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Introduction

Jeffrey R. Brown and Caroline M. Hoxby

Economists often find research opportunities in times of crises. Although no one would propose to have a financial crisis and major recession to learn about universities, a period of crisis provides a valuable window into their conduct. In a time of unanticipated scarcity, an institution's objectives, constraints, and incentives come into high relief. This opportunity to learn general lessons about universities is the key reason why we chose to study how the financial crisis and Great Recession affected higher education. Of course, we were also greatly interested in discovering what actually occurred during and after the Great Recession as universities dealt with the events occurring in the financial markets and the economy more generally.

The economic disruption of this period came as a shock to many universities, especially coming after a long period of economic prosperity and steady endowment growth. The scale and nature of the changes varied greatly among universities, depending on the size of their endowments, how their endowments were invested, their area of the county, whether they were dependent on state government appropriations, and their reliance on various federal agencies' grants and contracts. The shocks were often unexpected, sharp, and variant among universities. The timing was also due to events beyond the universities' control, such as the collapse of Lehman Brothers, losses at AIG, and other events that led to substantial disruption of financial

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markets. Although these circumstances are troubling for universities, they are ideal for economic analysis: the period created the exogenous variation that is necessary for econometric identification.

In addition to being an ideal time for economists to analyze universities, it is also a good time for universities' leaders—past and present, financial and academic—to assess the state of higher education. Crises tend to make people reflective, if for no other reason than that they often must make active decisions (e.g., to end a program) and cannot simply stick with the status quo. It can also be easier to be candid when it is self-evident that things are not going well—as when some endowments fall by a third or when some campuses are riven by protests about tuition increases.

In short, the goals of “How the Financial Crisis and Great Recession Affected Higher Education” were threefold: (a) to improve our understanding of the economics of higher education, (b) to show factually how higher education changed during a period of great economic stress, and (c) to stimulate conversations between economists and university leaders. We believe that these conversations, once begun, will enrich economic analysis and sharpen researchers' and university leaders' thinking.

An Important Discussion of University Endowments

“How the Financial Crisis and Great Recession Affected Higher Education” began with several studies of university endowments. This was followed by a discussion of endowments led by Jane Mendillo (president and CEO, Harvard Management Company), Scott Wise (Covariance Capital), and John Griswold (Commonfund Institute). The studies and discussion were truly remarkable because there emerged a convergence of facts, thought, and ideas for the future. After briefly summarizing each paper, we then describe the themes on which the discussion converged.

Key Findings from the Chapters on Endowment Management

Caroline M. Hoxby, in “Endowment Management Based on a Positive Model of the University,” began by noting the absence of a satisfactory model of why endowments exist and what function they should play. She observed that this was not merely her conclusion but also that of two of the most influential papers on the topic: Hansmann (1990) and Merton (1993). She then proposed a positive model of the university as a social venture capitalist in intellectual capital (embodied in students and research). A primary problem for the university-as-venture-capitalist is getting the alumni and societies that have benefitted from its investments to repay some share of their returns so that there is funding for future generations of students and research. Endowments, her chapter argues, help to solve this problem because they allow an alumnus or philanthropist who is “paying back” to commit the university to its social venture capitalist role.

According to Hoxby's model, the university has, at any time, two portfolios: an intellectual capital portfolio (students, research, similar projects) and a financial portfolio (the endowment). Like any good venture capitalist who funds projects from his financial portfolio, in this model the university should manage these two portfolios in a fully coordinated fashion with the goal of maximizing the university's ultimate contribution to society. This implies, for instance, that risks in the intellectual capital portfolio should be offset in the financial portfolio and vice versa. The liquidity of the financial side should be managed with an eye to the adjustment costs of projects on the intellectual capital side. A period of unusually good (poor) investments opportunities on one side should cause the university to draw funds from (give funds to) the other side.

Keith C. Brown and Cristian Ioan Tiu, in "The Interaction of Spending Policies, Asset Allocation Strategies, and Investment Performance at University Endowment Funds," closely examine the management of more than 800 university endowments from 2003 to 2011. They focus on what explains universities' spending policies and whether those policies are truly rules or merely "meant to be broken." Noting that many models of endowment management predict that the permanent portion of the spending policy should be highly stable, they find that most universities' policies are anything but stable. Half of the endowments revised their rules at least once over this time period and about a quarter of them changed their spending "rules" *each* year. (It should be noted that Hoxby's model does not imply that spending policies should be highly stable, so it is a potential—though so far untested—explanation for actual endowment management.)

While Brown and Tiu do not attempt to determine whether universities are better able to fulfill their overall objectives if they stick to their spending policies, they do convincingly demonstrate that there is no difference in benchmark-adjusted performance between institutions that did and did not stick to their spending rules.

William M. Goetzmann and Sharon Oster, in "Competition among University Endowments," take note of two phenomena: the fierce competition among elite private universities for undergraduates and the recent shift of endowment portfolios toward alternative investments such as hedge funds. They speculate that these phenomena are causally related—although which is the "chicken" and which the "egg" they leave as a matter of speculation. That is, they hypothesize that as universities compete more fiercely for undergraduates, they fear falling behind on endowment returns per student because high returns allow the university to enrich the undergraduate experience. Alternatively, it could be that some universities moved into alternative investments for exogenous reasons, made high returns, and then forced their near competitors (for undergraduates) to follow them into alternative investments, in a bid to keep up.

Goetzmann and Oster test their hypothesis using an overlap-in-applications

metric that captures competition for undergraduates. They show that when a school's endowment performance falls behind that of its closest competitor, the endowment tends to change its investment policy in a manner consistent with the goal of catching up to that rival. An implication of such behavior, regardless of how it began, is that endowment managers are pressed to take risks in search of high returns, potentially at the expense of future generations of students.

David Chambers, Elroy Dimson, and Justin Foo, in "Keynes, King's, and Endowment Asset Management," consider another period in which colleges—or at least one college—used alternative investments and thereby caught up to its rival. The college in question was King's College of Cambridge University and the rival was Trinity College of the same university. Perhaps most interestingly, the endowment manager was John Maynard Keynes and the alternative investments at the time were equities (as opposed to agricultural real estate, the traditional portfolio for a Cambridge or Oxford college).

Chambers, Dimson, and Foo argue that Keynes's move into equities was an innovation "at least as radical" as the recent move into illiquid assets by universities like Yale and Harvard. After a number of rough years in which Keynes's portfolio earned poor returns, he shifted to a stock-picking model that allowed King's to earn risk premia through tilting the portfolio toward value and smaller-capitalization stocks. By the time of Keynes's death, King's endowment had drawn even with Trinity, the richest of the colleges.

Themes that Emerged from the Discussion of Endowment Management

The panelists (Jane Mendillo, Scott Wise, and John Griswold) brought several themes to the surface which, perhaps surprisingly for any discussion about universities or among economists, received wide agreement in the discussion that followed. From most to least important, these themes were as follows.

1. A university can be viewed as having two management teams: its financial or endowment management team, and those who manage intellectual investments like students and research. There are substantial gains to communication between these two sides of the university about future investments, returns on existing investments, risks, diversification, expected cash flows, and, importantly, adjustment costs. While the managers on each side may thoroughly understand the other side in *some* universities, most discussants viewed such understanding as the exception rather than the rule.

Both sides received some blame in this regard, but universities' nonendowment managers received a bit more. This is because, unlike the endowment managers, they hesitate to quantify many of their investments, risks, adjustment costs, and cash flows. They may be good at describing certain current and near-term future costs, but they are often vague about adjustment costs. Moreover, they are often very reluctant to put numbers on the

benefits of their activities—benefits that flow through alumni donations, tuition, research grants, and philanthropic dollars. Of course, such benefits are difficult to quantify but they still have qualities like risk, diversification, and correlations with macroevents that can be described. Financial managers need more information if they are to understand how much of the university's intellectual investments will be lost if the endowment fails to provide a steady flow of cash.

Moreover, although endowment managers can describe their portfolios along numerous dimensions (risk, liquidity, diversification, horizons, and so on), they often hesitate to do so because they are dealing with university leaders who have very little training in finance. Some investment managers opt out of communicating much about their portfolios because they fear well-intentioned but misguided interference based on a leader's limited understanding of finance. The consequence is that neither side really understands the investments of the other side.

2. When a university regards its endowment as *part* of its portfolio, not a separate portfolio, this has numerous implications. For instance, during times when the endowment is earning high returns, university leaders might closely examine the marginal intellectual investments they are making and ensure that they have high expected returns as well. Discussants indicated that the opposite behavior seems to dominate in practice: during periods of high endowment returns, university leaders often seem to regard the endowment as a "slush fund" that permits them to make low-return investments on the intellectual side.

Another example is that endowment managers can be aware of a university's intellectual investments being disproportionately focused in a few industries (finance, high technology, biotechnology, and so on) or a specific area (often the city or region surrounding the university). Nearly all finance models suggest that such narrowness ought to be offset by diversification in the remaining (endowment) portfolio. Discussants argued that, often, it is not. In fact, for reasons of proximity or because alumni sit on their boards, endowment managers frequently disproportionately invest in the *same* industries and geography in which the university is already disproportionately invested.

A final implication concerns the liquidity of the endowment portfolio. When the university's total portfolio is the unit of analysis, not only the liquidity of financial investments, but also the adjustment costs of intellectual investments must be considered. Several participants used financial aid to illustrate this point. In the years from 2000 to 2007, many universities very publicly and forcefully committed themselves to financial aid policies that were intended to increase the economic diversity of their student bodies. These policies could not be changed in the short term—both because the university had made commitments to students who had already been admitted and because backing away from these policies would generate mas-

sive losses of reputation. In other words, these policies greatly increased the adjustment costs associated with any attempt to increase tuition revenue. They *predictably* cause the universities to spend more on financial aid during any financial crisis or recession—since families have lower wealth and incomes and the policies are formulas based on wealth and income. Endowment managers seem not to have been advised, when these policies were undertaken, that they should respond by modifying their portfolios to create additional cash during financial and economic downturns. This was despite the fact that the implications of the financial aid policies were not at all difficult to quantify for any given change in US wealth and gross domestic product (GDP).

3. Many endowment managers and university leaders, such as presidents, have contracts that reward them for endowment growth (often relative to a small group of peer institutions) regardless of its implications for the university as a whole. Such contracts may lead them to take undue risks or keep money in the endowment even when the university is most in need of cash for its core intellectual activities. Indeed, in separate work, Brown, Dimmock, Kang, and Weisbenner (2010) show that universities respond asymmetrically to shocks to their endowments.¹ They save endowment returns during periods of high returns (apparently as a precaution against periods of low returns) but then cut spending during periods of low returns (making it unclear why they were saving in the first place). The same authors demonstrate that university leaders' endowment decisions are sensitive to the size of the endowment on the day they were appointed—suggesting that they do not wish to have the endowment fall below an artificial target.

In the discussion, there was widespread interest in more sophisticated contracts that might align managers' and leaders' incentives more closely with the objectives of the university. After all, an endowment portfolio does not have a single moment (average return on investment), but many moments that can be built into a contract.

4. Owing to the long period from the mid-1980s to 2007 when some university endowments earned spectacular returns on investments in nontraditional assets, some university leaders and trustees have come to expect such returns as a matter of routine. Discussants agreed that such expectations are now unrealistic because so many sophisticated investors with long horizons (e.g., sovereign wealth funds) now also invest in nontraditional assets. Illiquidity premia are falling and hedge funds are becoming more correlated with the S&P 500.

Looking Ahead

Each financial crisis causes university and endowment leaders to engage in some self-examination. For instance, the bursting of the “tech bubble” in

1. Brown et al. (2010).

2000 caused some universities to alter their investment policies. However, it is unclear whether most universities took away larger lessons: it is much easier to plan for the last crisis than for future ones. Participants were optimistic that, through forums such as the NBER's conference, greater analytic firepower could be focused on endowment management and more could be learned from the recent financial crisis and recession than from previous events.

How Universities, Their Donors, and State Governments Responded to the Financial Crisis and Recession

The second half of “How the Financial Crisis and Great Recession Affected Higher Education” focused on how universities, their donors, and state governments responded to the financial crisis and recession. Researchers also examined how universities reacted to federal stimulus spending that was intended to counteract the recession. The papers were followed by discussions led by Mike Knetter (president, University of Wisconsin Foundation), Lawrence Bacow (president emeritus, Tufts University), Nancy Cantor (chancellor and president, Syracuse University), Stanley Ikenberry (president emeritus, University of Illinois), John Etchemendy (provost, Stanford University), and Scott Evans (senior advisor at TIAA CREF).

The discussions in this part of the conference revealed substantial stresses on universities. These “fault lines” apparently existed before the financial crisis and recession, but these economic tremors opened the fault lines and made the stresses more obvious for all to see. We describe these stresses after a brief summary of each paper.

Key Finding from the Chapters on Universities', Donors', and State Governments' Responses to the Financial Crisis and Recession

Jeffrey R. Brown, Stephen G. Dimmock, and Scott Weisbenner, in “The Supply of and Demand for Charitable Donations to Higher Education,” investigate how donations to universities change when their economic circumstances change. Using panel data from 1997 to 2009, they employ university fixed effects to eliminate the relatively constant characteristics of each school and to focus on the *fluctuations* in each school's circumstances. They also take on the difficult task of separating changes in the supply of donations from changes in the demand for donations.

Using incomes and house values in the state where the university is located as shocks to the *supply* of potential donations, Brown, Dimmock, and Weisbenner find that donations to universities decrease when their alumni and other local donors (businesses, philanthropies) have reduced financial capacity to make gifts, such as during the Great Recession. Interestingly, it is capital donations that are most sensitive to the economic well-being of the donor base. Using large negative endowment shocks to identify a university's *demand* for donations, the authors find that donations—but especially

donations earmarked for current use—increase when a school is short on cash. In short, while the scale of donations over the long run may be a function of a school's fundamental characteristics and activities, the timing and nature of the donations responds to current economic circumstances. There is substantial evidence that universities attempt to smooth their cash flow from donations by shifting between capital and current-use gifts.

Sarah E. Turner, in “The Impact of the Financial Crisis and Faculty Labor Markets,” examines one margin along which universities can cut costs during times when budgets are tight: faculty salaries. Interestingly, it is not at all obvious that this is a sensible margin on which to cut since student demand for higher education is often *countercyclical*. That is, enrollments usually rise at postsecondary institutions during recessions. Thus, even without cuts to the number of faculty or to their real salaries, the instructional work per dollar spent on faculty tends to rise during recessions.

Turner finds that institutions differed in their responses to the financial crisis and recession. Public institutions suffered more from the long-lived depression of state government budgets than from the relatively short-lived financial crisis. Thus, they have reduced faculty hiring and real earnings for several years in succession. Well-endowed private institutions, which suffered sharp but ultimately short-lived shocks to their endowments, tended to freeze faculty hiring and salaries for two or three years. Their hiring recovered by 2010/11, and some private institutions even benefitted from the economic downturn by “poaching” desirable faculty from the still-struggling public institutions.

Turner finds little evidence that institutions used the crisis to eliminate their oldest faculty (e.g., through early retirement or similar inducements), thereby allowing them to continue hiring new, young faculty. More generally, she concludes that the financial crisis and Great Recession have widened the differences between private and public institutions and between the experiences of older and younger faculty. It is worth noting that not only Turner but also Brown, Dimmock, Kang, and Weisbenner (2010) find evidence that suggests that faculty, not administrators, bear the brunt of payroll cuts during times when universities are in fiscal stress.

In “The Financial Crisis and College Enrollment: How Have Students and Their Families Responded?” Bridget Terry Long begins with the observation that previous recessions have caused college enrollment to *increase*. This is apparently because the opportunity costs are a very important part—for most students, the dominant part—of the total cost of attending college. That is, during a period when the labor market is buoyant and young people can obtain jobs, the cost of foregone wages greatly exceeds the tuition and fees associated with college—except for a small number of affluent, high-aptitude students who attend expensive colleges and pay full tuition. If, during a recession, the wages or jobs available to young people fall, their opportunity cost may drop—possibly dramatically.

However, we do not *necessarily* expect college enrollment to rise during recessions. Family incomes and wealth (especially housing wealth) may fall, reducing students' ability to pay tuition and fees. State governments, faced with falling tax revenues and rising demands for social insurance often reduce appropriations to public colleges and universities. The universities may raise tuition and fees in response, just at the time when students are least able to pay it.

Long studies the response to the Great Recession using a detrended difference-in-differences approach. She allows each college enrollment and households' college-related expenditure to be on a separate trend before the Great Recession. She then estimates the change from that trend for states that had either a light or a heavy experience of the recession. A state is judged to have a heavy experience if its unemployment rate rose disproportionately or its house prices fell disproportionately. She shows that the Great Recession, like previous recessions, increased college enrollment. However, in a change from previous recessions, Long finds that students paid distinctly *higher* tuition during the Great Recession.

Why might students have paid unusually high tuition during the Great Recession, especially relative to previous recessions? Eric Bettinger and Betsy Williams, in "Federal and State Financial Aid during the Great Recession," show that federal financial aid may be a cause. The growth in expenditure for the federal Pell grant was 134 percent over just three years, an enormous and unprecedented increase.

Bettinger and Williams describe state governments in "a perfect storm" in which they saw federal funds, and the Pell grant in particular, as their rescuer. Specifically, they study whether states decreased state financial aid when they saw their students receiving increased federal financial aid. They find that about 50 percent of states did this. Their fascinating case study of Ohio shows that, for many Ohio students, every extra dollar of federal aid caused them to lose a dollar of state aid.

Bettinger and Williams show that states did not offset federal aid prior to 1990: indeed, states previously complemented increases in federal aid. Since 1990, however, states have greatly expanded the generosity and coverage of their Medicaid programs. Whereas Medicaid accounted for only a small share of state budgets in the last major recession of 1981–1983, by 2007 it accounted for a massive share of most states' budgets. Since Medicaid payments automatically rise when family incomes fall, states may have cut higher education spending disproportionately to keep Medicaid funded. Moreover, during the boom years of the 1990s and the first decade of the twenty-first century, most states systematically underfunded their public employees' pension systems. Mandatory pension payouts rose just when their tax revenue fell—again, force putting pressure on higher education spending. Finally, most states' spending on public primary and secondary education is now governed by state supreme court

decisions, making it harder to cut that spending than to cut higher education spending.

A massive increase in Pell grant spending was part of the federal stimulus package that was intended to prop up demand and thereby pull the economy out of recession. However, the stimulus affected higher education not just through financial aid, but also through spending on research, which grew by about 20 percent in just two years. In “Did the Fiscal Stimulus Work for the Universities?” Michael F. Dinerstein, Caroline M. Hoxby, Jonathan Meer, and Pablo Villanueva examine how public and private institutions responded to the large, stimulus-driven increases in their revenue from federal sources. They focus on research universities because they received the vast majority of stimulus-driven research revenues and a substantial share of stimulus-driven aid revenues. Because the amount of stimulus revenue that a university received might be endogenous to its circumstances in the recession, the authors’ instrument for each university’s receipts with what it would have received if its share of each federal agency’s spending remained the same, but each agency’s spending went up by the percentage that it actually did.² Since some agencies’ spending increased much more than others’, different universities experienced very different stimulus-driven windfalls.

Dinerstein, Hoxby, Meer, and Villanueva show that private and public universities responded quite differently to stimulus windfalls. Private universities appear to have used the windfall revenue much like they would use a dollar of unrestricted revenue. That is, they implicitly held back some research funds that they would have spent and instead spent the federal money. The held-back funds could then be used to keep tuition from rising, limit unusually high payouts from the endowment, and so on. This is a partial flypaper effect: some, but not all, of the money “stuck where it landed.” Economic analysis predicts that a partial flypaper effect will be the result if an institution is trying to spend new revenue optimally, but is constrained somewhat by the restrictions associated with the revenue.

The authors find that public universities reacted to stimulus windfalls in a very different and extremely interesting manner. They appear to have used the funds as the basis of a renegotiation with their state legislatures—with the result that they gave up revenues from state appropriations but gained autonomy over their spending, the right to raise tuition, and the right to admit more out-of-state students (who pay much higher tuition and have higher scores than in-state students). It is as though they said to their legislatures, “We know that you are short on cash and would like to reduce our appropriation. Because we currently have the capacity to bring in revenue from sources such as federal research funds, we will not protest much about the reduced appropriations *if* you give us the power to spend our budget more as we like, allow us to raise tuition (since our institutions are in excess

2. This is a shift-share or Bartik instrument. See Bartik (1991).

demand), and allow us to admit more ‘paying,’ high-aptitude students from out-of-state.”

Themes That Emerged from the Discussion of Universities’, Donors’, and State Governments’ Responses to the Financial Crisis and Recession

No one who heard the panel discussions would conclude that the life of a university leader is easy. Some key points, many of which emphasized the stresses facing universities, were as follows:

1. There was some debate about whether the financial crisis and recession should be considered an opportunity for “creative destruction” or just plain destruction. Creative destruction is the idea that, in times of fiscal or other stress, organizations make hard decisions that ultimately raise their productivity. The discussants agreed that most universities needed some creative destruction of programs that were obsolete, “white elephant” construction projects, some unproductive faculty members, outdated administrative units, frills for students that did not actually improve their college experience, and so on. Discussants were less agreed about whether such creative destruction was practicable. Private university leaders tended to think that it was very difficult owing to tradition, faculty governance, and alumni and donor preferences. However, they usually agreed that *some* of what had been eliminated during the recession was productivity enhancing. Public university leaders tended toward the view that destruction was occurring without much of it being productive. They argued that, in responding to the crisis, public universities were even more constrained than private ones. For instance, leaders might be able to see how their staff ought to be restructured and reduced, but they were forced to shrink payroll through furlough days rather than differentially reducing more days for less productive faculty and staff.

2. A theme that recurred throughout the discussion was that public and private universities seem less and less alike—owing to their differences in governance, constraints, and sources of revenue. Private universities are concerned about financial market returns because they rely on endowment- and donor-based revenues. Private university leaders also emphasized how difficult it was for them to maintain their precrisis commitments to financial aid in the face of declining family income. Public universities were more focused on the degree to which they could and should raise tuition, enroll out-of-state students, and induce appropriate faculty and staff retirements. It is stressful for them to know that—without having the same autonomy—they have to compete with private universities for students, faculty, and research funding. Public universities also face a somewhat different crisis than the private ones faced. Private universities, especially highly endowed ones, were sharply struck by the financial crisis, but recovery from that crisis has been fairly quick as asset markets recovered their value. In contrast, public universities’ finances are more driven by the recession, with its consequences

for state tax revenues, family incomes, and pressures on appropriations. The period of slow growth in incomes continues and may last for several more years.

The notion that public and private universities face fundamentally distinct pressures fits neatly with the evidence. For instance, Bettinger and Williams find that many *public* universities' student aid fell as federal aid increased. There is no indication that something similar occurred at private universities. Turner suggests that private universities "poached" top faculty from public universities during the recession. Dinerstein, Hoxby, Meer, and Villanueva find that public and private universities responded to stimulus windfalls very differently.

3. Several discussants emphasized that, even within the private sector, there are widening differences between universities that rely on endowment returns and those that have such small endowments that their returns are hardly relevant. Even though endowment returns may never return to the heady rates of the 1990s and 2001–2006, a university leader ultimately has more discretion over endowment revenue than revenue from tuition. After all, a decision to raise the endowment payout rate involves fewer people and less public scrutiny than a decision to raise tuition.

Moreover, as made clear by Brown, Dimmock, and Weisbenner, universities that rely on gifts have ways to smooth their cash flow that are probably not available to institutions that rely almost entirely on tuition revenue.

4. There was widespread agreement that, at present, universities face headwinds. They are a popular "punching bag" for politicians and journalists, who often do not differentiate among institutions with excellent student and research outcomes and institutions with poor ones. Universities are increasingly called upon to demonstrate that their costs are justified by correspondingly high returns, but measuring the total social returns is very difficult. All institutions receive blame for the student debt crisis even though the vast majority of the defaulters attended nonselective institutions, especially nonselective for-profit schools.

Nearly all postsecondary leaders are excited about the potential of online education, but they do not yet see the financial model in which online education is compatible with on-campus education that is rich in student-faculty contacts and faculty research. They worry that online education may destroy the viability of in-person education much as online media have eliminated much of the traditional media like newspapers. While online media may be a reasonable substitute for traditional media, most discussants believed that substantial human capital would be lost if in-person education were largely destroyed by online education.

While the researchers did not claim that they could remedy the aforementioned problems, there was general optimism that research could help higher education to focus on its actual problems. For instance, the researchers suggested that they might be able to remedy the problem of measuring

returns to the education at many institutions by examining data on earnings, occupations, and a variety of other life outcomes. This may not be possible immediately—owing to the need for government data that are not currently available—but it is something that can be tackled. Reasonably accurate measure of returns would at least focus scrutiny on the institutions where returns are low. Student debt would similarly benefit from research that focuses policy and scrutiny on those students and institutions that are most involved. The immediate (partial equilibrium) effects of online education can be analyzed rigorously with randomized control trials. The (general equilibrium) effects of online education on the market for higher education can be modeled rigorously, much in the same way economists would model entry in other markets. Such modeling may not produce precise predictions, but it would almost certainly focus attention on key parameters such as the employers' rewards for skills acquired online versus in person.

Looking Ahead

In short, there was a general sense that more economic research was needed on an array of issues in higher education. It appears that university leaders are both able and eager to digest such research, especially if it is designed to be relevant to them. We believe that the research is most likely to be relevant and digested if conversations among economists and university leaders, like the ones at the NBER conference associated with this volume, continue.

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