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The revenue diversification of top-tier higher education institutions

Eszter Lukács
Széchenyi István University,
Hungary
lukacs.eszter@sze.hu
ORCID 0000-0001-6066-6881

Bálint Filep
Széchenyi István University,
Hungary
filep.balint@sze.hu
ORCID 0000-0003-3955-6818

Zsolt Kohus
Széchenyi István University,
Hungary
kohus.zsolt@sze.hu
ORCID 0000-0002-2153-615X

Sarolta Szabó
Széchenyi István University,
Hungary
szabo.sarolta@sze.hu

Abstract. This study examines the revenue diversification of the Top 30 higher education institutions (HEIs) as identified in the 2025 Times Higher Education and QS World University Rankings. Faced with declining government appropriations, HEIs are strategically diversifying revenue streams. Our analysis of financial reports reveals substantial variability in revenue sources, with some institutions primarily relying on research grants, tuition, and government funding. In contrast, others prioritize income from endowments, services, or medical activities. While funding optimization strategies may prioritize single revenue sources for short-term convenience, our findings suggest they risk institutional fragility, highlighting the need for sustainable financial models that balance research productivity, teaching quality, and public service over the long term. This article emphasizes the vital importance of financial autonomy, which enables institutions to invest strategically in recruiting top academic and research staff,

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upgrading research infrastructure, and enhancing an institution's overall performance. While strategic autonomy empowers institutions to achieve excellence and adapt flexibly to evolving societal needs, they must remain true to their core mission of public service as they diversify and optimize revenue sources.

Keywords: revenue diversification, higher education, income, financial autonomy, university rankings, sustainable funding models

JEL Classification: I20, I23, I28

1. INTRODUCTION

Higher Education Institutions (HEIs) globally are facing challenges to their traditional funding models. Growing demands for access to higher education, coupled with fluctuating government support, rising operational costs, and the need for continuous innovation, have all contributed to a financially challenging environment. The funding of HEIs, especially teaching and research activities, is considered an integral catalyst of research performance, progression, and excellence. However, the increasing expenditure of HEIs has become a significant issue for stakeholders, particularly from the perspective of effectiveness and return on investment (Aagaard et al., 2021; Ou et al., 2024). Therefore, contemporary science policies place strong emphasis on competition and performance-based incentives as key strategies for enhancing the efficiency and productivity of university systems (Auranen & Nieminen, 2010). As a result, the funding process of HEIs is increasingly scrutinized, and their evaluation has become a significant concern for governments and funding agencies (Álvarez-Bornstein & Bordons, 2021).

Historically, HEIs relied heavily on government funding, viewing it as a cornerstone of academic freedom and research excellence. However, over the past few decades, a global trend toward reduced public funding has emerged. This shift has been driven by various factors, including fiscal austerity measures, changing political priorities, and growing belief that higher education should be partially funded by itself (Barr, 2004). As government support wanes, HEIs have been compelled to diversify their revenue streams, leading to the proliferation of their funding models (Chevaillier & Eicher, 2002; Goksu & Goksu, 2015; Greben et al., 2024; Jaafar et al., 2023). Aghion et al. (2010) argue that university excellence is rooted in the optimal interaction between autonomy, funding, and accountability. This framework suggests that when universities are granted sufficient autonomy, they can make strategic decisions that foster innovation and academic quality. Adequate funding provides necessary resources for research and teaching, enabling HEIs to compete globally. Accountability mechanisms ensure that universities meet performance standards, use resources efficiently, and align their goals with societal needs. Thus, *great* science – that which directly and significantly impacts the world – depends both on researchers and the operation of institutions (Carayol & Maublanc, 2025).

This evolving landscape prompts further reflection on how university systems manage and perceive autonomy, especially within the context of global initiatives and institutional frameworks. The European University Association, in its 2023 edition of the Autonomy Scoreboard, differentiates between four types of autonomy: organizational autonomy (governance structures and internal decision-making), financial autonomy (control over funding, tuition, and borrowing), staffing autonomy (ability to recruit independently, set salaries, and promotions), and academic autonomy (programs, admissions, and research directions) (EUA, 2023b).

The existing literature on HEI autonomy and their performance remains limited and controversial. In a recent study, Painsi et al. (2025) found only minor, and in some cases negative, associations between types

of autonomy and HEIs' success in fulfilling their missions, suggesting that the performance of HEIs is "more complicated than generally assumed" and that this complexity warrants further investigation (Painsi et al., 2025, p. 15). Orosz (2018) observed that academic autonomy does not follow a strict linear relationship with other types of autonomy. For example, in countries such as the UK and Estonia, high financial autonomy is strongly correlated with organizational autonomy. Conversely, in countries such as Luxembourg and Slovakia, high financial autonomy is often associated with low organizational autonomy. Additionally, some nations, such as Norway and Poland, display high organizational autonomy but low financial autonomy. Conversely, Michavila and Martinez (2018) identified a positive correlation between the four autonomy types and a higher score in the Shanghai Ranking Academic Ranking of World Universities. Similarly, Hoareau et al. (2013) reported a positive effect of university autonomy and public funding on research output and educational performance.

Despite the controversial results in the literature, we agree with Painsi et al. (2025) that without sufficient funding, skilled personnel, and a supportive network, independent organisations are limited in terms of achieving their goals. To this end, through the analysis of the latest Financial Reports of the Top 30 best-performing HEIs in the THE World University Rankings 2025 (THE 2025) and QS World University Rankings 2025 (QS 2025)**,** we aim to explore the diversification of their revenue portfolio. Understanding the strategies employed by these institutions to balance multiple funding sources – ranging from government grants to private sector investments and philanthropic contributions – can offer valuable insights into sustainable financial models. This analysis is critical not only for understanding how leading universities navigate the evolving landscape of higher education funding but also for providing a framework that may help other institutions enhance their financial resilience. Beyond financial sustainability, revenue diversification strategies directly support the quality of education and innovation orientation that universities must achieve to contribute to Sustainable Development Goal Four (SDG4). As the global agenda increasingly emphasizes the role of higher education in promoting quality learning and fostering innovation (Olubiyi, 2024), understanding how leading universities finance these outcomes becomes essential.In an era of tightening budgets and increasing competition, the ability to maintain or expand funding sources while ensuring academic and research excellence is a key determinant of long-term success. This study's findings could guide HEIs in balancing autonomy, financial independence, and performance to stay competitive and contribute to society.

1.1. Funding models of HEIs

University funding models vary widely across the globe, shaped by historical, political, and economic contexts. At the core, three dominant university models emerge: public, private, and hybrid. However, there are remarkable variations between countries according to the ratio of public to private HEIs. In OECD countries, on average, 32% of HEIs are private, with the highest rate in Japan (70%) and the lowest in Finland (0%) (OECD, 2019; Ritzen, 2021).

Public universities are primarily financed by government appropriations, which may include block grants, performance-based funding, and targeted subsidies. These HEIs often serve broader societal missions such as promoting access, equity, and regional development (Ritzen, 2021). However, the sustainability of public funding has come under pressure due to rising enrolment, economic constraints, and shifting policy priorities. According to OECD data, the proportion of total funding coming from public sources declined in every European country surveyed between 1999 and 2020, with some experiencing sharp reductions—indicating a systemic shift toward private sources (OECD, 2024). This trend is further supported by Zatonatska et al. (2019), who found that most successful HEIs globally operate under market-oriented models that combine public and private financing. Similarly, Jongbloed and Vossensteyn (2001)

concluded that while performance-based funding has become widespread, its impact on institutional productivity remains unclear, and public funding continues to decline in relative terms across many systems. These findings underscore the growing need for diversified and resilient funding strategies in higher education.

Private universities, on the other hand, rely heavily on tuition fees, philanthropic donations, endowment income, and commercial ventures. These institutions typically enjoy greater autonomy in financial and academic decision-making, allowing them to respond more flexibly to market demands (Ritzen, 2021). However, private HEIs can also apply for government funds, though these funds often come with encumbrances. The model of private HEIs often raises concerns about affordability and social equity, as access to education becomes increasingly tied to financial capacity (Kakembo, 2025). In countries like the United States, private universities have developed sophisticated financial strategies, including active endowment management, corporate partnerships, and research commercialization (Acharya & Dimson, 2007). Endowment-based funding can provide long-term financial stability, enabling HEIs to invest in research, faculty recruitment, and infrastructure development. However, this model also leads to disparities between well-endowed institutions and those with limited financial reserves, reinforcing socioeconomic inequalities in access to education.

Hybrid models combine elements of both public and private funding. These are increasingly common in regions where public resources are limited or volatile. Universities may receive core funding from the state while also engaging in revenue-generating activities such as industry collaboration, international student recruitment, and alumni fundraising. The hybrid model is particularly prevalent in countries such as Australia, South Africa, and parts of Southeast Asia, where institutions must balance public accountability with financial sustainability (Joshi, 2007; Kakembo, 2025). Yurchyshena et al. (2024) argue that hybridization enhances institutional resilience and strategic autonomy, especially when paired with diversified income streams and robust governance mechanisms. The hybrid funding model is highly effective in entrepreneurial universities, which integrate industry partnerships and commercialization into their financial strategies and operations. It promotes income generation through knowledge exchange, technology transfer, and spin-off companies, enabling institutions to become more self-sufficient (Prokop, 2021; Samoilikova et al., 2023b; Samoliuk et al., 2024).

In addition to these three main models, there are other alternative solutions for university financing. A notable example is Buckingham, which originated as a pioneering approach to higher education that challenged traditional academic structures. Buckingham University was initially established as a small, private institution with a focus on academic excellence and community involvement. Over time, it evolved into a market-driven funding model, emphasizing flexibility, innovation, and responsiveness to economic and societal needs. This transition reflected a broader shift in higher education, where institutions began adopting market-oriented strategies to attract students, secure funding, and stay competitive in a rapidly changing landscape. Such models prioritize entrepreneurial principles, leveraging market mechanisms to enhance institutional sustainability and relevance in today's educational environment (Forlicz et al., 2024; Tooley, 2024; Németh et al., 2023). At Land Grant Universities (LGUs), the Cooperative Extension Service (CES) and Agricultural Experimental Station (AES) have been integral parts of the university. Even when state funds remained flat for all entities, the budget of the university significantly increased, predominantly through tuition fees, revenues from auxiliary services, and growth in funds. LGU, CES, and AES are complements in the budgeting process (Perry, 2023). In recent years, governments have also introduced reforms to the university governance structure to align with national economic and educational priorities. In 2016, the Polish government started a dialogue with the Polish academic world and created the "Constitution for Science" reform, which transformed Polish universities from state-controlled institutions into more autonomous entities governed by external university councils. This model introduces a new layer

of financial and strategic oversight by requiring that half of the council members be external stakeholders, such as industry leaders or policymakers. This shift represents a hybrid between state control and market-driven governance, reflecting an emerging trend in higher education policy worldwide (Waligóra & Górski, 2022). Thailand presents another case where higher education governance has been reshaped to fit national priorities. In 2018, Thailand consolidated its higher education and science ministries, creating a unified regulatory framework to guide universities toward national innovation goals (Intarakumnerd & Jutarosaga, 2023). In Hungary, until 2019, the higher education system consisted of state, private, and religious institutions. Since 2019, the Hungarian higher education system has undergone a model change, when the majority of Hungarian HEIs were transformed into entities maintained by public interest asset management foundations (EUA 2023a). This change was justified by several factors, including greater scientific efficiency, transparency, entrepreneurship, and university-industry collaborations, as well as a more effective response to societal needs (Samoilikova et al., 2023a).

1.2. The funding models of HEIs – Regional differences

Unique historical, economic, and political factors influence differences in university funding approaches across regions.

In North America, particularly in the United States, higher education funding is predominantly driven by private sources, including tuition fees, endowments, and philanthropy. Public universities are primarily financed through state appropriations, which have declined over time, prompting increased reliance on tuition and industry partnerships (Laderman et al., 2023). Prestigious institutions such as Harvard and Stanford exemplify the private sector's influence, leveraging substantial endowments and corporate collaborations to sustain research and infrastructure (Smith, 2023). The model promotes a competitive and entrepreneurial approach, with universities adopting market strategies to enhance their financial self-sufficiency (Gumport, 2000).

Europe presents a spectrum of funding models shaped by national policies and the Bologna Process. Countries such as Germany and those in Scandinavia maintain robust public funding systems, emphasizing accessibility and equity. Nonetheless, universities increasingly supplement public budgets with tuition fees – often limited to non-EU students – and competitive research grants from bodies like the European Research Council (Jongbloed & Lepori, 2015). The UK exemplifies a hybrid model, where institutions like Oxford and Cambridge benefit from a mix of endowment income, government grants, and private donations. The market-driven approach promotes commercialization and fosters university-industry collaboration, supported by government initiatives (Branch & Christiansen, 2021).

Asia showcases a diverse range of funding models, influenced by rapid economic growth and strategic government planning. In East Asia, the "Confucian Model" dominates, characterized by strong state involvement, universal tertiary participation, and significant household contributions to tuition (Marginson, 2011). In Southeast Asia, both private and public HEIs exist, with significant discrepancies in terms of quality and international visibility (Jacob et al., 2018). Southeast Asia experienced a significant expansion of higher education, and China emerged as the largest provider of higher education. Leading HEIs, such as Tsinghua University, Peking University, and the National University of Singapore, benefit from both government allocations and tuition fees, and the private sector (Henderson-Torres, 2021).

Australia's higher education system features a blend of public funding, tuition fees, and industry support. Institutions such as the University of Melbourne and the University of Sydney receive substantial government grants, complemented by competitive research funding and private donations (Ratten, 2022).

1.3. The revenue structure of HEIs

While almost all HEIs share a common vision for education, research, knowledge generation, and the fulfilment of societal needs, they characterize themselves as either "education heavy" or "research intensive". Moreover, universities globally are unique in their own ways based on their size, priorities, and societal engagement (Hamdullahpur, 2021). Distinctions are also reflected in their funding and revenue structures, which are tailored to support the fulfilment of their institutional missions.

Historically, the primary source of income for HEIs has been direct government appropriations, supplemented by research grants from both public and private agencies. Over time, this foundational funding has been extended by a complex web of additional sources, reflecting the evolving demands of diverse stakeholders. In the United States, academic research funding operates within a dual structure of government support, where the federal government plays a dominant role and state governments play a more limited one. Generally, federal funds are primarily allocated to advancing scientific research, while state funds support the broader educational and operational needs of HEIs. The predominance of federal R&D funding – and its concentration in a few states – has led to disparities in research infrastructure, scientific talent, and innovation outcomes, favouring top-tier and more prestigious institutions (Wu, 2020; Didenko et al., 2022). The public funding of European HEIs averages between 50%–90%. However, as highlighted by Pruvot et al. (2015), in some countries, national authorities tend to perceive additional incomes as a mechanism to compensate for the decreasing share of public funding for the higher education sector.

It has been claimed by Laderman et al. (2023) that although some HEIs are financed through state appropriation, the central government fund can be unstable. Moreover, in most systems, public authorities distribute funding through targeted funding schemes and performance-based contracts, rather than a lump-sum basis (Garritzmann, 2023), which can negatively affect HEIs that do not belong to the top-tier category and are more education-oriented. Thus, HEIs are under economic and policy pressure, forcing them to acquire additional, sustainable sources of revenue.

Tuition fees have become increasingly significant components of university revenue. While not all institutions charge tuition for domestic students, this income stream is predominant among private higher education institutions (Laderman et al., 2023). Countries such as the United States and the United Kingdom rely heavily on student-generated income, and some HEIs have established branch campuses in regions with youthful populations – often owned by foreign institutions – to attract international students (Al-Youbi et al., 2021). Tuition fees can provide a stable source of revenue for both public and private institutions (Ritzen, 2021); however, the extent and structure of tuition-based funding vary considerably across regions and countries (Estermann & Bennetot Pruvot, 2011; Pruvot et al., 2015). According to Hamdullahpur (2021), tuition fees and grant revenues are the primary sources of funding for HEIs operating under a decentralized financial structure. In such models, the allocation of funds to academic units mirrors the institution's overall management framework, with each unit receiving its entire budget directly. The flexibility in setting tuition fees is closely tied to internal political and policy decisions, enabling HEIs to diversify their income and reduce reliance on public or governmental funding. As Kupriyanova et al. (2020) emphasize, the autonomy to determine tuition levels can significantly enhance the financial capacity of HEIs.

Philanthropy – including donations, giving, and endowments from individuals and private foundations, whether on a regular or occasional basis – represents another significant source of revenue, particularly for private HEIs. However, the extent of philanthropic income varies considerably across institutions (Al-Youbi et al., 2021; Mathieson, 2021; Ritzen, 2021; Tierney, 2021). As Tierney (2021) emphasizes, successful higher education institutions (HEIs) in terms of philanthropic revenue often maintain dedicated leadership teams

focused on fundraising. In some cases, leaders such as the president and provost reportedly spend up to two-thirds of their working time securing such income. This finance-driven allocation of time is driven by the growing importance of philanthropy and fundraising in higher education, stemming from the decline in central and governmental financial aid as well as stagnating tuition rates (Alphin Jr. et al. 2016). However, Meyer and Zhou (2017) argue that the growing concentration of endowment health among elite HEIs can shift the role of philanthropic funding from a mechanism of institutional autonomy to one of production and fulfilling the needs of donors. This repurposing can threaten the cohesion of the higher education system and underscore the need for policy intervention to realign the privilege with the public purpose of HEIs. Nevertheless, philanthropy remains an integral part of higher education (Drezner, 2018).

Commercial and auxiliary activities – such as campus services, licensing, technology transfer, spin-off companies, publishing, contract research, and similar ventures – can also provide sustainable, self-generated revenue streams. The integration of entrepreneurial activities into institutional operations not only enhances financial diversification but also strengthens university-industry collaboration and expands the revenue portfolio of HEIs (Al-Youbi et al., 2021; Daniel & Alves, 2020; Ritzen, 2021). Auxiliary services, together with other grants and additional income from industry, can support insufficient central funding and cuts in the budget of HEIs (Perry, 2023). A special type of income is generated from publishing activities or university presses, which can result in a significant income for HEIs (Larivière et al., 2015). However, this type of income is restricted only to the well-known and long-operating HEIs (Beverungen et al., 2012). The previously presented findings indicate that HEIs rely on a diverse revenue stream, balancing government support with additional, often market-driven income and carefully cultivating new resources to support institutional growth and fulfil their societal responsibilities.

1.4. Income as an indicator of HEIs in university rankings

From a theoretical perspective, income is frequently analyzed within the framework of endogenous growth theory, which highlights the importance of investments in education and research as catalysts for sustained scientific and economic progress. Universities, as knowledge-generating institutions, depend heavily on financial resources to sustain and expand their academic and research functions. Income provides the means to recruit leading faculty, support diverse research initiatives, and deliver high-quality education (Arbia, 2023; Chang et al., 2025; Dembereldorj et al., 2018; Halili & Rodriguez Gonzalez, 2025; Hanushek, 2016; Yang et al., 2009). Consequently, these studies suggest that income influences not only the internal operations of higher education institutions but also impacts broader educational outcomes and societal equity.

The application of income as a comparison metric for HEIs is supported by both theoretical and empirical frameworks that establish links between financial resources, institutional performance, competitiveness, and societal influence. Theoretically, disparities in income can affect perceptions of prestige, shaping how individuals and institutions pursue and value reputation—an aspect considered directly or indirectly in the context of university rankings (Lacmanović & Škare, 2024; Walasek & Brown, 2019). Rankings, through their annual releases, have transformed higher education by incentivizing institutions to align strategies with measurable outcomes, including financial metrics (Hazelkorn, 2015). This finding aligns with broader theories of competitive advantage in higher education, where financial strength enables universities to attract top talent, invest in infrastructure, and conduct impactful research, thereby fostering financial independence (Hart & Rodgers, 2024; Mishchuk et al., 2025).

Times Higher Education World University Ranking (THE) incorporates income as a key metric within the methodology. The first edition, published without Quacquarelli Symonds (QS) collaboration, was in 2011. In this edition, income was included under the Research category, alongside reputation and research

volume, accounting for 30% of the overall score, with Industry income representing an additional 2.5%. Both income measures were normalized by the number of academic staff (THE 2011). By 2025, THE will expand the role of income into three categories: 1) Teaching (29.5%), which includes institutional income (2.5%); 2) Research Environment (29%), incorporating research income (5.5%); and 3) Industry (4%), related to industry income (2%) (THE 2024). The ranking also utilizes bibliometric indicators from Scopus and SciVal – such as Research Productivity, Research Strength, Research Excellence, Research Influence, Patents, and International Co-authorship – that are indirectly influenced by income levels. Thus, income functions as a multifaceted indicator within THE ranking, reflecting an institution's capacity, competitiveness, and societal relevance.

2. MATERIALS AND METHODS

Universities were identified based on their rankings in the Times Higher Education World University Ranking 2025 (THE 2025) and the QS World University Rankings 2025 (QS 2025). The Top 30 universities from each list were included in the analysis. Data from THE 2025 and QS 2025 were collected were downloaded on August 25, 2025, from their official websites. For 2025, the scores of three Categories related to income were extracted: Teaching, Research Environment, and Industry Income (THE 2024). For additional analysis of Industry income, the 2023 list was also downloaded. The 2023 list contained only the Industry Income indicator with 2.5% weight compared to THE 2025 list, where the Industry indicator of 4% is shared between Industry income and Patents with 2%–2% weight.

Financial reports of the Top 30 HEIs were downloaded from their official websites. The most recent versions of their financial statements, which are publicly available online, were analyzed. From each financial statement, the Operating Revenues were extracted and categorized based on the type of income.

Data analysis was performed using OriginPro software (version 2025, OriginLab corporation, Northampton, MA, USA).

3. RESULS

3.1. The relationship between income and the rank position of HEIs ranked in the THE 2025 list

THE 2025 report includes a total of 2092 HEIs, each with Score values across various categories. Initially, we plotted the Score values for Teaching, Research Environment, and Industry Categories against their observed ranks. These Categories were selected because the income contributes to their final scores: Teaching, 29.5% with an institutional income component of 2.5%, Research Environment, 29%, including 5.5% from research income; Industry, 4% with 2% from industry income. As shown in Figures 1A–C, there is a notable correlation between rank and Score: higher rank positions (closer to 1) tend to correspond with higher Score values of HEIs. The strongest correlation was observed between rank and Research Environment (correlation coefficient of -0.86), followed by Industry (-0.75) and Teaching Score (-0.72).

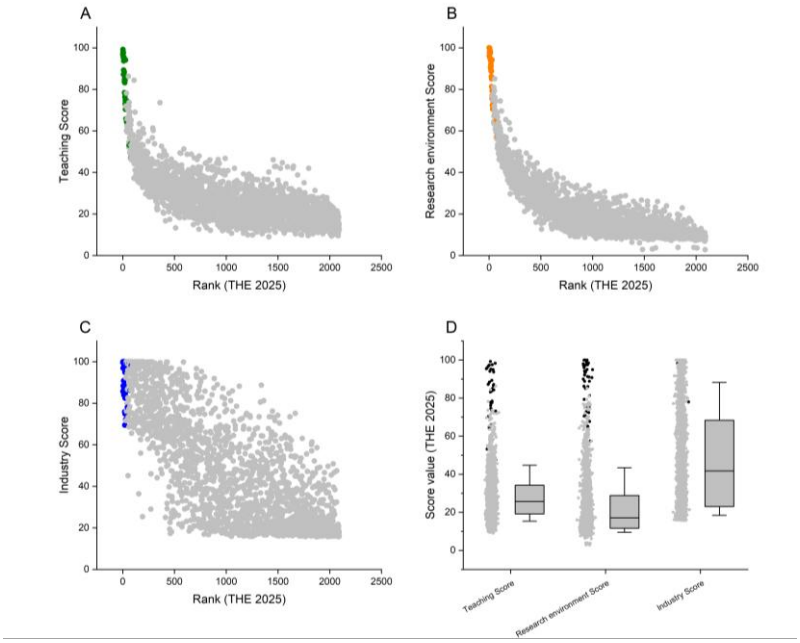

Figure 1. The relationship between the rank of HEIs and their Score values in THE 2025

Panels A–C: Scatter plots showing Score values for Categories Teaching, Research Environment, and Industry plotted against HEI rank positions based on THE 2025. Coloured circles indicate the Top 30 HEIs in both THE 2025 and QS 2025 rankings. Panel D: The distribution of Score values across these Categories, with the Top 30 HEIs marked by black circles. Box plots display the median, first (Q1), and third (Q3) quartiles, while the whiskers correspond to the 10th and 90th percentiles. The Score values for individual HEIs are displayed to the left of the box plots. The top 30 HEIs in THE 2025 and QS 2025 rankings are shown in black.

Examining the Score distributions for HEIs across the three categories, we found that Industry Scores have the highest median value (43.35) and interquartile range (Q1–Q3 of 43.5), compared to Teaching and Research Environment (see Figure 1D, Table 1). This examination suggests that Scores in the Industry category are less skewed. This may be due to the absence of reputation survey results, which are based on respondent data. Notably, reputation within the Teaching Category accounts for 15% of its total score, while in the Research Environment Category, research reputation contributes 18%, both constituting a significant portion of their respective scores.

Table 1

Descriptive statistics of Score values in categories Teaching, Research environment, and Industry, based on the THE 2025 list

Category (THE 2025)	**N total**	**Min.**	**1st Quartile (Q1)**	**Median**	**3rd Quartile (Q3)**	**Max.**	**Interquartile Range (Q3 - Q1)**
Teaching Score	2092	9	19.2	25.65	34.25	99.2	15.05
Research environment	2092	2.8	11.6	17.1	28.8	100	17.2
Industry Score	2092	15.7	23	41.7	68.35	100	45.35

Due to limited data on THE 2025, we did not analyze the internal distribution of indicators within the Category. However, we hypothesize that reputation survey results are likely to have the most significant impact on the overall Category Scores. This hypothesis is supported by QS 2025 results, which comprises

nine indicators, with the Academic and Employer reputation Scores derived from surveys. The correlation between rank and Score in QS 2025 is, similarly to THE 2025 results, strong (data not shown). The median Score is the lowest in the Sustainability. It is followed by Employer reputation and Academic reputation Categories, and these latter two survey-based indicators exhibit the narrowest interquartile ranges (Figure 2).

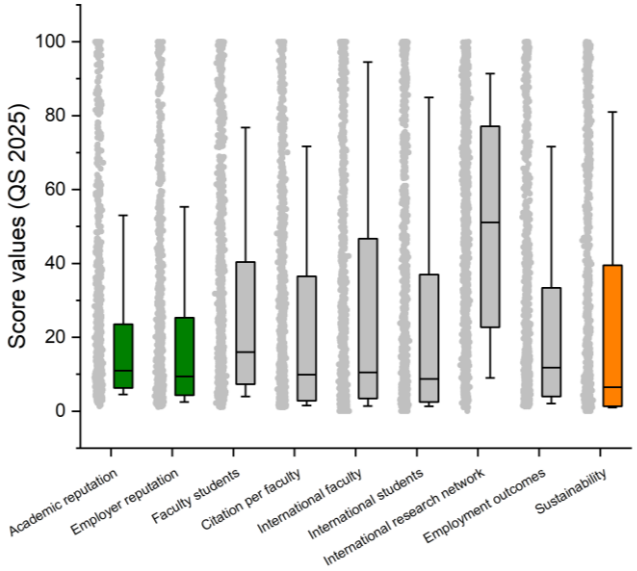

Figure 2. The distribution of Score values of indicators – QS 2025 list

Box plots display the median, first (Q1), and third (Q3) quartiles, while the whiskers correspond to the 10th and 90th percentiles. The Score values for individual HEIs are displayed on the left of the box plots. Green boxes highlight Indicators based on reputation surveys. The box in orange is the indicator with the lowest median value (Sustainability).

While income can play a significant role in THE 2025 rankings, the contributions of individual income Categories are not publicly available in THE 2025. Based on QS 2025 and the weighting of reputation-related indicators in THE 2025, survey results largely influence the overall scores for the Teaching and Research environment. Nonetheless, there may be a correlation between HEIs' overall rank and their income—whether total, research, or industry income. These results are also supported by THE 2023 results, where Industry income was a standalone indicator accounting for 2.5%, showing a significant correlation (-0.42) between HEIs' rank and their industry income score. Although this correlation is weaker than those for teaching (-0.69) and research environment (-0.77), it still indicates a notable relationship (see Figure 3).

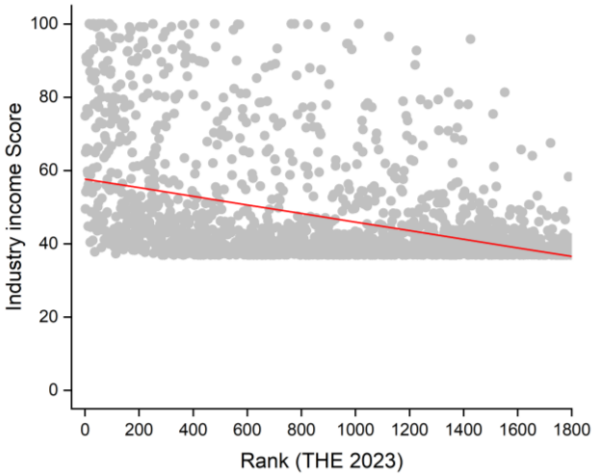

Figure 3. The relationship between the rank of HEIs and their Industry Income Score values in THE 2023

The scatter plot shows Score values for the Industry income plotted against HEI rank based on THE 2023 rankings. The red line indicates linear regression between the rank and Score values (Pearson's r correlation: -0.42, R^2: 0.16).

3.2. The operating revenue structure of the Top 30 HEIs on the THE 2025 and QS 2025 lists

Initially, we selected the Top 30 HEIs from THE 2025 for analysis. Subsequently, we cross-checked these institutions against QS 2025 and extended the group by including those HEIs that ranked in the Top 30 on QS 2025 but were ranked lower than 30 in THE 2025. This added 8 HEIs to the initial group. Consequently, the final sample for this analysis comprised 38 HEIs from 11 countries across four regions: 19 in North America (from 2 countries), 9 in Europe (4 countries), 6 in Asia (4 countries), and 4 in Australia (1 country). The distribution of countries and regions is summarized in Table 2 and illustrated in Figure 4. The United States has the highest number of HEIs, with 17 institutions. The second-largest country represented is the United Kingdom, with 5 HEIs, followed by Australia with 4. Countries with 2 HEIs each include Canada, Switzerland, Singapore, and China. France, Germany, Japan, and Hong Kong each have 1 HEI included in the list.

Table 2

Top 30 HEIs based on the THE 2025 and QS 2025 lists

QS 2025	THE 2025	Country	Region	HEI
3	1	United Kingdom	Europe	University of Oxford
1	2	United States	North America	Massachusetts Institute of Technology
4	3	United States	North America	Harvard University
22	4	United States	North America	Princeton University
5	5	United Kingdom	Europe	University of Cambridge
6	6	United States	North America	Stanford University
10	7	United States	North America	California Institute of Technology
12	8	United States	North America	University of California, Berkeley
2	9	United Kingdom	Europe	Imperial College London
23	10	United States	North America	Yale University
7	11	Switzerland	Europe	ETH Zurich

20	12	China	Asia	Tsinghua University
14	13	China	Asia	Peking University
11	14	United States	North America	University of Pennsylvania
21	15	United States	North America	The University of Chicago
32	16	United States	North America	Johns Hopkins University
8	17	Singapore	Asia	National University of Singapore
42	18	United States	North America	University of California, Los Angeles
34	19	United States	North America	Columbia University
16	20	United States	North America	Cornell University
25	21	Canada	North America	University of Toronto
9	22	United Kingdom	Europe	University College London, UCL
44	23	United States	North America	University of Michigan-Ann Arbor
58	24	United States	North America	Carnegie Mellon University
76	25	United States	North America	University of Washington
28	26	Germany	Europe	Technical University of Munich
61	27	United States	North America	Duke University
32	28	Japan	Asia	The University of Tokyo
27	29	United Kingdom	Europe	University of Edinburgh
15	30	Singapore	Asia	Nanyang Technological University, Singapore
26	32	Switzerland	Europe	École Polytechnique Fédérale de Lausanne
17	35	Hong Kong SAR	Asia	The University of Hong Kong
13	39	Australia	Australia and Oceania	The University of Melbourne
24	42	France	Europe	Université PSL
29	45	Canada	North America	McGill University
18	61	Australia	Australia and Oceania	The University of Sydney
30	73	Australia	Australia and Oceania	The Australian National University
19	83	Australia	Australia and Oceania	The University of New South Wales

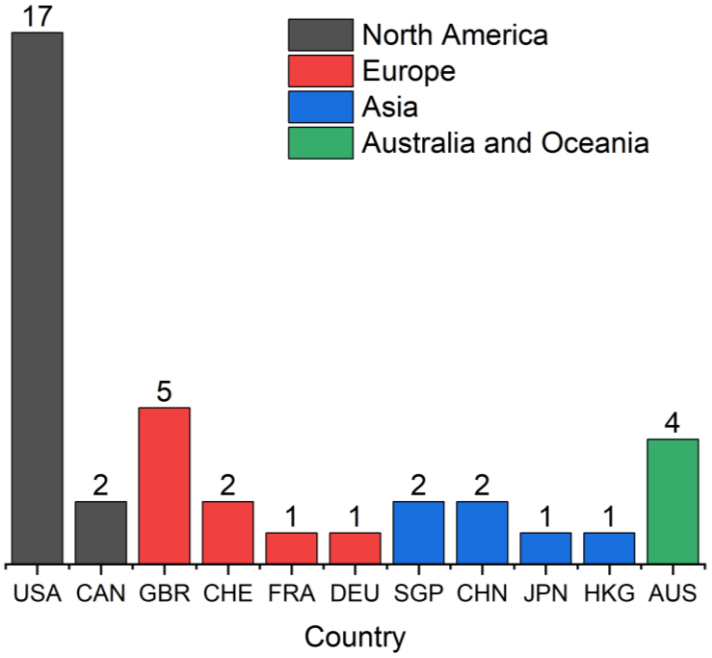

Figure 4. The regional distribution of countries based on the Top 30 THE 2025 and QS 2025 lists

USA – United States, CAN – Canada, GBR – United Kingdom, CHE – Switzerland, FRA – France, DEU – Germany, SGP – Singapore, CHN – China, JPN – Japan, HKG – Hong Kong, AUS – Australia.

For each of the 38 HEIs, a manual review of their most recent financial reports/statements was conducted. From the initial sample, five HEIs were excluded from subsequent analysis due to the absence of a financial report or lack of data on operating revenue distribution. This resulted in a final sample of 33 HEIs.

The financial reports or statements of the remaining HEIs covered either the 2023/2024 period (28 HEIs) or the calendar year 2024 (5 HEIs). We extracted data on Operating Revenue. Among these 33 HEIs, 11 were characterized by operating revenues lower than their operating expenditures. Of these 11, 9 reported a positive surplus or net income primarily from non-operating activities or direct government grants. For 2 HEIs, no surplus, net result, or net income was reported. This finding does not necessarily indicate a disadvantage for these institutions, as they disclosed both non-operating revenue and increases in total assets.

Following this, we proceeded with the analysis of the Operating Revenue Structure of HEIs. This initial assessment identified more than 20 different revenue categories. We further examined these categories, and when similar activities were described with different names across reports, we consolidated them. As a result, the number of categories was reduced to eight: (1) Tuition, (2) Funding body grants/Sponsored support/Private grants and gifts/Sponsored contracts, (3) Government/Research grants and contracts, (4) Publishing/Auxiliary enterprises/Sales/Services/Educational activities, (5) Other, not defined, (6) Investment, (7) Donation/Contribution/Endowment, and (8) Medical/Health services and Hospital.

It is important to note that the size of individual revenue categories in financial statements shows considerable variation, and in many cases, individual revenue sources are not strictly separated. For example, Funding body grants may encompass not only support for basic operations but also funding for specific research programs. Similarly, the Government/Research grants and contracts category can include both operational support and research funding from national agencies. Due to these issues in distinguishing revenue for basic operations versus research activities, categories (2) and (3) were merged into a single category. Consequently, we used seven categories for further analysis:

1 – Tuition

2 – Funding body/Government (revenue for basic operation and research)

3 – Services (revenue from services, auxiliary enterprises, technology transfer, contract research)

4 – Investment (revenue from investments)

5 – Philanthropy (donations, gifts, endowment)

6 – Health services (if stated as a separate category)

7 – Other (not defined type of revenue)

Figure 5 shows the percentage distribution of Revenue categories for 33 HEIs. Descriptive statistics (Table 3) confirmed that on a cumulative level, HEIs rely predominantly on the Revenue from the Funding body/Government and Tuition from students, reaching a median percentage distribution of 32.8% and 18%, respectively. This is followed by Revenues from Other sources (6.4%), Investment (6.2%), Services (3.1%), and Philanthropy (2.5%). All analysed HEIs reported Tuition and Funding body/Government Revenue. 24 HEIs reported Revenue from Services and Investment, 23 from Philanthropy, 11 from Health services, and 28 from Other sources.

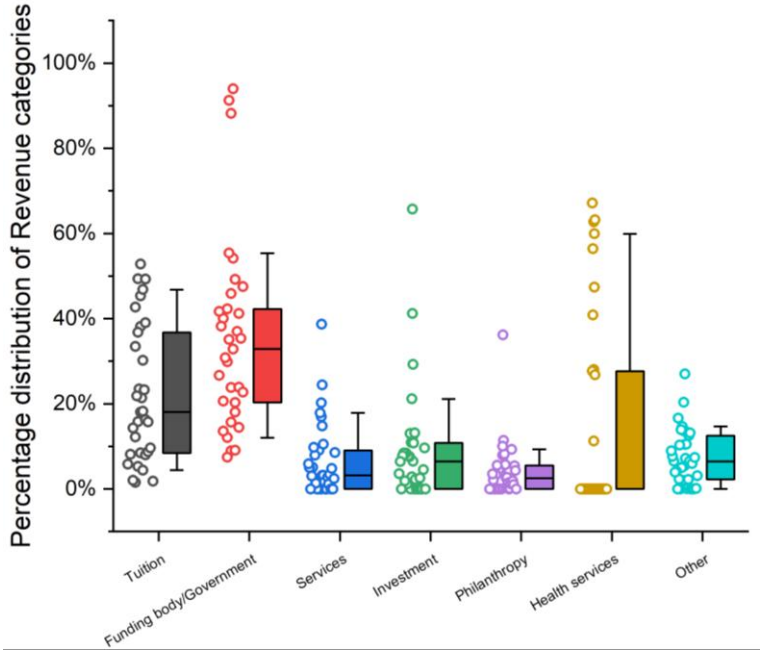

Figure 5. The Percentage distribution of Revenue categories for 33 HEIs

Box plots display the median, first (Q1), and third (Q3) quartiles, while the whiskers correspond to the 10th and 90th percentiles. The Score values for individual HEIs are displayed on the left of the box plots.

Table 3

Descriptive statistics of the percentage distribution of revenue sources

Category	Min.	1st Quartile (Q1)	Median	3rd Quartile (Q3)	Max.	Interquartile Range (Q3 - Q1)
Tuition	1.5%	8.4%	18.0%	36.8%	52.8%	28.3%
Funding body/Government	7.4%	20.3%	32.9%	42.3%	94.0%	22.0%
Services	0.0%	0.0%	3.2%	9.0%	38.7%	9.0%
Investment	0.0%	0.0%	6.4%	10.8%	65.7%	10.8%
Philanthropy	0.0%	0.0%	2.5%	5.5%	36.2%	5.5%
Health services	0.0%	0.0%	0.0%	27.7%	67.1%	27.7%
Other	0.0%	2.2%	6.5%	12.5%	27.0%	10.3%

At the level of 33 HEIs, the distribution of Revenue categories is shown in Figure 6. Although these institutions exhibit diversified revenue portfolios, the proportions of different revenue sources vary considerably, indicating distinct strategic approaches to maintain their activities and foster growth. Some HEIs rely predominantly on research funding and support from funding bodies or government agencies, while others place greater emphasis on income generated from tuition, endowments, or service-related activities. This variability underscores the importance for HEIs to diversify their revenue streams to enhance financial resilience amid evolving economic, policy, and funding landscapes.

While all 33 HEIs rely on tuition and income from funding bodies or government sources, for 22 universities, these sources account for more than half (over 50%) of their operating revenues. Whilst tuition

is the primary form of revenue for 6 HEIs, Funding body/Government revenue represents the highest share of 13 HEIs.

In terms of service-related income, the University of Oxford and the University of Cambridge demonstrate the highest shares. At Oxford, the Oxford University Press functions as a university department, with publishing services accounting for over 24% of revenue. Similarly, at Cambridge, publishing services are a significant source of income.

The highest returns from investments are observed at Harvard University and Princeton University. At Harvard, this income encompasses returns from endowments allocated for operations, returns from the general operating account, and other investment gains. For Princeton, this category includes income derived from markets, private equity investments, and tangible assets.

It is also notable that 11 HEIs generate substantial income from health services. For instance, although some universities like the University of Cambridge provide health services, the revenue from these is classified under the broader Total Revenue category. In cases where health services are separately reported, this revenue represents approximately 9.3% of the respective HEI's operating revenue.

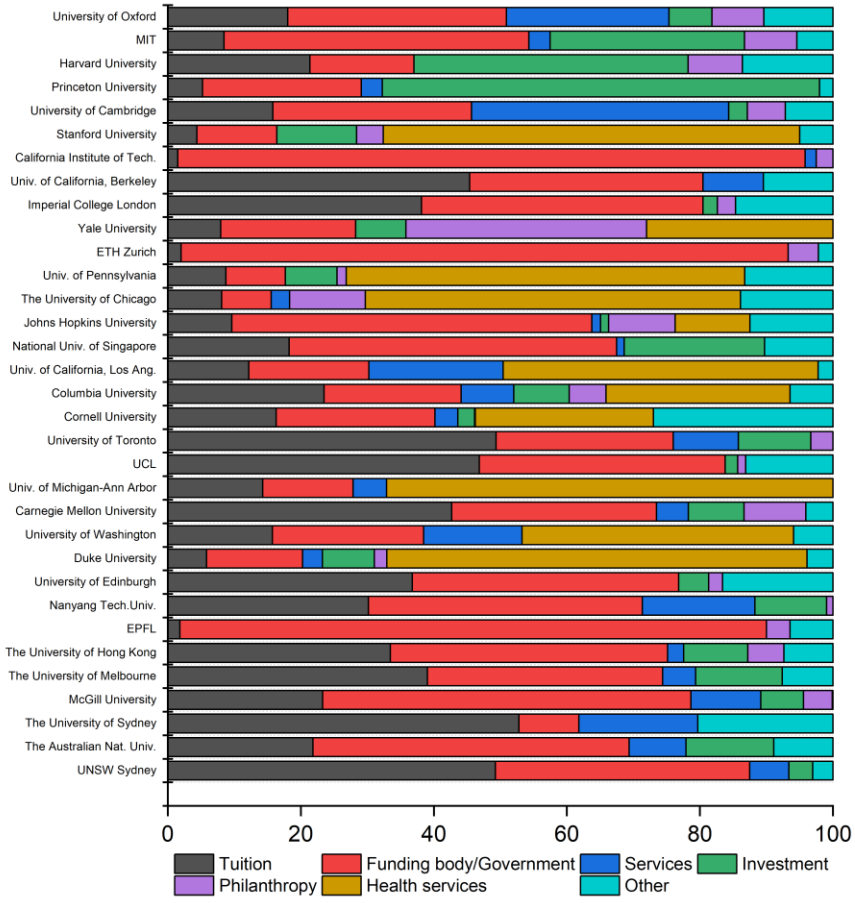

Figure 6. The Percentage distribution of Revenue Categories for 33 HEIs

3. DISCUSSION

This study investigates the revenue diversification of 33 top-tier HEIs, selected based on their positions in the THE 2025 and QS 2025. The analysis of these institutions' financial reports reveals a landscape characterized by diversity of revenue structure. Our findings are particularly pertinent given the increasing

importance of diverse revenue streams in an era where traditional reliance on government appropriations is waning (Estermann & Bennetot Pruvot, 2011; Jongbloed & Vossensteyn, 2001).

A key observation is the variability in revenue streams among the analyzed HEIs. Some institutions are heavily dependent on research funding and grants from funding bodies or government entities, while others prioritize income from tuition, endowments, or service-related activities. For a subset of institutions, tuition and funding body/government revenues collectively constitute more than half of their operating income. This funding distribution signals a strategic orientation toward maximizing research output and attracting sponsored research, factors often associated with higher rankings (Wu, 2020).

Conversely, the University of Oxford and the University of Cambridge demonstrate a significant reliance on service-related income, particularly through their respective publishing services. The Oxford University Press, functioning as a department within the University, contributes over 24% of Oxford's revenue, emphasizing the commercial potential of university-affiliated enterprises.

The considerable revenue share derived from investment activities at Harvard and Princeton University further underscores the importance of endowments and strategic asset management in sustaining institutional operations and supporting academic missions (Acharya & Dimson, 2007; Tierney, 2021). Given the increasing weight of institutional income in rankings methodologies, these sources become strategically important.

The notable income generated from health services by 11 HEIs further underscores the diverse operational models of these institutions, reflecting the integration of medical schools, medical facilities, and healthcare provision into their financial framework. While some universities classify health service revenues under broader categories, those reporting separate figures indicate a significant contribution to overall operating income, highlighting the financial synergy between academic and healthcare activities. This classification also adds to the overall operating budget, potentially impacting institutional scores.

Institutions are under pressure to optimize resource allocation and attract additional income streams that contribute to these areas of focus. This strategic response aligns with the existing literature on university financing, which acknowledges the growing complexity of revenue structures and the importance of diversified income streams for institutional stability (Al-Youbi et al., 2021; Laderman et al., 2023). Effective diversification, however, requires active financial management engagement to ensure that revenue sources are strategically cultivated and integrated into institutional planning (Aliamutu & Mkhize, 2024). As governments increasingly scrutinize higher education funding and emphasize performance-based incentives (Álvarez-Bornstein & Bordons, 2021; Jongbloed & Lepori, 2015), HEIs must adapt by cultivating additional revenue sources and optimizing resource allocation.

The evolving landscape prompts reflection on the autonomy of university systems, especially within the context of global initiatives and institutional frameworks. The ability to make strategic decisions that foster innovation and academic quality depends on adequate funding and financial independence (Aghion et al., 2010). Beyond adequate funding, the quality of financial management engagement determines how effectively HEIs convert diversified revenue sources into strategic outcomes (Aliamutu & Mkhize, 2024). This financial autonomy enables universities to respond more flexibly to market demands and societal needs, as well as to invest strategically in enhancing their rankings (Hazelkorn, 2015).

The findings of this study provide valuable insights for HEIs seeking to enhance their financial resilience and adapt to the challenges of a rapidly changing higher education landscape. By understanding the strategies employed by leading universities to balance multiple funding sources, institutions can develop more sustainable financial models that ensure long-term success (Ritzen, 2021; Smith, 2023). This strategy includes leveraging their strengths to excel in specific areas valued by ranking methodologies.

Further research is needed to explore the implications of these revenue structures for institutional performance, academic quality, and societal impact. Investigating the relationship between revenue

diversification, research output, student success, and community engagement could provide a more comprehensive understanding of the financial strategies that best support the multifaceted missions of higher education institutions (Hart & Rodgers, 2024). It is also essential to assess how these revenue models affect access to education and affordability, ensuring that efforts to diversify revenue streams do not exacerbate socioeconomic inequalities (Kakembo, 2025). Ultimately, future studies could examine the regulatory and policy frameworks that promote or hinder revenue diversification, thereby informing policy recommendations that foster sustainable and equitable higher education systems. These studies could consider how policies can support universities in achieving both financial stability and high rankings without compromising their core values and social responsibilities. Importantly, sustainable revenue models are instrumental in enabling HEIs to fulfill their core mission of delivering quality education and fostering innovation, both critical pillars of Sustainable Development Goal Four (Olubiyi, 2024).

It is worth noting that while institutions seek to diversify and optimize revenue, the core mission of public service must remain. Financial strategies should not come at the expense of essential but potentially less profitable educational programs or the universities' commitment to broader societal needs. However, financial autonomy is a foundational pillar in the strategic development of HEIs, enabling them to make independent decisions regarding resource allocation, talent acquisition, and long-term planning. As Aghion et al. (2010) suggest, institutional excellence arises from the optimal balance of autonomy, funding, and accountability. Financial autonomy empowers HEIs to invest in top-tier academic staff, advanced research infrastructure, and innovative educational programs. These elements directly contribute to improved institutional performance; however, this improvement is not immediate. Autonomy is not merely a governance tool but a strategic enabler of capacity, resilience, and performance. It must be exercised responsibly, ensuring that the pursuit of financial optimization does not compromise the core mission of public service and equitable access to education.

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