

## Stop Paying More for Less: Ways to Boost Productivity in Higher Education

*By Thomas A. Garrett and William Poole*

Higher education has seen a decrease in productivity over the past decade. Spending by colleges and universities is increasing as they use more resources to educate each graduating student, but the quality of the graduate is not improving commensurately.<sup>1</sup> The American Association of Colleges and Universities reports the fall in the quality of students graduating from institutions of higher learning and says, "Public policies have focused on getting students into college, but not on what they are expected to accomplish once there."<sup>2</sup>

Economists define productivity, in the simplest terms, as a measure of output per unit of input. Productivity in education can be measured in terms of units, such as average class size, or it can be measured in terms of dollars, such as the quality or value to students relative to the cost of educating students. These definitions allow for an evaluation of how a change in costs, quality or quantities influences productivity in higher education. Productivity will increase if student quality increases more than the cost of educating students. Similarly, a reduction in costs while student quality remains the same or rises will also increase productivity.



How can institutions of higher learning reduce costs and increase student quality in an effort to increase productivity?

### **The Rise in College Costs**

College tuition has increased dramatically over the past decade, as seen in the table on the next page.<sup>3</sup> Between 1991 and 2003, inflation-adjusted undergraduate tuition and fees per student increased by 49 percent at public institutions and by 39 percent at private institutions. Tuition increases, adjusted for inflation, averaged 3.4 percent per year at public institutions and 2.8 percent at private institutions, higher than the average

annual rate of inflation of 2.5 percent. The increase in tuition and fees has also outpaced the growth of disposable personal income. Expenditures on higher education as a percentage of disposable personal income have increased from 1.07 percent in 1991 to 1.41 percent in 2004. Although this percentage may seem relatively low, the outlay for children's education is the second largest family expense, exceeded only by housing.

<b>The Cost of Higher Education</b>			
	<b>1990-1991 School Year</b>	<b>Recent School Year (year)</b>	<b>Percent Change (%)</b>
Public - Average Undergraduate Tuition and Fees Per Student <sup>a</sup>	\$1,964	\$2,928 (2003)	49.1
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Instructional Expenditure Per Student <sup>b</sup>	\$7,395	\$8,654 (2001)	17.0
Administrative Expenditure Per Student <sup>b</sup>	\$2,807	\$4,325 (2001)	54.1
Instructional Expenditures as a Percent of Total Expenditure <sup>b</sup>	36.3%	34% (2001)	- 6.8
Administrative Expenditure as a Percent of Total Expenditure <sup>b</sup>	13.7%	17% (2001)	24.1
Percent of Students Receiving Financial Aid <sup>c</sup>	60%	74% (2000)	23.3
Percent of Tuition Covered by Financial Aid <sup>c</sup>	47%	54% (2000)	14.9
Tuition as a Percentage of Disposable Income <sup>c</sup>	1.07%	1.41% (2004)	31.8
Note: Data are in most recent year dollars. All expenditure and tuition data are from the National Center for Education Statistics, Digest of Education Statistics, 2003. Tuition as a percentage of disposable income is from the U.S. Census Bureau of Economic Analysis. Financial aid data are from NCES Report: A Decade of Undergraduate Student Aid 1989-90 to 1999-2000.			
<sup>a</sup> full-time student equivalents, two-year and four-year institutions			
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College tuition is rising rapidly for several reasons.<sup>4</sup> One is an increase in university costs. Total inflation-adjusted expenses at public universities increased by 28 percent between 1990 and 2000. The relative lack of a "bottom line" in public higher education compared to private sector enterprises reduces pressure to adopt cost-saving policies and procedures. This can result in the continued existence of excessive staff and unpopular academic programs or research centers, often coming at the expense of student instruction. For example, instructional expenditures as a percent of total expenditures at public institutions have decreased from 39 percent in 1977 to 34 percent

in 2001. In addition, administration expenditures increased from 30 percent of instructional expenditures in 1976 to 50 percent in 2001. More alarming is the fact that, while inflation-adjusted instructional expenditures per student increased by 17 percent between 1990 and 2001, administrative expenditures per student increased by 54 percent over the same period, as shown in the table.

Another reason for tuition increases is the recent recession and ensuing state budget crises. Fourteen states reduced state appropriations for higher education between fiscal years 2002 and 2003.<sup>5</sup> In response to state budget cuts for higher education, colleges and universities increased tuition by an average of 10 percent nationally between 2002 and 2003. This recent tuition increase was nearly double the average annual increase over the past decade.

Financial aid, including loans, may be another reason for tuition increases. The use of financial aid by universities is a form of price discrimination, meaning universities increasingly charge different tuition to different students, depending on ability to pay and university efforts to recruit students with special academic or athletic skills. Thus, more students can attend places of higher education than could otherwise. But, there has been almost no discussion of productivity enhancements that might constrain increasing university costs and, thus, tuitions that arise in part from the increase in student enrollments caused by financial aid.

As seen in the table, the percentage of students at four-year universities who received some financial aid increased from 60 percent in 1990 to 74 percent in 2000. Financial aid is now covering a larger percentage of tuition expenses. For example, financial aid covered 47 percent of tuition at four-year universities in 1990 compared with 54 percent in 2000. However, only some of the recent tuition increases have been offset by increases in financial aid.

### **Starting Points for Policy**

How can universities reduce costs and increase student quality in an effort to boost productivity? Before addressing this question and before any cost-saving or quality-enhancing policies can be implemented, legislators and education officials must first address several issues. These are 1) defining the objectives of the college or university, 2) defining productivity inputs and outputs, 3) measuring productivity and 4) demonstrating productivity improvements.<sup>6</sup> Once these issues are addressed, strategies to enhance productivity can be implemented.

### ***Defining Objectives***

Objectives of the university may include increasing student quality, increasing access and diversity, achieving greater cost-efficiency, making a better contribution to the needs of the community and improving basic research. University officials and state legislators may have divergent views regarding the top objectives of a university, but both groups typically agree that improving student quality is the most important higher-education objective.

## ***Defining Productivity***

While the economist's general definition of productivity, namely outputs relative to inputs, is straightforward, the definition is too simple to guide management strategies aimed at increasing productivity. A more thorough definition of productivity recognizes that productivity can be divided into two parts: efficiency and effectiveness. Efficiency refers to the level and quality of service that can be obtained given an organization's fixed resources. Thus, an organization is considered more efficient if it can increase the level or quality of service without increasing the amount of inputs used. Effectiveness, on the other hand, refers to how well an organization meets the demands of its customers. The customers in higher education are students, parents, employers and state legislatures. Customer demands may include such outcomes as a specialization of knowledge in a specific area, career assistance and job placement and, probably most important, the graduation of well-educated and productive students.

Thus, improving productivity in higher education requires undertaking measures that increase efficiency and effectiveness. Measures to cut costs, as universities across the country have done in the wake of the recent recession and state budget crises, only address the cost-efficiency dimension of productivity. Sound management practices to improve productivity in higher education must also look at the effectiveness of the organization, be it an academic department or the entire university.

## ***Measuring Productivity***

Productivity measurement is difficult in most service industries, and education is certainly no exception. In education, administrators need to be wary of simple measures such as the number of students per faculty member. While some observers may assume that quality "must" be higher when the student-faculty ratio is lower, a class of 25 is likely to be better than a class of five because of student interaction. In any event, it is important to measure output directly and not make assumptions about what "must" be the case when studying productivity.

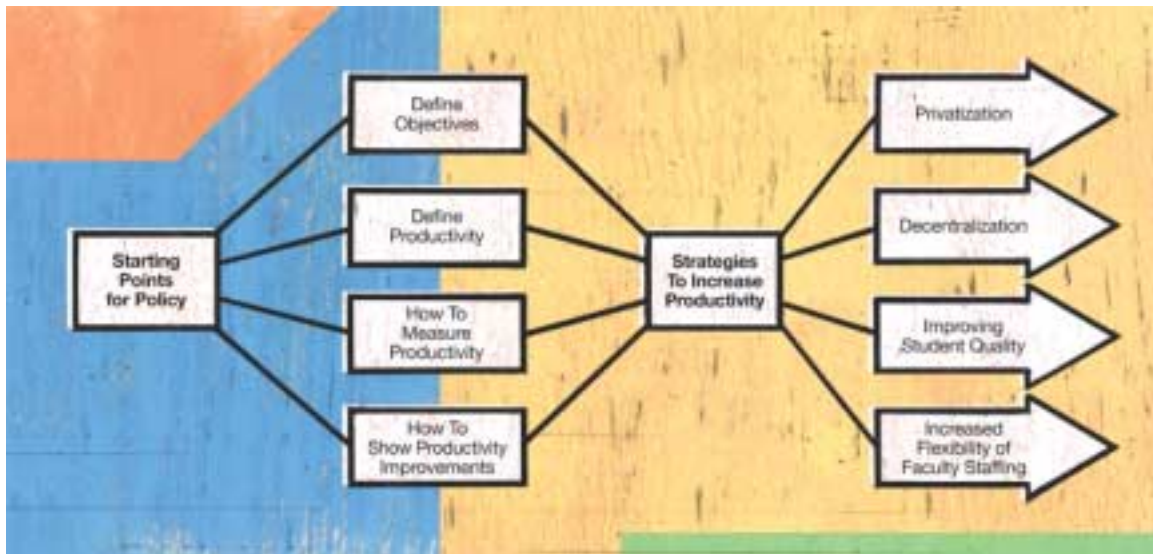
Before any measurement of productivity can occur, administrators need to decide what level or levels of the organization's productivity should be measured. For example, should a university measure the productivity of an individual faculty or staff member, or should it measure the productivity of an academic department or of the university as a whole? All are relevant and should be measured. An important point in measuring productivity is that measures should not be constructed prior to setting goals and objectives—doing so will lead administrators to value something that is measurable rather than measuring something that is valuable.

Measuring productivity in higher education requires a measure of both efficiency and effectiveness. Efficiency is often measured using ratios, such as physical output relative to an input or dollar cost of an input relative to an output. The exact efficiency measure used depends upon the objective set by the administration.<sup>7</sup> Efficiency ratios such as enrollment per section or contact hours per faculty member are reasonable and useful. An objective of improving students' progress toward a degree requires measures such as a withdrawal rate and average course load. Examples of cost-efficiency measures include instructional costs per student, library expenditures per student and administrative costs per student.

Measuring effectiveness can be difficult. One way is to assess community or client conditions and to benchmark them relative to community standards or those standards of other institutions of higher learning. An example could be the number of graduates who find a job within three months of graduation. Another option is to measure accomplishments, such as the number of graduates or the percentage of students taking a class that requires relatively advanced work, such as a technical research paper. The number of graduates going on to receive advanced degrees is another such measure. Finally, client satisfaction is an avenue to measure effectiveness. Clients can include alumni or businesses that frequently hire a university's graduates.

### ***Showing Productivity Improvements***

Demonstrating productivity improvements can be done in several ways.<sup>8</sup> One is to show an increase in revenue or participation that results from efforts that did not require an increase in tuition, fees or taxes. Another is to show a significant increase in effectiveness, such as the employment rates of recent graduates, without increasing costs or using additional resources. Numerous measures are possible, and each university should concentrate effort on those that best fit its own circumstances.



### **Strategies To Increase Productivity**

Many of the strategies for increasing productivity require changes in the administrative culture and in the mind-set of faculty and administrators. These strategies include privatizing services, decentralizing the bureaucracy, improving student quality and increasing the flexibility of faculty. Attempts to implement these strategies may be met with resistance or even legal challenges from the various professional organizations and associations that support faculty and administrators.

#### ***Privatization***

One way of increasing the cost-efficiency of higher education is through the privatization of certain services.<sup>9</sup> Most universities are vertically integrated; they not only provide education but also provide food service, student and faculty housing, cleaning and



maintenance, and records management. Although these services contribute to student learning, there is no reason why these services cannot be performed by private contractors.

With vertical integration, the full costs of inside staff, such as their wages and benefits, may be accounted for in other budget or service categories, thus making it difficult to assess the full costs of a certain service. The fees charged by outside contractors, however, will more clearly represent the full cost of providing a particular service. In addition, competitive pressures will increase the likelihood that private contractors will provide an efficient quantity and quality of labor for each service.

An issue that arises regarding the privatization of various university services is student employment. Currently, many students work for universities as library assistants, food preparers and custodians as part of a financial aid arrangement. Privatization may result in a reduction of staff, forcing some students to find alternative financial aid. However, even if students cannot find other jobs on campus or even off campus, concern over student employment ought to be minimal relative to concern over the growing costs of universities.

### ***Decentralization***

Privatization is part of the larger strategy of decentralizing the administrative structure. Although decentralization frequently occurs in the private sector, universities have generally not followed suit. One of the biggest criticisms of centralized administrative structures in universities is that administrators can generally add staff without having to justify the additions to anyone except other administrators.[10](#)

Decentralization can result in several benefits for universities. First, academic departments will have more control over their costs and staffing needs. As a result, departments will be better able to adapt to students' changing needs. The experience of many faculty is that universities provide too little in the way of support staff for faculty, thus forcing faculty to perform clerical duties. If individual academic departments had more control over their own budgets, they might decide to replace a faculty position with several support staff to improve efficiency. At the same time, administrators would have to resist the temptation to cut support staff in times of budget stringency. Creating a structure that gets the incentives right is not easy, but such a structure will be an essential feature of longer-run reforms to improve efficiency.

A case study of successful administrative decentralization at Antioch University provides some insights into the challenges of decentralization.[11](#) One such challenge was that a centralized administration had to reach a decision to decentralize the administration itself. The administration realized that decentralization was, in Antioch's case, the only real way to control costs. Another challenge was to realize and accept that some important senior and middle managers would be let go and that these individuals would resist any change in administrative structure. Antioch cut its centralized administration by 14 people, a reduction of 60 percent, and realized a 25 percent reduction in central administration costs. Resistance by lower management, faculty and staff to any change in the administrative structure required ever more vigilant leadership by upper management. All employees were involved in decisions, ensuring that the process to decentralize remained a collaborative one among all ranks of administrators and faculty.

### ***Improving Student Quality***

The quality of students—the knowledge and skills they gain from a university education—should be the primary goal of any institution of higher learning. Just how to increase student quality, however, remains unclear to many faculty. One reason for this lack of clarity is that many faculty, especially those at research institutions, see teaching as a secondary responsibility behind publishing in academic journals and acquiring research grants. Another reason is that most faculty members do not have training in good teaching strategies.

Good teaching practices include encouraging student/faculty contact, encouraging active learning, encouraging cooperation among students, giving prompt feedback, communicating high expectations, encouraging more time on each task, and respecting diverse talents and ways of learning.<sup>12</sup> An important point is that the passive lecture format that is found in most universities does not account for most of these practices. Even in smaller teaching-oriented colleges, many of these practices are likely to be absent. Furthermore, the use of student evaluations to judge the quality of faculty may lead some faculty to abandon good teaching practices and augment their evaluations through alternative means, such as leniency on grading, on assignment deadlines and on student absenteeism.

### ***Increased Flexibility of Faculty Staffing***

Much of the discussion relating to the role of faculty in contributing to productivity in higher education involves lengthening the time that faculty spend in the classroom, enhancing the quality of instruction and increasing flexibility of faculty staffing. Given the size of instruction as a percentage of total university expenditures (35 percent on average), an important cost-saving and quality-enhancing strategy is to better align faculty with student needs.<sup>13</sup> At many universities, as student demand for certain majors or classes ebbs and flows over time, there is little change in the number of faculty in each department. A failure to match teaching capacity with student demand is completely opposite the private sector, where changes in business conditions directly influence staffing levels.

To rein in costs, universities must have the flexibility to hire more faculty or increase teaching loads of current faculty when demand for a major increases and, conversely, universities must have the flexibility to reduce the number of faculty when demand for a major decreases. Just as an automaker must be able to shift production from large SUVs to small cars when energy prices soar, universities must make similar adjustments when student interest in subject X soars and interest in subject Y sags.

Probably the greatest obstacle to increased flexibility of faculty is tenure.<sup>14</sup> An economic argument for tenure is that it saves initial expense on the part of the university. The saving arises because faculty with tenure, or those hired with the possibility of tenure, will work at a lower salary in return for the guarantee of lifetime employment. Thus, tenure can be viewed as a nonpecuniary payment in lieu of salary. However, while there may be initial cost savings from tenure, the resulting inflexibility imposed by tenure has greater costs in terms of both dollars and student quality. Tenure prevents significant staffing changes in response to changes in student demands; tenure also prevents lower quality faculty from being replaced by higher quality faculty. Clearly, however, the abolition of tenure would be met with opposition from faculty and would even face legal

challenges. Strong department leadership would be willing to take such risks, as is typical of strong leadership in the business world.

## Conclusion

Institutions of higher learning are increasing their costs while student quality is stagnant, at best. While a private sector enterprise could not survive in this environment, a relative lack of competition shields universities from productivity-improving pressures. This article outlined several strategies aimed at increasing productivity in higher education, all of which require the unbiased attention of administrators, parents and legislators. Unfortunately, some parties are likely to dismiss such ideas out of hand, and that attitude is part of the reason universities have a productivity problem. Universities that can deliver high quality education at an attractive price will make a difference—an enormous difference—to our society.

## ENDNOTES

- 1 See Vedder (2004).
- 2 See American Association of Colleges and Universities (2002).
- 3 All data on tuition and expenditures are based on school years and are from the National Center for Education Statistics, *Digest of Education Statistics*, 2003. See [http://nces.ed.gov/programs/digest/d03/ch\\_3.asp#4](http://nces.ed.gov/programs/digest/d03/ch_3.asp#4).
- 4 See Vedder (2004).
- 5 See Trombley (2003).
- 6 Much of the following discussion is from Gates and Stone (1997) and Epstein (1992).
- 7 See Gates and Stone (1997).
- 8 See Epstein (1992).
- 9 See Hackett (1992).
- 10 Guskin (1996) discusses several strategies for increasing productivity in higher education.
- 11 See Guskin (1996), pp. 12-16. Antioch University is composed of five campuses across the country, overseen by a single administration.
- 12 See Chickering and Gamson (1991).
- 13 See Mortimer et al. (1985) and Waggaman (1991).
- 14 See McGee and Block (1991).

## REFERENCES

American Association of Colleges and Universities. *Greater Expectations: A New Vision for Learning as the Nation Goes to College*, 2002.

Chickering, Arthur and Gamson, Zelda. "Seven Principles for Good Practices in Undergraduate Teaching," in *New Directions in Teaching and Learning*, No. 47. San Francisco: Jossey-Bass, 1991.

Epstein, Paul. "Measuring the Performance of Public Services," in Marc Holzer, ed., *Public Productivity Handbook*. New York: Marcel Dekker Inc., 1992.



Gates, Susan and Stone, Ann. "Understanding Productivity in Education," Institute on Education and Training, RAND Corp., January 1997.

Guskin, Alan E. "Reducing Student Costs and Enhancing Student Learning: The University Challenges of the 1990s." Occasional Paper No. 27, Association of Governing Boards of Universities and Colleges, Washington, D.C., 1996.

Hackett, John T. "Productivity Through Privatization," in Richard Anderson and Joel Meyerson, eds., *Productivity and Higher Education*. Peterson's Guides. Princeton, N.J., 1992.

McGee, Robert W. and Block, Walter E. "Academic Tenure: An Economic Critique." *Harvard Journal of Law and Public Policy*, Vol. 14, No. 2, Spring 1991, pp. 545-72.

Mortimer, Kenneth; Bagshaw, Marque; and Masland, Andrew. *Flexibility in Academic Staffing*. ASHE-ERIC Higher Education Report No. 1, The George Washington University, Association for the Study of Higher Education, Washington, D.C., 1985.

Trombley, William. "The Rising Price of Higher Education." The National Center for Public Policy and Higher Education. San Jose, Calif., Winter 2003.

Vedder, Richard. *Going Broke by Degree: Why College Costs Too Much*. American Enterprise Institute Press for Public Policy Research, Washington, D.C., 2004.

Waggaman, John. *Strategies and Consequences: Managing the Costs in Higher Education*. ASHE-ERIC Higher Education Report No. 8, The George Washington University, School of Education and Human Development, Washington, D.C., 1991.

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of instructional expenditures in 1976 to 50 percent in 2001. More alarming is the fact that, while inflation-adjusted instructional expenditures per student increased by 17 percent between 1990 and 2001, administrative expenditures per student increased by 54 percent over the same period, as shown in the table.

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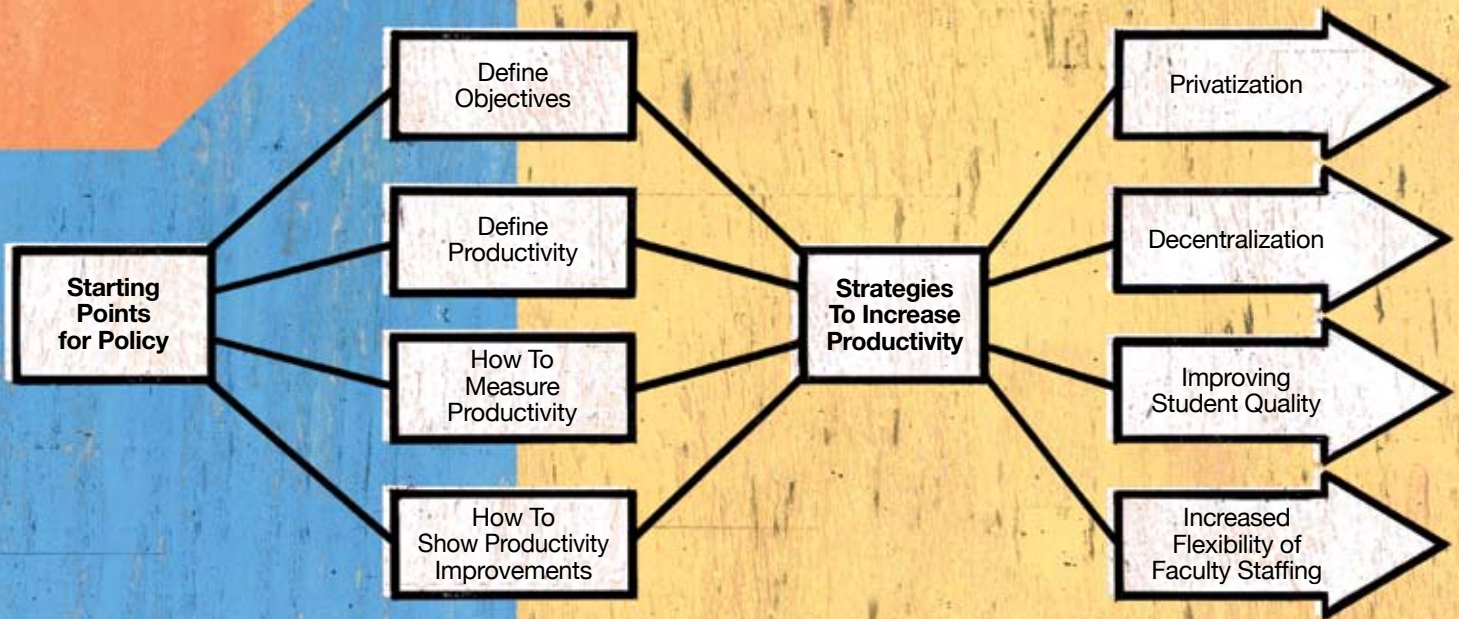
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justify the additions to anyone except other administrators.<sup>10</sup>

Decentralization can result in several benefits for universities. First, academic departments will have more control over their costs and staffing needs. As a result, departments will be better able to adapt to students' changing needs. The experience of many faculty is that universities provide too little in the way of support staff for faculty, thus forcing faculty to perform clerical duties. If individual academic departments had more control over their own budgets, they might decide to replace a faculty position with several support staff to improve efficiency. At the same time, administrators would have to resist the temptation to cut support staff in times of budget stringency. Creating a structure that gets the incentives right is not easy, but such a structure will be an



Privatization may result in a reduction of staff, forcing some students to find alternative financial aid. However, even if students cannot find other jobs on campus or even off campus, concern over student employment ought to be minimal relative to concern over the growing costs of universities.

**Decentralization**

Privatization is part of the larger strategy of decentralizing the administrative structure. Although decentralization frequently occurs in the private sector, universities have generally not followed suit. One of the biggest criticisms of centralized administrative structures in universities is that administrators can generally add staff without having to

essential feature of longer-run reforms to improve efficiency.

A case study of successful administrative decentralization at Antioch University provides some insights into the challenges of decentralization.<sup>11</sup> One such challenge was that a centralized administration had to reach a decision to decentralize the administration itself. The administration realized that decentralization was, in Antioch's case, the only real way to control costs. Another challenge was to realize and accept that some important senior and middle managers would be let go and that these individuals would resist any change in administrative structure. Antioch cut its centralized administration by 14 people, a reduction of 60 percent, and realized a 25 percent reduction in central administration costs. Resistance

by lower management, faculty and staff to any change in the administrative structure required ever more vigilant leadership by upper management. All employees were involved in decisions, ensuring that the process to decentralize remained a collaborative one among all ranks of administrators and faculty.

### Improving Student Quality

The quality of students—the knowledge and skills they gain from a university education—should be the primary goal of any institution of higher learning. Just how to increase student quality, however, remains unclear to many faculty. One reason for this lack of clarity is that many faculty, especially those at research institutions, see teaching as a secondary responsibility behind publishing in academic journals and acquiring research grants. Another reason is that most faculty members do not have training in good teaching strategies.

Good teaching practices include encouraging student/faculty contact, encouraging active learning, encouraging cooperation among students, giving prompt feedback, communicating high expectations, encouraging more time on each task, and respecting diverse talents and ways of learning.<sup>12</sup> An important point is that the passive lecture format that is found in most universities does not account for most of these practices. Even in smaller teaching-oriented colleges, many of these practices are likely to be absent. Furthermore, the use of student evaluations to judge the quality of faculty may lead some faculty to abandon good teaching practices and augment their evaluations through alternative means, such as leniency on grading, on assignment deadlines and on student absenteeism.

### Increased Flexibility of Faculty Staffing

Much of the discussion relating to the role of faculty in contributing to productivity in higher education involves lengthening the time that faculty spend in the classroom, enhancing the quality of instruction and increasing flexibility of faculty staffing. Given the size of instruction as a percentage of total university expenditures (35 percent on average), an important cost-saving and quality-enhancing strategy is to better align faculty with student needs.<sup>13</sup> At many universities, as student demand for certain majors or classes ebbs and flows over time, there is little change in the number of faculty in each department. A failure to match teaching capacity with student demand is completely opposite the private sector, where changes in business conditions directly influence staffing levels.

To rein in costs, universities must have the flexibility to hire more faculty or increase teaching loads of current faculty when demand for a major increases and, conversely, universities must have the flexibility to reduce the number of faculty when demand for a major decreases. Just as an automaker must be able to shift production from large SUVs to small cars when energy prices soar, universities must make similar adjustments when student interest in subject X soars and interest in subject Y sags.

Probably the greatest obstacle to increased flexibility of faculty is tenure.<sup>14</sup> An economic argument for tenure is that it saves initial expense on the part of the university. The saving arises because faculty with tenure, or those hired with the possibility of tenure, will work at a lower salary in return for the guarantee of lifetime employment. Thus, tenure can be viewed as a nonpecuniary payment in lieu of salary. However, while there may be initial cost savings from tenure, the resulting inflexibility imposed by tenure has greater costs in terms of both dollars and student quality. Tenure prevents significant staffing changes in response to changes in student demands; tenure also prevents lower quality faculty from being replaced by higher quality faculty. Clearly, however, the abolition of tenure would be met with opposition from faculty and would even face legal challenges. Strong department leadership would be willing to take such risks, as is typical of strong leadership in the business world.

### Conclusion

Institutions of higher learning are increasing their costs while student quality is stagnant, at best. While a private sector enterprise could not survive in this environment, a relative lack of competition shields universities from productivity-improving pressures. This article outlined several strategies aimed at increasing productivity in higher education, all of which require the unbiased attention of administrators, parents and legislators. Unfortunately, some parties are likely to dismiss such ideas out of hand, and that attitude is part of the reason universities have a productivity problem.

Universities that can deliver high quality education at an attractive price will make a difference—an enormous difference—to our society.

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### ENDNOTES

- <sup>1</sup> See Vedder (2004).
- <sup>2</sup> See American Association of Colleges and Universities (2002).
- <sup>3</sup> All data on tuition and expenditures are based on school years and are from the National Center for Education Statistics, *Digest of Education Statistics*, 2003. See [http://nces.ed.gov/programs/digest/d03/ch\\_3.asp#4](http://nces.ed.gov/programs/digest/d03/ch_3.asp#4).
- <sup>4</sup> See Vedder (2004).
- <sup>5</sup> See Trombley (2003).
- <sup>6</sup> Much of the following discussion is from Gates and Stone (1997) and Epstein (1992).
- <sup>7</sup> See Gates and Stone (1997).
- <sup>8</sup> See Epstein (1992).
- <sup>9</sup> See Hackett (1992).
- <sup>10</sup> Guskin (1996) discusses several strategies for increasing productivity in higher education.
- <sup>11</sup> See Guskin (1996), pp. 12-16. Antioch University is composed of five campuses across the country, overseen by a single administration.
- <sup>12</sup> See Chickering and Gamson (1991).
- <sup>13</sup> See Mortimer et al. (1985) and Waggaman (1991).
- <sup>14</sup> See McGee and Block (1991).

### REFERENCES

- American Association of Colleges and Universities. *Greater Expectations: A New Vision for Learning as the Nation Goes to College*, 2002.
- Chickering, Arthur and Gamson, Zelda. "Seven Principles for Good Practices in Undergraduate Teaching," in *New Directions in Teaching and Learning*, No. 47. San Francisco: Jossey-Bass, 1991.
- Epstein, Paul. "Measuring the Performance of Public Services," in Marc Holzer, ed., *Public Productivity Handbook*. New York: Marcel Dekker Inc., 1992.
- Gates, Susan and Stone, Ann. "Understanding Productivity in Education," Institute on Education and Training, RAND Corp., January 1997.
- Guskin, Alan E. "Reducing Student Costs and Enhancing Student Learning: The University Challenges of the 1990s." Occasional Paper No. 27, Association of Governing Boards of Universities and Colleges, Washington, D.C., 1996.
- Hackett, John T. "Productivity Through Privatization," in Richard Anderson and Joel Meyerson, eds., *Productivity and Higher Education*. Peterson's Guides. Princeton, N.J., 1992.
- McGee, Robert W. and Block, Walter E. "Academic Tenure: An Economic Critique." *Harvard Journal of Law and Public Policy*, Vol. 14, No. 2, Spring 1991, pp. 545-72.
- Mortimer, Kenneth; Bagshaw, Marque; and Masland, Andrew. *Flexibility in Academic Staffing*. ASHE-ERIC Higher Education Report No. 1, The George Washington University, Association for the Study of Higher Education, Washington, D.C., 1985.
- Trombley, William. "The Rising Price of Higher Education." The National Center for Public Policy and Higher Education. San Jose, Calif., Winter 2003.
- Vedder, Richard. *Going Broke by Degree: Why College Costs Too Much*. American Enterprise Institute Press for Public Policy Research, Washington, D.C., 2004.
- Waggaman, John. *Strategies and Consequences: Managing the Costs in Higher Education*. ASHE-ERIC Higher Education Report No. 8, The George Washington University, School of Education and Human Development, Washington, D.C., 1991.