

TRANSFER PRICING AND THE AMERICAN UNIVERSITY

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ABSTRACT

This paper contains a description of an optimal transfer pricing model for universities based on the transactions cost economics literature. The inadequacies of formula funding and incentive-based systems currently in place in the United States are analyzed, with those systems compared and contrasted with the properties of optimal transfer pricing systems. We adapt Hart's (1994) transactions cost model of the firm under incomplete contracting to institutions of higher education and apply the resulting modification of the Coase Theorem.

INTRODUCTION

American universities are under fire for fiscal practices. Stakeholders, such as state legislators, parents, and private donors, have taken both private and public institutions to task. A recent survey indicated that over half those polled "viewed colleges as businesses that mainly care about the bottom line" (Hebel, 2007). Criticized for accepting a large pay raise, a common occurrence, the president of Stevens Institute of Technology publicly claimed "There is no Enron here" (Lipka, 2005). Some might disagree. The University of Texas at Austin recently fired its Financial Aid Director (Drawbaugh, 2007). The New York based Cuomo Commission has investigated relationships between lenders and financial aid executives at both private and public universities throughout the United States for conflicts of interest and has persuaded several major universities to establish policies that place students' interests above lenders' interests.

Part of the reason that most people polled believe that universities are managed like money machines may be that tuition charges are ever-increasing at both types of institutions. It is unlikely that students, parents, and alumni know what happens to the funds that they transfer to universities. To the extent that stakeholders believe that the additional revenue is going to compensate the line employees, faculty, those stakeholders make enrollment and funding decisions erroneously.

In private institutions, asymmetric information leaves other stakeholders at a disadvantage relative to administration. One party (administration) knows particulars of faculty and staff compensation, but the others (students, parents, employers, etc.) do not.¹ This is because private institutions do not release much financial data. Federal Law requires them institutions to release Form 990 (Federal Tax Returns) within thirty days of anyone's written request as part of the Taxpayer Bill of Rights (Lively, 1996) Previously, *The Chronicle of Higher Education* reported the five highest paid employees' compensation in its annual report, available to anyone

online. Now, the *Chronicle* reports only presidential salaries, but GuideStar.org reports the full form 990 for private universities online (albeit lagged for two years).

Public institutions are a mixed bag. In theory, anyone can obtain a copy of the entire budget with every expenditure and revenue item listed (down to faculty and staff salaries). In practice, such institutions might be understandably reluctant to comply with such requests. Some states have excellent websites which have more aggregated line items available for public perusal (Texas and Arkansas, for example). Other states, such as Arizona, have grossly inadequate websites that contain little or no data. Furthermore, it is not clear how stakeholders are using those data that are reported.

In short, the United States has a largely unregulated industry that takes billions of dollars from a wide variety of people and is largely unaccountable for the results. This paper is not intended to support additional regulation of higher education, but it should be established at the outset that the potential for “another Enron,” and perhaps many Enrons, does indeed exist.²

What can be done, short of crippling regulation of one of America’s last export industries, higher education, to help each institution operate optimally? This paper posits that the answer may lie in a tool used by American industry for decades: transfer pricing. First, we define transfer pricing. Second, we point out examples of what we claim are pseudo-transfer pricing approaches. Third, we outline a traditional, administratively-driven and controlled (formulaic), approach to transfer pricing. Fourth, we apply a Coasian approach, recommending it as optimal.

LITERATURE REVIEW

Transfer Pricing Defined

“Transfer pricing refers to the consideration provided for transfers of goods, services and property between related parties.” (Deloitte, 2006) The term was originally applied almost exclusively to the allocation of *costs* between divisions in corporations. There are two sides to every market. Vertically integrated firms have outside alternatives to internal suppliers. Optimal compensation to internal divisions should reflect the external availability or scarcity of the products/services that the internal division supplies to other divisions of the firm.

The accounting literature reflects the IRS’s search for tax-evading firms that use accounting techniques to shift costs to divisions operating in low-tax countries and revenues to divisions operating in high-tax countries. (Johnson, 2006; Baldenius and Reichelstein, 2006). Almost all of the economic literature on transfer pricing has similarly focused on the cost and revenue shifting within multinational firms, although many papers in the transactions costs theory of the firm literature may be directly applied to the issue at hand (see Grossman and Hart, 1986, and Che and Hausch, 1999). This is because the same issues that apply to multinational firms also apply to multidivisional firms (Baldenius and Reichelstein, 2006; Alles and Datar, 1998). In a broader context, the evaluation of divisions as profit and cost centers so as to optimize the value of the firm is “transfer pricing.” (see Appendix 16A, Seo, 1991). The grand, overarching goal is to determine the optimal transfer rate, or price, for each division that both reflects the availability/lack of availability of its core competency outside the firm as well as the contribution of its own financial

performance within the firm. As Seo (1991) puts it, “three inherent and sometimes conflicting problems must be solved: goal congruence, incentive, and autonomy.”

The grand goal of achieving optimal transfer prices is typically attempted by a firm’s requiring estimates of future marginal revenues and marginal costs from each division and then enforcing rewards or penalties based on the divisions’ successes or failures in meeting such estimates. In corporations such as Xerox and Temple-Inland, a centralized asset-liability division reconciles any funding mismatches between divisions by transferring funds from underperforming units to successful units so that the overall institution will be profitable. Administration and overhead, including the costs of the asset-liability division, are paid out of residual profits. These profits are presumably larger because of the transfer pricing activities.³

The cost side is much better documented than is the revenue side (Kaplan and Cooper, 1998; Cooper and Kaplan, 1998). A popular approach to cost accounting, Activity Based Costing, is a subset of transfer pricing, because transfer pricing also considers revenues, not just costs (Seo, 1991, p. 532). The economic literature on transfer pricing considers two mutually exclusive and exhaustive situations: (1) the case in which there exists an external market for the transferred goods or services, and (2) the case in which there exist no external market for the transferred goods or services. The first case is, according to Seo, “the most common and most troublesome (p. 533).”

What Transfer Pricing is Not

Regarding higher education, most states have implemented some type of “formula” funding, sometimes called “performance based budgeting” or “performance based funding,” to try to make public universities accountable for expenditures by tying state appropriations to student semester credit hours or other enrollment-related measures (Burke, 2005). Is formula funding for state universities a substitute for transfer pricing? No, it is not, for several reasons outlined below.

Hearn, et. al. (2006) documented the University of Minnesota’s “Incentives-Based Budgeting System” in what is probably the most outstanding example of a quasi-transfer pricing system in an American public institution of higher learning. Florida Atlantic University is another example of an institution which has implemented a process that meets Burke’s criteria for a successful performance based funding system:

The shared performance indicators include student enrollment, degree attainment, and retention and graduation rates for first-time and transfer students by race and gender. They also cover the percentage of undergraduate credit hours taught by regular faculty, sponsored research, faculty publications, and percentage of faculty effort devoted to public service and to public schools (Burke, 2005, pp. 25-26).

The departmental assessment of outcomes tracks unit performance on instruction, research and service against established benchmarks” (Burke, 2005, p. 26). Apparently, however, financial measures are not key to the process.

The approach that Burke has analyzed has many flaws. First, there is no “standard” formula. In Arkansas, for example, South Carolina’s formula was applied wholesale to Arkansas institutions, a wholly inappropriate use of the approach. Second, some of the results seem unreasonable and *ad hoc*. In a well-publicized case, the American Psychological Association (APA) has taken issue with the lower subsidy to Texas psychology courses versus those of some other disciplines (Murray, 1999). Third, the approach represents the interest of only one stakeholder: the state.

In today's scene, where state appropriations are declining as a percentage of institutional revenues, administrators make internal budget decisions based on the state-mandated formula, even though tuition revenues, an increasingly important revenue source, are somewhat market-dependent. This has led to the "tail wagging the dog" at some institutions in that administration gears 100 percent of policy to satisfy a minority stakeholder, the state regulator. Perhaps most important, according to Burke, the former president of SUNY Plattsburgh, current incentive-based systems in place in American universities "leave academic departments - the units most responsible for institutional results - out of the performance loop." (Burke, 2005). As Seo might put it, under formula funding there is no autonomy for performance units.⁴

Some Complicating Factors

The pricing process for a university's offerings is convoluted.⁵ Tuition payments are unrelated to tuition activities. The very definition of "tuition" has been effectively changed in the U.S.: from "instruction" to "the dollars students pay" (not necessarily for instruction). What is the equivalent of a price per hour for instruction? The answer is not straightforward, because virtually every university, public or private, practices price discrimination. Rampant price discrimination removes most of the value of tuition quotes in terms of price content. (Martin, 2005)

Scholarships are *prima facie* price discrimination. Scholarships are for the most part unfunded, that is they are not covered by interest on endowment, and current and past donations are not the primary sources of scholarship funding, unlike what donors may be led to believe. Instead, most scholarships are paid out of budget as unfunded institutional grants or transfers. To the extent that cash grants are paid to scholarship recipients, they compete for dollars one-to-one with faculty and staff (Martin, 2002). To the degree that unfunded institutional scholarships are non-cash transfers, they are opportunity losses to other stakeholders (Martin, 2002).

Gary Fethke, immediate past interim president of the University of Iowa, has successfully modeled state research institutions in a game-theoretic context (Fethke, 2005). However, most institutions do not fall into this category and have no bargaining power with legislators. Smaller institutions, like hospitals, seem to have no idea what various activities actually cost. Instead, they charge fees (including tuition fees) based on what they need in order to balance their books.⁶ There is no centralized marketplace in which consumers and producers voluntarily meet and determine prices through mutually advantageous trade, but tuition rates are quoted as though professors and potential students have done just that.

Tuition is generally determined as the residual amount necessary to balance the budget after contributions from state governments, church groups, and/or alumni have been determined. To the extent that the contributions from those other sources decline, tuition must rise to fill the gap, independently of the market prices of the university's inputs. Therefore, the tuition quote per hour for any given university in the U.S. is not a true price. It is instead like a shim that a carpenter uses to render a building true (the building being analogous to the institution's budget). Furthermore, the budget, a cash-based process, is based on prior years' financial statements. Reconciliations of financial statements with cash flows are generally not provided to stakeholders, unlike the requirements imposed on private companies by Sarbanes-Oxley. A cursory analysis would seem to indicate that public institutions have much less subsidization of administrative activity than do private institutions. However,

when price discounting through scholarships are taken into account, this may no longer be the case (Martin, 2002).

Because of these convolutions in university finances, no one knows for certain what departments are “profit-centers” and what are “cost-centers” in American universities. No one can know until relevant data are reported, much less analyzed. Benchmarking is difficult even for public institutions, because the reporting of financial data and regulation by state authorities is not uniform. Financial aid data that are publicly available are a few years old at the freshest and are not compiled in a database that is conducive to analysis. Ideally, the incentive-based systems at comparable public institutions would provide objective, financially consistent information that could help private institutions better triangulate toward optimal rewards and penalties for employees. After all, they frequently compete with one another for the same pools of potential students and professors. Unfortunately, as indicated above, these systems have problems that limit their usefulness as benchmarking tools.

[Guidestar.org](http://www.guidestar.org) does indeed make Form 990 filings by private institutions publicly available, albeit lagged. But Form 990 does not contain complete financial analyses since it is intended for tax purposes only. What kinds of data *should* be made public? Pressure is building in the U.S. Congress to require more public disclosure from private institutions (Van Der Werf, 2007). A polar position would be for private institutions to release the same data that public institutions are required to release. Private institutions would be understandably opposed to this extreme and can presumably mount an effective lobbying campaign to limit such extensive disclosure requirements. But the other extreme of providing no useful data also seems politically unsupportable.

The transfer pricing process is political in practice, perhaps as much as is the formula funding approach. But it consists of mostly institutional, rather than state, politics. A transfer pricing system requires the establishment of what could be the most important committee on campus: an institutional planning committee to determine and monitor “transfer rates” for each input the institution uses (henceforward referred to as the “transfer” committee). Some of the issues such a transfer committee would deal with include: (1) “What penalties should be imposed if a manager of a certain ‘product line’ is consistently wrong in forecasting ‘sales?’” and (2) “What rewards should be provided if a manager achieves her self-imposed targets?” The rewards and penalties must be internally consistent with the overall performance of the institution.⁷

In the case of universities, considerable externalities are at work. Significant joint production takes place at all universities, resulting in substantial economies of scale and scope (Cohn and Cooper (2004). For example, a premiere music faculty may draw students to other disciplines. Institutional reputation is an important ingredient in marketing any program within the institution. The relevant question for the transfer committee becomes: “Just how much is that program (or the parent institution) worth to each of the other units?” The contribution of the academic reputation of one program as a complementary good to another program is difficult to evaluate, but must be evaluated. The oligopsonistic nature of most university-faculty relationships makes sudden cuts in any program potentially dangerous. If the relative value of a program is miscalculated and the faculty dismissed, how does the institution get them back once they’re gone? This asymmetry arising from the ease of

cutting programs and the difficulty of rebuilding them means that such evaluations must be done accurately for the educational firm to operate optimally.

The saving grace for transfer pricing in universities is that there is almost always an existing external market for the goods and services produced by each unit. The current size and diversity of higher education in the United States makes it possible to find a comparable outside provider for almost any of the inputs of the educational firm. Location is frequently the major differentiator that clouds the comparability between departments and faculty of different institutions that are otherwise very similar. Note that the university does not have to outsource the department or raid another institution's faculty (although some occasionally do so). What is important is that the comparables exist so that the *potential* for such a raid also exists, however unlikely.

Identification of Cost Drivers and Revenue Enhancers – A Formulaic Approach

What kinds of data are needed for a Transfer Pricing Model to be properly administered? Revenue data are probably most neglected, since their evaluation requires imagination. Central administration (and/or the transfer committee) must evaluate the market structure(s) in which the institution operates rather than simply cut costs across the board. Is it a research institution? Is it public or private? Is it an elite or land grant institution? Is it a teaching institution? Is it religious or not? Is it a liberal arts institution? Is it selective or not? What are the premiere professional programs? What must the institution *become* in order to continue its existence? Even more important, central administration must recognize that each program operates in its own separate industry, quite apart from the institution as a whole.

Should price discrimination be extended beyond scholarships to also apply between programs?⁸ That is, should the business school charge higher tuition rates than the school of social sciences? To what extent do administrative activities that full-time faculty do, such as advising (scheduling), explain the differences in pay between full-time faculty and adjuncts? Could those activities be more efficiently outsourced rather than handled internally?

On the cost side, data are needed for the institution and also its peer, competing, and aspirant institutions. These include salary, benefits, and subsidies to auxiliary programs. Above all, the process demands internal transparency of finances. It is better to have short-run disagreements about relative funding of programs or even individuals that can be arbitrated than to have a painful downsizing a few years later because such conversations never took place (a la Antioch College).

Conveniently, *The Chronicle of Higher Education* reports the average pay across disciplines (except medicine) for professors in the United States in its *Almanac of Higher Education*. Full reports are available for a fee from the College and University Professional Association for Human Resources (CUPA-HR) (<http://www.cupahr.org>). In fair use, we report only publicly available data that we have analyzed ourselves. An index for what full professors are paid on average in each discipline is shown in Table 1. Here, theology has been assigned the value of "1" since it is the lowest value. All the other disciplines' index values were determined as multiples of the lowest average salary (theology). Law has the highest value, 2, since law professors are paid, on average, twice as much as theology professors. A few disciplines have been deleted in the interest of space.⁹

As an example, according to fictitious Artesia Bible College's (ABC) Form 990, we'll say that the highest-paid professor at ABC earns \$83,387 teaching

business. Combining the factor for theology from Table 1 with the information from Form 990, an enterprising theology professor at ABC might conclude that his compensation should be \$55,385 (also shown in Table 1). This “just” compensation is the business professor’s salary of \$83,387 multiplied by the theology factor divided by the business factor, or $1.00 / 1.51$, or .662. In other words, based on the average going rate of theology professors and business professors, the theology professor ought to make 66.2 percent of what the business professor makes. If the theology professor in actuality makes something less than this amount, say \$50,000, he is apt to feel cheated.

**TABLE 1
INDEX OF AVERAGE NATIONWIDE COMPENSATION
OF FULL PROFESSORS BY ACADEMIC DISCIPLINE**

Discipline	Index Value	“Just” Compensation
Agriculture	1.22	\$67,369
Architecture	1.25	\$69,372
Ethnic, cultural, and gender studies	1.33	\$73,864
Biological and biomedical sciences	1.32	\$73,106
Business, management, marketing, etc.	1.51	\$83,387
Communication and journalism	1.14	\$62,921
Computer and information sciences	1.45	\$80,142
Education	1.15	\$63,476
Engineering	1.58	\$87,657
Engineering technologies/technicians	1.16	\$64,505
English language and literature	1.12	\$62,042
Family and consumer sciences	1.17	\$64,683
Foreign languages and linguistics	1.17	\$64,925
History	1.18	\$65,528
Legal professions and studies	2.00	\$110,937
Liberal arts and sciences humanities	1.09	\$60,268
Library science	1.14	\$62,992
Mathematics and statistics	1.23	\$68,250
Natural resources and conservation	1.25	\$69,129
Nursing	1.14	\$62,992
Parks, recreation, leisure, and fitness	1.08	\$59,878
Philosophy and religious studies	1.20	\$66,603
Physical sciences	1.31	\$72,414
Psychology	1.21	\$67,028
Public administration and social-service	1.24	\$68,935
Science technologies/technicians	1.01	\$55,932
Social sciences	1.28	\$70,702
Theology and religious vocations	1.00	\$55,385
Visual and performing arts	1.07	\$59,415

But this comparison is incomplete. The calculations presented are only the initial conditions for the transfer pricing process. They do not take into account merit pay, or class size at ABC, or research, or any other consideration peculiar to the institution. It is merely a calculation based on national averages and one actual salary at the institution. More information is needed to make a more meaningful comparison.

The *Chronicle* also reports the results of the annual American Association of University Professors (AAUP) faculty salary survey by institution. Most institutions of higher education are covered by the survey. ABC pays professors (averaging across disciplines) as shown in Table 2 below. Furthermore, Table 2 contains publicly available information on a cohort group in which ABC finds itself: church-related institutions, which pay less than other types of institutions.

TABLE 2
AVERAGE COMPENSATION FOR DIFFERENT ACADEMIC
RANKS AT A SINGLE INSTITUTION AVERAGING ACROSS
ACADEMIC DISCIPLINES

	Professor	Associate Professor	Assistant Professor	Instructor
National Average in Business	\$102,702	\$84,095	\$78,151	\$49,271
National Average Church-related	\$82,804	\$63,087	\$51,537	\$42,378
ABC Average	\$ 59,000	\$49,200	\$45,600	\$41,000

Now, the theology professor's calculations should include not only the business professor's salary as a percentage of the institution's average pay for full professors (\$83,387 / \$59,000, or 141 percent), but also the business professor's salary as a percentage of all nationwide business professor's pay (\$83,387 / \$102,702, or 81 percent) and perhaps the most accurate of all, the business professor's salary as a percentage of cohort church-related institutions (\$83,387 / \$82,804, or 100 percent). In other words, ABC's highest paid, and presumably most marketable, faculty member makes exactly the average of all cohort institutions (including ABC in the sample). It quickly becomes clear that the theology professor's quarrel is not with his higher-paid colleague in business, but rather that some institutional aspect (perhaps geographical location) is resulting in lower pay all-the-way-around at Artesia Bible College relative to other church-related institutions.

THE TRANSFER PRICING PROCESS

The process starts with the transfer committee's benchmarking the institution using the data described above. From the outset, the focus must be on faculty and faculty compensation. We support this assertion throughout this section of the paper, while continuing to describe its importance in the entire process of transfer pricing.

As former University of Texas President Peter T. Flawn put it, "the faculty is the heart and soul of the university" (Flawn, 1990). Since the largest component of

any university budget is faculty salaries,¹⁰ it is appropriate to ground transfer pricing in the context of those salaries. Horton (1999) pointed out that transfer pricing is an attempt to operationalize the profit-maximizing condition for a competitive firm: that all inputs be paid exactly the value of their marginal products. However, asymmetric information and differing degrees of control make direct observation of each input's marginal product problematic.

The process is consistent with that outlined in Lepak and Snell (1999) in their seminal work on Human Resource Architecture which combines transaction cost economics, human capital theory, and the resource-based view of the firm. Their basic point is that organizations should manage employees according to the values those employees provide to the organization. These values also depend directly on the uniquenesses of the skills (or values of human capital) those employees possess.

We conjecture that a university is an institution which develops human capital through the support of teaching and/or research activities of faculty. This approach is consistent with that of Rothschild and White (1995), who characterized faculty members as possessors of human capital, and Horton (2005), who cast full-time faculty and adjunct faculty as differing only in the degree to which they practice entrepreneurship. In terms of human resource architecture, faculty human capital is the stock of knowledge professors build through research and teaching. The university's course offerings are spillovers from the body of knowledge possessed by the faculty. The primary good that stakeholders are in search of is the transfer of the body of knowledge, rather than the course offerings.¹¹

A key result of the transaction cost literature is that incomplete contracts exist because of bounded rationality (Hart, 1996). According to Klein (1996) (as paraphrased by Williamson (1996)), "Human asset specificity poses more severe contract problems than does physical asset specificity." The tenure process, unique to universities, consists of complicated, incomplete contracts, implying that universities of all types struggle with discerning the true stock of intellectual capital and additional investments in it. The *first goal* of transfer pricing in an institution of higher education should be to establish the most marketable inputs' compensation as equal as possible to the competing compensation offered by potential external employers of those inputs, allowing for differences in mission, location, etc. The external focus comes first in order to avoid losing the most valuable human capital.

Because of the complexity of academic operations, transactions costs are high. Doctorates take years to earn, tenure takes years to achieve, and articles take years to write. In the presence of such high transactions costs, the Coase Theorem (Coase, 1960) breaks down. Is it possible to capture the essence of academic transactions costs in such a way that the market mechanism of a Coasian approach is retained? Thankfully the answer is "yes," and is provided by closely adapting Hart's transaction cost model for the case of complementary activities (pp. 144 – 147) to a university's transfer pricing problem.

In a university context, university employees (including administration, staff, and ancillary faculty) control asset 1 and those most marketable faculty members who possess intellectual property development capability control asset 2. Asset 1's effort level is represented by x . Asset 2's effort level is represented by y . In this simple model, period 0 is when the agents choose their actions which yield a return in period 1. $B_1(x,y)$ represents the return on asset 1's activities and $B_2(y)$ represents the return on asset 2's activities.

The owner of each asset can siphon off a fraction of the asset's return unobserved to the other owner during period 0. That fraction is represented by $(1-\lambda)$. The remaining profits that accrue to the institution are therefore

$$\pi_1 = \lambda \mathbf{B}_1(x,y) \quad (1)$$

$$\pi_2 = \lambda \mathbf{B}_2(y) \quad (2)$$

At period 1, the results of period 0's actions become obvious. Before the "official" profits are recognized and distributed, each type of agent has the option of destroying a certain amount of profit (which reduces both the siphoned-off portion as well as the portion the institution receives). The contractual compensation of both types of agents is given by the functions $I_1(\pi_1, \pi_2)$ and $I_2(\pi_1, \pi_2)$ such that $I_1 + I_2 = \pi_1 + \pi_2$.

A last general assumption Hart makes is that the marginal return to agent 1's effort is very small, so that $B_1(x,y) = \gamma(y)$. This is consistent with the university scenario outlined above, in which the less marketable employees find less outside demand for their services than do the most marketable ones.¹²

Case 1:

When the two types of assets are owned separately, the university is only a loose network of multilateral contracts between independent contractors. Hart calls this case "non-integration of assets." The net returns to both types of agents are

$$\mathbf{R}_1 = I_1(\pi_1, \pi_2) + (1 - \lambda) \mathbf{B}_1 - x \quad (3)$$

$$\mathbf{R}_2 = I_2(\pi_1, \pi_2) + (1 - \lambda) \mathbf{B}_2 - y \quad (4)$$

Even The University of Phoenix does not fit this case. Perhaps the old Western Governor's University would be the closest real-world example.

Case 2:

If, instead, agent 2 owned both assets x and y , the returns would be as follows:

$$\mathbf{R}_1 = I_1(\pi_1, \pi_2) - x \quad (5)$$

$$\mathbf{R}_2 = I_2(\pi_1, \pi_2) + (1 - \lambda) \mathbf{B}_1 + (1 - \lambda) \mathbf{B}_2 - y \quad (6)$$

This is the case of the typical American university, in which the tenure contract provides *de facto* ownership. Administrations, students, alumni, and maintenance personnel may come and go, but successful faculty may remain as long as they can afford to.

The optimal (first-best) allocation is represented by $x = x^*$ and $y = y^*$. Since the marginal return to x is so low, $x^* = 0$. On the other hand, y^* maximizes social surplus, $\gamma(y) + B_2(y) - y$. In Case 2, this can be achieved by the explicit contracts

$$\mathbf{I}_1 = \mathbf{E} \quad (7)$$

$$\mathbf{I}_2 - \pi_1 + \pi_2 - \mathbf{E} \quad (8)$$

where Hart treats E like an entry fee.¹³ However, Hart further shows that the first-best allocation cannot be obtained in Case 1, since agent 1 can dispose of profit by shirking and agent 2 can boost profit if she chooses.

Hart's model explains several phenomena connected with American university structure. Tenure amounts to control of all employees' profit streams. That is why the pay of clerical and maintenance workers at universities is so low relative to those on the outside.¹⁴ The fact that faculty representation and leadership on budget, buildings and grounds, and maintenance committees is expected on most campuses is representative of agent type 2's control of agent type 1's profit.

In Lepak and Snell's terminology, the human capital underlying university course offerings is of extremely high value. It is not the teaching which of extremely high value. Otherwise, if it were, new entrants, such as The University of Phoenix, could not compete with a well-established industry (traditional higher education) because what the industry produces could not be commoditized by standardization into a canned package. Instead, it is the possession of and spin-offs from human capital which is of extremely high value. Research institutions seek to explicitly develop and reward the investment activities of professors (those investments being additions to intellectual human capital). Teaching institutions, on the other hand, generally eschew pursuing research and focus on the lower valued activity: communicating yesteryear's intellectual capital to a broader audience. This activity does not pay well in a traditional university setting. Hence, teaching institutions struggle with accreditation and external funding relative to research institutions.

In other words, those faculty members that are most attractive to competitors need to be paid first and will drive the rest of the institution's transfer pricing efforts. As mentioned before, Hart (1996) demonstrated that the Coase Theorem breaks down for those employees who possess monopoly power over inputs required by the firm. This is because, in a university context, professors may choose to withhold investments in intellectual capital from the institution, instead choosing to "cream off" (Hart's term) monopoly rents on the side. Teaching institutions may experience this phenomenon when summer research grants are insufficient to entice their full-time faculty away from moonlighting. Those inputs for which this phenomena occurs (the most marketable faculty) cannot be retained through internal market mechanisms alone. Instead, the university has to calibrate the compensation of these key inputs in line with competitors, at practically any cost.¹⁵

This flies in the face of governmental authorities, whose search for the holy grail of an equitable funding formula is driven by the perception that disparities in teaching loads and compensation are somehow bad. We maintain that those institutions most criticized by the advocates of formula funding have likely been groping toward an optimal transfer pricing process. Thus the motivation for formula funding of state institutions is inconsistent with the practice of optimal transfer pricing and efficient use of resources.

In practice, optimal transfer pricing for a university is a multi-step, iterative process. It begins with the formulaic approach mentioned above, in which certain inputs' transfer prices are established and others are sorted out by those internal market forces that are present, vis-à-vis the example with the theology professor's benchmarking relative to the business professor. But this is only the first step. The process is tuned by trading in internal markets. Once the most marketable faculty members are correctly priced, the institution has a market alternative to ferreting out

every input's correct price. The simple mechanism, in practice in corporations, requires the highest paid employees¹⁶ to contract with internal personnel, such as maintenance and clerical, for services for which the highest paid employees are willing to pay.¹⁷ Consistent with the Coasian Theory of the Firm, the institution operates optimally when it reduces the transactions costs, via the transfer committee, for the most marketable employees to trade with those who are not directly contributing to the core competencies of the institution. Those internal employees who insist on compensation that is too high relative to the external market for their services can be optimally outsourced. Those internal employees who settle for too little during one cycle will raise the stakes in bargaining relative to their outside counterparts until their pay is at parity.

This result comes about for two reasons. First, investments in intellectual capital of the institution are inseparable from the additions to human capital of the faculty. Second, those inputs that have no ability to generate, boost, or cream off the monopoly rents for new intellectual capital cannot earn a premium. In other words, in a university setting, the faculty is different, and yes, faculty members are the most important stakeholders. The power of the transactions cost argument is evident in that all a private institution may need to establish initial conditions for an effective transfer pricing model is the salary data for the highest five paid faculty members at peer institutions, which is typically available through GuideStar.org.

As part of the process, the centralized transfer committee elicits forecasts of costs, research outcomes, and enrollment from each unit. The committee subsequently assesses a penalty from each unit that underperforms and pays a premium to each unit that meets its forecasts. Alternatively (and more efficiently), the institution establishes faculty pay by benchmarking with other institutions and allows a Coasian trading system between inputs. In either case, the resulting stream of cash flows is separate from the budgeted base pay established in the initial conditions described previously. In a few cycles, many years of budget inefficiencies can thus be corrected and thereafter forestalled.

CONCLUSION

Much work remains to be done. Exactly where the breakpoint for the most marketable employees is established will differ between institutions, since those institutions tend to differ as to mission and region served. Geographical location is perhaps the most important factor that would require subjective judgment as to how the institution's compensation relates to its peers'. The degree to which complementarily affects how much financially unattractive programs are subsidized will also vary between institutions. Political maneuvering will continue until the end of the age, regardless of the resource allocation methodology used.

Most important, the Coase Theorem still has utility in higher education compensation. When the nature of faculty and intellectual capital is fully appreciated, any optimal allocation of resources within the American university must conform to the market in which the institution operates, regardless of administration, faculty, or staff's most noble and egalitarian tendencies.

Some, particularly non-economists, may object to the explicit infusion of market forces into the university's financial planning process. In response, we simply point out that (1) market forces will guide the institution regardless of our feelings (once again invoking the spectre of Antioch College), and (2) it is much better to try

to understand them and adjust to them than to pretend that they do not exist. In this way, the negative effects of academic Enrons can be minimized.

ENDNOTES

1. Martin (2002) is among those who have pointed out that tuition increases have far outstripped faculty pay raises.
2. To punctuate this point, consider Antioch College, which closed in 2007 amidst controversial financial practices (Carlson, 2007).
3. Of course, each division may have the incentive to “lowball” the forecast for its own performance. There are techniques for discouraging such behavior, such as tying base compensation to a previously-attained level of performance. Also, the transfer committee is subject to charges of favoritism and bias.
4. As a cautionary tale about the follies of formula funding, one should consider the South Carolina experience. When the state’s new plan for performance-based budgeting was formulated, the committee that drafted the thirty-seven performance indicators for measuring universities had no representatives from higher education. The committee maintained that the process was to be fluid, with feedback from universities. Instead, a powerful state senator blocked any attempts to revisit any of the measures. Many of the indicators, chosen by individual committee members in a virtual vacuum, subsequently proved to be unmeasurable or meaningless. (Trombley, 1998) Officials from the University of South Carolina have estimated that initial compliance with the performance-based budgeting law cost that institution \$150,000, none of which was covered by appropriation.
5. There is wide disagreement about just what a university produces. Does it “produce” graduates or student semester credit hours? Does it produce “an education?” Such a debate is relevant, but well beyond the scope of this paper.
6. In hospitals, this practice leads to the infamous ten-dollar Tylenol tablets.
7. On one hand, it may be practical for the transfer committee to consist of central administration, whose sole compensation would be based on how effectively revenues and costs have been and continue to be allocated. Their pay would be the residual from the transfer pricing process. In this way, faculty and staff would not be penalized by administrative mismanagement in the way that they usually are penalized during campus financial crises. In addition, faculty would not be burdened with serving on yet another committee.
On the other hand, faculty participation in such a committee would likely guarantee job safety for the economists on campus.
8. As we were reminded by an anonymous reviewer, Peterson’s publishes discount rates for virtually every college or university in the U.S. These rates are useful for benchmarking institutions, but such data do not address the local turf battles that loom over discounting for auxiliary programs such as athletics.
9. Similar indices may be constructed for other faculty ranks and may be instructive about salary compression, since in some fields, for example, associate professors are paid better on average relative to their colleagues in other disciplines than are full professors relative to their cohorts.
10. A possible exception is The University of Phoenix, whose only full-time faculty are full-time administrators.

11. Unfortunately, the actual transactions taking place are couched in terms of course offerings, which outside observers are tempted to commoditize. As of this writing, the largest university in the United States, The University of Phoenix, has been quite successful at this.

Perhaps not coincidentally, while the meaning of “tuition” has changed, so the role of professor has changed from that of possessor of a valued body of knowledge (intellectual capital) to that of master facilitator of educational processes (laborer). This is how institutions like Phoenix may be said to have lost their faculties.

12. For example, a fair research professor provides more value to a university than does the world’s best electrician.
13. We prefer to interpret E as side-payments corresponding to the residual paid by the most marketable faculty for overhead expenses and fees to other divisions. This E is optimally managed by the transfer committee.
14. Some perks, such as free tuition, are available to many of the employees, representing agent type 2’s willingness to avoid further cash side-payments to agent type 1 employees.
15. Unlike Horton’s (1999, 2005) approach, Hart’s model does not require the objective of profit maximization, although such a goal is consistent with the practice of many American universities. To the skeptics of this statement, we would simply ask, “What institution does not try to minimize losses during a bad year?” Since loss minimization and profit maximization are the same goal, the argument applies to all but a few institutions, such as Antioch College.
16. As an alternative to viewing faculty as laborers, they may be treated as the owners of (intellectual) capital as in the two-sector model.
17. A small case example may be instructive. At one bank at which one of the authors worked, “consulting” fees were charged to the financial operations (line) division by support divisions, such as computer services. This internal billing system was modified over several months until the transfer prices were calibrated. The billing forced line employees to call for, say, computer services only when absolutely necessary. The number of calls that resulted in the staff member’s pointing out “Your problem is that your computer is not plugged in,” dropped off to zero.

The practice was infectious. Each time that one employee answered a question of another employee, even in the same division, the standard, half-joking reply was, “That’ll be twenty-five bucks.” What was done in part-jest in industry can be practiced in seriousness in higher education with optimal results.

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