Nonoptimal use of nontraditional education

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Abstract

Many universities are implementing nontraditional programs for working adults using adjunct, nontraditional faculty as temporary workers. This practice is defended as economically necessary. However, no economic theory of this practice has been developed. In a simple model of private universities with two products, traditional and nontraditional education, surplus is maximized subject to market demand for traditional and nontraditional education. Tuition and faculty staffing are choice variables. Marketing and library services are fixed at predetermined levels. The results are consistent with conventional price theory: to operate optimally, the firm pays each input the value of its marginal product, adjusted by the appropriate price elasticity of demand. If the university is modeled as a firm, traditional education is tuition elastic and nontraditional education is tuition inelastic, then traditional faculty are optimally paid more than nontraditional faculty only when traditional tuition is higher than nontraditional tuition. [JEL Code: L31]

Keywords: Nontraditional; Traditional; Adult education; Nonoptimal; Surplus; Market

1. Introduction

Traditional college and university enrollments have been declining throughout the 1990s, primarily because of a lack of 18- to 22-year-old potential students. In response to this drop in enrollment, universities have offered nontraditional programs aimed primarily at working adults. Nontraditional programs, as defined here, consist of programs marketed specifically toward students over the age of 25 who are working full-time while pursuing a degree. These programs, often offered at remote sites, employ primarily part-time adjunct faculty who teach accelerated format courses.

Some researchers have pointed out disparities in the way universities treat traditional, full-time faculty and the way they treat nontraditional, part-time faculty (Gappa & Leslie, 1993). In contrast to traditional faculty, it is often the case that nontraditional faculty members are not paid regular, ongoing salaries (their remuneration is more properly termed wages), provided offices, offered job security, or granted benefits. In their book, The invisible faculty, Gappa and Leslie (1993) cite university administrators who justify segregating faculty into traditional and nontraditional roles based on economic necessities. The arguments of Gappa and Leslie were updated in a recent issue of Academe in a Statement from the Conference on the Growing Use of Part-Time and Adjunct Faculty (1998). To date, however, none has modeled the economic basis for such disparate treatment or tried to answer the following questions.

- What is the economic goal of private universities in establishing nontraditional programs?
What are significant similarities and differences between private universities with nontraditional programs and private corporations?

Is the practice of segregating faculty into ‘haves’ and ‘have-nots’ consistent with the economic goals of private universities?

Perhaps most frustrating is that the traditional economic theory of the firm seems to have been forgotten when it comes to analyzing the role of nontraditional education and adjunct faculty.

This paper will apply microeconomic principles to address these questions by formulating a simple theoretical model of the private university as a firm with two products: traditional and nontraditional education.

2. Background

James (1990) cited a substantial literature beginning with Breneman (1970) and continuing with Garvin (1980) which assumed that the major goal of a university is prestige maximization. In her own model, James assumed the university wishes to maximize prestige and satisfaction subject to a break-even constraint (p. 85).

While the goal of prestige maximization may be suitable for major research universities, it may be inappropriate for small, teaching-oriented private institutions. For those institutions which are more tuition-driven, a different goal may be considered. This paper will assume that policies and perhaps mission are largely dollar-driven, at least for those private universities which receive little research funding and are not as highly ranked academically as the best known research or even doctoral institutions. Consistent with the modern perception that nonprofit entities strive to set aside the excess of revenues over expenditures as surplus (fund balance) toward endowment, the private university is assumed to attempt to maximize surplus subject to production constraints.3

This is not the first place in which a large subset of modern private universities has been characterized as a business industry.4 Game theorists Brandenburger and Nalebuff (1996) pointed out that even elite institutions

2 Horton and Parry (1997) considered the role of adjunct faculty in Higher Education marketing.

3 Admittedly, research universities derive operating revenues from grants and foundation funds. With the governmental research funding cuts of the 1980s and 1990s, however, these institutions face dwindling sources of research funding. Their presence, moreover, in the market for nontraditional programs, indicates that they are still somewhat enrollment-driven (see Blumenstyk et al., 1997).

4 Ridgeway (1968) characterized American universities as ‘closed corporations’.

The private university is assumed to produce two services: traditional education and nontraditional education. While this assumption may be inaccurate for some institutions, it suffices for many small to medium sized non-research oriented institutions such as those in Table 1. To produce the services, the university must attract two...
Table 1
Members of The Consortium for the Advancement of Adult Higher Education, location, and 1996 total enrollment by institution

<table>
<thead>
<tr>
<th>Institution</th>
<th>Location</th>
<th>Enrollment (full-time equivalent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albertus Magnus College*</td>
<td>Connecticut</td>
<td>1142</td>
</tr>
<tr>
<td>Averett College*</td>
<td>Virginia</td>
<td>1966</td>
</tr>
<tr>
<td>Baker University*</td>
<td>Kansas</td>
<td>1771</td>
</tr>
<tr>
<td>Belhaven College*</td>
<td>Mississippi</td>
<td>905</td>
</tr>
<tr>
<td>Cardinal Stritch College*</td>
<td>Wisconsin</td>
<td>3948</td>
</tr>
<tr>
<td>Cornerstone College*</td>
<td>Michigan</td>
<td>1106</td>
</tr>
<tr>
<td>Eastern Nazarene College*</td>
<td>Massachusetts</td>
<td>1263</td>
</tr>
<tr>
<td>Fontbonne College*</td>
<td>Missouri</td>
<td>1501</td>
</tr>
<tr>
<td>Indiana Wesleyan University*</td>
<td>Indiana</td>
<td>2975</td>
</tr>
<tr>
<td>LeTourneau University*</td>
<td>Texas</td>
<td>2155</td>
</tr>
<tr>
<td>Medaille College</td>
<td>New York</td>
<td>878</td>
</tr>
<tr>
<td>Montreat College*</td>
<td>North Carolina</td>
<td>1011</td>
</tr>
<tr>
<td>Ohio Dominican College</td>
<td>Ohio</td>
<td>1416</td>
</tr>
<tr>
<td>Olivet Nazarene University*</td>
<td>Illinois</td>
<td>1762</td>
</tr>
<tr>
<td>Shorter College*</td>
<td>Georgia</td>
<td>1151</td>
</tr>
<tr>
<td>Southern Wesleyan University*</td>
<td>South Carolina</td>
<td>1365</td>
</tr>
<tr>
<td>University*</td>
<td>Kentucky</td>
<td>929</td>
</tr>
<tr>
<td>University of Phoenix*</td>
<td>Arizona</td>
<td>30,132</td>
</tr>
<tr>
<td>William Penn College</td>
<td>Iowa</td>
<td>460</td>
</tr>
</tbody>
</table>

Total enrollment 57,836

* Denotes institutions regionally accredited to offer masters degrees.

All institutions regionally accredited to offer bachelors degrees.

types of students: traditional (TS) and nontraditional (NS). They do this by hiring appropriate faculty and providing services such as library and learning resources. At present, traditional programs are still using admissions departments for signing up students. While this process merits further modeling, admissions departments are assumed to sign up students. Nontraditional programs, however, have employed full-blown marketing departments to aggressively advertise and seek out working adult students. These marketing departments, frequently affiliated with outside consulting firms such as the Institute for Professional Development (owned by Apollo Group Inc.), are paid a percentage, as high as 40 or 50 percent, of gross tuition revenue. Furthermore, nontraditional students are much less likely to require traditional library services in their studies than traditional students. Therefore, in this model, the production of traditional students is assumed to be inversely related to traditional tuition rates \(t\) and directly related to traditional faculty employed \(TF\) and library resources purchased \(L\). Similarly, the production of nontraditional students is assumed to be inversely related to nontraditional tuition rates \(n\) and directly related to nontraditional faculty employed \(NF\) and marketing effort expended \(M\). Payments to traditional faculty, nontraditional faculty, library resources, and marketing effort are symbolized by \(w_t\), \(w_n\), \(l\), and \(m\), respectively.

The objective function, to maximize surplus, is given by

\[
tS + nNS - (w_{TF} + w_{NF} + lL + mM),
\]

which represents tuition revenue minus cost of faculty, library, and marketing resources. Such variables as physical plant, staff, and administration, while important, may be treated more fully in a more complicated framework. Here, they are not explicitly modeled.

The constraints to which the university is assumed to be subject are

\[
TS = T(t,TF,L),
\]

where \(\partial T/\partial t < 0\), \(\partial T/\partial TF\), and \(\partial T/\partial L > 0\).

\[
NS = N(n,NF,M),
\]

where \(\partial N/\partial n < 0\), \(\partial N/\partial NF\) and \(\partial N/\partial M > 0\).

\[
L = L,
\]

and

\[
M = M.
\]

The Lagrangian function is as follows:

\[
\max S = \{tS + nNS - [w_{TF} + w_{NF} + lL + mM] \\
- \lambda^*[TS - T(t,TF,L)] - \mu^*[NS - N(n,NF,M)]\}
\]

by choosing \(t\), \(n\), \(TF\), and \(NF\).

Regional accrediting bodies are assumed to impose library spending, \(L\). Marketing expenditure, \(M\), is assumed slow-to-change, in keeping with the steep learning curve that academicians have consistently exhibited in this area.

The first order conditions from maximizing Eq. (6) are as follows:

\[6\] Administrators and staff members are important, but are omitted for simplicity. Extensions of this work will consider the many valuable contributions of such employees, such as negotiating contracts and leases, formulating strategy and policy, and dealing with irate students and faculty.
\[ \partial S / \partial t = TS + \lambda \partial T / \partial t = 0 \] (7)
\[ \partial S / \partial n = NS + \mu \partial N / \partial n = 0 \] (8)
\[ \partial S / \partial TF = - w_t + \lambda \partial T / \partial TF = 0 \] (9)
\[ \partial S / \partial NF = - w_n + \mu \partial N / \partial NF = 0 \] (10)
\[ \partial S / \partial \lambda = TS - T(t,TF,L) = 0 \] (11)
\[ \partial S / \partial \mu = NS - N(n,NF,M) = 0 \] (12)

Assuming that the second-order conditions for a maximum are also met, Eqs. (7)–(10) can be solved for the following equations:

\[ (TS^* + \partial T / \partial TF) (\partial T / \partial t) = - w_t \] (13)
\[ (NS^* + \partial N / \partial NF) (\partial N / \partial n) = - w_n \] (14)

Multiplying both sides of Eq. (13) by 1/t and both sides of Eq. (14) by 1/n,

\[ [(TS^* + \partial T / \partial TF) + \partial T / \partial TF = - w_t / t] \] (15)
\[ [(NS^* + \partial N / \partial NF) + \partial N / \partial n] = - w_n / n \] (16)

Since \( (\partial T / \partial n)(TS^*) + \) is the tuition elasticity of enrollment for traditional students \( (\epsilon_n) \) and \( (\partial N / \partial n)(NS^*) + \) is the tuition elasticity of enrollment for nontraditional students \( (\epsilon_n) \), Eqs. (15) and (16) become

\[ (\partial T / \partial TF) / \epsilon_n = w_t / t \] (17)
\[ (\partial N / \partial NF) / \epsilon_n = w_n / n \] (18)

In other words, to operate optimally, the university must pay each class of faculty the proportion of tuition equal to the marginal product of the faculty, adjusted by the tuition elasticity of enrollment for students. This result is analogous to the well-known profit maximization condition of microtheory, that to maximize profit, the firm must pay each factor of production the value of its marginal product.

To the extent, however, that traditional education is highly tuition elastic, nontraditional education is relatively inelastic, and marginal product of faculty is greater for nontraditional faculty than it is for traditional faculty, the following condition obtains:

4. Conclusion

Private universities which implement nontraditional programs for working adults typically staff such programs with part-time, adjunct faculty. These faculty are paid wages, but are not paid permanent salaries, provided with offices, granted tenure, or given benefits. Some
researchers have argued that, out of fairness, adjunct faculty should be paid more, since nontraditional tuition rates may exceed nontraditional tuition rates, even though the cost of library services and physical plant is far less for nontraditional programs than for traditional programs. Administrators respond that because of economic considerations, they cannot afford to pay nontraditional faculty more.

The model outlined in this paper, however, suggests that a policy which establishes nontraditional faculty may be the result of a false economy, consistent with the findings of Gappa and Leslie (1993). Rather than pay nontraditional faculty less, the institution which is maximizing its surplus funds subject to market constraints will pay nontraditional faculty proportionately more than traditional faculty, rather than less. These results can be extended through

1. considering marketing expenditures for nontraditional programs a fixed percentage of nontraditional tuition revenue, as is currently the case with many such programs,
2. examining empirical evidence, such as pay rates, staffing levels, tuition rates, and growth of unrestricted endowment among private institutions with both traditional and nontraditional programs,
3. expanding the current model to consider academic prestige over funding, as other studies have assumed for traditional programs, and
4. examining the optimal organizational form of the private university.

If the results of the model are accepted, then those universities which continue to exploit adjunct faculty do so to the institution’s detriment, since such a practice results in inefficiency. For a school which faces little competition, this may be a minor consideration. For those institutions in increasingly competitive markets, such inefficiency may prove fatal.

References