

Financial Sustainability and Resource Management in Higher Education Institutions: An Analysis of the Yale University Experience (2024-2019)

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Abstract: This study examines financial sustainability strategies in higher education, centered on Yale University's fiscal performance from 2019 to 2024. Utilizing a descriptive-analytical methodology grounded in Resource Dependence Theory and the Yale Endowment Model, the research evaluates how strategic resource management ensures long-term institutional continuity. Analysis reveals that Yale effectively navigated global economic volatility and the COVID-19 pandemic by diversifying revenue streams reducing tuition reliance to a marginal 8–9% and maintaining a disciplined 5.25% endowment payout rate. These measures, coupled with an average asset growth rate exceeding 9%, successfully insulated the operating budget from market fluctuations. Consequently, the study advocates for universities to adopt financial hedging through increased illiquid asset holdings and the decoupling of academic operations from student-derived income.

Keywords: Financial Sustainability, Endowment Management, Higher Education, Yale University

(JEL) Classification : G32, G11, I22, I23.

1. Introduction

The higher education sector worldwide is undergoing a period of significant and consequential change that requires reconsideration of traditional models of financing and administration, particularly in large research-oriented institutions. These institutions are no longer merely centers for the transmission of knowledge; rather, they have come to resemble large corporations managing assets valued in the billions of dollars. Accordingly, the challenges they now face are similar to those encountered by large multinational companies, whether in terms of management or financing.

Economist William Baumol explains that costs in sectors heavily dependent on human labor, such as education and the arts, rise more rapidly than the general rate of inflation. The reason for this is that improving productivity in these fields is more difficult compared with industrial sectors that rely on automation and technology. (Archibald & Feldman, 2022, p 42).

In this context, the notion of “financial sustainability” has become the foremost concern of higher education institutions. The objective is no longer limited to achieving an accounting balance between revenues and expenditures at the end of the year. Rather, the issue has taken on a deeper dimension, focusing on the capacity to withstand potential crises,

whether a global health pandemic such as COVID-19, financial crises and stock market collapses, or even changes in student enrollment resulting from demographic shifts.

The fundamental challenge lies in how to balance the right of future generations to benefit from resources with the urgent need of the present generation to utilize these resources for operational and research purposes. Preserving assets so that they remain accessible to future generations is important; at the same time, today's growing needs must be met. The matter is not simple, but instead requires a careful balance between the present and the future (Lahr, 2024, p 92).

The experience of prestigious American universities, such as Yale University, stands out as a distinctive model. The university adopted a non-traditional investment approach focused on illiquid assets and broad diversification of investments. In addition, it applied specific rules governing the disbursement of funds, based on complex calculations, which helped it not only withstand difficult periods but also substantially increase its wealth. This success enabled it to support scientific research and provide generous financial aid to students without being directly affected by economic crises (Takahashi, 2023, p 118).

1.1. Research Problematic:

The research problem of this study revolves around the following main question:

How can higher education institutions achieve financial sustainability and continuous asset growth within a volatile economic environment?

This main question gives rise to the following sub-questions that guide the course of the research:

- What are the dimensions of the financial strategy that enabled Yale University to overcome the repercussions of the COVID-19 pandemic (2020) and the subsequent inflationary fluctuations (2022–2024)?
- How does “Resource Dependence Theory” contribute to explaining the transformation of major universities from reliance on tuition fees to reliance on endowment returns and grants?
- Has the adoption of the “Yale Investment Model” led to a tangible improvement in indicators of financial solvency and operational capacity compared with traditional models?

1.2. Significance of the Study:

The research problem of this study revolves around the following main question:

The study provides a practical framework for universities seeking to reduce their dependence on unstable government funding or on tuition fees. By examining the management of assets within the Yale Model and the application of hedging-based spending rules, universities may identify more stable and effective approaches to managing their financial resources.

2. Theoretical Framework and Concepts of Financial Sustainability in Academic Markets:

2.1 Definition of the Concept of Financial Sustainability in Higher Education

To understand how Yale University operates in depth, it is necessary to begin by clarifying the meaning of financial sustainability. In the context of non-profit and educational institutions, sustainability is not merely the achievement of profit. Rather, it refers to the university's ability to secure the resources it needs in order to continue operating and to fulfill its educational mission over the long term. At the same time, it must maintain the level and quality of its outputs as well as its competitive standing.

Researchers indicate that financial sustainability consists of three principal dimensions (Cheslock, 2020, p. 2):

- **Financial Solvency:** the institution's ability to meet its long-term obligations and protect its net assets from erosion.
- **Financial Resilience:** the capacity to respond to sudden financial shocks (such as declines in donations or investment returns) without resorting to austerity measures that harm the educational process.
- **Financial Autonomy:** the ability to make strategic decisions based on the academic mission rather than under pressure from external funders.

2.2. Resource Dependence Theory – RDT

Resource Dependence Theory, developed by Jeffrey Pfeffer and Gerald Salancik in 1978, represents an appropriate theoretical lens for analyzing the behavior of major universities. The theory is based on the premise that organizations are not self-sufficient; rather, their survival depends on the exchange of resources with the external environment.

The theory argues that organizations seek to reduce uncertainty and dependency through specific strategies:

- **Diversification:** multiplying funding sources in order to reduce the influence of any single funder. In the university context, this means shifting from exclusive reliance on tuition (tuition-dependent) or government support toward a balanced mix including endowment returns, competitive research grants, industrial partnerships, and donations.
- **Control of critical resources:** the organization attempts to own the resource rather than continually request it. The university "endowment" represents the ideal application of this principle; it transforms the university from an institution dependent on annual external inflows into one that possesses its own "financial reservoir" generating independent income, thereby granting it substantial bargaining power and decision-making autonomy.
- **Strategic alliances and joint ventures:** instead of relying solely on informal relationships, organizations resort to alliances and joint ventures as more formal organizational mechanisms to coordinate activities and share resources and knowledge. This strategy is considered "more constraining" than merely joining professional associations, as organizations use it to manage interdependence with entities that control their critical resources, thereby reducing environmental uncertainty without full institutional merger (Davis & Cobb, 2010, pp. 24–25).

2.3. The Development of the "Yale Model" in University Finance:

Historically, university endowment management tended to be highly conservative and focused heavily on relatively safe investments such as fixed income instruments and publicly traded equities that generated limited returns. However, in the mid-1980s a major shift occurred under the leadership of David Swensen at Yale University. He developed what became known as the Yale Model, which is based on a greater allocation to equities and deep diversification of investments, while taking advantage of what is termed the "illiquidity premium." Because universities possess a very long investment horizon, they are able to hold funds in assets that cannot be quickly liquidated, such as private equity and venture capital, thereby enabling higher long-term returns (Avery et al., 2024, p. 2).

2.3.1 The Impact of the Transformation on Academic Financial Markets and Financial Sustainability:

The adoption of advanced financial models and sustainability practices has had a profound impact on the structure of financial management, as reflected in the following areas:

- Strengthening risk management: universities now adopt a more dynamic approach to risk. Instead of avoiding all risks, they accept certain calculated risks—such as liquidity risk—in order to achieve better returns. At the same time, hedging tools are employed to protect financial resources. Financial crises, such as the 2008 crisis, demonstrated that institutions with diversified investment strategies were more capable of resilience and recovery from shocks (Dumestre, 2016, p. 28).
- Stabilization of operating funding through spending rules: spending rules help balance current needs with preserving the endowment's future value. Rather than being directly affected by sudden market fluctuations, these rules convert changes into stable income that can be relied upon, thereby improving long-term strategic planning and scientific research (Avery et al., 2024, p. 1).
- Intergenerational equity: this concept expresses the essence of financial sustainability. In order to ensure that future generations benefit from endowment resources with the same effectiveness as the present generation, the university commits to achieving investment returns that cover spending rates and higher education inflation (HEPI) (Avery et al., 2024, p. 41).

2.3.2 Structural Challenges and Concerns:

Despite its financial success, this approach faces significant criticisms and challenges:

- Liquidity constraints and financial crises: these become evident when universities rely heavily on assets that are difficult to convert quickly into cash. During crises, such as the 2008 financial crisis, institutions may be forced to borrow at high interest rates to cover daily expenditures, placing them in a highly difficult position (Avery et al., 2024, p. 2).
- Ethical concerns and wealth governance: there is growing concern regarding the ethical dimension and the management of large university wealth. Some argue that universities are increasingly transforming from educational institutions into large financial entities attached to educational facilities, raising questions about whether wealth accumulation aligns with their social mission. This may require a comprehensive review of admission policies and reduction of the financial burden on students (Mbhalati, 2025, p. 55).
- Governance complexity and the institutional gap: managing large and complex assets requires specialized and costly financial expertise. This widens the gap between large universities, which possess the resources and capacity to manage such challenges, and smaller institutions that lack these capabilities, thereby deepening inequality among them (Mbhalati, 2025, p. 72).

3. Yale University's Strategic Framework: An Applied Case Study (2019–2024)

3.1. Overview of Yale University and Its Financial Position.

Yale University (founded in 1701) is considered one of the oldest and most prestigious higher education institutions in the world and a member of the “Ivy League”. Its financial model is distinguished by the massive size of its investment

endowment relative to its operating budget. During the period 2019–2024, the value of the endowment increased from approximately 30 billion USD to more than 41 billion USD, before reaching about 44 billion in 2025, making it one of the largest university endowments worldwide (Yale University, 2024). The endowment constitutes the university's largest source of revenue, financing roughly one-third of its annual operating budget (Yale University, n.d.).

3.2. Financial Analysis and Sustainability Applications (2019–2024).

This study relies on the analysis of longitudinal financial data extracted from Yale University's annual reports. The financial performance will be examined across three time periods that represented a genuine test of the sustainability model: the pre-pandemic phase, the pandemic shock and recovery phase, and the inflationary period.

3.2.1. Solvency Analysis and Asset Growth

Table (01): Development of Yale University's Financial Position (2019–2024)

Unit: million USD

Fiscal Year	Total Assets	Liabilities	Net Assets	Percentage Change in Net Assets
2019	44,428	12,186	32,242	-
2020	44,696	12,964	31,732	(1.6%)
2021	56,223	11,931	44,292	+39.6%
2022	54,719	10,025	44,694	+0.9%
2023	54,426	9,698	44,728	+0.1%
2024	55,315	9,278	46,037	+2.9%

Source: (Prepared by the researcher based on financial data reported in Yale University's annual reports (2019–2024))

Table (01) shows that the university's financial position experienced noticeable development, reflecting its relative ability to maintain stability and growth despite prevailing challenges.

In 2020, although the campus was completely closed and the university lost housing and dining revenues, its net assets declined only slightly by 1.6%. More importantly, this decrease was not the result of operating losses but rather of accounting factors, particularly the increase in pension liabilities resulting from lower interest rates. The university did not have to lay off employees, which indicates the strength of its financial resources.

Then came 2021, an exceptional year. The university experienced unprecedented growth, as its assets increased by nearly 40%. This substantial surge added more than 12 billion USD to net assets in a single year. The principal reason was the success of its venture capital investment strategy, especially with the boom in the technology sector at that time. This success placed the university on a stable trajectory for the coming decade.

During the period from 2022 to 2024, the university maintained a high level of assets despite inflation and market volatility. Assets remained above 44 billion USD, while liabilities simultaneously showed a continuous decline from 12.9 billion to 9.2 billion. This indicates an improvement in the financial situation and a stronger overall financial position for the university.

3.2.2. Endowment Management Efficiency and the Test of the “Spending Rule”

The endowment represents the “engine of wealth” for Yale University. Table (02) illustrates how the university managed the relationship between investment returns and operating expenditures.

Table (02): Endowment Performance Indicators and Spending Policy (2019–2024)

Year	Endowment Value (Billion USD)	Annual Investment Return (%)	Actual Spending Rate (%)	Endowment Contribution to Budget (Million USD)
2019	30.3	5.7%	4.6%	1,353
2020	31.1	6.8%	4.8%	1,438
2021	42.3	40.2%	5.0%	1,513
2022	41.4	0.8%	3.8%	1,568
2023	40.7	1.8%	4.3%	1,752
2024	41.4	5.7%	4.8%	2,000

Source: (Prepared by the researcher based on reports of the Yale University Investment Office)

Sustainability Mechanism Analysis

The data clearly demonstrate how the smoothing rule used by Yale operates. The rule is based on the following equation (Avery et al., 2024, p. 15):

$$Spending_t = 0.80 \times (Spending_{t-1} \times (1 + Inflation)) + 0.20 \times (TargetRate \times MarketValue_{t-2})$$

Accordingly, current-year spending is determined 80% on the basis of the previous year’s spending (to ensure stability) and only 20% on the basis of the endowment’s market value (to respond to change).

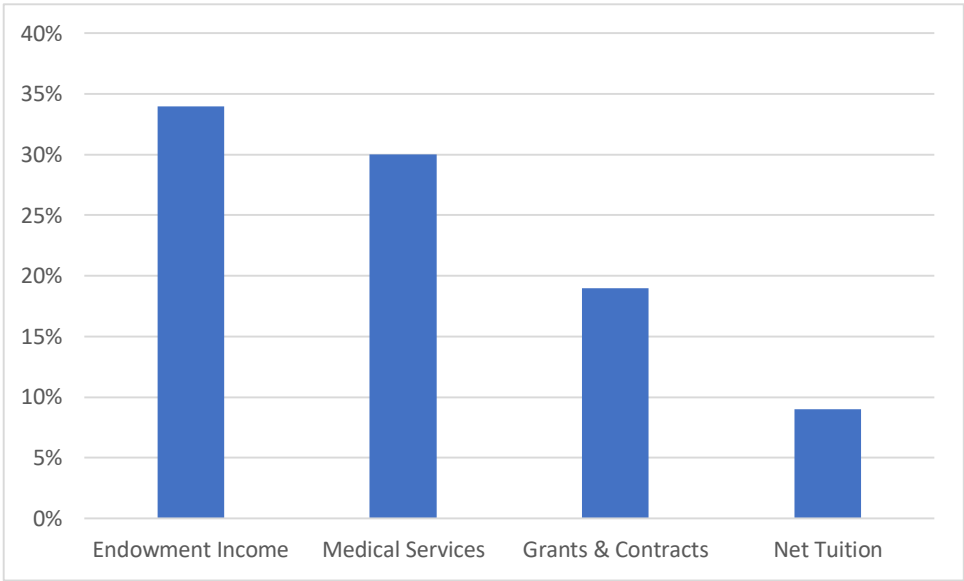
When this approach is examined during 2022 and 2023—years in which endowment returns were very low compared with inflation and the targeted spending rate—the university would likely have been forced to sharply reduce its budget had it relied solely on direct income. However, the actual outcome was entirely different.

The table shows that actual endowment spending increased from 1,513 million USD

in 2021 to 1,752 million USD in 2023. This occurred because the smoothing rule distributed the substantial surplus achieved in 2021, when returns reached 40.2%, across subsequent years. In other words, the university did not spend the exceptionally high returns realized in 2021 immediately; instead, it retained part of them to offset shortfalls in later years. This represents the essence of financial sustainability: ensuring the continuity of academic operations without being affected by daily market fluctuations.

3.2.3. Revenue Structure and Source Diversification at Yale University

Fig.(01): Yale University Revenue Structure for 2024



Source: (Prepared by the researcher based on the preceding data.)

Through the logic of Resource Dependence Theory, Yale University has adopted a strong revenue system that protects it from the traditional risks facing higher education. According to 2024 data, endowment returns constituted 34% of its revenues, representing the largest source. This was followed by medical services, such as hospitals and clinics, at approximately 30%. Research grants and contracts, whether from government or private sector sources, contributed 19%. Tuition and fees, by contrast, accounted for less than 10% of total income.

This structure means that Yale does not rely heavily on tuition revenue, which shields it from the “demographic cliff” feared by many universities due to declining student numbers. The university has thus evolved from a purely degree-granting educational institution into a research, medical, and investment center in which teaching represents only one component of its mission. The diversification of income sources has reduced its dependence on students as the primary revenue stream, granting it greater freedom to select students on the basis of merit rather than financial capacity.

3.3. The Future of Financial Sustainability at Yale and Alignment with Strategic Vision

The university is moving toward strengthening this model through strategic initiatives aimed at ensuring sustainability for decades to come:

3.3.1. The “For Humanity” Campaign:

The university launched a large-scale fundraising campaign titled “For Humanity”, targeting the collection of 7 billion USD. By 2024, it had raised approximately 5.8 billion USD. Notably, roughly one-third of these funds is allocated directly to increasing the endowment’s capital base, thereby significantly reinforcing the university’s financial foundation (Yale University, 2024).

3.3.2. Investment in Science (Upper Science Hill Development):

Yale is investing heavily in the development of scientific and engineering infrastructure. These expenditures are not merely costs but a strategic step toward attracting new research grants, which constitute around 19% of the university’s income. This process also generates patents and future commercial revenues, creating a positive cycle linking funding and innovation (Yale University, 2023).

3.3.3. Emphasis on Financial Aid:

The university places considerable emphasis on student financial support. It seeks to raise 1.2 billion USD dedicated to financial aid in order to ensure that education remains accessible to all rather than limited to the wealthy, thereby enhancing diversity and sustaining educational quality (Yale University, 2024).

3.4. Potential Risks in the Yale Financial Model

Despite its considerable success, the model faces specific risks that must be carefully managed (Yale University, 2024):

3.4.1. Liquidity Risk and Market Timing:

The heavy reliance on illiquid assets (such as private equity requiring years to liquidate) may become problematic during a global liquidity crisis. Matt Mendelsohn, Yale’s Chief Investment Officer, acknowledged that the portfolio may “lag” behind the market during periods of strong public equity performance (as occurred in 2024, when Yale achieved 5.7% while competitors more dependent on public equities recorded higher returns). Nevertheless, the strategy continues to rely on long-term outperformance.

3.4.2. Taxation and Regulatory Pressures:

The university’s financial success (an endowment valued at about 41 billion USD) has attracted political attention. The U.S. government has begun imposing an excise tax on large endowment returns, and any future increase in such taxes could reduce funds allocated to education.

3.4.3. Academic Inflation:

Maintaining Yale’s global standing requires increasing investments in technology and human talent. If higher education inflation (HEPI) continues to exceed general

inflation, the endowment would need to achieve nominal annual returns exceeding approximately 8–9% merely to preserve the status quo, which represents a substantial challenge in a low-return investment environment.

4. Conclusion:

The examination of Yale University's experience between 2019 and 2024 reveals that financial sustainability in universities is neither accidental nor merely a matter of fundraising. Rather, it constitutes an integrated system encompassing governance, strategic planning, and disciplined investment practices. Yale did not confine itself to the traditional notion of sustainability; it advanced toward what may be described as financial resilience. The university diversified its revenue sources in order to reduce dependence on tuition income and implemented an effective spending rule that enabled it to respond to financial shocks. As a result, it transformed the COVID-19 crisis into a challenge that it successfully managed, reorganizing its obligations while simultaneously achieving substantial growth in its assets.

4.1. Results:

- Yale University achieved net asset growth exceeding 14 billion USD over 6 years, driven primarily by the effective utilization of the market boom in 2021 and the reinvestment of its gains.
- The “smoothing spending rule” proved to be the most effective risk management tool, ensuring the continuity—and even expansion—of funding for academic activities in 2022 and 2023 despite economic slowdown and declining investment returns.
- The Yale model confirms the validity of “Resource Dependence Theory”, reducing reliance on unstable external resources (tuition and public support) while strengthening internal resources (the endowment) enhanced the university's autonomy and the quality of its outputs.

4.2. Recommendations:

Based on the findings of the study, the following recommendations are proposed for universities and policymakers in the higher education sector:

- Universities should abandon expenditure policies based solely on “available cash” and adopt formula-based rules relying on multi-year moving averages in order to isolate academic operations from economic fluctuations.
- University endowment portfolios should be diversified to include real and illiquid assets that provide inflation protection and higher long-term returns, rather than relying primarily on deposits and low-yield bonds.
- Scientific research should not be treated as a cost center but as a strategic revenue source (through grants and partnerships) that contributes to revenue diversification.
- Favorable financial years (as Yale experienced in 2021) should be used to build strategic reserves rather than to permanently expand operating expenditures, thereby ensuring sustainability across generations.

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