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Cost, Price, Equity and Quality in Higher Education

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Introduction

As tuition and other college expenses have continued to out pace the rate of inflation in the U. S. economy, increased attention has focused on the economics of higher education. Questions have been raised, explicitly or implicitly, as to whether the higher cost of a college education is justified and whether there are policy measures - private or public - which might be put in place to contain these costs and/or alter the nature of the product.

Perhaps uniquely among the economic sectors of Western society, higher education combines factors of cost, quality, price and time in ways in which perception may be as important as reality. Given the dual role of higher education, this is not surprising. On the one hand, the purpose of higher education is to provide an experience which will enrich the student's life. On the other hand, the purpose of higher education is to prepare people for entrance into professional life.

Of course, these purposes are closely intertwined. An education which is a liberating one will enhance an individual's economic worth in today's knowledge-based society. And an institution's success in providing productive additions to the work force (and important research contributions to business and industry) will enhance the reputation of both the institution and its alumni and, thereby, perpetuate its existence.

This said, there immediately rise definitional questions of major importance. Among these are the following considerations: What is meant by the enhancement of life and how can this be measured? Can this enhancement of life be measured at graduation or at life's end? To what degree does society

wish to make institutions of higher education conduits of social change and social mobility? In what ways can the efforts of institutions to create knowledge and disseminate knowledge be measured? And how can the role of private versus public, small versus large, sectarian versus secular institution be evaluated?

While the influence of education on the quality of life and on occupational achievement may elude precise measurement, it well illustrates the problem of evaluating the economics of higher education. Changes in the quality of life are experienced over many years. Prospective students must rely on the testimony of others for their initial evaluation. Similarly, alumni achievement is a function of a number of socio-economic variables so that baccalaureate origins may have a limited role in determining career paths.

Nonetheless, a comparative examination of the financial and economic attributes of a cross section of colleges and universities may provide clues to their impact on students, the mission which the schools envision for themselves, and the role these institutions are playing in society The evidence seems to indicate that student and faculty quality are intimately related (hardly a surprising conclusion, but not a relationship that has been very well documented) and that the institutional patterns of resource allocation reveal something of the institutional value systems.

What is attempted in this paper, then, are the following things:

- identification of financial and economic dimensions of schools as these relate to student quality and alumni

achievement

- identification of attributes of schools as these relate to institutional focus on the socio-economic background of students
- identification of the origins and uses of financial resources as these relate to the efficiency and strength (and prospects for) of colleges and universities
- identification of policy implications for government, foundation, college and individual decision making.

Financial Factors in the Quality of Higher Education

Fiscal strength is, obviously, a component of potentially enormous effect in determining the quality of an institution. But, perhaps not so obviously, it is no guarantee of success; and conceivably could have a perverse influence.

If one views education as an enterprise whose essence is the development of the life of the mind, then considerations of dedication, purpose and creativity are paramount and constitute factors not easily related to the world of finance. Certainly it can be argued that the relationship, while almost surely positive, is not linearly monotonic. Alfred North Whitehead, with characteristically understated eloquence, has said:

> "The justification for a university is that it preserves the connection between knowledge and the zest for life, by uniting the young and the old in the imaginative consideration of learning."
> (A. N. Whitehead The Aims of Education, 1929, p. 97)

Taking Whitehead's idea of a university at face value, it might be argued that "imaginative consideration of learning" may be facilitated by money but hardly guaranteed by it.

Recent research by the National Catholic Educational Association indeed suggests that effectiveness in education at the primary and secondary school level is not a function of dollars but of "dedication of students and teachers." Richmond Times Dispatch, August 11, 1990. And, in his report on a decade of higher education in Virginia, Dr. Gordon Davies has said that the experience of the State Council of Higher Education is that "relatively small amounts of money on the margins of institutional budgets can help to produce profound changes for the better in colleges and universities (while) ironically, large amounts of money can produce complacency." Gordon Davies Ten Years of Higher Education in Virginia, June, 1987, p. 6.

If the world of higher education does not lend itself to routine tests of fiscal strength and operating efficiency and economic performance, it nonetheless is influenced, constrained and empowered by money. An indicator of such an influence is that student quality is significantly related to the fiscal strength of an institution. Regressions based on the experience of colleges and universities in Virginia in 1988 yield the following results:

$$SAT = 916 + \underset{(2.03)}{0.0004}\ (\text{Total Assets} + \text{Endowment})$$

R-squared = 0.24

for public institutions and

$$SAT = 856 + \underset{(3.22)}{0.002}(\text{Total Assets} + \text{Endowment})$$

R-squared = 0.33

for private institutions.

t-values are in parentheses

Student quality is measured by average SAT of entering freshmen, and

total assets plus endowment is at book value. These regressions appear to confirm the thesis that fiscal strength is an important but not exclusive factor in the quality of education. In fact, these two regressions yield an interesting observation - that student quality is less influenced, on the average, by fiscal size among the state-supported institutions than in the privately supported schools. (Slope of 0.0004 versus 0.002.)

While the absolute level of fiscal strength provides a partial explanation of student quality, the more crucial question is that of comparing the various attributes of an institution with the sources and allocation of its financial resources. For our purposes, we have used regression analysis to develop single equation models of the economic, academic and demographic factors involved in higher education in Virginia.

These factors are highly interdependent and, therefore, are subject to the problem of multicollinearity in econometric analysis. Thus, a model which includes a large number of variables (such as size of school, faculty salaries, tuition, endowment income, scholarships, academic support, black/white student composition, student services, and government aid) will be very "explanatory" (i.e., have a high coefficient of correlation) but will not pick out significant individual variables.

The following function, based on a few key variables, suggests that high SATs are associated with a well paid faculty, high tuition, and a historically white student body. Spending for student services is inversely related to SATs while scholarships are positively related (though with low statistical

significance). [Data based on private colleges and universities in Virginia for fiscal year 1987-88.]

$$SAT = 425 + \underset{(2.72)}{12.4}(\text{Faculty Salaries}) + \underset{(1.87)}{0.04}(\text{Tuition}) - \underset{(-3.96)}{182.0}(\text{Race})$$
$$- \underset{(-1.52)}{0.82}(\text{Student Services}) + \underset{(0.85)}{0.25}(\text{Scholarships})$$

Adjusted R-square = .807

where faculty salaries are measured in thousands of dollars, tuition in dollars per student, race as a binary variable, student services and scholarships in dollars per full-time equivalent student.

Thus, quality is associated with higher "price" (tuition), more expensive factors of production (higher faculty salaries), and inversely with the provision of amenities (student services) with race appearing as a legacy of the past. Scholarships do not appear as a statistically significant variable, possible reflecting the mixture of financial resources expressed in the following function:

$$\text{Scholarships} = \$391 + \underset{(2.46)}{0.20}(\text{Tuition})$$

Adjusted R-square = .187

indicating that, on average, private colleges and universities in Virginia increase scholarship money at a rate of $20 for every $100 increase in tuition. (Some work, alluded to here, about increases in tuition from one school year to the next indicates that the increases do not appear to be

"collusive.")

That tuition is a major explanatory variable is indicated in the following equation:

$$SAT = 541 + .06(Tuition)$$
$$(5.17)$$

Adjusted R-square = .54

indicating that for every $1000 increase in tuition, SATs rise by 60 points. Of course, as indicated above, for every $100 increase in tuition, scholarships rise $20. And, by the following equation

$$Tuition = \$5077 + 1.29(Endowment\ Income)$$
$$(5.74)$$

Adjusted R-square = .592

it is seen that for every $100 increase in endowment income, tuition charges rise by $129. (n.b., tuition rises with endowment income rather than being "offset" by endowment income. It is also notable, in this connection, that the larger (in terms of financial resources) private schools tended to charge higher tuition.)

The role of government aid in the private institutions has, at first glance, a curious algebraic sign

$$SAT = 1045 - 0.14(\$government\ aid)$$
$$(-3.41)$$

Adjusted R-square = .325

government aid being defined as assistance from all levels of government. The direction of "causation" is quite plausibly from low SATs to government aid, suggesting that for every drop of 100 points in average SAT scores, governments invest some $700 in aid per student. Possibly, government aid to private schools is doing no more than barely keeping some struggling schools in existence - which, if true, would carry a message of social significance.

Analysis of public colleges and universities yields conclusions remarkably similar to those found for the private sector. The fiscal factors, in fact, seem broadly the same as those for the private sector, with what seems to be one important difference. The difference is that there are political pressures for "spreading the wealth" in the public sector.

This hypothesis receives support in the following equation

$$SAT = 594 + \underset{(0.58)}{0.003}(School\ Size) + \underset{(1.47)}{11.4}(Faculty\ Salaries)$$
$$+ \underset{(0.66)}{0.3}(Tuition) + \underset{(2.63)}{0.73}(Endowment\ Income) - \underset{(-2.71)}{0.60}(Scholarships)$$
$$- \underset{(-1.00)}{0.04}(Academic\ Support) + \underset{(0.60)}{.90}(Black/White)$$
$$+ \underset{(1.29)}{0.24}(Student\ Services) + \underset{(1.04)}{0.04}(Government\ Aid)$$

Adjusted R-square = .92

While the interdependence among these variables creates the problem of multicollinearity, the function does yield some interesting results. SATs are directly related to endowment income and inversely related to scholarships. Faculty salaries (with a t-value of 1.47 in the presence of multicollinearity) are a significant factor in a quality student body. It is perhaps surprising that government appropriations are not positively related to SATs. Certainly, the image is that states spend more on prestigious flag-ship (high SAT) schools. One plausible explanation is that governments try to "even things out."

The two-variable regressions (i.e, regressions relating SATs, in turn, one-on-one to faculty salary, tuition, ...) do indicate that, broadly speaking, the factors at work in the public sector are the same as for the private institutions. For example, SATs and faculty salaries are positively related, and statistically significant as are the SATs and tuition. However, other variables are not significant: government assistance (as shown in the multiple regression); student services; academic expenditures.

Using a few variables (to avoid problems of multicollinearity), it is seen that SATs in publicly supported colleges and universities are explained well by only three variables: faculty salaries, tuition, and race.

$$\underset{}{SAT} = \underset{}{391} + \underset{(2.76)}{13.8}(\text{Faculty Salaries}) + \underset{(1.64)}{0.05}(\text{Tuition}) - \underset{(-6.27)}{331}(\text{Race})$$

Adjusted R-square = .868

Thus, it appears that state government policy is to invest in higher faculty salaries in the flagship schools and that these schools charge higher tuition, pay faculty well, and over the years have accumulated significant endowment resources. These factors reenforce the already-established high quality of the institutions - indicating, again, that perception may be a "part" of reality. However, when it comes to scholarships, academic support and student services - the policy of the state seems much more egalitarian. Indeed, the two-variable regression relating SAT and scholarships indicates that scholarship monies are perhaps "spread" across institutions in such a way that there is no differential impact among schools.

Fiscal Strength and Operating Efficiency - Accounting Measures

The majority of consumer spending is for goods/services produced by the private for-profit sector of the economy. Major exceptions to this rule are medical care and education and medical care is trending toward the for-profit sector. Consumer Reports evaluates the quality of products produced by manufacturers and U.S. News and World Report evaluates the quality of the product from educational institutions. A substantial body of knowledge exists in the finance field concerning the evaluation of private for-profit corporations from the investor perspective. Fiscal strength and operating efficiency of private sector companies can be, at least partially, evaluated through the published financial statements. Higher education does not publish financial statements as such, but provides financial information to the Department of Education through the Integrated Postsecondary Education Data System (IPEDS). These data, in Virginia, are collected at the state level by the Council of

Higher Education for Virginia (SCHEV) and can be accessed as public information.

The fiscal strength of corporations can be measured through Balance Sheet relationships dealing with debt/equity, total assets (i.e., size), relationship between assets and debt, etc. Since educational institutions produce no equity and do not report a Balance Sheet *per se*, a major portion of this evaluation is not possible. However, it is possible to measure variables that contribute to academic strength, such as size (total assets plus endowment, number of students, and total assets plus endowment per student), profitability of auxiliary enterprises, total faculty compensation, the cost of tuition, scholarship aid, the annual investment in the library, and the gap that exists between tuition and total cost of the educational service.

Operating efficiency, in the private sector, relates to Income Statement relationships of expense to revenue, income to revenue, and inter-statement relationships of income to assets and income to equity. Some of this is transferrable to educational institutions, but it must be remembered that higher education is not profit-motivated. Being non-profit institutions, colleges and universities strive essentially to break-even. This means that any evaluation of operating efficiency must be relative, not absolute. Variables that can be used to evaluate efficiency include grand total revenue (including auxiliary enterprises) over total assets plus endowment (asset turnover), operating margin over total assets plus endowment (return on investment), tuition over academic expenses (yield), administrative expense over total revenue, and institutional support per full-time student (the

latter two deal with minimization of overhead).

Table 1

Fiscal Strength Measures	Operating Efficiency Measures
Total Assets + Endowment	Total Rev./Assets + Endow.
Full-time Equivalent Students	Op. Margin/Assets + Endow.
Tot. Assets + Endow./FTES	Tuition/Academic Expenditures
Auxiliary Enterprise margin	Institutional Support/FTES
Instructional Cost/FT Faculty	Institutional Support/TR
Tuition/FTES	
Scholarship/FTES	
Library/FTES	
(Total cost-Tuition)/FTES	

In the educational sector, constraints may be imposed (or self imposed) that restrict enrollment, tuition, etc., that make this environment less than the purely competitive situation. For example, the Commonwealth of Virginia recently capped the tuition increases for the 1990-91 academic year for all state institutions of higher learning. This action will affect operating efficiency unless the institutions take measures to reduce costs. Landlocked institutions do not have the ability to expand facilities to meet growing demand for their services. Institutions that have imposed enrollment limitations upon themselves find some options toward improved operating efficiency closed because of this action.

Analysis of Public Schools

The first presumption is that public schools are sufficiently different from private schools that each needs to be evaluated separately. From a

financial strength perspective, UVA ranked #1 or #2 in all categories. This was our *a priori* assumption. It was a bit surprising to find Radford at the bottom of the fiscal strength ranking due to low faculty support and low tuition. Intuitively, one might have expected the predominantly black institutions to occupy the lowest positions because of the significant bad press they have enjoyed in recent years, but it was not so. William & Mary and VMI, though only middle-sized institutions, ranked very highly on fiscal strength because of VMI's small enrollment (high resource commitment per student) and high tuition and William & Mary's tuition and library expenditures.

From the perspective of operating efficiency, it was interesting to note that VA Tech and Mary Washington occupied the top two positions while VMI had sole possession of last position. Va Tech excelled in asset turnover and low overhead percentage while Mary Washington received a high yield on academic expenditures and had a low cost of support per student. VMI ranked last in return on investment and next to last in overhead support per student. If one were looking for evidence of economies of scale within public institutions, this appears not to be significant.

Analysis of Private Schools

Though scoring poorly in auxiliary enterprise margin and scholarship assistance, W&L led the pack. Bluefield, by virtue of its poor showing on virtually every measure, trailed all others. Hampton, while the third largest in assets plus endowment, had a very low measure of fiscal strength, particu-

larly on the resources committed per student and on the more academically related items. It is interesting to note the role that scholarships play in narrowing the "gap" between total costs and tuition. R-MC Women has the highest gap and the highest scholarship/FTES while Bluefield ranks #22 in Tuition/FTES and #23 in scholarship/FTES.

The most efficient private school was Marymount with a high ranking on all ratios while the least efficient was R-MC Women's. The nature of the mission of R-MC Women's contributed significantly to its rankings, e.g., note the ranking of FTES (small school) and scholarship/FTES (high cost). There was little evidence of economies of scale among private schools.

Are public and private schools significantly different?

From a production perspective, there should not be significant differences between public and private institutions of higher education. Students + Faculty, in an educational environment (which serves as a catalyst), produces education. If they do exist, the differences appear below the surface in such areas as mission, scale, student services, etc.

Typically, public institutions are viewed as efficient processors of large numbers of students, while privates tend to be viewed as selective as to quantity and type of student. It is interesting to note that the public institutions are, on average, larger than the privates. Economies of scale would suggest that size could increase efficiency, which is borne out in a higher Operating Margin/Total Assets + Endowment than is found with the

private schools (2.88% vs 2.45%). But, the internal rankings do not suggest that either type of schools demonstrates increased efficiency with size.

Other than the intangibles related to size and "atmosphere", the objectives of public and private education are quite similar. The differences in their strength attributes deal more with enrollment than perhaps with any other single factor. Instructional cost/full-time faculty is 1.3 times as high in public than in private, but this could reflect the fact that several of the public universities offer expensive graduate programs. Auxiliary Enterprise margins generated by publics averaged 7.3 times the margins generated by privates ($4,249,830 vs $578,901). This could be indicative of the greater numbers of students "processed" or could represent the only way the schools have to offset inadequate state funding. The total assets plus endowment of the publics averaged 3.4 times those of the privates and the enrollment figures were 5.6 times higher. Though the number of full-time faculty was not available for four privates, the annual cost of instruction for publics exceeded that for privates by $16,000 per faculty member, perhaps again traceable to graduate programs in large public schools.

The average total assets plus endowment per student for private schools was twice that of the publics because few of the public schools in Virginia have significant endowments and because of the lower enrollment of the privates. The private schools also spend more per FTES ($1,870 vs $995) and a greater percentage of their revenues (14.64% vs 9.29%), on average, than do the public schools on "overhead". This may be reflective of the additional costs involved in significant development, i.e., fundraising, effort more

characteristic of private education than of public. While their tuition averaged 2.8 times that of public, privates gave 3.2 times as much in scholarship/FTES. This still left a $4,405 - $2,660 = $1,745 difference between public and private in "gap" less scholarship. Nationwide, fifteen years ago, the tuition gap between public and private education was $1,500; in 1987-88 it was $5,300 (The Chronicle of Higher Education, July 18, 1990, A-23).

The function of Auxiliary enterprise margin appears to be the same in both types of schools -- to increase overall profitability. Four public schools (William & Mary, Longwood, Radford, and Norfolk State) had negative operating margins before auxiliary operations were added. Only Norfolk State and Christopher Newport had deficits in auxiliary operations, but Newport's was not sufficient to eliminate its operating margin. In the private schools, Emory & Henry, Ferrum, Randolph-Macon Women's, St. Paul's, Sweet Briar, and Virginia Union had deficits before auxiliary operations that were not erased by profitable auxiliary operations. Sweet Briar and Virginia Union had deficits before and in auxiliary operations as well. Bluefield, Hollins, Mary Baldwin, and Randolph-Macon overcame pre-auxiliary operations deficits with profitable auxiliary operations.

On the efficiency side, the average public institution had a significantly greater asset turnover (75% vs 51%) than did the average private school. This indicates more education per dollar of assets committed from public education -- which should be expected. Private schools, on the other hand, got a far greater yield on their academic expenditures (94% vs 43%) but spent considerably more on overhead than did the public institutions. Higher

tuition and greater amenities account for this result. Perhaps, students willingly pay more for private education to gain these inefficiencies, plus the inefficiencies of smaller size, smaller classes, more personalized attention, etc.

In summary, fiscal size, tuition, and the ability to generate an auxiliary enterprise margin appear to be the dominant determinants of fiscal strength, from an accounting perspective. Asset turnover and minimization of overhead appear to be the most significant criteria in measuring operating efficiency.

A Broader Perspective

The picture which emerges from this analysis is clear. It shows that the quality of an institution depends on the dollars available to it and that these dollars, in turn, produce quality.

This is hardly a startling discovery. However, the specificity of the analysis may be interesting. While the quality of a school is a function of many factors, it turns out that just a few variables are the crucial ones. These are: tuition, faculty salaries, and endowment income (from the economic side) and fiscal size, tuition, auxiliary enterprise margin, asset turnover, and minimization of overhead (from the accounting side).

Interestingly, scholarship expenditures are either statistically insignificant or are actually inversely related to quality, both from an economic and an accounting perspective. A plausible explanation for this

finding is that the social contract in today's world is one in which the aim - both in the private and public sectors - is to make family income neutral in terms of access to higher education.

While the analysis in this paper, and the analysis in the literature on this subject, find a number of other relationships that are of interest (for example, spending for academic support is statistically significant in the private, but not the public sector), the nub of the matter is that price, income and quality are inextricably intertwined.

Of course, this is the way the world works and that this should be true in higher education is not (as indicated above) surprising. However, the implications are not trivial when viewed in a broader context. That context is that graduates of quality schools go on to high levels of achievement in the business and professional world and thus are in a position to ensure alma mater's continued success and alma mater's continued ingestion of students whose socio-economic background prepares them well for entrance to prestigious schools and whose family income levels permit the payment of the high cost of higher education.

Thus, the findings of this study might be summed up in the phrase from the popular song of the 1920s (Ain't We Got Fun) that "the rich get richer and the poor get poorer." One might interpret this as evidence of the efficient working of a market system in which innate personal ability and a supportive family background lead to high levels of output and productivity. Or, in the public arena, one might infer a political bias toward the successful institutions resulting in higher funding. Or, one might interpret this as evidence

for the Marxist view that the whole education system of a society is merely an instrument for the fashioning of a sub-servient work force.

That the graduates of quality schools do better in the business and professional world is shown in a study by Dolan, Schmidt and Jung (1985, Review of Economics and Statistics) in which a simultaneous equation model was developed showing the interdependence of student ability, faculty salaries and alumni achievement and the role of various exogenous factors. The focus of that study was on the identification of patterns of resource allocation within a school that would produce successful alumni. The study concluded that "faculty salary, academic and administrative support ...quality students and quality faculty, buttressed by ...libraries, laboratories, and, more recently, computers, appear as the major cogs driving the educational process" (pp. 519-520).

Although the data base for Virginia schools is more limited in this respect than for the Dolan-Jung-Schmidt study, analysis of this data set via two-variable regressions indicates that the production of Ph.D.s and Executives are related as follows:

$$\text{Executives} = -6.99 + \underset{(3.92)}{.00843}(\text{SAT})$$

$$R\text{-square} = .39$$

$$\text{Ph.D.s} = 26.2 + \underset{(3.52)}{.033}(\text{SAT})$$

$$R\text{-square} = .33$$

That the quality of students appearing on these campuses is a function of family income and socio-economic status has been documented by the College Board, and set out at some length in a recent review article in the New York Review of Books. This is graphically illustrated in Figure (1). Taking the values in this graph and performing two-variable regression analysis indicates that SATs are a statistically significant function of income. The graph shows unambiguously, also, that scores on the SAT tests are a function of ethnic background.

That financially disadvantaged students lack access to higher education is not clear. The results in this paper indicate that there is an inverse relationship between quality of students and scholarship aid (or that the relationship is not significant). The Dolan et al study found the coefficient for the scholarship variable was negative (and significant at the .01 level). However, at least one study (Machlis, circa 1974) found that low-income classes are under-represented in higher education and that the wealthy have a "disproportionately large number of students in attendance."

Policy Implications

The crystal-clear indications are, from this study, that higher education in Virginia is a product of, and a component of, the social and economic system. That this statement is tinged with an economic interpretation of history (Marxist, to some degree) should not blind one to its legitimacy and importance.

It suggests that, in the first place, that the system has worked well in

the past and serves society well in the present. To use a perhaps tired cliche, whatever is not broken should not be fixed. However, to say that the system works generally well and effectively is not to say that there are not important possibilities for change.

One important change is suggested and that is that consideration should be given to much higher levels of spending for low income and minority groups. The results of the present paper indicate that there is a definite thrust toward financial assistance to these groups. The algebraic signs of the coefficient for scholarship money and for government aid to private institutions would suggest this. Also, the apparent "spreading" of financial resources among the public institutions warrants such an inference.

But the overriding evidence here is that this is only marginally effective. The implication is that the term "massive" might be the operative term. Large doses of capital from the private and public sectors might be in order. A current recommendation to public education from The Education Commission of the States calls for:

> . providing more money for need-based student aid programs.
> . allowing students attending private colleges to use at least some state student aid funds even if they enroll in colleges that are outside their state.
> . including private colleges in competitive grant programs sponsored by the state.
> . considering paying private colleges to offer certain academic programs rather than creating new programs at public colleges. (The Chronicle of Higher Education, July 18, 1990, A1)

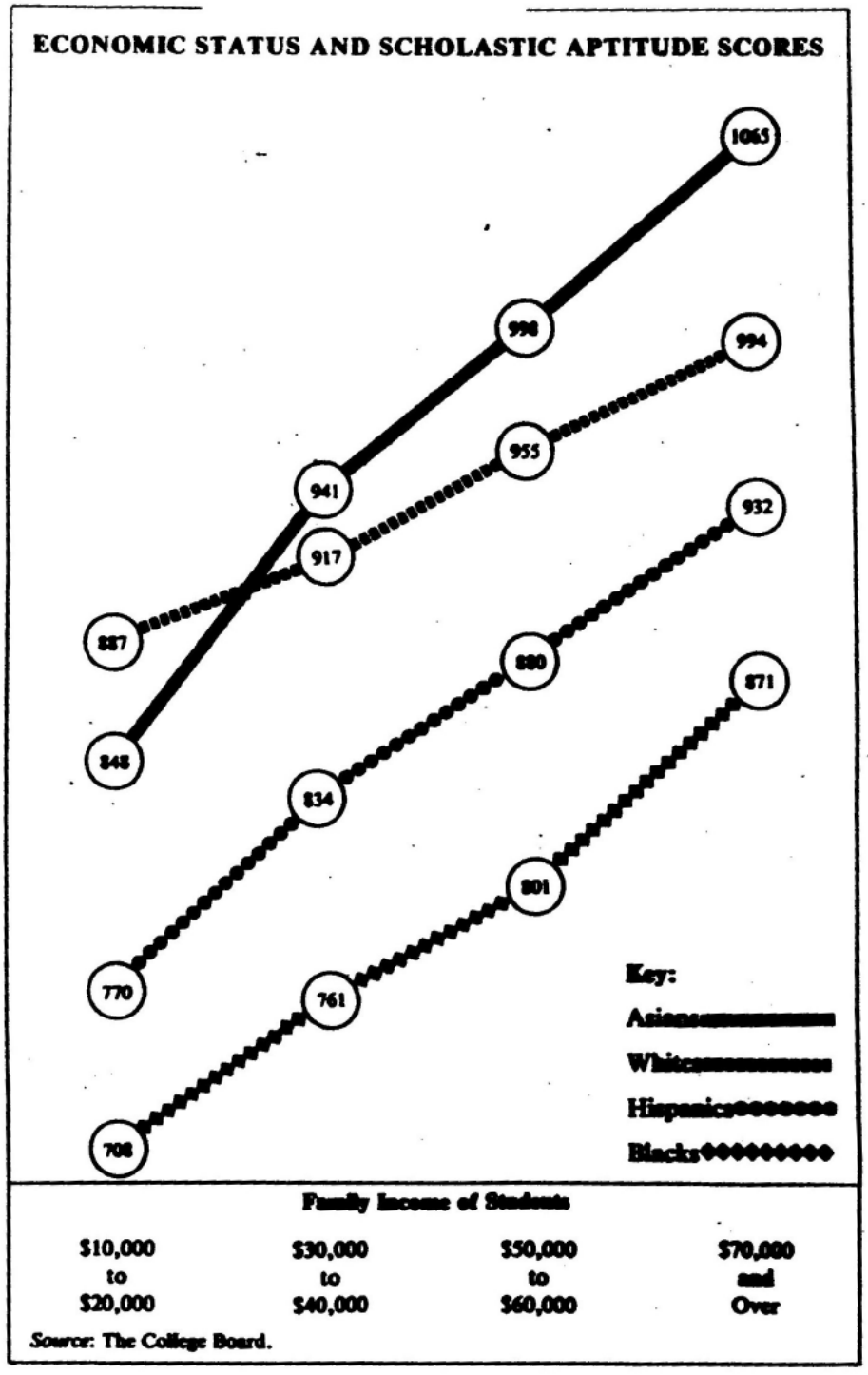
A large infusion of capital could be effectively used at the elementary and secondary school levels (see, e.g., the Dolan and Schmidt study, 1987, Economics of Education Review). Also, one might argue that the pricing system

in higher education should, in theory at least, involve even more price discrimination than is presently the case, e.g., the relative unprofitability of private schools *vis-a-vis* the public institutions.

While these conclusions would appear to have considerable support in the context of this paper, an even broader context would suggest that education is not the only scarce resource in society and that spending for health, transportation, corrections, defense, and recreation might create an opportunity cost that would preclude higher spending for education. The general equilibrium analysis required to address this matter is beyond the scope of this study.

At the level of partial equilibrium analysis and accounting evaluation, however, it is clear that quality, price and income are the key determinants of the nature of higher education.

Figure 1



October 12, 1989

Figure 2
Fiscal Strength

Public Colleges and Universities - 1988

School	(1) Total (000) Assets + Endowment	R A N K	(2) FT Equival. Students (FTES)	R A N K	(3) (1)/FTES	R A N K	(4) Auxiliary Enterprise Margin	R A N K	(5) Instruct- ion. Cost/ FT Faculty	R A N K	(6) Tuition/ FTES	R A N K	(7) Scholar- ships/ FTES	R A N K	(8) Lib- rary/ FTES	R A N K	(9) "gap"	R A N K	(10) Average Ranking
UVA	915,647	1	18,680	2	49,017	2	20,390,198	1	120,932	2	3,524	1	1,217	1	854	1	6,699	1	1.33
VCU	444,584	2	16,384	3	27,135	3	17,875,872	2	126,409	1	2,675	6	512	6	317	7	5,928	2	3.56
Virginia Tech	364,648	3	23,184	1	15,728	7	1,978,102	8	75,036	3	3,065	4	504	7	432	4	3,825	4	4.56
George Mason	142,987	4	13,772	4	10,382	12	6,609,585	4	71,948	5	1,593	12	231	13	283	9	2,589	8	7.89
Old Dominion	139,708	5	12,820	5	10,898	10	6,646,120	3	69,415	6	2,079	8	387	8	266	12	2,562	9	7.33
James Madison	133,162	6	9,754	6	13,652	9	4,055,261	5	59,168	9	1,887	9	193	15	282	10	2,014	13	9.11
William & Mary	111,011	7	6,716	9	13,652	5	2,319,755	6	72,925	4	3,143	3	259	12	602	3	3,134	6	6.11
VMI	66,853	8	1,310	14	51,033	1	1,013,950	9	68,721	7	3,302	2	639	4			4,480	3	5.33
Virginia State	61,946	9	3,414	10	18,145	4	706,528	10	56,264	12	2,902	5	1,112	2	269	11	2,413	10	8.11
Radford	61,193	10	7,612	7	8,039	13	2,200,251	7	49,052	14	1,350	14	262	11	207	13	2,210	12	11.22
Longwood	46,973	11	2,936	13	15,999	6	684,074	11	52,510	13	1,654	11	368	9	603	2	2,409	11	9.67
Norfolk State	46,803	12	6,898	8	6,785	15	(245,318)	14	60,374	8	1,416	13	1,053	3			3,608	5	8.67
Mary Washington	44,245	13	2,992	12	14,788	8	440,229	12	48,405	15	2,428	7	224	14	375	6	1,515	15	11.33
Christopher Newport	22,561	14	3,232	11	6,980	14	(1,114,897)	15	56,993	11	1,662	10	281	10	291	8	1,600	14	11.89
Clinch Valley	12,629	15	1,165	15	10,857	11	187,744	13	59,035	10	1,261	15	534	5	411	5	2,730	7	10.67
Average	174,330		8,725		18,206		4,249,830		69,812		2,263		518		399		3,178		

Private Colleges and Universities - 1988

Univ. of Richmond	312,230	1	3,978	3	78,489	3	5,198	21	69,148	4	7,616	6	958	19	725	3	4,640	16	8.44
Washington & Lee	132,661	2	1,903	6	69,711	4	343,558	14	80,246	2	8,434	5	1,477	13	937	1	7,460	5	5.78
Hampton	124,346	3	4,740	2	26,233	13	1,479,758	2	42,987	15	4,465	20	828	22	219	19	4,699	15	12.33
Randolph-Macon, W.	63,769	4	677	21	94,193	2	284,015	16	42,056	17	8,767	3	3,087	1	637	5	12,739	2	7.89
Sweet Briar	63,748	5	590	22	108,047	1	(34,251)	22	55,509	5	9,325	1	2,660	4	872	2	17,272	1	7.00
Hollins	51,020	6	935	13	54,566	6	639,704	11	76,376	3	8,567	4	1,807	9	553	6	7,983	3	6.78
Roanoke	49,677	7	1,417	7	35,058	10	468,652	12	54,869	6	7,557	8	1,747	10	376	9	4,614	17	9.56
Hampden-Sydney	47,601	8	870	15	54,713	5	825,978	6	51,838	9	9,192	2	2,912	2	660	4	7,138	6	6.33
Randolph-Macon	46,571	9	1,043	11	44,651	7	1,400,641	4	47,371	13	7,560	7	1,206	16	379	8	5,706	12	9.67
Lynchburg	40,323	10	1,974	5	20,427	17	1,199,302	5	52,576	8	6,321	9	1,272	15	262	16	3,960	19	11.56
Mary Baldwin	34,695	11	973	12	35,657	8	1,705,725	1	52,642	7	5,903	15	2,516	5	280	15	7,736	4	8.67
Bridgewater	30,231	12	858	16	35,234	9	665,395	9	42,899	16	6,303	10	2,801	3	283	14	5,728	11	11.11
Eastern Mennonite	27,122	13	923	14	29,385	12	194,292	17	51,129	10	6,004	13	2,149	7	329	10	4,983	14	12.22
Ferrum	25,861	14	1,095	8	23,618	14	85,098	19			5,343	17	1,981	8	295	12	6,488	8	11.11
Virginia Union	22,809	15	1,077	10	21,178	16	(483,578)	23			5,014	18	1,660	11	173	20	6,644	7	13.33
Emory & Henry	22,398	16	737	19	30,391	11	38,480	20	44,596	14	5,453	16	886	21	466	7	6,105	9	14.78
Liberty	21,006	17	6,175	1	3,402	23	1,448,039	3			3,249	23	1,003	18	153	21	3,588	20	14.00
Marymount	17,791	18	2,042	4	8,713	22	783,864	7	100,456	1	6,199	11	1,168	17			2,080	23	11.44
Shenandoah	16,849	19	744	18	22,646	15	645,872	10			5,933	14	1,591	12	243	17	4,943	13	13.11
Virginia Wesleyan	16,228	20	1,086	9	14,943	19	284,703	15	48,215	12	6,005	12	899	20	294	13	2,545	22	15.78
Averett	11,223	21	824	17	13,620	20	378,151	13	48,459	11	4,833	19	1,344	14	222	18	3,981	18	16.78
St. Paul's	10,009	22	718	20	13,940	21	767,729	8	31,637	18	3,604	21	2,486	6			5,979	10	14.00
Bluefield	5,948	24	313	23	19,003	18	188,395	18	27,317	19	3,584	22	210	23	309	11	2,997	21	19.89
Average	51,918		1,552		37,296		578,901		53,701		6,314		1,680		413		6,085		
Grand Average	100,239		4,383		29,761		2,027,952		60,809		4,715		1,222		408		4,937		

Figure 3
Operating Efficiency

Public Colleges and Universities - 1988

School	(1) Tot. Rev./ Total Assets + Endow.	RANK	(2) Op. Margin/ Total Assets + Endow.	RANK	(3) Tuition/ Academic Expenses	RANK	(4) Instit. Support/ FTES	RANK	(5) Instit. Support/ Total Rev.	RANK	(6) Average Ranking
UVA	0.5982	12	0.0282	8	0.3447	12	1,124	12	0.0383	1	9.00
VCU	1.1189	2	0.0507	3	0.3109	14	1,326	13	0.0437	2	6.80
Virginia Tech	0.9907	3	0.0260	9	0.4449	7	827	6	0.0531	3	5.60
George Mason	0.7132	8	0.0485	4	0.3809	10	835	7	0.1128	13	8.40
Old Dominion	0.7233	7	0.0528	2	0.4479	6	877	9	0.1113	12	7.20
James Madison	0.6406	11	0.0327	6	0.4838	5	633	2	0.0725	4	5.60
William & Mary	0.7557	6	0.0180	11	0.5007	4	984	11	0.0788	5	7.40
VMI	0.3594	15	0.0159	12	0.4270	8	1,777	14	0.0969	8	11.40
Virginia State	0.6629	9	0.0564	1	0.5461	2	1,929	15	0.1603	15	8.40
Radford	0.9016	4	0.0320	7	0.3792	11	624	1	0.0861	7	6.00
Longwood	0.5626	14	0.0141	13	0.4071	9	915	10	0.1016	9	11.00
Norfolk State	1.1690	1	-0.0074	15	0.2818	15	877	8	0.1106	11	10.00
Mary Washington	0.5838	13	0.0428	5	0.6158	1	688	3	0.0798	6	5.60
Christopher Newport	0.7614	5	0.0024	14	0.5095	3	741	4	0.1394	14	8.00
Clinch Valley	0.6475	10	0.0195	10	0.3159	13	766	5	0.1090	10	9.60
Average	0.7459		0.0288		0.4264		995		0.0929		

Private Colleges and Universities - 1988

Univ. of Richmond	0.1783	23	0.0222	11	1.1750	2	1,368	7	0.0977	2	9.00
Washington & Lee	0.2513	20	0.0234	9	0.8279	19	1,775	14	0.1013	3	13.00
Hampton	0.3665	14	0.0172	15	1.0686	5	1,230	4	0.1279	10	9.60
Randolph-Macon, W.	0.2168	22	-0.0114	20	0.8230	20	5,145	23	0.2518	23	21.60
Sweet Briar	0.2369	21	-0.0100	19	0.6874	22	3,319	22	0.1296	12	19.20
Hollins	0.3096	18	0.0065	16	0.8763	14	1,844	15	0.1091	4	13.40
Roanoke	0.3646	15	0.0176	13	1.1423	3	1,480	11	0.1157	7	9.80
Hampden-Sydney	0.3217	17	0.0232	10	0.9419	11	1,996	17	0.1134	5	12.00
Randolph-Macon	0.3003	19	0.0031	17	1.0639	6	2,224	19	0.1659	17	15.60
Lynchburg	0.5534	6	0.0503	4	1.0627	7	1,373	8	0.1215	8	6.60
Mary Baldwin	0.4250	10	0.0425	6	0.7232	21	2,559	20	0.1689	19	15.20
Bridgewater	0.3741	13	0.0328	8	0.8728	15	1,155	3	0.0876	1	8.00
Eastern Mennonite	0.3908	11	0.0188	12	0.8341	18	1,475	10	0.1284	11	12.40
Ferrum	0.4841	9	-0.0165	22	0.8447	16	1,747	13	0.1527	15	15.00
Virginia Union	0.5229	8	-0.0276	23	0.9217	13	2,611	21	0.2357	22	17.40
Emory & Henry	0.3768	12	-0.0033	18	1.0109	9	1,930	16	0.1684	18	14.60
Liberty	2.0857	1	0.0758	2	0.9598	10	1,018	1	0.1435	6	4.00
Marymount	1.0945	2	0.1443	1	1.0889	4	1,089	2	0.1142	6	3.00
Shenandoah	0.5456	7	0.0657	3	0.8422	17	1,521	12	0.1230	9	9.60
Virginia Wesleyan	0.6169	5	0.0450	5	1.2008	1	1,248	5	0.1354	13	5.80
Averett	0.6847	3	0.0380	7	0.9332	12	1,468	9	0.1573	16	9.40
St. Paul's	0.6755	4	-0.0119	21	0.6442	23	2,087	18	0.2216	21	17.40
Bluefield	0.3632	16	0.0174	14	1.0494	8	1,359	6	0.1966	20	12.80
Average	0.5104		0.0245		0.9389		1,870		0.1464		
Grand Average	0.6034		0.0262		0.7366		1,525		0.1253		