

Introduction to *Financing Institutions of Higher Education*

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In fall 2023, more than 18 million students were enrolled in degree-granting colleges and universities, about three quarters of them in public institutions (Welding, 2024). In 2022, about 62% of U.S. high school graduates enrolled in college, and 36% of the U.S. population aged 25 and above had a Bachelor's degree or higher (Talbot, 2024). Despite recent downward trends, the reach of higher education has expanded greatly in recent decades. In 1960, only 8% of the over-25 U.S. population had college degrees.

The higher education sector contributes to the creativity, economic competitiveness, and resiliency of the U.S. economy. Tertiary education is a key factor in upward economic mobility of individuals who seek undergraduate and graduate degrees from community colleges, four-year colleges and universities, and of those in the workforce who seek upskilling and reskilling training to keep up with rapidly changing technologies. Although the measurement of the economic return to higher education, in the form of increased earnings, raises many subtle issues, summarized for example in a recent review by Lovenheim and Smith (2022), Cecchetti and Schoenholtz (2019) suggest that a plausible estimate is that the median real return to a private or out-of-state public education is around 8%, while the reduced tuition of an in-state public education implies an even higher median real return around 10%. These returns are extremely high relative to those available in financial markets with comparable risk.

Institutions of higher education also have important effects on the economies where they are located. Valero and Van Reenen (2019) estimate that internationally, a 10% increase in the number of universities in a region is associated with an increase in regional GDP of 0.4%, with positive spillover effects to neighboring regions as well.

There is wide variation in the financial circumstances facing different types of institutions and the students they serve. However, for several parts of the higher education sector, the basic financial model has been under increasing stress for the last two decades. Institutions have faced rising costs and difficulty in securing commensurate revenue growth. These costs are passed onto students attending these institutions and may appear prohibitive to some prospective students. This is particularly problematic as institutions of higher education try to diversify their student bodies to educate more students from families with limited financial means. In a recent study, Wilson et al. (2021) analyzed how public universities' diversity and inclusion units managed budget allocations in response to the recent economic downturn due to the coronavirus pandemic. The authors concluded that when diversity and inclusion efforts are a strategic priority for the institution, this is reflected in the budget structure and should be manageable even during fiscal uncertainty, like a global pandemic.

In 2019-20, public 4-year colleges and universities received roughly 38% of their revenues from federal and state governments, down more than six percentage points from the share in 2007-08 (*Digest of Educational Statistics, 2021, table 333.10*). The other sources of funds for public colleges and universities include self-supporting operations, net tuition and fees, private gifts, investment revenue and endowment income, and local government support. State funds provided to academic institutions are used to support four primary activities: general operations; research, agriculture, and medical programs; financial aid; and non-credit and continuing education (State Higher Education Executive Officers Association – SHEEOA – 2021).

Private schools, as well as some public research universities, rely heavily on private philanthropy to cover costs that are not supported by student tuition, state support, or sponsored research. Philanthropic giving has remained strong at the most selective private schools. Growing wealth

inequality has increased the resources of the wealthiest donors, many of whom appreciate both the social value of higher education – which has contributed to the emergence of many newer fortunes – and the long-term favorable publicity that named gifts to universities can provide. However, to the extent that private philanthropy takes the form of endowment gifts rather than current-use gifts, schools can spend only the investment income on the gifts and not the principal. The difficulty for universities is that the safe real interest rate, and hence the investment income generated by a conservative investment strategy, declined considerably during the first two decades of this century (Campbell and Sigalov, 2022).

A low-return environment presents endowment-dependent institutions with an unpalatable choice. They can ignore the problem, in which case their endowment value will likely decline in real terms, forcing future reductions in spending; or they can cut the spending rate today; or they can seek to increase return by taking more risk. The last reaction, sometimes known as “reaching for yield,” is documented by Campbell and Sigalov (2022) who present a theoretical analysis of its motivation.

One investment strategy that many larger endowments have followed is to diversify broadly across asset classes, reducing allocations to U.S. stocks and bonds and increasing allocations to international markets, commodities, real estate, hedge funds, and particularly private equity. This strategy, sometimes called the “Yale model” because it was pioneered by the university’s endowment manager, David Swensen, in the late 1980s, has the potential to improve returns while limiting the additional risk that is taken on. However, diversified Yale-model endowments are still exposed to large common shocks affecting all asset classes, such as the Global Financial Crisis in 2008-09, and there are concerns, raised for example by Stafford (2022), that risks in private equity are understated because these investments are not promptly marked to market. The illiquidity of private equity can also cause problems for universities that seek to draw on their endowments during downturns.

A key question for endowment-dependent institutions is how they should react to unexpected endowment returns that can be highly volatile from one year to the next. Unusually good returns trigger a debate between those who would like to smooth benefits over time, either by increasing current spending gradually or by capital spending on infrastructure and renovations, and those who would like to use a windfall to meet core educational objectives such as expanding access. Unusually poor returns trigger an even more intense debate between those who would like to take time to adapt to reduced resources and those who argue with Winston Churchill that one should “never let a good crisis go to waste,” and that the university should take the opportunity of financial stringency to cut activities that are less successful or of lower priority to the institution.

These issues were particularly salient during the Global Financial Crisis in 2008-09, and again during the coronavirus pandemic in 2020-21. Importantly, these recent downturns occurred at a time when inflation was low, and hence universities were unable to adjust by constraining nominal wage growth and allowing real wages to fall, a strategy that many followed during the high-inflation 1970s. Commonfund Higher Education Price Index® (HEPI) data show that costs for colleges and universities rose 1.9% in 2020 and 2.7% in FY2021. The five-year average HEPI inflation rate for the 2016-2021 period was 2.6%. Within the index there are some more volatile components, notably utilities, which saw a 15.0% cost increase in FY2021 versus a 15.7% decline in FY2020.

The higher inflation experienced since 2021 presents both challenges and opportunities for universities. Comparative research on the experience of higher education institutions during periods of low and high inflation would be especially useful in providing guidance for this new economic setting. If colleges and universities are able to raise nominal tuition prices, while holding down wage growth, their financial profile may brighten. For institutions that are constrained by the need for legislative approval of tuition increases, however, higher inflation may be a challenge that further stresses finances.

The COVID-19 pandemic disrupted cash flows but also coincided with some of the strongest financial returns on record for many large college and university endowments. The impact of the pandemic and its aftermath varies substantially across institutions. Some schools, particularly in the community college sector, have experienced cost pressures and enrollment declines in response to a tight labor market. On the other hand strong financial returns after the pandemic – 34% at Harvard, 40% at Yale, and an extraordinary 65% at Washington University in St. Louis – have provided new financial flexibility for institutions fortunate enough to have such resources (Bauman, 2022). These institutions account for a relatively small share of enrollment but are widely followed in the media and other outlets.

Given this backdrop of demographic and institutional challenges, the goal of this conference volume is to understand changes in decision-making by students, families, and financial managers of institutions, as they face financial challenges in U.S. higher education sector. Such challenges include the stagnating number of college-age domestic students, geographic mismatch of growing populations and thriving colleges and universities, financial pressures stemming from the coronavirus pandemic, growing student debt burdens and sticker prices that deter prospective applicants, conflicting objectives among those who have fiduciary responsibilities for these institutions, and low expected returns in capital markets. There are also opportunities on the horizon to increase access to education among diverse and distributed populations, and to reimagine the use of financial instruments and organizational structures to improve performance in the sector. The volume aims to promote an exchange of ideas among higher education administrators, consultants, and scholars. It draws together insights from financial and organizational economics, public finance, and industrial organization, as well as the economics of education.

Paper summaries

Some of the questions addressed in this conference volume include:

1. Affordability, access and impacts on sustainability of various types of institutions of higher education: How will the gradual decline in the size of domestic cohorts of 18-year-olds affect the financing of the higher education sector?
2. Management strategies of financial assets and liabilities of universities, given uncertainties related to endowments and debt: How will endowment-dependent institutions adjust to unexpected positive or negative shocks in capital markets, and handle low prospective asset returns? Are there ways to make university budgets more flexible to accommodate these shocks? Given the difficulties that universities face in adjusting their operations rapidly, what is the right model for long-term economic planning in institutions of higher education?
3. Financing community colleges and minority serving institutions (MSIs): How have universities and colleges incorporated diversity and inclusion goals in financial frameworks? What are the prospects of developing new revenue sources that can increase access to higher education for students from a broad spectrum of experiences, and geographies? What are the actual and perceived barriers to entry to institutions of higher education that reimagining financial models and organizational structures could solve? What does it take to broaden access to higher education, what does it cost institutionally and how can those costs be managed?

The papers in the volume are organized into three broad groups that address these questions. The volume also includes several written discussions of the papers as well as written remarks by three academic leaders who participated in an informative panel session. In addition many other participants attended the two meetings associated with this project, and made valuable comments and suggestions that improved the papers.

The first group of papers looks at tuition revenue, the most obvious source of income for an educational institution but one with doubtful growth prospects in the coming years. A challenge for the higher education sector is that enrollment has declined considerably since its peak in 2010. A paper by **Jacob Vigdor**, “The Ebbing Tide: How Will Higher Education Adapt to Demographic Change?”, reports a decline in enrollment from 2010 to 2022 of 2.7 million students, about 12% of the 22 million students enrolled at the peak. Vigdor asks to what extent this decline is driven by demographic trends and other exogenous forces, and to what extent it can be offset by policy changes available to colleges and universities.

At the aggregate level, the period from 2010 to 2022 saw a 5% decline in the number of 18-year-olds in the United States, so that declining enrollment might appear unsurprising in this environment. However, Vigdor points out that the number of 18-year-olds declined far more, by almost 25%, during the period from 1981 to 1991, and during that time enrollment growth was positive albeit slower than it had been in earlier decades. Universities and colleges at that time were able to sustain growth by increasing the share of 18-year-olds who went to college and lowering their dropout rates, as well as by expanding graduate degrees and recruiting international students.

To understand the different experience in the 2010-2022 period, Vigdor performs a cross-sectional analysis for an important type of institution: public schools offering four-year degrees. He shows that for these institutions, state-level demographic trends are strong predictors of enrollment changes in 2010-2022. The demographic effects are strongest for baccalaureate colleges that award only bachelor’s degrees, and weakest for flagship research universities with “R1” status. Enrollment declines are also stronger among commuter schools without on-campus housing, historically Black colleges and universities (HBCU’s), and institutions with lower grant revenue. It appears that the measures schools took in earlier decades to resist demographic forces have no longer proved effective.

Looking into the future, Vigdor combines demographic projections with the estimated enrollment model to forecast an overall enrollment decline of almost 13% in public four-year institutions between 2021 and 2033. Enrollment projections are much more favorable for R1 universities but much worse for baccalaureate colleges, whose enrollment is projected to decline by over 25%. These trends will be challenging to manage as the most affected schools have negligible endowments, limited grant revenue, and little ability to raise tuition. In recent years state and local governments have increased transfers per student for schools experiencing enrollment declines, but there are political constraints on the extent of this type of support.

Francisca Antman, the discussant of this paper, emphasizes that demographic projections can be enhanced by performing them separately for different racial and ethnic groups, given that these groups have different propensities to attend college. Antman also highlights the strong shift in student demand away from humanities and towards engineering and scientific fields, which have implications for resource allocation within universities as well as for the prospects of smaller schools that may be less equipped to offer the majors that are most in demand.

A paper by **Peter Hinrichs**, “How Much Can Families Afford to Pay for College?”, turns attention to the resources families have available to pay college tuition bills. Hinrichs uses the federal government’s concept of Expected Family Contribution (EFC), as calculated on the Free Application for Federal Student Aid (FAFSA) form. The EFC combines student and parental income and assets, excluding housing and retirement accounts, and then applies a graduated contribution rate (analogous to a progressive tax rate) to estimate the amount that a family can reasonably pay for college. Using survey data on enrolled undergraduates over the period 1996-2020, Hinrichs finds that the EFC was relatively stable in real terms from 1996 until 2012 and increased thereafter, with the increase being concentrated in the top quartile of family incomes, among White and Asian households, and among households with college degrees –

all of these patterns reflecting trends in the distribution of income and wealth rather than any important changes in the methodology used to calculate the EFC.

Hinrichs compares these trends in the EFC with the average cost of attendance (COA) at the colleges attended by the students in the survey. COA reflects the “full sticker price”, the maximum cost that any student could be charged by a college. COA has grown faster than EFC, so financial need, defined as the gap between COA and EFC, has also increased – although less strongly among households in the top quartile of income.

This does not necessarily mean that households are under greater financial stress, however, because as Hinrichs’ discussant **Phillip Levine** emphasizes, few students – even those with top-quartile family income – actually pay the COA. Tuition discounts are widespread and the COA may have risen as fast as it has precisely because colleges are willing to charge high prices to a few particularly wealthy students in order to keep costs down for other families. But such a strategy can only raise limited revenue for schools given the small number of COA-paying students.

Another contribution of Hinrichs’ paper is to show how the EFC would change under various possible changes in the methodology used to calculate it. Including home equity in the EFC calculation of wealth would penalize Hispanic households and help Asian households relative to White and Black households, while including retirement accounts would penalize White and Asian households and help Black and Hispanic households.

A paper by **Robert Kelchen, Dubravka Ritter, and Douglas Webber**, “Predicting College Closures and Financial Distress”, asks how operational and financial data, including data on enrollments and tuition revenue, can be used to forecast the closure of colleges. The focus is on private colleges, both non-profit and for-profit, since public institutions very rarely close although they may be merged. (Mergers and consolidations are excluded from the focus of the paper because of challenges in measuring these events.)

While rich data on college operations and finances are available in the US Department of Education’s Integrated Postsecondary Education Data System (IPEDS), many variables have incomplete coverage and this is a particular problem for measures of debt, assets, and leverage. To handle this, the paper argues for the use of a machine learning classification algorithm, XGBoost, that can handle missing data and nonlinearly transform and interact available predictors. The performance of XGBoost compares favorably with more traditional prediction methods: specifically, with OLS estimation of linear probability models using continuous predictors, a subset of continuous predictors selected using least absolute shrinkage and selection (LASSO), or discretized (binned) predictors that can include dummies for variables that are expected to be missing.

The authors find substantial predictability in college closures. As one measure of this, among colleges with complete data, 83 out of the 100 observations with the highest XGBoost-predicted closure probabilities actually closed within three years. The most important variables contributing to this predictive ability are growth rates of operating variables such as revenue, tuition, enrollment, and staff, along with failures to meet federal accountability metrics.

The paper uses the XGBoost model to forecast what may happen in the future under alternative enrollment scenarios. Using 2019 as a pre-COVID baseline, the enrollment declines that occurred in 2019-2023 already imply an additional institution closing each year. A one-time decline of 15% in enrollment relative to 2019 would create a wave of over 70 closures and ongoing closures of an additional 5 institutions per year. While the precise numbers depend on the particular model used and scenarios considered, it is clear that demographic trends are likely to put a significant number of colleges and universities under significant financial stress. Closures also have the potential to adversely affect the

local economies surrounding closed colleges, a topic the paper highlights as a priority for future research.

A second group of papers focuses on the financial assets and liabilities of universities, specifically endowments and debts.

Christopher Avery, Ronald Ehrenberg, Catharine Hill, and Douglas Webber's paper "Endowment Spending Rules" takes a comprehensive look at the financial decisions of private, non-profit institutions that report endowment information on IRS Form 990. The paper focuses on 187 colleges and universities with the highest 2021 endowments per student and tracks these institutions using available data between 2008-09 and 2021-22. During this period investment returns on these endowments were strong, above 7% in nominal terms, and were supplemented by contributions above 3% of endowment value. Average payout rates from endowments were about 5%, and inflation in the higher education price index (HEPI) averaged about 2.5%.

Observed spending data can be used to estimate the parameters of spending rules relating endowment distributions to lagged endowment values and lagged spending. The authors obtain estimates that are broadly in line with institutions' statements about their payout rules, although they do show that schools spend new contributions relatively rapidly, consistent with the idea that they aim to demonstrate to donors near-term mission impact from the gifts they receive.

The paper emphasizes the importance of quasi-endowment funds, also known as "funds functioning as endowment", which are unrestricted funds invested alongside true endowment funds. Endowment distributions do not represent actual spending if the distributions are reinvested as quasi-endowment. The paper shows that net spending that adjusts for quasi-endowment accumulation is more volatile, as a fraction of initial endowment, than conventional measures of endowment distributions. The paper also shows that colleges and universities have built up their quasi-endowments alongside their endowments during the period of strong investment returns in the early part of this century. While this could be criticized as "hoarding" funds, it could be justified if schools are taking the time to plan large new initiatives or if they are building reserves in anticipation of future financial challenges.

Jeffrey Brown, the paper's discussant, questions whether endowment spending and asset allocation decisions can be justified as the outcome of a university's intertemporal optimization problem. Standard theory would for example imply that universities should match assets and liabilities and should use endowment assets to hedge the risks in their other sources of income; yet there is little evidence that this occurs. Brown suggests instead that principal-agent problems are important. As one example, Brown cites the finding of his earlier research (Brown et al 2014) that university leaders are reluctant to allow endowment values to fall below the level that prevailed when they took office.

A paper by **John Campbell, Jeremy Stein, and Alex Wu**, "Economic Budgeting for Endowment-Dependent Universities", develops a framework to analyze a university's financial position using an intertemporal budgeting approach. The approach, designed for universities with substantial financial assets, forecasts university operating revenues and costs over the infinite future, calculates the present value of those operating obligations, and then compares the value of the obligations to the value of the university's wealth.

This approach differs from standard university budgeting procedures, which typically focus on a single year and use generally accepted accounting principles (GAAP) to calculate an annual budget surplus or deficit. A GAAP budget is misleading from the perspective of an economist interested in the university's intertemporal budget constraint, because it mixes financial flows with the real-side revenues and expenses that reflect the physical economics of the university. For example, distributions from the endowment and proceeds from new debt issuance are both treated as forms of revenue. However, these

sources of revenue simply transfer a pool of fixed resources from the future to the present -- higher endowment spending today leads to lower endowment spending in the future, and debt issuance today requires debt repayment in the future. There is no distinction in a GAAP budget between these sources of revenue and other sources, which improve the university's long-run financial position, such as increased tuition income.

In contrast to the conventional budgeting method, the intertemporal approach fully separates real and financial flows. The real operating economics of the university are captured in the present value of the net expenditures, which have nothing to do with debt issuance, interest expense, or endowment payouts. And financial resources are fully captured by the current value of the endowment in excess of debt obligations. The difference between the present value of operating obligations and wealth is the present-value shortfall of the university.

The authors illustrate their approach using data from the Harvard Faculty of Arts and Sciences (FAS) as of June 30, 2023. For the first few years through 2028 they have granular FAS cash-flow forecasts, and they assume constant growth rates for subsequent years. These cash-flows are discounted at a real interest rate of 5%, consistent with the assumption that Harvard's endowment is able to earn a 5% real rate of return in expectation. These procedures imply that FAS has a present-value shortfall of \$6.54 billion, corresponding to an annualized structural deficit of \$327 million or about 20% of the 2023 operating costs of the FAS. This negative finding contrasts with modest positive GAAP surpluses reported by the FAS in recent years. It highlights the fact that a large endowment – almost \$18 billion for the FAS – is not available to fund new spending if the institution is already using it to pay for operating expenses.

Antoinette Schoar, the paper's discussant, highlights the danger that an intertemporal budgeting approach can be misused by manipulating assumptions about distant future cash-flow growth rates to disguise a university's true financial position. Schoar also discusses the responses of universities to short-term GAAP deficits and questions whether these responses are optimal.

In "The Role of Debt in Financing Higher Education", **Matteo Binfarè and Kyle Zimmerschied** turn attention to the use of debt by both public and private non-profit four-year universities. They combine municipal bond data from Refinitiv with financial and operating data on universities from IPEDS over a long sample period from 1985 to 2022. They compare tax-exempt and taxable issuance, the former having lower yields and the latter – increasingly popular since the 2008-09 Great Recession – allowing greater flexibility in the use of bond proceeds. A substantial fraction of bond issuance is associated with refinancing given the prolonged decline in interest rates over their sample period. However, public universities in particular increased their leverage substantially during the 2000s and the early 2010s, with some reversal in recent years.

Binfarè and Zimmerschied also track changes in credit ratings for issuers and bonds over time, observing that university credit quality has remained stable over time, with an increasing number of schools being rated, while the average credit quality of bonds declined after the Great Recession when municipal bond insurance became unavailable or exorbitantly expensive. AAA bonds have accounted for less than 10% of recent issuance, as compared with about 50% before the Great Recession.

Comparing bond yields across issuers, and controlling for a wide variety of issuer and bond characteristics, the authors find that public universities issue bonds at slightly lower yields than private universities must pay.

The authors also relate university leverage to the composition of revenue and expenses.

Public universities that receive a lower share of their revenue from state and federal government support tend to have higher leverage, and schools with high reliance on long-term debt tend to spend

heavily on student services and dormitory capacity. This pattern is consistent with the view that debt is used to finance fixed assets, particularly when direct state support is not available for this purpose. The discussant of this paper, **Daniel Bergstresser**, emphasizes that public-private partnerships, in which universities sign lease contracts with private developers, are an increasingly common alternative way for schools to finance the provision of fixed assets such as dormitories, parking garages, and even classrooms and offices. Understanding such novel forms of leverage is an interesting task for future research.

A third group of papers in this volume focuses attention on community colleges and minority serving institutions (MSI's) that provide higher education to traditionally underserved populations. Such institutions are particularly important as the higher education sector seeks to increase the fraction of Americans who earn college degrees and to realize the ideals of diversity, equity, and inclusion.

Nikki Edgecombe, Elise Swanson, Thomas Brock, Maria Cormier, Christopher Avery, and Carmen Huynh provide an overview of the community college sector in "Financing Community Colleges: Current Landscape and Future Directions". They delineate the scale of the sector (almost 1,000 community colleges enrolling over one third of all US undergraduates) and highlight the attractions of low tuition and convenient local access to lower-income and minority students.

The financing problem for community colleges is that tuition can only be kept low if the colleges receive public support, particularly from states but sometimes from local governments as well. (Federal funding is generally modest for these institutions.) The heart of the paper is a detailed comparison of the systems by which this support is allocated in six states – California, Michigan, New York, Ohio, Tennessee, and Texas – that account for almost half of all community college students in the US. These states vary widely in the proportion of state support provided (highest in Tennessee at 52%, lowest in Michigan and Texas at 22%), the proportion of local support (highest in Texas at 36%, lowest in Tennessee at 1%, and the reliance on tuition and fees (highest in Tennessee at 43%, lowest in California at 13%). They also vary in the extent to which they tie state support to student enrollments or to educational outcomes. The paper highlights the importance of allocating funds in a way that takes account of the varying educational challenges that each community college faces, for example with regard to the level of services its students require to succeed.

The authors also discuss the relatively flexible federal funding that was provided to community colleges during the COVID-19 pandemic by the Higher Education Emergency Relief (HEER) fund. Community colleges used these funds to offset lost tuition revenue, assist students with food, housing, and mental health needs, and invest in information technology to offer online education. Importantly, funds were allocated in a way that recognized the greater needs of schools enrolling larger numbers of low-income students receiving Pell grants. The paper suggests that lessons learned from this experience can be valuable for states in the post-pandemic environment.

The two final papers in the volume examine in detail two barriers to college enrollment that particularly affect lower-income and minority students: distance to school, and the level of tuition before discounts (sticker price).

Riley Acton, Kalena Cortes, and Camila Morales, in "Distance to Opportunity: Higher Education Deserts and College Enrollment Choices", use administrative data from Texas to explore how the distance to the nearest two-year and four-year schools (from the high schools that students attended, used as proxies for their home locations) affects students' decisions whether to attend college and if so whether to go to a two-year school or a four-year school.

Setting the stage, the authors show that students in rural south and west Texas, who are disproportionately White and Hispanic, must often contend with much greater distances to the nearest

schools than students in east Texas and particularly the densely populated Texas Triangle, who are disproportionately Black and Asian. These distances are associated with reduced probabilities of college attendance, but the effects are heterogeneous across income levels, race, and ethnicity. Specifically, White and higher-income students who live far from the nearest two-year college tend to respond by attending a four-year college, whereas Black, Hispanic, and lower-income students tend to respond by not going to any college at all. (The distinction between higher- and lower-income students is measured by whether students qualify for lunch subsidies or other public assistance.) These differences in responses to distance, rather than differences in distance itself, are important for understanding racial and economic disparities in four-year college enrollment propensities.

The paper also explores nonlinear effects of distance, with special attention to “college deserts”, areas that are more than 30 miles away from the nearest two- or four-year college. Living in a two-year college desert has a negligible effect on college attendance for White and higher-income students, but lowers the probability of college enrollment by as much as 12 percentage points for Black, Hispanic, and lower-income students. The paper uses these estimates to simulate the effects of closing specific community colleges, finding for example that two-year colleges in Hispanic areas of Texas are particularly important for sustaining overall enrollment levels in Texas public colleges.

Zachary Bleemer, the discussant of this paper, emphasizes that while distance and the response to distance are important for understanding four-year college enrollment, they do not appear to contribute importantly to the gaps by income and race in the overall propensity to attend college (including both two-year and four-year colleges). Bleemer calls for further research on the causal effects of college openings and closings, and for analysis of distance effects on students’ choice of college majors.

In “Examining the Effects of Tuition Reset Policies on Enrollment and Institutional Finances at Minority Serving Institutions”, **James Ward, Daniel Corral, and Catharine Hill** ask whether minority students are particularly susceptible to “sticker shock”, in which the level of full tuition and fees deters students from applying and enrolling even if schools are willing to offer tuition discounts. To respond to this problem, some minority serving institutions (MSI’s) have used tuition resets, defined as cutting their sticker prices by at least 5%.

The paper provides a general overview of minority serving institutions and of the strategy of tuition resets. The core of the paper is a difference-in-difference estimation that compares outcomes for tuition-resetting MSI’s with outcomes for a matched control group of non-resetting MSI’s. Importantly, the sample includes both public and private MSI’s. The paper finds that tuition resets do not increase the number of applications to a school, possibly because some potential applicants interpret low tuition as a sign of low quality, a negative effect that may offset positive effects on other applicants who prioritize affordability. However, private MSI’s (which typically have higher initial tuition levels) do experience growth in enrollments, including enrollments of Pell grant recipients, and growth in tuition revenue. Overall, these findings suggest that lower-income minority students are particularly vulnerable to sticker shock that may be ameliorated by resetting tuition; but schools should beware of reputational side-effects of tuition resets, which may outweigh their benefits particularly for public MSI’s.

The volume also includes written remarks by three senior academic leaders based on a panel discussion at the conference.

Benjamin Hermalin, currently the Provost of the University of California at Berkeley, clarifies the long-term financial challenges facing California’s flagship research university. He highlights Berkeley’s dependence on state funding and the decline in the real value of that funding over the last twenty years, even as the size of Berkeley’s student body has increased and the share of out-of-state students, who make high tuition payments, has declined. On the cost side, Hermalin emphasizes the financial costs of

regulatory compliance, efforts to expand educational opportunities to a broader range of students, and competition to recruit faculty in the face of high living costs in the Bay Area. He argues that until now Berkeley has responded by limiting new initiatives and deferring maintenance expenditures, but that these responses, while expedient in the short term, are inadequate in the long term. In the future Berkeley will need both to concentrate its spending on core educational and research activities, while cutting non-core spending, and to improve its productivity through the use of technology.

Robert Brown, who retired as president of Boston University in 2023, makes the case for an approach to university financial management that he calls Strategy Centered Management (SCM). By contrast with Responsibility Centered Management (RCM), a common management approach since the 1970s, which decentralizes budgetary authority to various academic units within a university, SCM centralizes control of core revenues and expenses and allows the central administration of the university to use operational surpluses to build reserves, which can be reinvested in new strategic initiatives. Brown argues that this approach better reflects the current academic environment in which both student interests and the most exciting research opportunities are interdisciplinary. He cites Boston University's new Faculty of Computing and Data Sciences as an example of the institutional creativity that SCM makes possible.

Lisa Lynch, former Dean of the Heller School for Social Policy and Management at Brandeis University, and former Provost and Interim President of the university, explores trends in the workforce of higher education. She highlights that since 2011, there has been a reversal of a previous trend to hire more part-time faculty. The share of full-time faculty, which was 50% in 2011, had risen to 56% by 2022. However, many of these full-time faculty are contract faculty rather than tenured or tenure-track faculty. Retirements of tenured faculty stimulated by the COVID-19 pandemic may have accelerated this shift in faculty composition.

Full-time staff are also vitally important to the functioning of higher education and account for 45% of its workforce. The hot labor market of the last few years has driven up staff compensation costs and increased turnover. A challenge for institutions of higher education is that many staff express a strong desire to work remotely, but this can be difficult to reconcile with the creation of a vibrant on-campus community.

Lynch discusses the increase in collective bargaining and strike activity by both faculty and students over the past decade, arguing that this is a natural response to the precarity of contract faculty employment and to the financial pressures experienced by graduate students. She predicts further conflict related to unionization efforts by student athletes.

The contributions to this volume explore the financing of higher education by students and the institutions that serve them, drawing on insights from financial economics and industrial organization and complementing a rich literature on the economics of higher education grounded in labor economics. Within this focus on individual and institutional financial decision-making, several important topics deserve further exploration. While the volume highlights the importance of broadening access to higher education and the factors that influence the attendance decisions of diverse students, a more systematic exploration of the institutional costs of diversity, equity, and inclusion and the strategies available to schools to manage these costs would be valuable. Also, the papers in the volume focus on financial management strategies, taking operational structures such as faculty tenure and educational technology as given. Operational reforms, for example to the delivery of classroom education or the provision of student services, are not considered. An important task for future research is to understand the educational, labor market, and financial implications of changing operational models in higher education. We hope that the work presented in *Financing Institutions of Higher Education* will be a useful starting point for research that addresses these issues.

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APPENDIX A
Financing Institutions of Higher Education
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Data Summary: The table below details the datasets used in the papers in this volume. Overall, the datasets include¹:

- National Postsecondary Student Aid Study (NPSAS)
- Panel Study of Income Dynamics (PSID)
- Integrated Postsecondary Education Data System (IPEDS) (UnitID, Revenue by Source, and Higher Education Relief Funds (HEER))
- College Scorecard (Closed School Weekly Reports, and Heightened Cash Monitoring (HCM) Level 2)
- Postsecondary Education Participants System (PEPS)
- U.S. Bureau of Economic Analysis (population and income per capita at the county level)
- IRS 990 Tax Filings (Schedule D)
- Institutional Financial Data
- Municipal Bond Issuances
- Coincident Index (Philadelphia Federal Reserve Bank)
- Community Colleges Network (ARCC) (Interviews with College Administrators)
- Texas Education Authority (TEA)
- Common Core of Data (CCD) by the National Center for Education Statistics in the Institute for Education Science (NCES)
- Texas Higher Education Coordinating Board (THECB)
- The American Association of Community Colleges (AACC)
- Texas Association of Community Colleges (TACC)
- Minority Serving Institutions (MSI) Data Project

¹ In addition, other specialized datasets were not used in this volume's papers but also provide helpful information to study the finances of higher education: Common Data Set (CDS); College Board (Trends in College Pricing Report); Higher Education General Information Survey (HEGIS) Series (the predecessor to of IPEDS); some states have made institutional data available, like the City University of New York (CUNY); and there is the College and Beyond II (CBII).

Papers Theme 1: Tuition Revenue		
Title	Authors	Data Sources
How much Can Families Afford to Pay for College?	Peter Hinrichs, <i>Federal Reserve Bank of Cleveland</i>	<p>1) National Postsecondary Student Aid Study (NPSAS): Used to document Expected Family Contribution (EFC) from the Free Application for Federal Student Aid (FAFSA). Note: EFC is being replaced with the Student Aid Index (SAI) beginning in 2024–2025, but many of the same principles carry over to this newer measure.</p> <p>https://nces.ed.gov/datalab</p>
		<p>2) Panel Study of Income Dynamics (PSID): Used to calculate alternative measures of the ability to pay for college.</p> <p>https://psidonline.isr.umich.edu/default.aspx</p>
The Ebbing Tide: How Will Higher Education Adapt to Demographic Change?	Jacob L. Vigdor, <i>University of Washington and NBER</i>	<p>1) Integrated Postsecondary Education Data System (IPEDS): The analysis uses IPEDS data on enrollment and institutional characteristics restricted to public institutions offering 4-year degrees. The data spans 1984 to 2022, but most analyses of cross-sectional variation examine the change in log enrollment between fall 2010 and fall 2022 as they necessarily exclude institutions that closed over the intervening period.</p> <p>https://nces.ed.gov/ipeds/</p>

<p>Predicting College Closures and Financial Distress</p>	<p>Robert Kelchen, University of Tennessee – Knoxville</p> <p>Dubravka Ritter, Federal Reserve Bank of Philadelphia</p> <p>Douglas A. Webber, Board of Governors of the Federal Reserve</p>	<p>1) Integrated Postsecondary Education Data System (IPEDS): UnitID. Used to obtain information on the historical features of colleges and universities (organizational structure, location, and finances) and on the characteristics of their students and staff primarily from 2002 to 2023. IPEDS: data are collected annually on the academic year calendar for each UnitID (IPEDS ID for an individual institution).</p> <p>https://nces.ed.gov/ipeds/</p>
		<p>2) College Scorecard: Used the predominant degree from College Scorecard and supplement with Carnegie classifications where available. to classify institutions (2 or 4 year, private or public, non-profit, or for-profit)</p> <p>https://collegescorecard.ed.gov/</p>

		<p>3) Postsecondary Education Participants System (PEPS) Closed School Weekly Reports: From the Federal Student Aid (FSA). This database classifies institutions based on their Office of Postsecondary Education identification number (OPEID), which is based on the unit of analysis under which a program participation agreement is entered upon with the Department of Education (Office of Federal Student Aid, 2017). We restrict the sample of institutions in the PEPS data to those where the main campus (FSA OPEID ending in “00”), as opposed to a branch/satellite campus, closed.</p> <p>https://fsapartners.ed.gov/home/</p> <hr/> <p>4) College Scorecard Heightened Cash Monitoring (HCM) Level 2: The College Scorecard data on colleges placed on Heightened Cash Monitoring (HCM) level 2 is used to flag institutions perceived by sector observers to be in precarious financial condition. HCM level 2 is the most serious level of federal monitoring that requires a college to get reimbursed after the fact for federal financial aid disbursed to students instead of receiving those funds in advance.</p> <p>https://collegescorecard.ed.gov/</p>
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		<p>5) U.S. Bureau of Economic Analysis: To collect population and income per capita received by residents at the county level, from 1967 to 2022.</p> <p>https://www.bea.gov/</p>
Papers Theme 2: Financial Management of Assets and Liabilities (Endowment, Debt)		
Title	Authors	Data Sources
Endowment Spending Rules	<p>Christopher Avery, <i>Harvard University and NBER</i></p> <p>Ronald G. Ehrenberg, <i>Cornell University and NBER</i></p> <p>Catharine Hill, <i>Ithaca S+R</i></p> <p>Douglas A. Webber, <i>Federal Reserve Board</i></p>	<p>1) IRS 990 Tax Filings, Schedule D: Data reported by private, nonprofit colleges and universities from 2008-09 to 2021-22. 2008-09 was the first year that colleges filed Schedule D as part of their 990 tax returns. Schedule D reports endowment levels along with revenues (1. Investment returns; 2. Contributions) and (3. Grants and scholarships; 4. Administrative costs; 5. Other costs)</p> <p>https://www.irs.gov/forms-pubs/about-form-990</p>
Economic Budgeting for Endowment-Dependent Universities	<p>John Y. Campbell, <i>Harvard University and NBER</i></p> <p>Jeremy C. Stein, <i>Harvard University and NBER</i></p> <p>Alex A. Wu, <i>Harvard University</i></p>	<p>1) Institutional Data from Harvard’s Faculty of Arts and Sciences (FAS): Multi-year financial plans were used to forecast cashflows over an infinite horizon.</p> <p>Note: this paper presents an alternative framework that discounts cash flow forecasts over the infinite future and compares the present value of operating obligations to the value of the university’s endowment net of any debt it has issued.</p>

<p>The Role of Debt in Financing Higher Education</p>	<p>Matteo Binfarè, <i>University of Missouri</i> Kyle Zimmerschied, <i>University of Missouri</i></p>	<p>1) Municipal Bond Issuances: Municipal bond issuances and U.S. higher education institutions that report to the Integrated Postsecondary Education Data System (IPEDS). Municipal bond issuances were obtained from Refinitiv’s SDC Platinum. A unique list of municipal bond issuers and beneficiaries of proceeds (in cases of debt issued on behalf of higher education institutions) was hand-matched with the universe of IPEDS reporting organizations by a bond’s beneficiary and then by a bond’s issuers. The sample was restricted to bond issuances from academic years 1985 to 2022.</p> <p>https://www.lseg.com/en/data-analytics/products/sdc-platinum-financial-securities</p>
		<p>2) Integrated Postsecondary Education Data System (IPEDS): Data on the financial position and operations of U.S. four-year public and private not-for-profit universities comes. These data were merged, including relevant university controls from 1985 to 2022, into an issuance panel. The analysis was restricted in this setting to data from 2001 to 2022.</p> <p>https://nces.ed.gov/ipeds/</p>
		<p>3) Coincident Index: This is a measure of a State’s economic activity and unemployment rates from the Philadelphia Federal Reserve Bank. Additionally, to control the underlying</p>

		<p>state distress risk, data were obtained from S&P global on ratings changes at the state level.</p> <p>https://www.philadelphiafed.org/surveys-and-data/regional-economic-analysis/state-coincident-indexes</p>
Papers Theme 3: Financial Challenges Facing Community Colleges and Minority Serving Institutions (MSI)s		
Title	Authors	Data Sources
Financing Community Colleges: Current Landscape and Future Directions	Nikki Edgecombe, <i>Columbia University</i> Elise Swanson, <i>Harvard University</i> Thomas Brock, <i>Columbia University</i> Maria Cormier, <i>Columbia University</i> Christopher Avery, <i>Harvard University and NBER</i> Carmen Huynh, <i>Columbia University</i>	1) Revenue by Source: Data on community college revenue per full-time equivalent (FTE) student were obtained from the Integrated Postsecondary Education Data System (IPEDS), and used to represent the proportion of revenue per FTE student by source and state in 2019. https://nces.ed.gov/ipeds/
		2) State Funding Formulas: From existing literature, specifically Lingo et al. (2021, 2023). These data were used to characterize the funding formulas within the focal states as traditional, incentive, and hybrid. https://static1.squarespace.com/static/5d9f9fae6a122515ee074363/t/6446df7a981da30ef202a70c/1682366330568/ISBrief_TheLandscapeofStateFundingFormulas_PublicCollegesUniversities_April2023.pdf

		<p>3) Higher Education Relief Funds (HEER): Data on HEER funding on a per full-time equivalent (FTE) basis were obtained from the Integrated Postsecondary Education Data System (IPEDS). The data were used to examine how institutions used federal relief funds, what groups of students they targeted for assistance, and what types of assistance they felt were most important to retaining and helping students advance.</p> <p>https://nces.ed.gov/ipeds/</p>
<p>Distance to Opportunity: Higher Education Deserts and College Enrollment Choices</p>	<p>Riley K. Acton, <i>Miami University</i> Kalena Cortes, <i>Texas A&M University and NBER</i> Camila Morales, <i>University of Texas at Dallas</i></p>	<p>4) Interviews with College Administrators: To examine how institutions used HEER funds utilization. Interview data were collected in the summer of 2023 as part of the Accelerating Recovery in Community Colleges Network (ARCC) analysis of federal relief efforts for the Community College Research Center (CCRC)'s project on community college finance.</p> <p>1) Longitudinal records from the Texas Education Authority (TEA): Records on K-12 school enrollment and high school graduation. Student-level data from the UT Dallas Education Research Center (ERC).</p> <p>https://tsp.utdallas.edu/ut-dallas-education-research-center/</p>

		<p>2) Longitudinal records from Texas Higher Education Coordinating Board (THECB): Student-level records containing information on student enrollment in all Texas public two-year and four-year postsecondary institutions.</p> <p>https://www.highered.texas.gov/</p> <p>3) Common Core of Data (CCD) by the National Center for Education Statistics in the Institute for Education Science (NCES): Comprehensive, annual, national database of all public elementary and secondary schools and school districts. The data were used to observe a high school's latitude and longitude, urbanicity, overall student enrollment, student-teacher ratio, charter, magnet, and eligibility for Title I.</p> <p>https://nces.ed.gov/ccd/</p> <p>4) Texas Higher Education Coordinating Board (THECB), the American Association of Community Colleges (AACC), and the Texas Association of Community Colleges (TACC): The latitudes and longitudes of all colleges reported on these datasets were merged to create measures of distance between all Texas high schools and their nearest postsecondary higher education institutions</p> <p>https://nces.ed.gov/ipeds/</p>
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Resetting Tuition at Minority Serving Institutions: Implications for Enrollment and Institutional Finances	James Dean Ward, <i>Ithaca S+R</i> Daniel Corral, <i>University of Toronto</i> Catharine Hill, <i>Ithaca S+R</i>	1) Integrated Postsecondary Education Data System (IPEDS) Institutional Enrollment and Finances: A panel dataset from 2003 through 2021 of 2,966 public and private institutions was used to estimate the relationship between a tuition reset and institutional outcomes. https://nces.ed.gov/ipeds/
		2) Minority Serving Institutions (MSI) Data Project: Classification data from the MSI compiled by Nguyen et al. (2023) were used to obtain estimates and calculations specific to MSI institutions. https://www.msidata.org/
Panel Discussions: Financial Management Challenges in Higher Education		
Strategy-Centered Leadership and Financial Management is Needed in Research Universities	Robert A. Brown, Boston University	1) Secondary and Institutional Data: Statistics about the Higher Education.
The Finances of a Public Flagship University	Benjamin E. Hermalin, University of California	1) Institutional Financial Data for the Fiscal Year FY 2022-23 https://controller.berkeley.edu/accounting-and-controls/financial-reporting/uc-berkeley-financial-reports-unaudited .
Labor Market, Financial Management Challenges in Higher Education	Lisa M. Lynch, Brandeis University and NBER	1) Secondary Data: Statistics about the Higher Education labor market from secondary sources.

