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The Level of Financing the Higher Education and Science Sector from Public Funds in Poland

Abstract

Objectives: The aim of the article is to verify the hypothesis that the funding level of the Polish higher education sector is disproportionate in relation to the country's economic development, despite the reform considering changes in the mechanisms for determining and classifying financial resources for public universities from the state budget. The paper fills the research gap concerning the scarcity of publications analysing sector financing trends and the impact of the changed funding algorithm on universities' financial situations. It provides an in-depth analysis of the effects before and after the reform as well as explores the implications for the financial stability of educational institutions in Poland.

Research Design & Methods: This article conducts an analysis based on statistical data regarding the financial status of higher education institutions juxtaposed with the country's economic condition. Parameters and legal aspects governing the indexation of public funds for university operations were gathered and explicated utilising laws, assumptions, and resources from Polish and international institutions.

Findings: The research demonstrates that while revenues from universities' operational activities are ostensibly increasing, their real value, adjusted for inflation, has consistently lagged significantly behind the economic growth rate since 2016. Concurrently, the minimum wage level is progressively rising, substantially augmenting the expenses borne by universities. Additionally, the indexation mechanism for financing the higher education and scientific sector via public funds fails to ensure revenue stability amidst disparities between forecasted and actual indicators. In the context of the country's economic progression, the financial status of Polish universities is markedly declining, partly due to the limited diversification of their revenue sources.

Implications / Recommendations: The necessity to augment public funds for higher education and science is underscored to ameliorate institutional financial health while rigorously assessing their effective and judicious utilisation. The mechanism governing budgetary fund indexation should consider unconventional solutions capable of addressing abrupt impoverishment within the higher education sector.

Contribution / Value Added: This article contributes to the ongoing discourse surrounding the financial state of the higher education and scientific sector by furnishing substantial evidence of insufficient funding in relation to Poland's dynamic economic progress. It serves as preliminary material for identifying and implementing corrective and pre-emptive measures to mitigate future adverse consequences.

Keywords: higher education funding, Polish universities financing, universities budget, educational finance reform, funding algorithm changes, financial stability of universities, state budget allocation for universities

Article classification: research article

JEL classification: E62, H41, H61, H83, I22, I23, I28

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Introduction

Five years after the implementation of the provisions of the Higher Education and Science Act and the new funding algorithm for entities operating in the sector, voices from the academic community increasingly highlight the insufficient level of financing for higher education in Poland. Criticisms and raised demands do not concern isolated cases that could be explained by individual financial situations, but, rather, draw attention to the low and unattractive remunerations in the current market realities, which contribute to the issue of a low intergenerational turnover rate of academic staff. Furthermore, there is a lack of resources allocated for ensuring access to educational materials, infrastructure, and performing administrative tasks (KRASP, 2022; RGNiSW, 2021). The identified problems and challenges facing the sector prompt considerations about ongoing systemic changes within universities and the long-term consequences of neglect for the economy and society.

Numerous studies have been dedicated to the topic of financing Poland's higher education sector (e.g. Banyś, 2019, 2021; Górniak, 2015; Kwiek, 2010; Wilkin, 2015). However, there is a noticeable lack of recent publications that provide a detailed analysis of specific financial challenges faced by Polish universities in the light of the 2018 sector reform and the altered economic realities. Previous studies had not explored the currently evident implications of changes in the public funding algorithm, nor had they examined the macroeconomic conditions under which universities now operate. This study aims to assess the current financial situation of the higher education sector in relation to the country's economic conditions as well as to verify the hypothesis that the current funding level may be insufficient in relation to the economic conditions in Poland. The research utilises regulations framing the financial management of universities, data concerning the financing of the Polish higher education and scientific sector, as well as macroeconomic indicators and values subjected to synthetic and comparative analysis. The conducted research aims to answer the following questions: (i) How is the structure of revenues and operational costs of universities changing? (ii) How effective are the mechanisms of public fund indexing in ensuring the financial stability of higher education institutions? (iii) How does the trend in universities' operating revenues align with the country's key macroeconomic indicators such as GDP growth, inflation rate, and wage levels?

Literature review

One of the key determinants of national and regional economic development is the level of social education (Batabyal & Nijkamp, 2013; Romer, 1990). Scientific studies within the economics of education demonstrate that countries with developed higher education systems and higher investments in research and development have greater potential for faster growth in a knowledge-based globalised economy (Agasisti & Bertoletti, 2022; Varghese, 2013). Research institutions, possessing the potential to generate technologically- and conceptually-innovative solutions, play a significant role in reconstructing economies after periods of market crises, thereby enhancing societies' economic resilience to market fluctuations (Times Higher Education, 2020). The prolonged process of educating highly-qualified personnel with higher levels of education is associated with increased competitiveness in the labour market, contributing to reducing unemployment (Núñez & Livanos, 2010). Additionally, investments in developing innovative solutions translate into enhanced productivity (Duran, 1987; Karatas, 2009; Rodríguez-Pose & Crescenzi, 2008). These

aspects, aimed at supporting the country's economic development and enhancing the population's qualifications (Brzezicki, 2019), align with both the strategic goals of the state and the mission of universities. This constitutes a crucial starting point for considerations regarding the long-term social return on invested public funds in the science and higher education sector (Birdsall, 1996; Goksu & Gungor Goksu, 2015) in the literature. Opposing views are also presented in the literature, referring to neoliberalism (Neave, 1992), advocating for increased marketisation of universities (Antonowicz, 2016), and limiting public funding. According to these propositions, the management model and financial economy of higher education institutions should mirror those utilised in private enterprises (Dąbrowa-Szefler, 1995).

As a result of the 2018 higher education reform, the previous multi-stream funding mechanism for universities was replaced by a collective subsidy from the state budget. Its allocation is tied to legally-specified goals pursued by academic institutions (MNiSW, 2019). The obligation to designate the volume of funds for individual university tasks (as defined in Article 94 of the Act of 27 July 2005 on Higher Education) was transferred from the central level to the authorities of individual units, allowing discretionary decision-making regarding the allocation across various areas of university activities. This change, ensuring autonomy in spending commensurate with individual needs (NIK, 2020), drew from the tenets of the New Public Management paradigm, advocating that funding should be linked to the effective utilisation of resources (Szczurowski & Rekuć, 2017). Effective financial management combined with long-term and consistent investment of state budget resources into research and higher education guarantees institutions the assurance of their financial stability (Stachowiak-Kudła & Kudła, 2017). Further support in achieving this goal comes from the application of mechanisms for indexing public funding, long-term planning, and the diversification of university revenue sources (Kalinowski, 2012). Ensuring financial security should form the basis for sustainable development, focusing on seeking efficient and innovative solutions in both long-term research and day-to-day institutional activities (Di Carlo et al., 2019; Estermann & Claeys-Kulik, 2013). Insufficient public funding for universities compels these institutions to seek funds in the private sector by:

- intensifying collaboration with business;
- increasing the commercialisation of scientific activities;
- privatising various aspects of academic life;
- raising tuition fees.

Worth emphasising is the fact that the effectiveness of obtaining funds from private entities depends on the alignment of goals and missions between both parties (Hamilton & Nielsen, 2021). On the one hand, the limitation of public funding may serve as an additional incentive for universities to engage in partnerships with socioeconomic environments. On the other hand, it restricts access to education and the allocation of funds for innovations – issues beyond the primary functions of the institutions (salaries, infrastructure provision).

Public funds remain the primary source of operational revenue for Polish universities (Kwiek et al., 2016). Therefore, budgetary assumptions constitute a crucial element determining the continuity and stability of higher education and scientific institutions. While expenditure planning typically occurs on an annual basis, the formulation of budget assumptions takes into account guidelines established in the "Multi-Year State Financial Plan" and the directions outlined in the updated convergence programme (Owsiak, 2013). Reference to these strategic documents plays a pivotal role in achieving the state's long-term tasks and objectives. As indicated in these documents, the implementation of tasks in higher education and science aims to enhance

the competitiveness of the Polish economy. Additionally, one of the objectives includes elevating the level of scientific research outcomes and fostering collaboration between academia and business, advancing the development of innovative companies (Council of Ministers, 2018–2024).

Research methodology

The research utilised statistical data sourced from the Main Statistical Office in Poland (GUS, 2019, 2024a, 2024b, 2024c) and Eurostat (2024), including GDP, inflation rates, average and minimum salaries in the economy, the minimum basic wage of a full professor, operational revenues and costs of universities, and public expenditure on the higher education sector. Financial aspects were drawn from budget assumptions prepared by the Ministry of Finance, budgets for the years 2014–2025, and budget execution analyses. The rationale for focusing on financial resources from the state budget stems from the fact that it constitutes the primary source of operational revenue for the higher education sector in Poland. Legal frameworks associated with the financial management of the science and higher education sector were defined based on the Act of 27 July 2005 on Higher Education Law, and the Act of 20 July 2018 on Higher Education and Science Law.

The amassed research material underwent analysis to assess the adequacy of the provided funding level to country's economic conditions within the higher education system, considering historical and forecasted economic realities. *Post facto* analysis was applied to the existing structure of revenues and operational costs of higher education institutions in Poland, i.e. financial categories used in planning and reporting documents. Subsequently, the level of state budget expenditures on higher education was verified and evaluated concerning observed legislative changes during the reform period. The analysis outcomes were contextualised within a macroeconomic framework by indexing wages increments and operational revenues, significant for the higher education sector, with an inflation index. The conclusion segment of the analysis involved evaluating the effectiveness of the existing mechanisms in indexing the number of subsidies granted to universities. The analysis serves as the basis for evaluating the current and projected financial situation of the Polish higher education sector in relation to the country's economic circumstances.

Results and discussion

With a low degree of revenue source diversification, higher education institutions are reliant on decisions made by the main funders: the government and households. University authorities have tools at their disposal to influence the level of revenues and costs, securing the institution's financial stability. For instance, they can modify the number of students in subsequent admissions while considering financial mechanisms embedded in the subsidy allocation algorithm. They can also adjust the range of study programmes, apply for grants to conduct scientific research, contingent upon legal constraints, university strategies, socioeconomic conditions, and demographic situations.

The analysis of operational revenues obtained by universities from 2014 to 2023 leads to the conclusion of a consistent trend of their nominal increase; however, it is not a reliable indicator for assessing potential improvements in the actual financial situation. Notably, modifications in financial streams from public funds result in discrepancies in presenting the extent of financing for both educational and research activities during the periods governed by two legal frameworks. The values of subsidies granted from 2019 to 2023 should be compared with the cumulative

value of state budget allocations for educational, statutory activities, and a portion categorised as other revenues from 2014 to 2018. This comparison aims to significantly diminish the disparity between subsidy amounts and grants, which will be reflected in Figure 1.

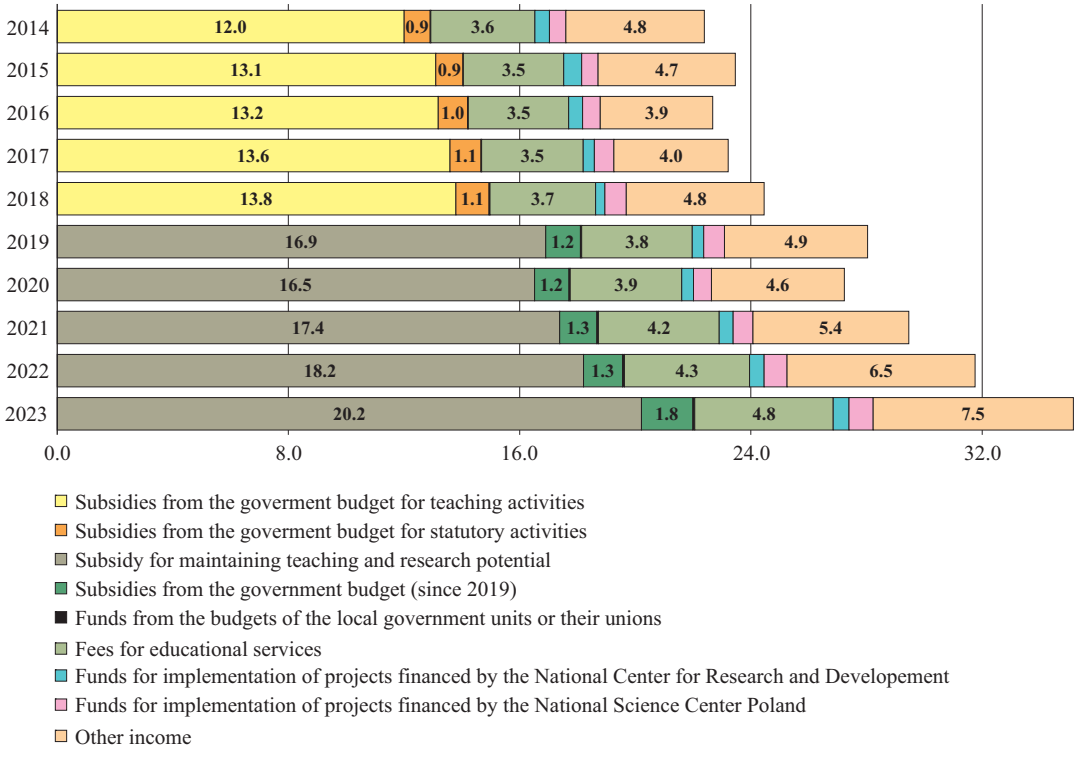

Figure 1. Revenues from the university's core operating activities in 2014–2023 [in bn PLN]

Source: Own study based on GUS, Higher Education and its finances, and Higher Education Institutions and their finances.

Another significant element is the trend line of operating revenues derived from fees for educational services. Despite steady nominal growth since 2017, culminating in a record high of 4.8 billion PLN in 2023, the share of operating revenues derived from fees for educational services has been on a downward trajectory, declining from 16.1% to 13.4% over the analysed period. A structural analysis inference also indicates that private funding remains a marginal portion of the funds acquired by educational institutions compared to at least 60–69% (from 2019 to 2023: approximately 66–69%) sourced from the state budget and other public entities. Conclusions drawn from the analysis contained in Figure 1 also demonstrate an increase in funding for projects financed by the National Centre for Research and Development as well as the National Science Centre Poland, supporting the execution of specific research endeavours.

Personnel costs, including wages, social security contributions, and employee benefits, constitute the most significant operational expense category incurred by universities, accounting for approximately 70% of total expenditures. The most significant increase in university staff wage costs occurred in 2023, with a year-on-year rise of 12.5%. A comparable surge was last observed in 2019, when costs grew by 11.4%. Particularly in recent years, geopolitical

realities have significantly impacted the overall operational costs. The year 2020, due to the COVID-19 pandemic, witnessed a shift of university activities into the virtual realm, resulting in an unchanged or even reduced cost in material consumption, energy, and external services compared to the previous year. Remote operations persisted for a significant part of 2021 (MEiN, 2021), limiting costs related to material and energy consumption. Consequently, in 2022, amid a dynamic inflation surge, these costs saw a record-breaking 22% increase, followed by a further 19% rise in 2023.

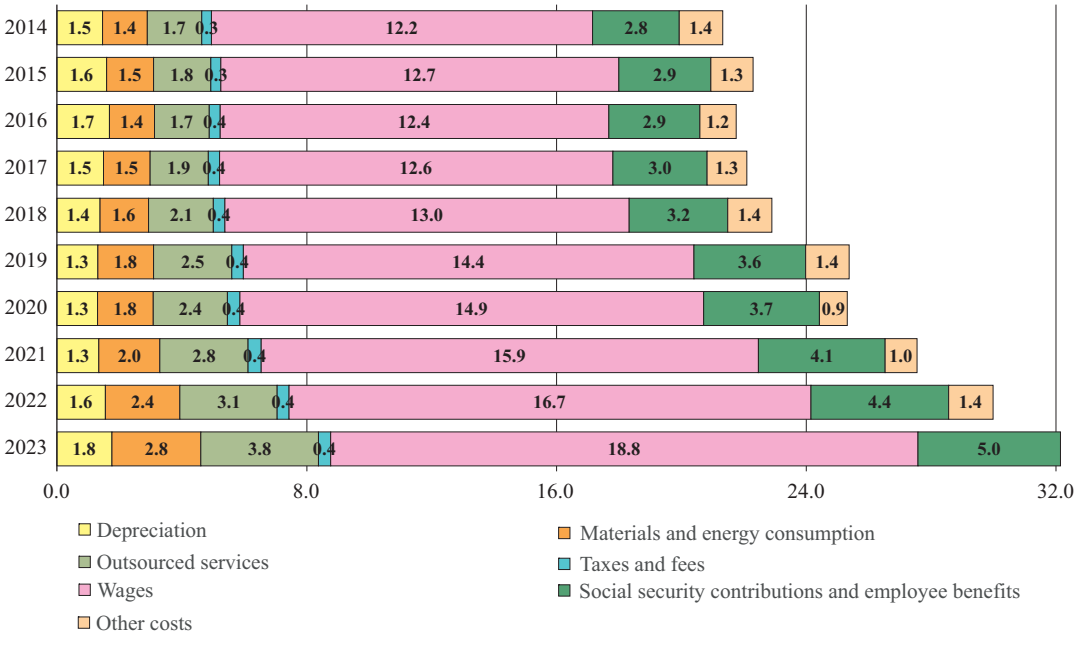

Figure 2. Detailed breakdown of operational expenses of the university by categories from 2014 to 2023 [in bn PLN]

Source: Own study based on GUS, Higher Education and its finances, and Higher Education Institutions and their finances.

The coverage ratio of operating costs by subsidies for maintaining educational and research potential is decreasing: it stood at 66% in 2019 and was 7 percentage points lower in 2023. Difficulties in estimating the impact of this trend on the financial situation of the university arise due to the lack of clear analysis of cash flows between the acquired subsidy and the expenses covered by it, such as wages of employees engaged in teaching activities for full-time and postgraduate studies (both basic and commercial activities). Notably, a significant change for the sector – the decline in the number of students (GUS, 2019, 2024c) driven by changes in the funding algorithm – has not significantly impacted cost reductions.

The coverage ratio of operating costs by fees for educational services remains relatively stable at 14–15%, while the weight of other revenues is increasing, with the ratio reaching nearly 22% in the last year, approximately 3.5 percentage points higher than three years earlier. This category includes revenues from room rentals, separate business activities, long-term investments, and dedicated funds. Consequently, there has been an increase in the potential to generate revenue from commercial and investment activities.

The data presented in Figure 3 reflects the actual level of budgetary expenditures for section of the budget 803 "Higher Education" from 2014 to 2018, whereas from 2019 onwards, it pertains to budget heading 730 "Higher Education and Science." Apart from the enactment of the new Higher Education and Science Act at the end of 2018, which altered the streams and funding algorithms for higher education institutions from public funds, there was also a change in the budgetary classification of expenditures for higher education and science in 2019. This merger combined section of the budget 730 "Science" and 803 "Higher Education" into a new singular category 730 "Higher Education and Science."

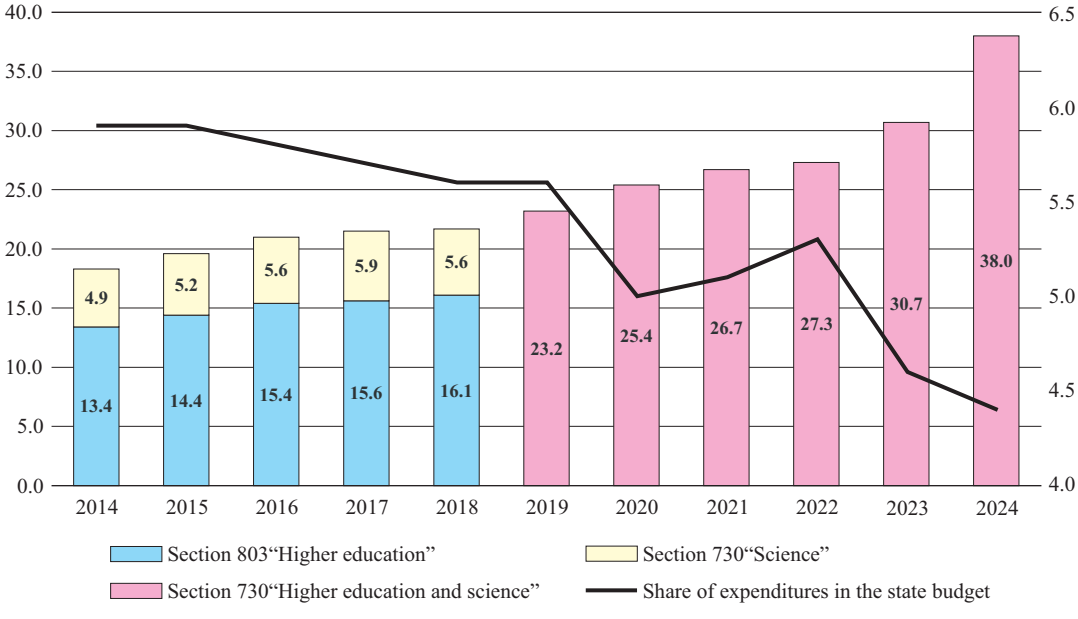

Figure 3. Public expenditures from the state budget on science and higher education and their share in the state budget from 2014 to 2024 [in bn PLN, %]

Source: Own study based on budget acts for 2014–2024.

The growth rate of public expenditures in the sector exhibited a downward trend during the period of previous budget classification, declining from 8.5% to 0.9% in subsequent years. However, since 2019, expenditure growth has fluctuated between 2.2% and 9.6%. Notably, in 2023 and 2024, state budget allocations for the higher education and science sector increased significantly by 12.6% and 23.5%, respectively. Over the past decade, the share of state budget expenditures allocated to higher education and science has declined by 1.53 percentage points, reaching 4.38% in 2024. Despite the sector's reform involving modifications in the classification of state budget expenditures since 2015, the share of funds allocated to higher education and scientific institutions from the state budget has significantly decreased.

To assess the adequacy of university financing and the current as well as projected situations of academic institutions, the author conducted a comparative analysis of the growth rate of operational revenues concerning GDP, minimum and average wages in the economy, as well as the minimum basic salary of a full professor. This analysis considered the average annual inflation values from 2014 to 2023, setting the year 2014 as the reference point (100%). Based

on the National Bank of Poland's July 2024 projections, an inflation rate of 6.6% for the year 2024 was adopted, along with a GDP growth rate of 3.0% in 2024 (average values of the most probable ranges) (NBP, 2024). Additionally, the assumption was made that operational revenues of universities would increase by the same percentage between 2024 and 2025 as expenditures from the state budget on higher education and science.

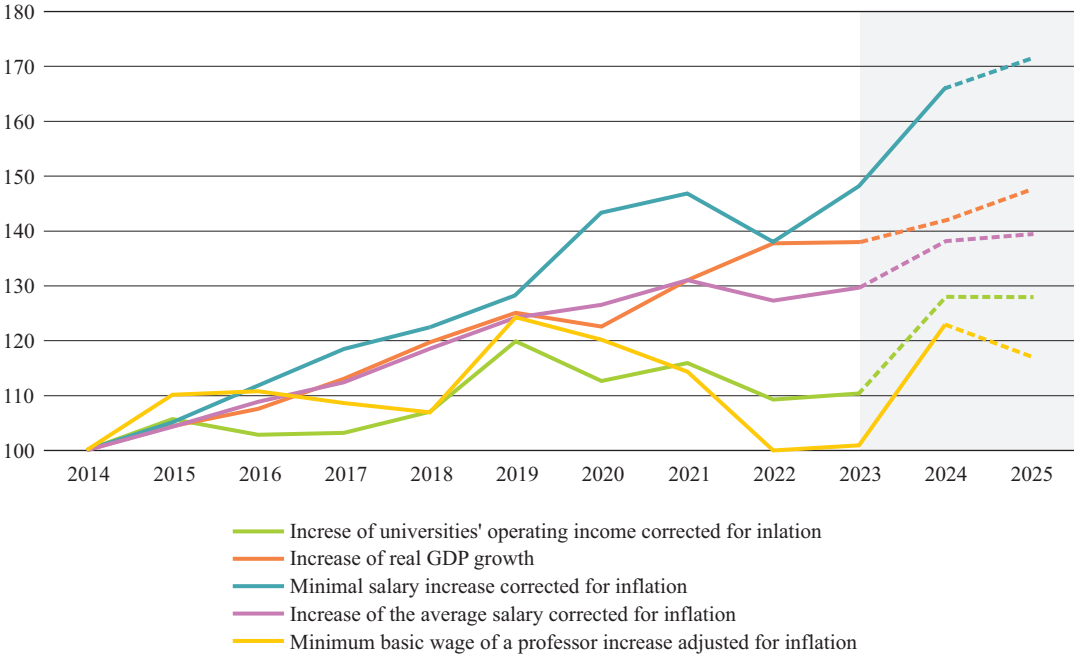

Figure 4. Analysis of the relative growth of university operational revenues adjusted for inflation compared to the growth of GDP, minimum and average salary in the economy, minimum basic wage of a professor from 2014–2025, along with projections for 2024 and 2025 (2014 = 100%)

Source: Own study based on GUS, Average Employment, and Gross Monthly Earnings data, Council of Ministers Regulation on the Minimum Wage and Hourly Rate, Eurostat and NBP projections of GDP and inflation.

All types of remunerations displayed periodic valorisation relative to inflation, shaped by market realities or legislative changes in the case of minimum wages. Until 2021, the increase in the average level of wages in the economy generally corresponded to the pace of economic growth, aligning with the dynamics of national development. However, the level of the minimum wage in Poland exceeded the pace of the country's economic growth, significantly impacting the higher education and scientific sector in terms of wage costs, primarily for administrative staff. The rise in the minimum wage for a full professor proportionally affects the salaries of academic staff with lower academic ranks and scholarships awarded to doctoral students (Act of 20 July 2018 on Law on Higher Education and Science). As of 2023, it increased from 6,410 PLN to 7,210 PLN (Regulation of the Minister of Education and Science of January 2, 2023, amending the regulation on the minimum monthly basic salary for a professor at a public university), and reached 9,370 PLN in 2024 (RGNiSW, 2023). The decisions by the Minister of Education and Science partially compensate for the current economic situation and the period of declining

attractiveness of wages in the sector since 2019 in relation to market realities. However, when assessing the financial situation of employees in the higher education and scientific sector, it is important to consider that basic wages are just one of many possible ways of earning income (functional bonuses, civil-law contracts) (Sekuła, 2021). While the rise in salaries may enhance the sector's competitiveness in relation to market rates, it will undoubtedly impact the cost structure of universities, where personnel costs form the largest portion, thereby limiting the possibility of allocating funds for other university activities.

A pessimistic outlook emerges from the comparison of the growth in operational revenues of universities with Poland's GDP growth. In 2016, there was a decrease in the growth rate of revenues by about 3 percentage points compared to the previous year, marking the first year of higher economic growth compared to the operational revenues of universities indexed by inflation. Since then, their growth rate has remained significantly below the pace of economic growth. For the following three years, operational revenues, adjusted for inflation, grew at a rate of approximately 1.0–6.4% annually. However, starting in 2019, which was the first year of the new sector financing mechanism, a period of successive decline in the growth of operational revenues of universities commenced. Their trajectory presents an opposite direction to the rising GDP of the country.

The total amount of planned expenditures from the state budget allocated for financing universities in subsequent years underwent valorisation based on the average annual consumer price index and, concerning salaries, on the average annual growth rate of salaries in the state budget sphere (Act 2005, Article 93). These regulations theoretically guaranteed the valorisation of funds allocated to the sector in response to the relatively current economic situation of the country. However, in practice, this mechanism refers to the values used to develop the annual state budget expenditure plan within the framework of the budget act. Consequently, the valorisation parameters could correspond to 0% of the value, as confirmed by the data included in Table 1.

Table 1. Projected and actual values of the goods and services price index, as well as the average annual wage growth rate in the state budget sector for the years 2009–2018

Year	CPI (YoY)			Average annual wage growth rate in the state budget sphere (as per budget acts)
	Forecast	Actual	Diff	
2009	2.9%	3.5%	+0.6	3.9%
2010	1.0%	2.6%	+1.6	1.0%
2011	2.3%	4.3%	+2.0	0.0%
2012	2.8%	3.7%	+0.9	0.0%
2013	2.7%	0.9%	–1.8	0.0%
2014	2.4%	0.0%	–2.4	0.0%
2015	1.2%	–0.9%	–2.1	0.0%
2016	1.7%	–0.6%	–2.3	0.0%
2017	1.3%	2.0%	+0.7	0.0%
2018	2.3%	1.6%	–0.7	0.0%

Source: Own study based on budget acts for 2009–2018 and data from the Central Statistical Office.

The average annual salary growth rate in the state budget sphere, as established in the budget acts and defined as the year-on-year salary increase, remained at 0.0% for eight consecutive years. Consequently, from 2011 to 2018, the government did not plan any salaries valorisation for state budget employees. Over a span of ten years, the valorisation of the funds designated for salaries averaged 0.49% annually, which is significantly lower than the inflation rate of 1.71% (projection: 2.05%). A notable discrepancy is evident between the projected and realised values of the goods and services price index – averaging 1.5 percentage points annually during the period of ten years. The average annual values of this variable, as defined in the budget act, carry an evident predictive error arising from the macroeconomic environment's variability. However, the values set by the legislator between 2010 and 2016 significantly deviated from reality. From the economic benefit perspective, this discrepancy could have favoured the sector during periods of real deflation, since the projected valorisation was based on positive index values. The mechanism did not guarantee an increase in funds for the science and higher education sector due to discretionary decisions regarding the salary growth index in the state budget sphere, including maintaining a 0% increase for several years and a significant discrepancy between projected and actual inflation values. The valorisation mechanism underwent changes upon the enactment of the 2018 law, which specifies in Article 383 the valorisation of funds in the state budget for financing higher education and science by summing up two parts:

1. In terms of higher education financing, valorisation is based at least on the projected commercial price growth rate as set in the budget act (also applied in the previous mechanism).
2. In terms of science financing, valorisation is grounded on the multiplication of the valorisation index and the projected real GDP growth provided to the Social Dialogue Council based on the Minimum Wage Act.

Table 2. Forecast and Actual Values of the Indices Used for Indexing Funds Allocated for Financing Higher Education and Science from the state budget in years 2019–2025

Year	Higher education financing			Science financing				
	CPI (YoY)			GDP (YoY)			Indexation Rate	Multiplication
	Forecast	Actual	Diff	Forecast	Actual	Diff		
2019	2.3%	2.3%	0.0	3.8%	4.4%	+0.6	1.25	0.048
2020	2.5%	3.4%	+0.9	3.7%	–2.0%	–5.7	1.35	0.050
2021	1.8%	5.1%	+3.3	4.0%	6.8%	+2.8	1.45	0.058
2022	3.3%	14.4%	+11.1	4.3%	5.1%	+0.8	1.55	0.067
2023	9.8%	11.4%	+1.6	3.2%	+0.1%	–3.1	1.65	0.053
2024	6.6%	3.6%	–3.0	3.0%	2.9%	–0.1	1.75	0.053
*2025	5.2%	…	…	3.8%	…	…	1.85	0.070

* Figures not available at the time of publication.

Source: Own study based on assumptions from the state budget project for 2019–2025, state budget acts for 2019–2024 and Eurostat data.

The values communicated to the Social Dialogue Council by June 15 of a given year concerning the projected growth of GDP align with the assumptions for the state budget project. Due to the public availability of this type of document, the data contained within it has been utilised

for the above analysis. The forecast GDP values and inflation for 2025 are based on the July 2024 projection issued by the National Bank of Poland.

The index for the valorisation of science funding from 2020 to 2028 is increasing by 0.1, starting from the baseline value set in 2019 at 1.25. This gradual increase aims to signify a higher priority for the development of this field through the gradual elevation of science funding levels. Additionally, according to Article 383 Section 5, the legislator introduced limitations on reducing the financial resources earmarked in the state budget for financing higher education and science compared to the preceding year. This is crucial for ensuring the financial stability of the sector during economic crises or deflationary conditions.

Table 3. Comparison of Actual Growth and Statutory Assumptions of Minimum Indexing of Expenditures from the state budget for Science and Higher Education in the years 2019–2023

Year	Indexing for Financing Higher Education (min)	Indexing for Science Financing (min)	Indexing range for higher education and science (min)	Actual Growth of Expenditures on Higher Education and Science	Fulfilment of Statutory Indexing Requirement
2019	2.3%	4.8%	2.3–4.8%	6.79%	YES
2020	2.5%	5.0%	2.5–5.0%	9.64%	YES
2021	1.8%	5.8%	1.8–5.8%	5.04%	YES
2022	3.3%	6.7%	3.3–6.7%	2.20%	NO
2023	9.8%	5.3%	5.3–9.8%	12.55%	YES

Source: Own study based on state budget acts for 2019–2023.

The legislation of the act does not specify the exact proportions between the minimum indexing of expenditures for higher education and for science. Therefore, for analytical purposes, a range of minimum indexing was adopted, which must be met when determining the state budget and expenditures in this area. An analysis of Table 3 demonstrates that while this stringency was adhered to in the years 2019–2021 and 2023, the allocations for higher education and science did not fulfil the indexing conditions as designated by the regulations in 2022.

It is crucial to note that anchoring the higher education financing mechanism to the inflation index is sensitive to disparities between projected and realised increases in prices. This sensitivity was particularly evident in 2022, when the average annual index of goods and services remained at a high, double-digit level. The observed differences are substantial, influencing the assessment of the reliability of the data contained in the assumptions for the state budget prepared well in advance in accordance with public finance principles. The mechanism is more suited to economic stability realities and tends to falter when the economy contends with crisis conditions. The legislator did not anticipate a compensatory or protective solution to ensure a relatively steady increase in sector financing relative to rising costs and economic stagnation in the event of significant differences between forecasted values determining the amount of allocated funds and the recorded values of macroeconomic indicators.

Conclusions

For eight years, the real growth rate of university operational revenues in Poland, accounting for the average annual growth of goods and services prices, has consistently remained below the country's economic growth rate. Among them, the most significant is the subsidy for maintaining educational and research capacity, which, although increasing nominally, is failing to keep pace with the country's economic development. Statutory raises in the minimum wage progressively escalate costs for universities, while the simultaneous lack of revenue increases exacerbates financial crises within individual institutions. The existing legal framework lacks a correlational mechanism between the growth of the minimum wage and public fund streams.

Institutions heavily reliant on state budget funding require not only government-provided subsidies but also increased revenue from the business sector. Rational allocation and improving the efficient use of available funds at the institutional level is imperative. Leveraging the statutory autonomy granted to universities for allocating funds to different areas according to current needs should introduce solutions and regulations to limit inefficiency. While revenue from educational services fees and the potential to generate income from commercial and investment activities have increased in recent years, these approaches also have limitations and negative consequences. Excessive tuition fee hikes may create economic barriers to education access, and the rapid growth of revenues from commercialising scientific research, currently at a low level (Łaskowska et al., 2023), necessitates long-term systemic actions.

Since 2015, the share of expenditure on higher education and science from the state budget has decreased despite the 2018 reform and changes in budget classification. The existing mechanisms that index the amount of public funds allocated to the sector exhibit significant shortcomings during economic crises when projected values of macroeconomic variables do not align with reality. Doubts also arise regarding the application of a minimum level of budget indexation for the science and higher education sector under the state budget. Assuming that the state's policy goals remain focused on the sector's development and its continued financial commitment to Polish science and higher education, a solution indexing subsidy in response to the relative decline in public expenditure causing financial problems in institutions should be implemented. However, any increase must precede a broader audit of expenditure at the university level and strengthen the existing control mechanisms.

These aspects demonstrate alarming trends in the education and higher education sectors. Polish universities are not developing in line with the country's economic growth. Long-term educational issues may be associated with a gradual loss of the most critical element driving the country's development, namely highly-qualified workforce and scientific expertise equipped with market-attractive competencies and useful in a rapidly changing environment. Failure to take action in order to improve the financial condition of higher education and scientific institutions may deepen the negative trends in this sector and in the entire country.

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