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A Value-Added Perspective on Higher Education

Michael Simkovic*

Higher education should not be evaluated based on good or bad outcomes, but rather based on value added. Education can add substantial value even while producing unappealing outcomes, because those outcomes may still be better than realistic alternatives after considering heterogeneity in student populations. Conversely, education can fail even while producing attractive outcomes if a realistic alternative could have added more value.

Patients entering the intensive care unit (ICU) of a hospital are likely to die much sooner than individuals who never walk into a hospital. This is not because ICUs kill people, but rather because sick people come to hospitals seeking medical attention. The sickest are moved to the ICU, where they can receive the higher cost and higher quality treatment they need.

If hospitals were evaluated based purely on outcomes, without taking into account differences in patient health before they walked in the door, the best hospital in the country would be the one that only treated people who were healthy. The worst hospital in the country would be one that treated patients with the most serious conditions and the greatest need for healthcare. If a hospital wanted to move up the rankings, it would behoove that hospital to find and treat only the healthiest patients while avoiding those who actually needed healthcare.

Imagine if raw outcomes not only determined rankings, but if these rankings in turn determined the resource available to each hospital. Over time, the hospitals that served the healthiest patients would have the most resources, while the hospitals that served the sickest patients would have the fewest.

Although this approach to evaluating healthcare providers may sound perverse, it is a close approximation of the approach that is routinely used to evaluate institutions of higher learning.

Elite institutions—those that serve primarily students with high standardized test scores, excellent primary and secondary schooling, strong motivation, and rich,

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powerful, and well-connected families—are assumed to add the most value. This is because their students have the best outcomes: the highest completion rates, the best chances of finding a job, the highest pay, the lowest debt burdens, and the lowest chances of defaulting on their debts. Because of the perception that good outcomes are *caused* by elite institutions, elite institutions can charge the highest tuition, offer the least scholarship, and still attract the best students. Because elite institutions have the most resources, they can attract the best faculty and staff, build the best facilities, and provide a very high quality education. But the kinds of students elite institutions serve would arguably have equally good outcomes if those students attended less selective but equally well-resourced institutions.¹

Conversely, many institutions' graduates have less attractive outcomes—lower completion rates, lower employment rates, lower pay, higher debt burdens, and higher student loan default rates.² These institutions are often assumed to do less to help their students, even though these institutions typically serve students who faced many challenges before they arrived at college or graduate school—lower standardized test scores, weaker academic preparation, lower levels of motivation, and less educated and wealthy families.³ It is far from clear that such students would have better outcomes if they could have attended a more selective institution with similarly limited resources. But because poor outcomes for these students are perceived to be *caused* by the institutions they attend, the institutions that serve them have a harder time attracting students and must offer their services at a lower price—lower tuition, or higher discount, rates. As a result, these institutions have fewer resources and struggle to improve the quality of services they can provide.

Evaluating institutions of higher learning based on the final product—a combination of incoming credentials of students and value added—makes sense in some contexts. For example, employers may simply want to hire the best employees available for any given wage. They do not care whether those employees are the best because of the value added by an educational institution or because those employees had pre-education characteristics that made excellence a foregone conclusion.

But evaluating institutions of higher learning based on outcomes, as opposed to value added, makes far less sense for prospective students and for policy makers when private and public sources pay for education and expect it to provide some value in return (however they define value). It does not necessarily make sense for institutions with the best incoming students and the best outcomes to charge the highest prices and have the most resources because those institutions may not always add the most value. Similarly, institutions with bad outcomes that serve

1. E.g., Stacy Berg Dale & Alan B. Krueger, *Estimating the Payoff to Attending a More Selective College: An Application of Selection on Observables and Unobservables*, 117 Q.J. ECON. 1491 *passim* (2002); Stacy Dale & Alan B. Krueger, *Estimating the Return to College Selectivity Over the Career Using Administrative Earnings Data passim* (Nat'l Bureau of Econ. Research, Working Paper No. 17159, 2011), <http://www.nber.org/papers/w17159> [<https://perma.cc/E9Y6-VTHY>].

2. David J. Deming et al., *The For-Profit Postsecondary School Sector: Nimble Critters or Agile Predators?*, 26 J. ECON. PERSP., Winter 2012, at 139, 155, 159.

3. *Id.* at 146.

riskier students may add a great deal of value compared to the alternative and should not necessarily charge the lowest prices or have the fewest resources.

Education consumes resources. It also provides value. The critical question is whether the marginal value provided is greater than marginal costs, and where the next dollar of investment can do the most good.⁴

Shifting from an approach that focuses on outcomes to an approach that focuses on value added can help us conduct the kinds of analyses that can answer critical questions for students, educators, and policy makers.

A value-added approach depends fundamentally on recognizing that different institutions serve different populations of students, and that many factors besides differences in quality of education contribute to differences in outcomes. To understand the quality of education, we must understand how differences in student characteristics, macroeconomic conditions, or other factors affect student outcomes.

The relevant question is not, “Will education make this student as or more successful than another student?” Instead, the relevant question is, “Will this student be more successful with more education than he or she would have been with less?” A large body of research focusing on identical twins routinely shows that the twin with more education earns more than the twin with less.⁵ But increased income is not enough. The increase must justify the costs of additional education.

Another important question is whether a particular kind of education or a particular institution provides the greatest value to a particular kind of student. In other words, it may be impossible for a single linear ranking of institutions to reflect the relative value of each of those institutions to all potential students. Different rankings that are tailored to different segments of the student population may be more sensible.⁶

4. This applies not only to education, but also to all public and private investments. If the marginal return to education is higher than the marginal return to other investments, more resources should be shifted toward education. Michael Simkovic, *The Knowledge Tax*, 82 U. CHI. L. REV. 1981 (2015).

5. See, e.g., Orley Ashenfelter & Alan Krueger, *Estimates of the Economic Return to Schooling from a New Sample of Twins*, 84 AM. ECON. REV. 1157, 1171–72 (1994) (estimating from a sample of identical twins that an additional year of schooling increases wages by 12% to 16%, and reporting that this is probably not due to differences in innate ability); Dorothe Bonjour et al., *Returns to Education: Evidence from U.K. Twins*, 93 AM. ECON. REV. 1799 *passim* (2003); Colm Harmon & Ian Walker, *Estimates of the Economic Return to Schooling for the United Kingdom*, 85 AM. ECON. REV. 1278, 1284 (1995); Paul Miller et al., *What Do Twins Studies Reveal About the Economic Returns to Education? A Comparison of Australian and U.S. Findings*, 85 AM. ECON. REV. 586, 597 (1995); Oddbjørn Raalum & Tom Erik Aabø, *The Effect of Schooling on Earnings: Evidence on the Role of Family Background From a Large Sample of Norwegian Twins*, 26 NORDIC J. POL. ECON. 95, 110 (2000); Cecilia Elena Rouse, *Further Estimates of the Economic Returns to Schooling from a New Sample of Twins*, 18 ECON. EDUC. REV. 149, 156 (1999); cf. David Neumark, *Biases in Twin Estimates of Returns to Schooling*, 18 ECON. EDUC. REV. 143, 144 (1999) (discussing how within-twin estimates may result in an upward bias).

6. For example, the value added by a law degree may typically be higher for students who majored in humanities and social sciences than for students who majored in STEM subjects, although both groups seem to benefit relative to a terminal bachelor's degree. MICHAEL SIMKOVIC & FRANK MCINTYRE, *VALUE OF A LAW DEGREE BY COLLEGE MAJOR* (2016), <http://papers.ssrn.com/>

Assuming declining marginal returns to education and increasing marginal costs, the optimal level of investment in education, both for the individual and for society as a whole, is the point at which the marginal return and marginal cost of additional investment in education are equal.

What this means is that at the optimal level of investment in education, there will be marginal students whose education costs them roughly about as much as the benefit it provides. If outcomes were perfectly predictable, the last student educated would be the one for whom education provided just as much benefit as it cost (or just slightly more benefit than cost). But because of variability in outcomes that is not predictable *ex ante*, an *ex ante* efficient level of investment in education will lead to marginal cost and marginal benefits being equal only in expectation. *Ex post*, some students will pay more than the value they receive.

Similarly, there will be marginal institutions where the benefits of education will be roughly equal to the costs, with some students gaining from their educations and some students losing. As long as there is no other institution that could take those same students and provide a higher benefit at equal cost, or an equal benefit at lower cost, then such institutions must exist for there to be an efficient level of investment in education. Although policy makers might be tempted to shut down such a marginal institution, that would be a mistake. It would lead to inefficient underinvestment in education.

Some may wonder how it is possible to simultaneously have underinvestment in education and also have highly educated individuals who are unemployed.

Some unemployment is necessary in a market economy to facilitate matching of employers and employees.⁷ Keynesian economists speak of a “natural rate of unemployment” and more mainstream macroeconomists discuss tradeoffs between unemployment and inflation, accepting that neither unemployment nor inflation can be reduced to zero.⁸ Just as equipment or machinery generally cannot be utilized

abstract=2742674 [https://perma.cc/DD4K-3XD9] (last visited Mar 29, 2016). Among law degree holders, those with STEM backgrounds still have higher total earnings than those with humanities or social science backgrounds. *Id.*

7. Edmund S. Phelps, *The Origins and Further Development of the Natural Rate of Unemployment*, in *THE NATURAL RATE OF UNEMPLOYMENT: REFLECTIONS ON 25 YEARS OF THE HYPOTHESIS 15* (Rod Cross ed., 1995); Mary C. Daly et al., *A Search and Matching Approach to Labor Markets: Did the Natural Rate of Unemployment Rise?*, 26 J. ECON. PERSP., Summer 2012, at 3; Chinhui Juhn et al., *Why Has the Natural Rate of Unemployment Increased over Time?*, BROOKINGS PAPERS ECON. ACTIVITY, 1991 no. 2, at 75, 138; Edmund S. Phelps, *Phillips Curves, Expectations of Inflation and Optimal Unemployment over Time*, 34 *ECONOMICA* 254, 256 (1967); Thomas J. Sargent, *Rational Expectations, the Real Rate of Interest, and the Natural Rate of Unemployment*, BROOKINGS PAPERS ECON. ACTIVITY, 1973 no. 2, at 429, 464.

8. Kungiga. Vetenskapsakademien: The Royal Swedish Academy of Sciences, *Edward Phelps's Contributions to Macroeconomics*, NOBELPRIZE.ORG (Oct 9, 2006), http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/2006/advanced-economicsciences2006.pdf [https://perma.cc/Z4NW-HC5T].

at full capacity 100% of the time, it would be rare to find an individual who will go through his or her entire career without a period of unemployment.⁹

Estimates of higher education earnings premiums can—and often do—incorporate periods of unemployment.¹⁰ The likelihood of unemployment and the length of unemployment are typically lower for those with higher levels of education than for those with lower levels of education, especially after controlling for age, experience, and other demographic characteristics.¹¹ Younger workers typically have higher unemployment rates than mid-career workers, but among the younger workers, those with higher levels of education are more likely to be employed.¹² This also holds true for experienced workers, and continued to hold for young graduates during the recent recession.¹³

A related question is how there can be underinvestment in education when some highly educated individuals are “underemployed”—that is, working in jobs that are typically occupied by individuals with a lower level of education than themselves and do not officially require their level of education.

Workers who appear to be “underemployed” or “overeducated” often need higher levels of education to obtain the same outcomes as some less educated workers. This is because the “overeducated” workers generally may have less helpful social connections or characteristics (other than education level) associated with lower earnings. Additional education helps compensate for these disadvantages.¹⁴

9. Stephen Nickell, *Education and Lifetime Patterns of Unemployment*, 87 J. POL. ECON. S117, S123–26, S125 tbl.6 (1979) (estimating at least one spell of unemployment lasting at least six months occurring between the ages of twenty and sixty for even well-educated individuals and multiple shorter spells of unemployment); Organization for Economic Cooperation and Development, *Business Tendency Surveys for Manufacturing: Capacity Utilization: Rate of Capacity Utilization: European Commission and National Indicators for the United States*, FRED ECON. DATA, <https://fred.stlouisfed.org/series/BSCURT02USM160S> [<https://perma.cc/V6CA-PVKD>] (last visited Mar. 12, 2017).

10. See Michael Simkovic & Frank McIntyre, *The Economic Value of a Law Degree*, 43 J. LEGAL STUD. 249, 277 (2014).

11. *Id.*; W. Craig Ridell & Xueda Song, *The Impact of Education on Unemployment Incidence and Re-Employment Success: Evidence from the U.S. Labour Market*, 18 LABOUR ECON. 453, 462 (2011); OECD, EDUCATION AT A GLANCE 2013: OECD INDICATORS 144–447 (2013), [https://www.oecd.org/edu/eag2013%20\(eng\)—FINAL%2020%20June%202013.pdf](https://www.oecd.org/edu/eag2013%20(eng)—FINAL%2020%20June%202013.pdf) [<https://perma.cc/DL2Z-4KNF>].

12. See MARTHA ROSS ET AL., BROOKINGS INST. METROPOLITAN POL’Y PROGRAM, UNEMPLOYMENT AMONG YOUNG ADULTS EXPLORING: EMPLOYER-LED SOLUTIONS, 1, 6–7 (2015), http://www.brookings.edu/~media/research/files/reports/2015/07/20-young-adults-jobs/bmpp_srvy_unemploymentyouth_july20.pdf [<https://perma.cc/X4P3-Y69G>] (describing employment and education trends between youth and middle age persons).

13. See Michael Simkovic, *Risk-Based Student Loans*, 70 WASH. & LEE L. REV. 527, 536 (2013); Jaison R. Abel & Richard Deitz, *Do the Benefits of College Still Outweigh the Costs?*, 20 CURRENT ISSUES ECON. & FIN., no. 3, 2014, at 1, 10.

14. See Peter Arcidiacono et al., *The Economic Returns to an MBA*, 49 INT’L ECON. REV. 873, 876 (2008) (“[A]dditional schooling could compensate for low workplace skills . . . [or fewer] job contacts—something those who do not choose to obtain an MBA may already have. . . . [There is] evidence of negative selection into business school”); Thomas K. Bauer, *Educational Mismatch and Wages: A Panel Analysis*, 21 ECON. EDUC. REV. 221, 228 (2002); Yuping Tsai, *Returns to Overeducation:*

After properly controlling for differences in earning potential prior to higher education, those with higher levels of education are more likely to be employed full time and earn more per hour of work, even including the underemployed.¹⁵

Labor economists have long rejected efforts to determine whether there is a “shortage” or “surplus” of education by reference to job openings or projections for specific types of jobs, instead favoring earnings premiums as the better measure.¹⁶ Job opening projections are notoriously inaccurate, and the benefits of education extend across multiple occupations and industries.¹⁷ Within every occupational category, those with higher levels of education typically earn more than those with less, including those who are underemployed.¹⁸

Holding all else equal, the more predictable that value added becomes ex ante, the smaller the proportion of students who will need to lose from investment in education ex post at an efficient level of investment.

Another implication is that it might be easier to approach the efficient level of investment in education if the government: first, helps pay for education to the extent it derives benefits from education such as higher tax revenue; and, second, provides insurance to mitigate unpredictable and uncontrollable risks of investment in higher education. Subsidies and public insurance should be structured so that the likelihood of any individual student actually losing money is minimized while in

A Longitudinal Analysis of the U.S. Labor Market, 29 ECON. EDUC. REV. 606, 606 (2010) (finding evidence from long term data that “overeducated status does not cause lower earnings”).

15. Simkovic, *supra* note 13, at 532–33. The relationship between level of education, wages, and employment holds true as education increases at each incremental level between grade school and a post baccalaureate professional degree. Thus, an associate’s degree holder will typically earn more and face lower risk of unemployment than a similar high school degree holder. A master’s degree holder will typically earn more and face lower risk of unemployment than a similar bachelor’s degree holder, and a PhD or Professional degree holder will typically earn more and face lower risk of unemployment than a similar Master’s degree holder. (On some measures, Professional degree holders outperform PhD holders, although those with PhDs typically have more years of schooling than those with Professional degrees.)

16. See Richard B. Freeman, *Is a Great Labor Shortage Coming? Replacement Demand in the Global Economy 3* (Nat’l Bureau of Econ. Research, Working Paper No. 12541, 2006) (“[BLS] [p]rojections of future demands for skills lack the reliability to guide policies on skill development.”); Michael W. Horrigan, *Employment Projections to 2012: Concepts and Context*, MONTHLY LAB. REV., Feb. 2004, at 3, 15–16 (“The general problem with [projections for] specific occupations over the next 10 years is the difficulty of projecting . . . dynamic labor market responses [Education earnings premiums] speak to a general preference on the part of employers to hire those with skills associated with higher levels of education.”); Frank McIntyre & Michael Simkovic, *Timing Law School*, 14 J. EMPIRICAL LEGAL STUD. (2017) (finding that BLS projected job openings for lawyers do not predict law graduate outcomes).

17. See David Neumark et al., *Future Skill Shortages in the U.S. Economy?*, 32 ECON. EDUC. REV. 151, 155 tbl.2 (2013); see also Simkovic & McIntyre, *supra* note 10, at 252 n.2 (finding a substantial law degree earnings premium, including 40% of law degree holders who were not practicing law).

18. Neumark et al., *supra* note 17, at 156 (“[F]or nearly every occupational grouping, wage returns are higher for more highly educated workers even when BLS does not categorize the higher level of education as required. For example . . . for management occupations, the estimated coefficients for [professional degrees] are all above the estimated coefficient for a Bachelor’s degree, which is the BLS required level.”).

expectation the marginal student provides benefits and costs to the government that are equal.

Another implication is that some outcomes that are often regarded as failures might still be adding value. If a student fails to complete a program of study, but the additional years of education he or she completed prior to dropping out improve his or her earning potential by more than those years' cost, then that education still adds value for that non-completing student. Conversely, completion may destroy value if the program completed has high costs and low benefits.

Similarly, student loan defaults are often regarded as a failure. But if the marginal benefits the government receives in the form of partial repayment of student loans, higher tax revenues, and lower social welfare spending exceed the cost of extending the loan in the first place, then the student loan is a success. Indeed, from the perspective of taxpayers, anything less than a 100% loss rate on student loans might be a success compared to full public funding for education because loans, unlike grants, will be at least partially repaid. Increasing public funding for education makes sense when the benefits to the public exceed the costs. Increased public funding might allow for a higher quality of education per student or enable more students to be educated. Either effect could benefit the public by increasing tax revenue, lowering social welfare spending, or providing some other public benefit. Conversely, even if student loans are repaid in full—for example, with help from family—but the program of education is costly and provides few benefits, the underlying degree could still be a poor private investment.

Still, another implication is that educational resources should not be allocated according to simple heuristics—the best outcomes, the worst outcomes, equal outcomes for all students—but rather, should be spent where they can provide the most value on the margin.

If our social welfare function prefers equality of incomes and not simply higher incomes for all, then we should still ask whether it might be more efficient to achieve greater equality through taxation and redistribution rather than through changes in the allocation of education spending. If the marginal returns to education really are higher for those from more privileged backgrounds, then, political economy permitting, more educational benefits could be directed toward the privileged, with redistribution handled through taxation and transfer programs.¹⁹

Another important implication is that the only way to determine whether education costs too much or too little is in reference to the marginal benefits of a dollar of additional education spending and the marginal costs of a dollar of spending cuts. If a dollar increase in tuition and education spending will increase the value of the education by a dollar and a penny, then tuition should go up. If a dollar cut in tuition will decrease the value of education by ninety-nine cents, then tuition should go down.

19. Louis Kaplow & Steven Shavell, *Why the Legal System Is Less Efficient than the Income Tax in Redistributing Income*, 23 J. LEGAL STUD. 667, 668 (1994).

The fact that higher education costs more than it used to cost several decades ago is neither surprising nor is it a cause for alarm. The value of education is also much higher today than it was several decades ago. Higher education earnings premiums are higher on an annual basis.²⁰ They likely last longer, since life expectancy among the educated is longer.²¹ Interest rates are lower,²² so the same stream of future benefits is worth more in present value terms.²³ Within race and institution type, completion rates have increased.²⁴ In sum, there are many signs that increases in the cost of education parallel increases in its quality and value added.

By contrast, stories about market or regulatory failures leading to runaway costs seem implausible given the very large number of educational institutions—literally thousands²⁵—and the decentralized regulation thereof through state accreditation agencies, and the intense competition between institutions for students. This competition often takes the form of competition on price through

20. Simkovic, *supra* note 4, at 2036 tbl.1, 2037 tbl.2.

21. Matteo Cervellati & Uwe Sunde, *Human Capital Formation, Life Expectancy, and the Process of Development*, 95 AM. ECON. REV. 1653, 1659 (2005); Seema Jayachandran & Adriana Lleras-Muney, *Life Expectancy and Human Capital Investments: Evidence from Maternal Mortality Declines*, 124 Q.J. ECON. 349 *passim* (2009); Ellen R. Meara et al., *The Gap Gets Bigger: Changes in Mortality and Life Expectancy, by Education, 1981–2000*, 27 HEALTH AFF. 350, 350 (2008); S. Jay Olshansky et al., *Differences in Life Expectancy Due to Race and Educational Differences Are Widening, and Many May Not Catch Up*, 31 HEALTH AFF. 1803, 1804 (2012); Emily Oster et al., *Limited Life Expectancy, Human Capital and Health Investments*, 103 AM. ECON. REV. 1977, 1997 (2013); Gopal K. Singh & Mohammad Siahpush, *Widening Socioeconomic Inequalities in U.S. Life Expectancy, 1980–2000*, 35 INT’L J. EPIDEMIOLOGY 969, 977 (2006).

22. FED. RES. BANK ST. LOUIS, BD. GOVERNORS FED. RES. SYS. (U.S.), *10-Year Treasury Constant Maturity Rate* [DGS10], <https://research.stlouisfed.org/fred2/series/DGS10/> [<https://perma.cc/3Z7C-JEY3>] (last visited Oct. 3, 2016).

23. Simkovic & McIntyre, *supra* note 10, at 278.

24. THOMAS SNYDER ET AL., NAT’L CTR. FOR EDUC. STATISTICS, U.S. DEP’T OF EDUC., *DIGEST OF EDUC. STATISTICS 2015*, at 679–84 tbl.326.10 (51st ed. Dec. 2016), <https://nces.ed.gov/pubs2016/2016014.pdf> [<https://perma.cc/Q7CX-UD4B>]; A.B.A., SEC. LEG. EDUC. ADMISSIONS BAR, *Enrollment and Degrees Awarded 1963–2012 Academic Years* (2014), http://www.americanbar.org/content/dam/aba/administrative/legal_education_and_admissions_to_the_bar/statistics/enrollment_degrees_awarded.authchec.kdam.pdf [<https://perma.cc/P522-PSSW>].

25. SNYDER ET AL., *supra* note 24, at 62 tbl.105.50.

scholarships.²⁶ Such competition can keep the costs of education down and lead to more of the surplus going to students.²⁷

Throughout this Essay, I have discussed “costs” and “benefits” without specifying what they mean. Although most people would probably agree that benefits include increases in earnings and costs include lower earnings while in school and paying tuition, many people would not consider those the only benefits and costs. According to some perspectives, they are not even the most important ones.

Whatever values are used to judge the costs and benefits of education, we need some way to trade them off against each other, unless one particular cost or benefit—and only one—is infinitely large. Reducing these costs and benefits to dollars makes tradeoffs possible.

Once we can measure costs and benefits, and once we think in terms of value added, causation, and tradeoffs, the process of making progress in higher education policy can begin.

26. See Lucie Lapovsky, *Institutional Financial Health: Tuition Discounting and Enrollment Management*, in 2 STUDY OF COLLEGE COSTS AND PRICES, 1988–89 TO 1997–98, at 57, 58, 71 (Alisa F. Cunningham et al. eds., Nat’l Ctr. Educ. Stat. 2001) (finding that the percentage of students who received institutional financial aid increased from 63.7% in 1990 to 79.4% in 1999 and predicting that competition among institutions of higher education will result in an increase in character-based aid); Gordon C. Winston, *Higher Education’s Costs, Prices, and Subsidies: Some Economic Facts and Fundamentals*, in 2 STUDY OF COLLEGE COSTS AND PRICES, 1988–89 TO 1997–98, at 117, 124–25 (Alisa F. Cunningham et al. eds., Nat’l Ctr. Educ. Stat. 2001) (“[T]he competition for student quality depends on a school’s position. That means, simply, that a school’s fortunes can change either because of what it does or because of what its competitors do. That, in turn, has all the characteristics of an arms race.”).

Almost all ABA-approved law schools offer at least some scholarships that cover half or full tuition. At twenty-five law schools, 30% or more of full-time students receive such large scholarships. 2014 LSAC OFFICIAL GUIDE TO ABA-APPROVED LAW SCHOOLS, https://officialguide.lsac.org/release/OfficialGuide_Default.aspx [<https://perma.cc/39BV-FLBC>] (last visited Jan. 14, 2014).

27. See Lapovsky, *supra* note 26, at 63 (finding that the discount rate—“defined as institutional financial aid dollars divided by the gross tuition and fee revenue”—has increased, on average, from 27.7% to 37.3% from 1990 to 1999); *id.* at 66 (“Institutional aid is an enrollment management tool. The granting of aid to a significant percentage of the class is necessary to fill the class with the number and quality of students needed, as most institutions are unable to enroll an adequate number of qualified students at their published price.”).

