











# “Identifying key risks to the stability of Ukrainian universities during wartime”

<b>AUTHORS</b>	Olha Doronina   Liudmyla Yurchyshena   Kseniia Bondarevska   Ihor Vechirko  Tetiana Kulinich  
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Olha Doronina, Doctor of Science in Economics, Professor, Head of Department of Management and Behavioral Economics, Vasyl' Stus Donetsk National University, Ukraine. (Corresponding author)

Liudmyla Yurchyshena, Ph.D. in Economics, Associate Professor, Head of Department of Finance and Banking, Vasyl' Stus Donetsk National University, Ukraine.

Kseniia Bondarevska, Doctor of Science in Economics, Professor, Department of Social Security and Tax Policy, University of Customs and Finance, Ukraine.

Ihor Vechirko, Ph.D. in Law, Department of Fundamental and Private Legal Disciplines, Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University, Ukraine.

Tetiana Kulinich, Ph.D. in Economics, Associate Professor, Department of Management of Organizations, Lviv Polytechnic National University, Ukraine.



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### SPECIAL ISSUE "UKRAINIAN UNIVERSITIES IN NEW REALITIES: 10 YEARS OF WAR"

Olha Doronina (Ukraine), Liudmyla Yurchyshena (Ukraine), Kseniia Bondarevska (Ukraine), Ihor Vechirko (Ukraine), Tetiana Kulinich (Ukraine)

# IDENTIFYING KEY RISKS TO THE STABILITY OF UKRAINIAN UNIVERSITIES DURING WARTIME

## Abstract

Ukrainian universities operate under uncertain conditions and numerous challenges during wartime, significantly affecting their stability. This paper aims to identify and classify the key risks to the stability of Ukrainian universities during wartime and propose proactive tools for their mitigation. The study focuses on financial, personnel, and social risks, which are highlighted as the most critical under current circumstances. The data were sourced from the official websites of 10 universities, Open Budget, and the official websites of the Ministry of Finance of Ukraine and the State Statistics Service of Ukraine. The methodology combines theoretical analysis and statistical evaluation, including calculating marginal income – representing the portion of income covered by variable costs – and the operating margin ratio, defined as the ratio of marginal income to total income. Financial risks include a 7.9% reduction in education budget allocations, decreased subsidies, and insufficient state support. Personnel risks are analyzed through indicators, e.g., uncompetitive average hourly wages, leading to staff attrition and reduced motivation. The findings propose a multi-level classification of risks, categorizing them into external and internal with subcategories such as financial, personnel, and social ones. Non-traditional financial measures, such as unpaid leave and allowance reductions, were observed as short-term crisis strategies but require further evaluation to assess their long-term impact. The paper contributes to academic discourse by outlining challenges to university stability during wartime and providing a foundation for future research into effective risk mitigation strategies.

## Keywords

finance, personnel, risk, social risks, management, stability, education expenditures, higher education, university management, wartime

## JEL Classification

I22, I23, I25, M12

## INTRODUCTION

Higher education institutions in Ukraine are susceptible to reforming the educational sector, which has been actively taking place in the country in recent years. Their operation and stability have significantly changed under the influence of the COVID-19 pandemic and Russia's full-scale aggression in Ukraine, which began in February 2022. The war fully "expanded" the autonomy of higher education institutions (HEIs), which were practically left alone with their problems. After all, higher education is not a priority today, and the government has repeatedly emphasized the unification of HEIs. In the last year, it has created a survival environment for regional universities, while the central ones are increasing their scale due to the increase in the contingent and the concentration of budgetary resources as a result of growth in budget financing. The manual modes of allocation of budget funds between institutions are unclear, the expectations are unattainable, and the budget funding sequestrations are the test of the financial ability of universities to eliminate funding shortages at the expense of special funds and accumulated cash balances on accounts. Personnel hunger, social risks, psychological conditions, and, at the beginning of the war, demotivation

of personnel, including scientific and pedagogical ones, intensified unexpected risks to the financial stability of universities. Funding cuts force the university management to make unconventional decisions regarding personnel policy.

Despite the high requirements and the establishment of key performance indicators of the scientific and pedagogical personnel, salaries are reduced due to downtime, transfer to part-time work, vacation at their own expense, reduction of allowances, increases in average workload, etc. In 2022, with the beginning of the full-scale aggression of the Russian Federation in Ukraine, the scale of the departure of educators (mainly women) abroad increased. According to the survey conducted by the Analytical Center “OsvitAnalytika” of Kyiv Borys Grinchenko University, 25,000 higher education teachers (6% of their total number) left Ukraine in the year of the full-scale war (Kiriienko, 2023). With that, the management of HEIs sets certain requirements for such employees: return to Ukraine, take vacation at their own expense (provided full workload is performed), make additional payments, etc. At the same time, HEIs are pretty cautious in using such tools of retrenchment, sometimes “survival” in crisis conditions, trying to protect themselves from inspections in the post-war period. It is currently impossible to obtain complete and reliable information about the prevalence and scope of such measures in higher education in Ukraine. According to the results of a survey of teachers and staff of Ukrainian higher education institutions who remained in Ukraine, 97.8% of respondents noted a deterioration in their psycho-emotional state with complaints of depression (84.3%), exhaustion (86.7%), loneliness (51.8%), nervousness (84.4%), and anger (76.9%) (Kiriienko, 2023). This, of course, negatively affects work performance and effectiveness and ultimately provokes an additional threat to the stability of universities. Thus, an urgent problem that requires a systematic scientific solution is the clear identification of risks to the stability of Ukrainian universities in the conditions of war and the elaboration of recommendations for their management. At the same time, this study considers the stability of higher education institutions as their ability to adapt to changes, successfully withstand the negative impact of external or internal risks, and ensure the efficiency and stability of their activities even in difficult and unstable conditions. The stability of universities is a complex phenomenon that is most effectively supported through the simultaneous minimization of financial, personnel, and social risks.

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## 1. LITERATURE REVIEW

With the beginning of the full-scale Russian invasion of Ukraine, the higher education sector faced unprecedented challenges that jeopardized the stability of Ukrainian universities. These challenges include financial instability, personnel losses, and social disruptions, which necessitate a comprehensive analysis of risks and their management strategies. This review synthesizes existing research to outline the global and local landscape of risks affecting higher education institutions (HEIs) and their implications for Ukrainian universities during wartime.

Helsloot and Jong (2006) propose a foundational classification of risks in higher education, categorizing them into three groups: unique risks inherent to the sector, risks driven by broader societal dynamics, and risks specific to universities as institutions. This classification serves as a starting

point for understanding vulnerabilities in the context of crisis management, a necessity emphasized by the imperfections of existing systems. Similarly, Ruzic-Dimitrijevic and Dakic (2014) stress the critical role of tailored risk management strategies in enhancing HEI stability.

The global COVID-19 pandemic amplified the vulnerabilities of higher education institutions (Jackson & Konczos Szombathelyi, 2022; Staniec et al., 2023). According to UNESCO (2021), funding cuts during this period threatened the stability and inclusivity of HEIs, particularly in low- and middle-income countries. Hazzan and Zahav (2022) emphasize the urgent need for robust crisis management systems to mitigate these risks. Further, Outhred and Turner (2023) highlight structural challenges such as massification and reduced international mobility, which disrupt the trajectory of higher education development and exacerbate financial and social risks. Sustainable

development goals (SDGs) are a catalyst for transformative change at universities (Smolennikov et al., 2024; Zhavoronok et al., 2024). Bui et al. (2024) argue that these changes come with the risk of resistance to innovation from academic staff. However, achieving SDGs is a strategic imperative, integrated into university activities at all levels, indicates reputation, and contributes to attracting financial resources (Pakkan et al., 2023). Strengthening internationalization through international scientific cooperation, the formation of an inclusive environment, and student mobility is accompanied, as noted by Msomphora (2025), by the challenges of the COVID-19 pandemic, financial constraints, the need for cultural competence, and adaptive strategic planning. Given the speed and scale of modern changes and challenges faced by universities, it is necessary to apply effective risk management to enhance the stability of higher education. British scientists have developed a risk profile for the higher education sector (PwC, 2023), determining that the largest share of risks is financial stability (100% of all registered risks), student recruitment risks (100%), and personnel risks (100%). Thus, there is a need for a thorough study of the above complex of modern risks for the stability of universities in the modern world.

In the context of the ongoing war in Ukraine, Reznikova (2022) identifies systemic shortcomings in national risk assessment frameworks, including the lack of comprehensive strategic planning, unified methodologies, and interagency coordination. These weaknesses are mirrored in the higher education sector, where financial instability, personnel losses, and institutional closures are particularly pronounced. The full-scale war in Ukraine has brought changes not only to the lives of Ukrainians but also to the field of higher education (Kozmenko et al., 2023). Some universities were forced to relocate for the second time and faced the challenge of survival under conditions of uncertainty. The response of university leadership and staff was mixed and accompanied by financial and personnel risks.

Kaleniuk and Kuklin (2017) emphasize the economic risks of staff dismissals, reduced student numbers, and sharp declines in funding. Addressing these challenges requires diversifying financial sources and enhancing university

autonomy. The challenges of higher education in Ukraine in wartime conditions (Ministry of Education and Science of Ukraine, 2022b) are exacerbated by the outflow of personnel and students abroad, accompanied by the implementation of the educational process in an asynchronous format and the intensification of social problems. This requires identifying risks accompanying the transformation process of higher education with the definition of proactive risk mitigation tools.

Financial risks remain a critical threat to the stability of Ukrainian HEIs, particularly during wartime. Yurchyshena et al. (2024) advocate for a hybrid financing model to address funding deficits, while Shofolova (2022) outlines key financial policy components based on UK experience. Personnel risks, including staff attrition and reduced motivation, are explored by Chernenko (2014) and Serhieieva and Yelesina (2012), who identify these risks as drivers of increased operational costs and potential disruptions in academic quality. The role of universities in the context of social risk (Doni & Moser, 2014) is determined by the constraints affecting the activities of researchers, the need to consider ethical factors to ensure the reliability of results, transparent communication with business, and eliminating the risk of potential conflicts of interest between researchers, universities, and business. The impact of academic staff's personality traits on performance is vital for managing financial, social, and human resource risks in higher education institutions. Kiziloglu et al. (2021) found that the Big 5 and dark traits can enhance productivity and introduce additional risks through stress, perfectionism, and social media addiction. Specifically, neuroticism negatively affects efficiency due to stress, while Machiavellianism has a positive effect, although social media addiction reduces this impact. These findings indicate that antisocial traits can both boost productivity and pose a threat to HEI stability through staff turnover and psychological issues, necessitating consideration of their influence in risk management strategies.

The literature review indicates that while global crises, such as the COVID-19 pandemic, have reshaped the risk landscape for higher education, the full-scale war in Ukraine introduces unique challenges to the stability of its universities.

Addressing financial, personnel, and social risks requires a comprehensive approach that combines international best practices with context-specific strategies. The findings underscore the urgent need for effective risk management systems tailored to the wartime realities of Ukrainian HEIs.

The aim of this study is to identify and classify the key risks to the stability of Ukrainian universities during wartime and propose proactive tools for their mitigation. To reveal this goal, these research tasks were elaborated on:

1. To develop the multi-level risk classification for better structuring the impact of various risks on universities, developing more effective strategies for overcoming them, and relevant resilience programs.
2. To assess the impact of risks on the financial stability of universities in wartime depending on their geographical location and size.
3. To prove that the level of resilience of Ukrainian universities during wartime is positively correlated with the availability of staff support programs (material, psychological, etc.).

## 2. METHODS

The following general scientific and unique methods and techniques were used to achieve the research aim. First, the theoretical analysis and synthesis are used to improve the classification of the risks to the stability of universities in war conditions. Statistical, coefficient, and dynamic analysis analyzed changes in consolidated budget expenditures for HEIs and dynamics of income growth of Ukrainian universities. Comparison method and method of averages are used to calculate and compare the average hourly wages for certain types of economic activity in Ukraine and the USA, as well as the 2022–2024 level of salaries of the scientific and pedagogical employees in Ukraine. Finally, the data visualization method, graphic representation, and methods of systematization and scientific generalization are employed. The desk research method was also used to structure the types of risks of lowering the stability of higher education

institutions in war conditions, as well as to generalize the types of social risks of lowering the stability of higher education institutions.

A proprietary methodology was applied to calculate the university's marginal income, which reflects the portion of revenues covered by variable costs (wages and associated accruals) and leaves resources for covering fixed costs (Kozlovskiy et al., 2024; Hayda et al., 2024), thereby creating a positive financial space. The university's operating margin ratio is calculated as the ratio of marginal income to total university revenues, allowing for the assessment of the income share allocated to generate a positive financial result and cover fixed costs.

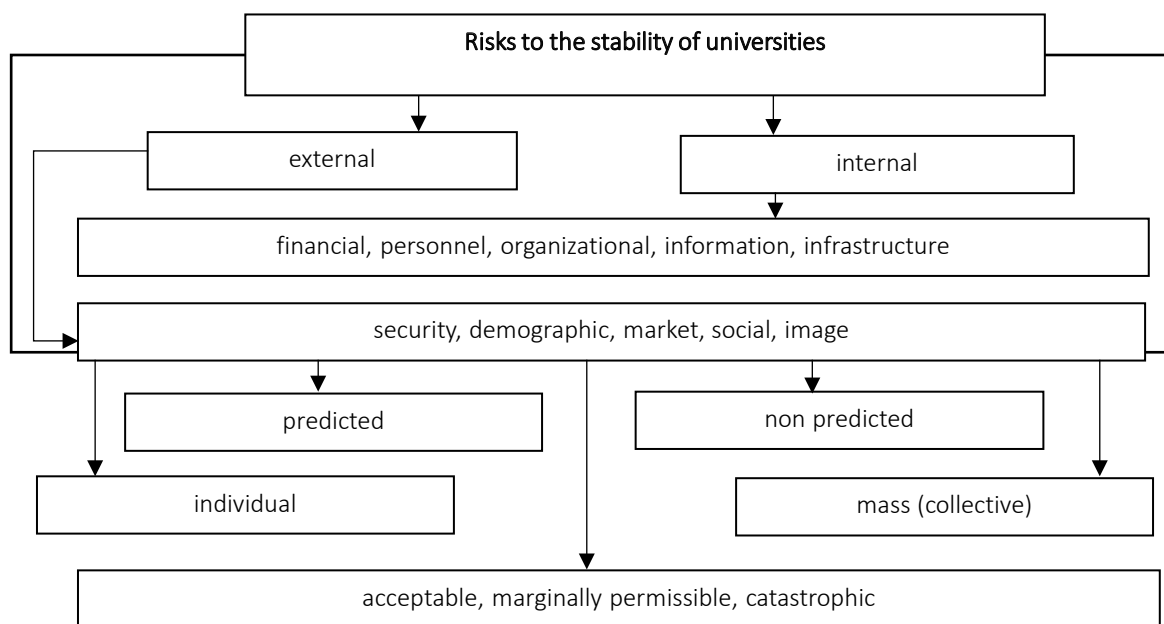
Thus, the research methodology is based on: 1) a combination of quantitative and qualitative research methods; 2) an in-depth analysis of the scientific works of researchers who have studied the issues of risk management in education; 3) summarizing the previous research and experts experience of the authors of the publication.

The primary data for the study were obtained from open sources, including statistical data published by the Ministry of Education and Science of Ukraine, the Ministry of Finance of Ukraine, and the State Statistics Service of Ukraine. Moreover, it used information published on the websites of Ukrainian universities selected for the study (10 universities). The sample of universities (all included in the top-200 ranking) included different groups of HEIs by specialization (classical or polytechnic) and geographical location (capital or regional).

## 3. RESULTS AND DISCUSSION

### 3.1. Theoretical framework

This study sought to define the stability of the university in the war conditions as the ability to withstand the threats of martial law and adverse scenarios of changes in the external and internal environment, continue educational and scientific activities, not be subject to organizational destruction, and withstand negative external influences at the expense of appropriate adjustment of approved development strategies, implementation



**Figure 1.** The multi-level classification of the risks to the stability of universities

of anti-crisis tools, and development of adaptation mechanisms to new realities. Ensuring the stability of Ukrainian universities should be based on the risk management system, which involves its arrangement and assessment. Figure 1 summarizes main groups of risks to the university's stability.

These factors can create obstacles to university stability in war conditions or, conversely, contribute to the definition of an effective strategy to prevent its negative consequences. This classification is basic and covers those risk groups that affect university stability in wartime. It is based on five features that are directly related to the specifics of university management in wartime.

The first is the level of risk occurrence (external, which is formed outside universities; internal, which is related to the university's limited ability to maintain its stability in wartime). In times of war, external risks are more threatening to the stability of universities, but in turn, they also create a number of internal risks. For example, an external risk of demographics (outflow of young people abroad) provokes internal risks for universities, such as financial (reduction in income) or personnel (reduction in staff due to a decrease in the contingent).

The second is the cause of risk occurrence (financial, personnel, organizational, information, infrastructure, security, demographic, market, social, and im-

age). Among the groups of risks presented in Figure 1, the analysis focuses specifically on financial, social, and personnel risks. The lack of adequate financial and personnel support makes it impossible to carry out high-quality activities of the university and its reconstruction in wartime conditions. In addition, these groups of risks are in close direct connection with each other and, in the future, can provoke the emergence or exacerbation of other groups of intra-organizational risks.

The third is the degree of predictability of risks. Thus, risks can be predicted and unpredictable for universities in wartime conditions, and therefore, difficult to take into account during the management process (for example, mass withdrawal of applicants due to departure to safer regions or countries).

The fourth is the nature of risk manifestation. Individual risks are personalized for a university employee, such as the threat of being fired for going abroad during a war. Mass (collective) risks related to all or most of the university staff or to a specific group (for example, the mobilization of male employees who do not have grounds for a corresponding postponement).

Finally, some consequences impact the stability of universities (acceptable, marginally permissible, catastrophic). The acceptable risks are risks

that are entirely acceptable in terms of their consequences, and the sustainability of the university does not change significantly. The marginally permissible risk is an acceptable level that is approaching a critical point where the university may lose its ability to function normally. For example, this may apply to the minimum allowable quota of applicants to a university. The catastrophic risk is associated with the loss of the university's stability and its inability to continue its activities in wartime conditions.

Therefore, the developed classification of risks will allow higher education institutions to better identify them and develop measures to prevent (neutralize) risks in accordance with the group to which a particular type of identified risk is assigned. This classification is the basis for conducting the empirical part of this study.

### 3.2. Financial risks to the stability of universities

The key component of ensuring the stability of universities is financial. The probability of its violation is due to the presence of financial risks that directly or indirectly lead to a lack of income and a shortage of funds. The full-scale war in Ukraine increased the destruction of the stability of Ukrainian universities due to the complete or partial destruction of the material and technical base in combat zones, lack of support from the state, reduction of funding, and cancellation of formulaic funding based on indicators of higher education efficiency. The budget allocation in 2022 was carried out manually, in accordance with the adopted resolution of the Cabinet of Ministers of Ukraine (2022a), which suspended the effect of formula funding of higher education institutions under indicators of their activity. Such measures led to the uncertainty of HEIs regarding their expectations in budget funding, as a result of receiving funding only for the payment of wages and communal services.

The risk to the budget funding arose periodically throughout 2022 as a result of the reduction of budget allocations for education by 7.9% (Figure 2) due to the prioritization of defense expenditures. The budget sequestration in April 2022 by 10% and the reduction of the educational subvention from the state fund during June-December 2022 by an aver-

age of 17% per month (Ministry of Education and Science of Ukraine, 2022a) affected the shortfall in spending of the consolidated budget of higher education by 14.6%. The result of the first sequestration of the budget (Cabinet of Ministers of Ukraine, 2022b) was shock therapy for HEIs. Education expenditures were reduced by a total of UAH 3,916.4 million, including 86.2 million UAH for scientific and scientific and technical activities of HEIs and scientific institutions, 2,107.2 million UAH for the training of personnel of HEIs, 514.5 million UAH for the payment of academic scholarships, 162.06 million UAH for the training of personnel by Taras Shevchenko Kyiv National University.

Although 2023 showed a slight increase in expenditures on HEIs (1.5%), this growth does not offset the decline of previous years. Compared to 2021, funding for higher education decreased by 6.5%, which is a lower rate compared to the growth in funding for other sectors of the economy.

As a result of the reduction in budget allocations, HEIs optimized the number of staff units, made changes to the staff list in terms of bringing them up to standards, transferring rates from the general to a special funding fund, and reducing vacant rates. In fact, the HEIs "exposed" the reserves of personnel support, except for the scientific and pedagogical staff. After all, everyone knows the practice when laboratory assistants, methodologists, and other categories of employees work in HEIs at 1.5 times the rate because their salaries are below the minimum wage, which causes staff turnover, low motivation of such employees, and sometimes an inappropriate level of qualification.

The consequences are the dismissal of the specified categories of employees, an increase in the labor intensity of the scientific and pedagogical staff, and a possible "personnel famine" in universities.

Despite the 7.0% reduction in expenses in 2022 compared to 2021 and the average increase for 2018–2023 by 5.1 %, the stability of HEI financing is being violated at the expense of budget financing, which remains a priority for most universities.

Expanding the financial autonomy of universities and the possibility of attracting private financing of educational services has both its advantages

Source: Open Budget (n.d.).

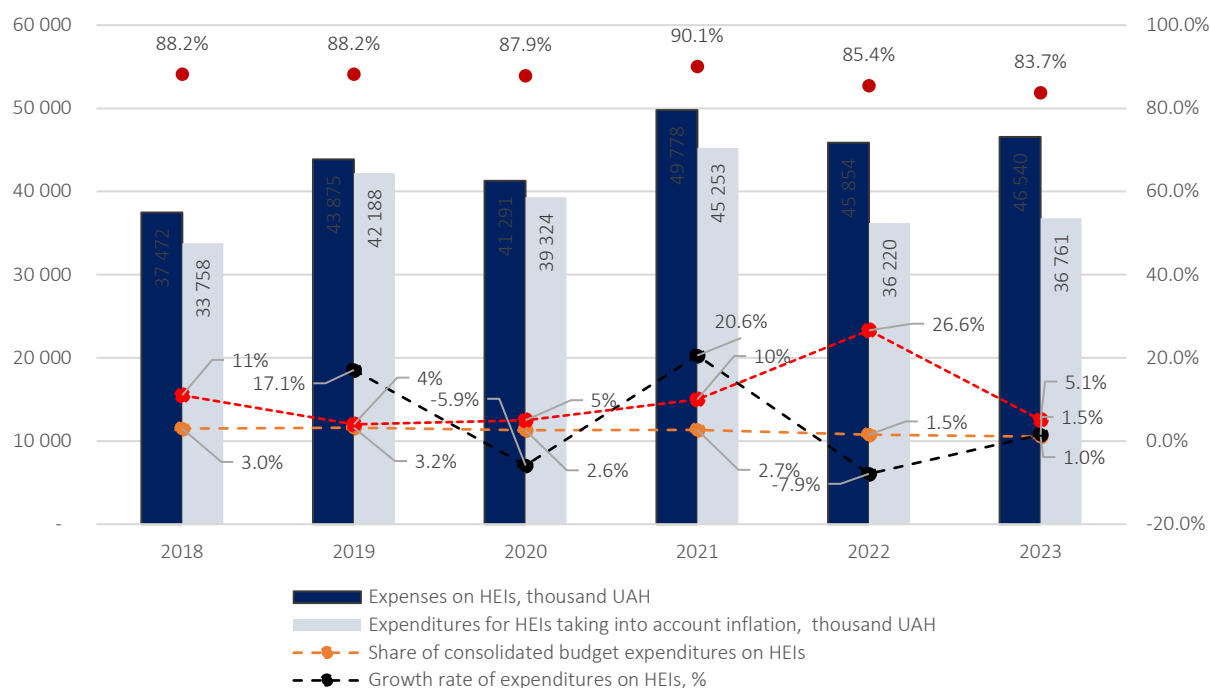


Figure 2. Changes in consolidated budget expenditures for HEIs

and challenges. In the war conditions, the leading universities became even more potent because they concentrated students with the highest admission scores and received budgetary funding, compared to regional ones; their trends are excellent (Appendix A, Figure A1).

The average increase in the total income of universities during the studied period fluctuates, so in 2018–2021, it is within the range of 7.0 to 17.0 %; in 2022–2023, it is –0.4 to 2.9 %. Trends in changes in income between universities included in the sample are different, so an increase in university income below the average for the sample is a sign of violation of financial stability.

This situation is typical in 2022 for such universities as Vasyl’ Stus Donetsk National University, Sumy State University, National Technical University “Kharkiv Polytechnic Institute,” and National University “Zaporizhzhia Polytechnic.” Other institutions have positive growth, but if compared with the inflation rate in 2022, 26.6%, no university has exceeded this value, which causes the risk of inflationary depreciation of incomes and limits financial opportunities.

The increase in budget funding is observed in the leading universities of Ukraine, which, despite on-

line education and active combat operations, enroll applicants; some applicants, while abroad, chose universities located in combat zones, knowingly understanding that education will be conducted in a distance format. Private funding increased in most universities in 2022 due to an increase in master’s students because military actions and mobilization in Ukraine stimulate young men to study full-time, including bachelor’s degrees, which delays them from being drafted into the ranks of the Armed Forces. The loss of income occurred due to the decrease of additional educational services and the reduction of the solvency of the population, including the reduction of employers’ expenses. Financial risks are related to changes in the volume and structure of revenues and expenses and affect their ability to form a positive financial space at the expense of the budget surplus to ensure an increase in the balance of funds. The indicator that characterizes the university’s ability to cover fixed costs is the share of marginal income in the university’s income, the average level of which is 0.26 (Appendix A, Figure A2).

When calculating the marginal income, the salary and the accruals were included in the variable costs, that is, universities in which the indicator is below the average can potentially cover rent, util-



ity costs, electricity, gas supply, Internet, etc., excluding the cost of developing both academic potential and material and technical base.

The indicator of the university's financial stability is the operating margin ratio, which shows the share of surplus/deficit in revenues, provided that the value is greater than 0. The University of Customs and Finance, National University "Chernihiv Polytechnic," National Technical University "Kharkiv Polytechnic Institute," partly Zaporizhzhia National University and Sumy State University, as during 2018–2023, the indicator fluctuates significantly. Other universities maintain current financial stability due to available cash balances and funds in foreign currency accounts, despite the impossibility of covering expenses due to current income (Appendix A, Figure A2). Thus, the most significant fluctuations in financial stability coefficients were recorded in universities that are located close to the line of active hostilities or the border with Russia (Zaporizhzhia, Chernihiv, Dnipro, and Sumy).

The collapse of the stability of Ukrainian universities in the conditions of war determines the use of non-traditional tools for ensuring financial stability, which is the result of university management decisions. The most common tools include vacation at the expense of the staff, including scientific and pedagogical employees, who are forced to complete the workload fully and, at the same time, take a certain number of days at their own expense. For example, one day at the associated professor's own expense saves labor and accruals in the amount of UAH 970 and affects the reduction of vacation expenses. Such an economy tool is unofficial, so it cannot be measured statistically. However, it is widely used by universities in wartime conditions, including for employees who have temporarily gone abroad.

Next, allowances for scientific and pedagogical employees for rank, degree, length of service, complexity, tension, etc., are reduced. However, reducing additional fees for titles and degrees is a violation of the Law of Ukraine, "On Higher Education," so not all universities take the risk of violating the current legislation to save money.

Third, the introduction of layoffs at HEIs at the beginning of the war in Ukraine made it possible, in the absence of an educational process or the impossibility of it, to pay a salary of two-thirds of the official salary or average salary.

Fourth, universities introduced differentiated remuneration for employees in accordance with the results of rating or performance of key performance indicators.

Fifth, the introduction of a shortened working day for HEI employees, except for scientific and pedagogical employees, is widespread. This measure is not effective enough, as it does not bring significant savings, because in most cases, the salary of administrative, management, and service personnel according to the single tariff grid is at the level of the minimum wage.

Finally, the limitation of the number of days of annual leave used by scientific and pedagogical workers allows for savings on vacation and health benefits payments.

The measures outlined were identified through informal consultations with representatives of the academic community and reflect actual practices implemented by Ukrainian HEIs during the crisis caused by the war. Notably, these measures lack official confirmation in the form of regulatory acts or statistical data due to their unsystematic nature and the specific context of 2022, when universities were compelled to respond to unpredictable circumstances.

The tools described in this analysis are presented as examples of crisis financial solutions to illustrate potential approaches for HEIs' adaptation during times of crisis. However, their application was predominantly local and situational, underscoring the need for further systematic research into their effectiveness, legal compliance, and long-term impact on universities' financial stability.

It is obvious that these tools have a direct (and in most cases, adverse) impact on the personnel of HEIs and the conditions of their use, which entails the reduction of personnel potential, a decrease in performance indicators, and as a synergistic consequence, the loss of the university's stability.

### 3.3. Social and personnel risks to the stability of universities

The personnel and social risks to the stability of Ukrainian universities in wartime are internal risks that are directly dependent on financial risks and are formed under the influence of external risks, in particular, security and demographic risks. Considering social and human resources risks together is appropriate due to their close relationship and mutual influence on the sustainability of universities. Thus, social risks that arise in wartime conditions (dissatisfaction, conflicts in the team, mental health problems) directly affect human resources risks (dismissal of employees, decreased motivation to work). Therefore, a combined approach to the analysis of social and human resources risks allows one to check the full picture and respond to potential challenges more effectively than considering these aspects separately.

Personnel potential is a crucial factor in social capital, HEI competitiveness, and a source of support for university stability. It is the high level of dedication of lecturers to their work, loyalty to HEIs, and understanding of the socially important mission of universities in wartime conditions that become the resource that ensures the uninterrupted provision of educational services to applicants and the performance of other functions of HEIs. Due to these qualities of lecturers in a format adapted to the conditions of martial law, Ukrainian institutions managed to continue (and, in the regions of active hostilities, resume) their activities. At the same time, the mentioned points must necessarily be supported by the appropriate human resources policy and the priorities of university strategies adjusted in wartime.

Despite the exceptionally critical role of personnel potential in the university's activities, the sphere of formation and use of personnel potential of HEIs contains the most acute risks of a social nature, which cannot always be managed by university management.

Currently, one of the main risks to the stability of universities is the physical loss of personnel potential. It comprises migration, dismissal of the scientific and pedagogical personnel at their own

will and transfers to work in another sphere of activity, mobilization to the ranks of the Armed Forces and units of territorial defense, refusal to move together with the displaced higher education institution from the occupied territories, or even death. To these facts, one can also add the low level of motivation of young people to continue working at universities after completing postgraduate and master's studies. Regarding migration, against the background of the growth of such opportunities due to the increase in the number of various support programs for Ukrainian researchers in wartime conditions, these programs were used by the most progressive teachers and scientists who speak a foreign language at a high level, have significant scientific achievements, foreign partnerships capable of conducting competitive scientific research, etc. In addition, the migration of scientists and teachers is caused not only by the deterioration of the security situation in Ukraine as a result of the war but also by the financial and economic situation in higher education and the significant gap in the levels of remuneration of lecturers at Ukrainian and international universities.

Analyzing the outflow of personnel from the sphere of higher education in wartime, one should separately take into account such a category of scientific and pedagogical workers who, during the period of martial law, on their own initiative, are on leave without maintenance or with whom the university has suspended labor relations. These groups are potentially "dangerous" in terms of a high probability of not returning to work at the university.

One of the global long-term issues that has intensified in the conditions of war and provoked the outflow of personnel from the industry is the low level of remuneration. The level of remuneration in education, particularly in higher education in Ukraine, has been at a lower level than the average for many years. In addition, it cannot be recognized as worthy and fair in relation to the complexity of educational work, its intensity (the intensity of work has increased with the transition to a mixed or distance learning format since the beginning of the COVID-19 pandemic), and the demands placed to scientific and pedagogical employees.

Against the background of increasing trends of the average monthly salary in 2010–2023, the index of competitiveness of the average salary in education in 2021 was 0.84, and in 2023 – 0.71. It demonstrates the much lower level of remuneration in the industry compared to the Ukrainian average. In addition, the deterioration of the standard of living of educators is influenced by the increase in the level of inflation in Ukraine. According to the State Statistics Service of Ukraine (2023), in 2023, the inflation was 5.1% (in 2022 – 26.6%), and accordingly, this led to a decrease in the real wages of employees. International comparisons also show a significant imbalance in the salary level of educators in Ukraine and abroad (Table 1).

**Table 1.** Average hourly wages for certain types of economic activity in Ukraine and the USA

Source: Migrant.biz.ua (n.d.), State Statistics Service of Ukraine (2020), U.S. Bureau of Labor Statistics (2023) and Budz (2023).

Type of economic activity	Average wage per hour worked, USD USA		Average hourly wage in Ukraine in relation to the USA (%)
	USA	Ukraine*	
<b>2019</b>			
Construction	30.45	2.7	8.9
Trading	25.33	3.12	12.3
Transport	24.67	3.5	14.2
Information sphere	41.71	5.1	12.2
Financial activity	35.54	5.58	15.7
Education	27.45	2.82	10.3
<b>2023**</b>			
Construction	37.01	2.03	5.48
Trading	37.07	3.32	8.9
Transport	29.81	2.76	9.25
Information sphere	48.71	6.1	12.52
Financial activity	44.14	5.53	12.52
Education	33.56	2.00	5.95

Note: \*calculated at the official exchange rate of the National Bank of Ukraine as of Dec 27, 2019 (23.2929 UAH for 1 US dollar) (Ministry of Finance of Ukraine, 2019) and Oct 23, 2023 (36,5513 UAH for 1 US dollar) (Ministry of Finance of Ukraine, 2023). \*\* data as of October.

The comparison in Table 1 is made with the USA, since this country has one of the leading economies in the world with a high level of labor remuneration. The comparison helps one understand how competitive the labor market in Ukraine is in the global context. In addition, traditionally, many Ukrainian educators

and scientists went to work in the USA; in conditions of war, these processes intensified even more, and the significant difference in the level of salaries is one of the key motives for labor migration, which carries personnel risks for the sustainability of Ukrainian universities.

Even before the beginning of the COVID-19 pandemic and the full-scale war in Ukraine in 2022, the average hourly wage rate in Ukraine in education did not correspond to a similar indicator in the United States. Thus, the low wage level in Ukraine is a key threat to the population's social security and well-being (Shaulska et al., 2020; Bondarevska & Doronina, 2022). Therefore, the average hourly wage rate in the education sphere in Ukraine in 2023 was only 5.95% (in 2019 – 10.3%) of the similar figure in the USA.

Currently, despite an 11% increase in the salaries of scientific and pedagogical employees (salary increase coefficient – 1.11) in 2022, their level remains significantly lower compared to the average monthly wage in Ukraine (Table 2). Indicated risks are appropriate to attribute to the social risks, which significantly impact the personnel component of the stability of HEIs.

The second group of personnel risk factors in higher education is related to the impossibility or unwillingness of some teachers to fully perform their professional functions in wartime conditions. These are problems with the lack of electricity supply, access to a stable Internet, depressed moral and psychological state, demotivation, despair, etc. This group of personnel risks can also include the so-called “internal dismissal,” when a scientific and pedagogical employee is more of a nominal employee, that is, is indifferent to the performance of job duties.

Thus, in Ukraine, there is a tendency to reduce the competitiveness of remuneration in higher education, which is becoming a significant factor in exacerbating personnel risks.

The third group of personnel risks in universities in wartime conditions is related to the limitation of the possibility of influence of HEIs on improving the qualitative structure of personnel, optimizing the ratio between individual groups of personnel.

**Table 2.** The level of salaries of the scientific and pedagogical employees in Ukraine, 2022–2024

Source: State Statistics Service of Ukraine (2023).

Positions of the scientific and pedagogical employees	Basic salary according to the unified tariff system, UAH		In % to the average monthly salary in Ukraine *	
	2022	2024	2022	2024**
Lecturer-intern	7,464	9,894.54	50.23	49.65
Assistant, lecturer	8,071	10,639.35	54.31	53.39
Senior lecturer	8,679	11,384.16	58.4	57.12
Associate professor, head of the department (associate professor)	9,894	12,128.97	66.58	60.86
Professor	10,531	12,909.30	70.8	64.78
Dean, director of the educational and scientific institute, head of the department (professor)	11,138	13,654.11	74.95	68.52
Rector	12,613	15,462.3	84.88	77.59

Note: \* average monthly salary in 2022 = 14,859 UAH. \*\* average monthly salary in June 2024 = 19,927 UAH.

The fourth group should include personnel risks associated with a decrease in the financial stability of the university.

Thus, the generalization of financial, social, and personnel risks of violation of the stability of educational institutions, which have worsened for Ukrainian higher education, confirms the need to adjust the approved strategies of higher education and requires the university management to introduce anti-crisis management tools.

Among the most pressing social risks in the field of higher education in Ukraine during the war are the following:

- a steady decline in the prestige of employment in higher education,
- complication of communication processes,
- increased labor intensity, and
- a growing level of conflict potential due to the deterioration of the moral and psychological state of HEI employees.

Most of the listed social risks that arise in higher education institutions are due to the deterioration of the mental health of academic staff, which is confirmed by numerous studies. Thus, Tsybuliak et al. (2023) demonstrate an increasing proportion of individuals, both men and women, experiencing high levels of emotional exhaustion. Specifically, the percentage of male academic staff experiencing high levels of emotional exhaustion

rose from 33.33% in July to 48.39% in December. Similarly, for women, this percentage increased slightly from 58.95% to 61.42%. There was also a significant increase in the percentage of individuals experiencing high levels of depersonalization for both genders.

To prevent these risks at the university, faculties, and department levels, the university administration must actively support the mental health of employees. At the same time, such measures are more effective at the level of micro-groups (at the departmental level), which will contribute to forming a more favorable moral and psychological climate and developing additional skills of employees (both soft and hard skills).

For example, in 2022–2023, the Departments of Management and Behavioural Economics and Entrepreneurship, Corporate and Spatial Economics of Vasyl' Stus Donetsk National University implemented a series of retreats and educational events. Department employees had the opportunity not only to recover in nature but also to acquire skills in self-care, first aid, AI application in professional activities, development and delivery of training programs, etc. Such comprehensive programs became possible thanks to grants for the professional development of educators and made it possible to prevent professional burnout of employees, further unite department teams, and provide employees with up-to-date skills. Thus, proved that Ukrainian universities' resilience level during wartime is positively correlated with the availability of staff support programs.

## CONCLUSION

The study aimed to identify and classify the key risks to the stability of Ukrainian universities during wartime and propose proactive tools for their mitigation. The focus of the study is on financial, personnel, and social risks since, in wartime conditions, they are the most influential (among the managed ones) in ensuring the sustainability of universities.

As a result, the multi-level classification of the risks to the stability of universities was proposed. It distinguishes financial, personnel, organizational, information, and infrastructure aspects. This classification will allow university management to create a more complete map of risks and accordingly develop comprehensive measures to support the stability of a higher education institution. Based on the proposed classification, an assessment of financial risks and identification of personnel and social risks in the universities of Ukraine during the war was carried out. The results indicate that financial, personnel, and social risks are directly dependent on each other, and the growth of signs of crisis in one of these areas automatically provokes new risks in others.

Based on the calculations, the risk of disrupting the financial stability of universities in war conditions is becoming more and more vital. University managers understand that financial problems will increase in the post-war period, so it is necessary to make flexible management decisions regarding the diversification of incomes, their growth, grant programs from international partners, how to increase the competitiveness of the university, as well as supporting the personnel core because there is already an outflow of scientific personnel.

The study generalized four types of personnel risks relevant to Ukrainian universities during the war and identified key social risks. Personnel and social risks are mainly the consequences of the deterioration of the financial stability of universities. In turn, the reduction of the personnel potential of higher education institutions is a prerequisite for the deterioration of financial condition due to restrictions on their ability to provide high-quality educational and scientific services. Thus, university management in Ukraine in wartime conditions should be enriched with proactive tools for managing financial, personnel, and social risks, allowing universities to become sustainable and build growth strategies. The practice of identifying risks and assessing their possible consequences for the stability of Ukrainian universities in wartime conditions should be an integral part of the strategic management system of higher education institutions, and its full implementation requires university managers to have developed risk management skills.

Future research may adjust the sample of universities used in the study by including those educational institutions that were relocated after 2022. This will allow one to explore different types of models for supporting the financial stability of higher education institutions and to study the unique approaches of these universities to overcoming personnel and social risks.

Considering the results of the conducted analytical research, as well as the theoretical foundations of solving the problem of ensuring the stability of HEIs in the context of overcoming financial, social, and personnel risks, it is worth noting the need for further study of the above-mentioned issues. First of all, this is related to the continuation of the war in Ukraine, which exacerbates existing issues and provokes the emergence of new challenges that negatively affect the stability of Ukrainian universities. A relevant scientific task for further research, which has high applied significance, is modeling the stability of a higher education institution depending on the different strengths of influence (degree of manifestation) of financial, personnel, and social risks or their combined influence.

## AUTHOR CONTRIBUTIONS

Conceptualization: Olha Doronina, Liudmyla Yurchyshena, Ihor Vechirko, Tetiana Kulinich.

Data curation: Kseniia Bondarevska, Ihor Vechirko, Tetiana Kulinich.

Formal analysis: Liudmyla Yurchyshena, Kseniia Bondarevska.

Funding acquisition: Kseniia Bondarevska, Ihor Vechirko, Tetiana Kulinich.

Investigation: Kseniia Bondarevska, Ihor Vechirko.

Methodology: Olha Doronina, Liudmyla Yurchyshena, Tetiana Kulinich.

Project administration: Olha Doronina, Liudmyla Yurchyshena, Kseniia Bondarevska.

Resources: Tetiana Kulinich.

Software: Olha Doronina, Ihor Vechirko.

Supervision: Olha Doronina, Ihor Vechirko.

Validation: Olha Doronina, Liudmyla Yurchyshena, Kseniia Bondarevska, Tetiana Kulinich.

Visualization: Liudmyla Yurchyshena, Ihor Vechirko.

Writing – original draft: Liudmyla Yurchyshena.

Writing – review & editing: Olha Doronina, Liudmyla Yurchyshena, Tetiana Kulinich.

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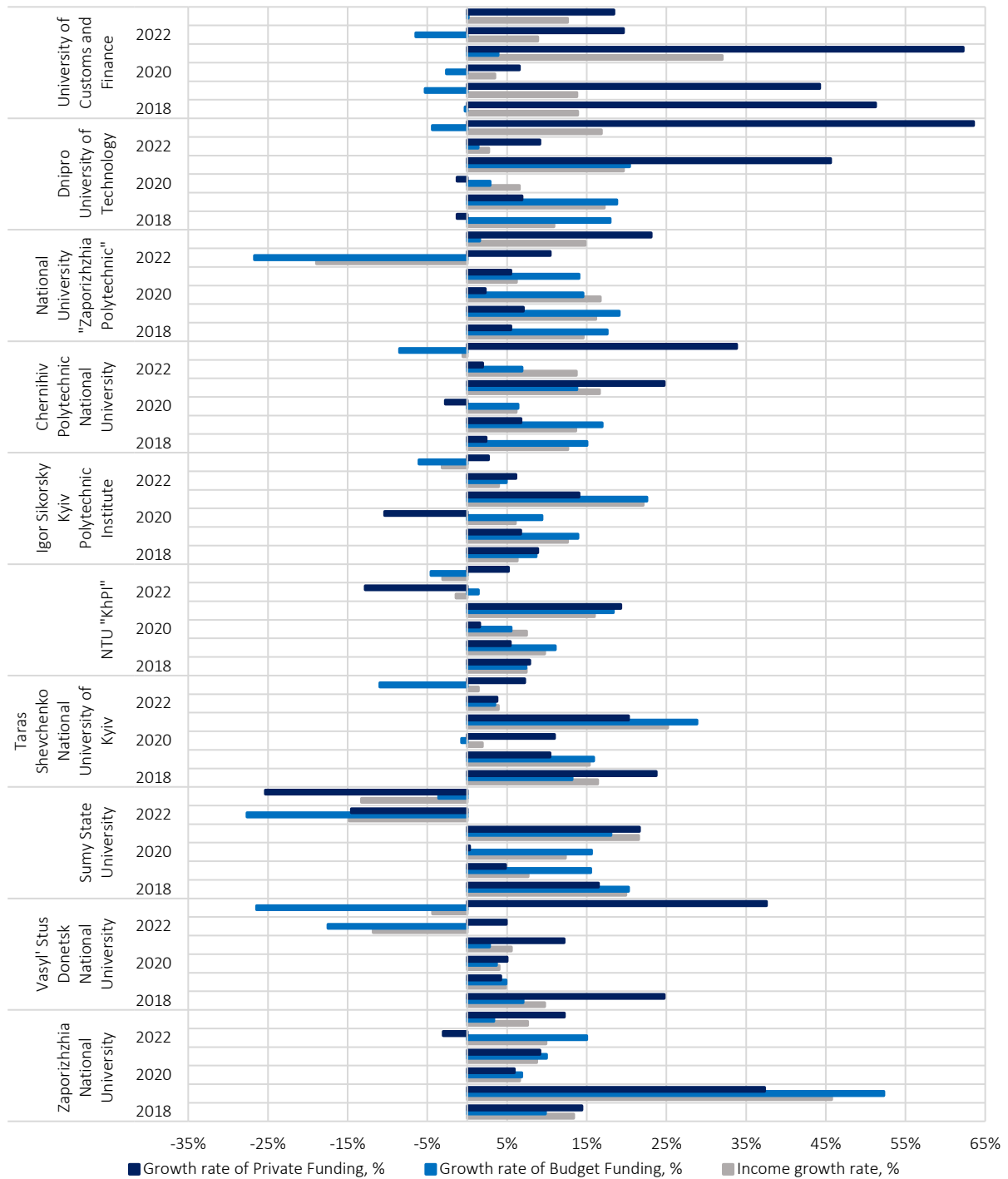
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# APPENDIX A

Source: Compiled and calculated based on the publicly released financial statements of universities.



**Figure A1.** The dynamics of income growth of Ukrainian universities

Source: Compiled and calculated based on the publicly released financial statements of universities.

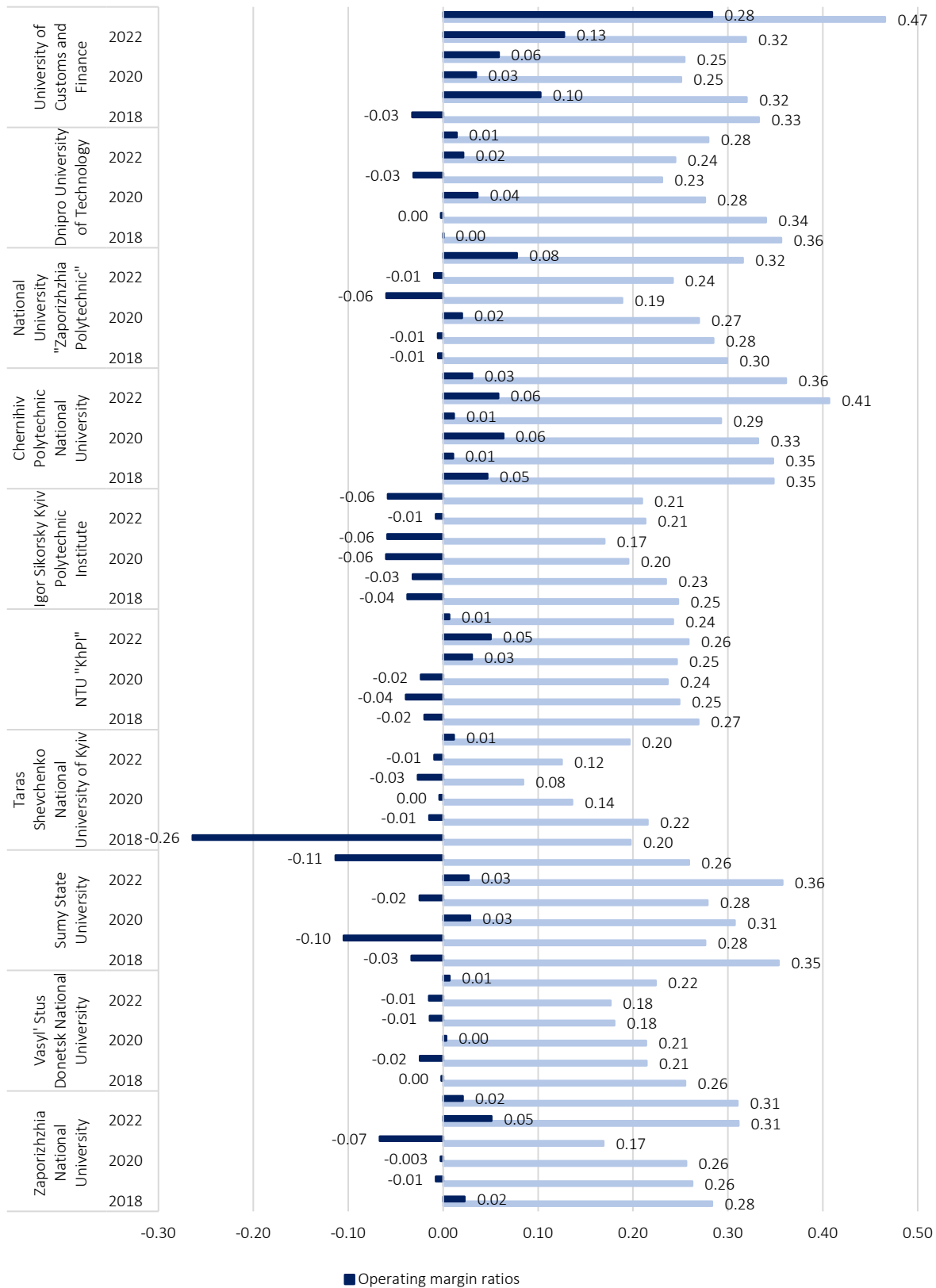


Figure A2. Changes in the share of marginal income and operating margin ratio of universities