of universities per 1 student in 2020

Source: compiled by the authors on the basis [13—27].

Thus, the main factors influencing the level of income of universities per 1 student are the structure of the contingent, the level of fee-payment, type of university (central or regional, technical, classical, economic), priorities of public funding policy and structure of university specialties.

The university's marginal income shows the extent to which the university is able to cover fixed costs (depreciation and amortization, material and other expenses) at the expense of its income. To calculate marginal income the variable costs were subtracted from income — salary and social expenses. In absolute values, the indicators between universities are incomparable, because their scale is ambiguous. The impact on financial stability could be judged by the indicator of the share of marginal income in the income of the university. The average value of the indicator for classical universities is 20 %, technical — 21%, economic — 24 % (Fig. 5).

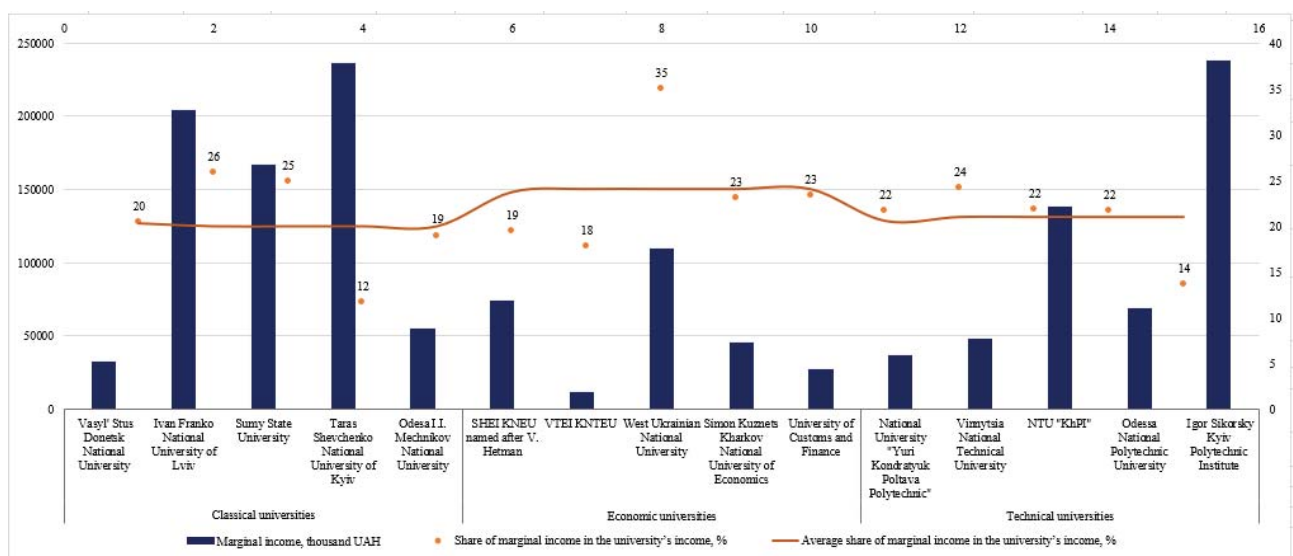


Fig. 5. Marginal income indicators of universities in 2020

Source: compiled by the authors on the basis [13—27].

The share of marginal income for most universities is close to the average, but for leading universities this figure is much lower, and is 12 % for T. Shevchenko National University of Kyiv, 14 % for Igor Sikorsky Kyiv Polytechnic Institute. These HEIs show restricted potential to finance additional costs that wouldn't help to build their capacity and strengthen competitiveness in the market of educational services. Partially this situation is due to higher level of remuneration in these universities comparing with other HEIs. On the one hand, it is an incentive for the professional development of teaching staff, increasing the university's ability to provide qualitative educational services, research and form unique value proposals. On the other hand, it limits the financial capacity of the university to fully cover fixed costs.

The ability of university to ensure current financial stability from the standpoint of their net performance is characterized by an indicator of surplus or deficit (*Fig. 6*).

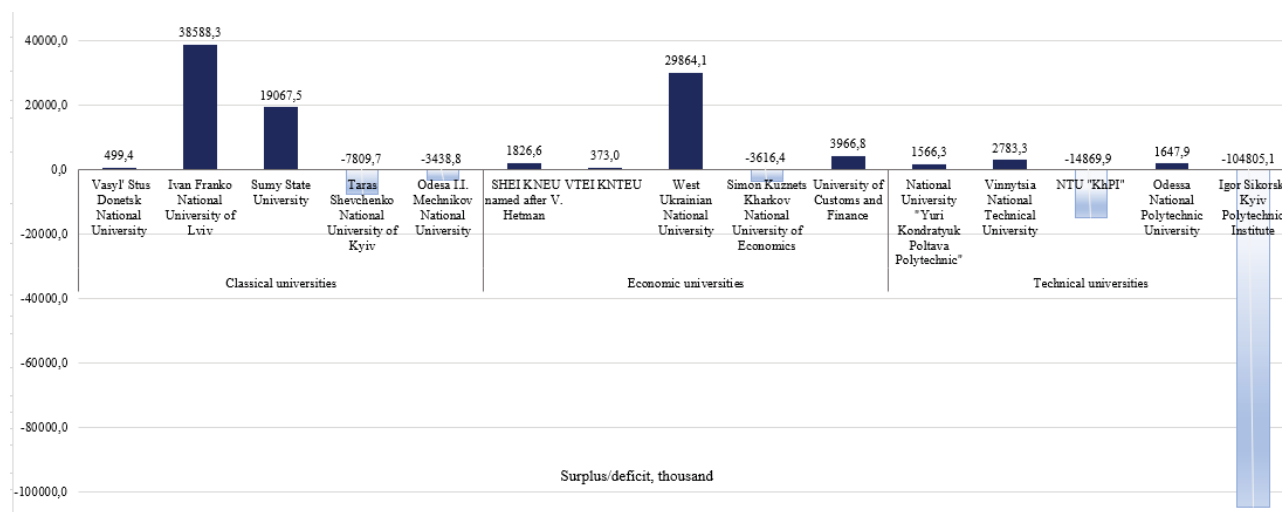


Fig. 6. Deficit / surplus of universities' budgets in 2020

Source: compiled by the authors on the basis [13—27].

Even though public HEIs are non-profit organizations and are not focused on maximizing a positive financial result, maintaining a balance between income and expenditure within a financial year is one of the key factors of ensuring financial stability. It indicates the university's ability to generate revenues (including budget financing) that cover all its expenditures. The reasons for the imbalance may be the accounting policy (the period of write-off of assets, the formation of future income, etc.), non-relevant pricing policy in the field of educational services, inefficient financial management, and cost allocation. For the most cases, such an imbalance arises in terms of income and expenditure of the non-budget funding (income and expenditure of paid services), which determines the important role of management policy at the university level. Among 15 universities of the sample, only five received a negative balance in 2020 (T. Shevchenko National University of Kyiv had the deficit of 7809.7 thousand UAH, which is 0.4 % of the university's income, I. Sikorsky Kyiv Polytechnic Institute — 104805.1 thousand UAH or 2.4 %, S. Kuznets Kharkiv National University of Economics — 3616.4 thousand UAH or 1.8 %, Odessa II Mechnikov National University — 3438.8 thousand UAH or 1.2%, NTU «KhPI» — 14869.9 thousand UAH or 2.4 %). Meanwhile, only one of them (T. Shevchenko National University of Kyiv) had such an imbalance due to the implementation of budget programs, and others produced it within paid services. It should be noted that the least number of those who received a deficit (only one) were the universities of economics, which in 2020 almost all received reduced public funding compared to the previous year (from 95 % to 98.7 %). Conversely, the largest share of HEIs with the deficit was in sectors with increased public funding — polytechnics received from 1.9 % to 12.3 % of additional funding, classical universities — from 99.2 % to 120% compared to funding in 2019. At the same time, the percentage of the deficit of the total income of the universities range from 0.4 to 2.4 %, which is not critical, but requires attention by the financial stability and improvement of the efficiency of management decisions in the long run.

Conclusions. The income potential of the university and the formation of its resource base is determined by the university's affiliation to a particular sector (economic, classic or technic), that generates the specifics of students contingent formation in terms of specialties, state priorities for studying through public funding, formula funding, competitiveness of universities in the market of educational services, ability to attract resources to finance scientific activities, implement research projects. Increasing this potential has a positive effect on the financial stability of the university. From this point of view, technical and classical universities gain the advantages in competition for financial resources and therefore have higher financial stability.

At the same time, the ability to make effective management decision in the field of cost coverage and investments is becoming an increasingly important issue. In this aspect, the sectoral specific of the university loses its impact on the level of its financial stability, giving way to effective management. As the results of the analysis showed, neither the status, nor the regional affiliation, nor the branch, nor the scales of the university are decisive in obtaining the final or net financial result.

The analysis is carried out in terms of an income approach to assessing the financial stability of the university. The expansion of the analytical sections of the assessment of financial stability will increase the objectivity of the research results in the future and improve the assessment methodology. The use of a full set of indicators that consider in addition to income, cost policy, liquidity, capacity ability to pay, cash flow management at the university should be the basis for financial decisions to increase financial stability. The investigation of such indicators could add the scientific gain in the sphere of financial stability of HEIs in perspective.

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