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**Expenditure Patterns and Trends in U. S. Higher Education
Implications for Quality**

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Implications for Quality

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This paper examines data on recent trends in U. S. higher education spending to shed light on the following familiar question: "Have recent rapid increases in higher education costs been used efficiently to improve the quality of higher education, or have they been spent wastefully on academic bureaucracy, frills, or improvements in quality whose value is less than their cost?"

The question is important in light of the growing concern in Congress, in state legislatures, and among parents and citizens that this spending receive careful scrutiny. Even leaving aside the opportunity costs paid by students through withdrawal from the workforce, higher education costs the nation well in excess of \$100 billion. Although families pay only about a third of this total, they are rightly concerned that they get their money's worth from the money they spend, and both state and federal governments, which account for the majority of the bill, are also concerned about accountability.¹ Attention focuses especially on the relative handful of highly selective private colleges and universities who have raised their prices unusually fast in the 1980's and who, while enrolling a tiny fraction of the nation's students, dominate the headlines on the college cost issue.

In this paper we examine data on expenditure trends for a variety of types of colleges and universities. We classify institutions by public vs. private control, by university vs. four year college vs. two year college level, and, for private

¹ This paper concentrates on institutions' expenditures on education. For a helpful treatment of the costs facing families through tuition charges, and how those have changed over time, see Hauptman, 1990.

institutions, by level of endowment per student. We describe in as much detail as the data permit where the increases in higher education spending in recent years have gone. By establishing what colleges and universities have spent their money on, we can offer some plausible assessment of what implications these expenditure changes have had for various dimensions of educational quality.

THE DATA

We base the following analysis of trends in spending on a data set reporting financial information on individual colleges and universities.² The data set was constructed by merging three federally maintained data sets. One, the Financial Statistics report from the Higher Education General Information Survey (HEGIS), describes the basic financial accounts of all public and private non-profit post-baccalaureate institutions in the United States, as well as a handful of "proprietary" trade schools that are run for profit. The second, the Fiscal-Operations Report and Application to Participate (FISAP) data base, provides more detailed information on student aid spending, revenues and of the aided population at colleges and universities which apply for federal assistance under any of the so-called "campus-based" programs (direct loans, SEOG's, and college-work study).³ The

²For a parallel analysis of college and university revenue trends, see McPherson, Schapiro, and Winston, 1989a and b.

³We are grateful to the American Council on Education for preparing the merged data set for our use. Laurent Ross of the ACE was very helpful to us in programming and documenting the merge.

third, the HEGIS Enrollment Survey, reports full and part time enrollment for all institutions, allowing us to construct estimates of full-time-equivalent enrollment, which we use to express the financial data on a per f-t-e enrollment basis. We have these merged data sets for all private non-profit and public colleges and universities for the academic years 1978-79, 1983-84, and 1985-86. Painstaking efforts have been made to clean the data set of reporting and recording errors. In addition, we have dropped all proprietary schools from the sample as well as all schools with fewer than two hundred undergraduates. The data set has been constructed as a panel, so that only schools with data for all three observation years are included.

Tables 1 and 2 provide a summary of these data. They report expenditure information for 1985-86, as well as the percentage change in each variable over the 1978-79 to 1985-86 period. (Note that in the tables each academic year is indexed by its ending year: for example, 1978-79 is listed as 1979.) All data are expressed on a per student basis and in constant 1979 dollars (using the CPI as deflator).

The top panel of Table 1 presents a number of expenditure categories for different type and control of institutions for 1985-86. The second panel presents percentage changes in each category over the 1978-79 to 1985-86 period, while the bottom panel shows how the change in each expenditure category contributes to the overall increase in expenditures over the seven year period. The format of Table 2 is analogous to Table 1, except that it focuses

on private universities and four year colleges, and disaggregates these institutions according to their level of endowment per student in 1978-79.

Expenditure categories are as follows. The first column [netspend] presents the average per f-t-e- student value of educational and general spending net of student aid at the various categories of **institutions**.⁴ "Netspend" is then broken down into the following nine components: instruction and self-supported research [instruct]; sponsored research [research]; public service (including extension services) [pubserv]; academic support other than libraries (computers, deans, etc.) [acadsupp]; libraries [library]; student services (admissions, registrar, counseling, student health, recreation) [studsew]; institutional support (administration, accounting, security, alumni and development) [instsupp]; plant operations and maintenance [opmnexp]; and a residual category [other]. The next two columns divide student aid spending into unrestricted scholarships [sclunres] and restricted scholarships [sclrest]. Additions to land, buildings and equipment (which reflect capital rather than current expenditures) are reported in the final column [plantadd].

EXPENDITURE TRENDS AT PUBLIC AND PRIVATE INSTITUTIONS

Turning first to the top panel of Table 1, we note that in

⁴We have netted out student aid spending because part of this spending is directly "passed through" from federal student aid, and the rest is best seen as foregone institutional revenue, rather than as spending on educational programs.

every expenditure category except public service the per student values at private universities far exceed those at public universities.⁵ In particular, instructional expenditures at private universities are 71% larger than those at their public counterparts. A comparison between private and public four year colleges produces a very different result: most categories of spending are quite similar (with the exceptions being student services and institutional support, where in each case the privates are substantially higher, and public service, where public institutions are much higher). It is notable that per student spending on instruction is virtually identical at public and private four year colleges. At two year institutions, public expenditures on instruction exceed those at private institutions. Private two year colleges, however, spend much more on student services and institutional support than do their public counterparts, so that on balance per student spending is higher at private than at public two year institutions. In every spending category except student services, universities spend more than four year colleges, which in turn spend more than two year colleges. Student aid spending is substantially higher at every category of private institution than in its public counterpart. Plant additions are also higher in private institutions, although the differences are smaller. Universities in both sectors spend more

⁵It is possible that some expenditures at public institutions are significantly understated, since in some states costs of employee benefits (such as pension plans) may appear on state government budgets rather than institutional budgets.

than twice as much per student on plant additions as do two year or four year colleges.

An examination of percentage changes in these categories over time, shown in the second panel, indicates that increases in net spending at private institutions exceed those at public institutions. Notable differences exist in rates of growth of instructional spending, student services spending, academic support, and operation and maintenance. Interestingly, research spending grew more rapidly at public than at private institutions over this period. Concerning scholarship spending, unrestricted spending increased faster at private than at public institutions, while for restricted spending the reverse pattern obtained. Spending on new plant and equipment grew somewhat faster at private than at public institutions.

The third panel provides an analysis of shares in expenditure growth that takes into account both the size of a particular expenditure category and its rate of growth. These are depicted in Figure 1. At public universities, for example, 30% of the increase in net spending over the period was contributed by the increase in instructional expenditure. The next most important contributors were research (26%) and institutional support (17%). The contribution of instructional expenditures was even larger at private universities, where it accounted for 46% of the increase in net spending, while institutional support provided 15%. Increases in research expenditures were far less important at private than at public universities (8% vs. 26%). Increases in

instructional expenditure were also quite important at public and private four year colleges. However, the largest contributor at public four year colleges was institutional support (43%) -- principally administrative expenses. At private two year colleges, institutional support again was the largest factor in cost growth, although instructional expenditures was the prime contributor in the case of two year public institutions.

What does this imply for quality? Drawing a link between expenditures and quality is made difficult by the degree of aggregation of the various expenditure categories. Even the instruction category includes expenditures on self-supported research, as well as provision of instructional services. Such categories as student services include items like counseling and health, which are clearly service-related, with other items like admissions, which may be seen as a marketing expenditure.

Still, the data seem to warrant some conclusions. On the one hand, the relatively strong contribution of instructional expenditures to cost growth is reassuring. On the other hand, looking at growth rates in spending, the rapid increases in research spending and institutional support at public universities and four year colleges accompany relatively slow growth in instructional spending at these institution types. It is worrying that the contribution of research expenditures to cost growth is almost as high as instruction at public universities, and that the contribution of institutional support exceeds that of instruction at public four year colleges. Conclusions about quality at private

institutions are better made after we turn to examination of Table 2, which shows the effects of the considerable heterogeneity among private institutions.

EXPENDITURE TRENDS BY ENDOWMENT LEVEL IN PRIVATE HIGHER EDUCATION

The top panel of Table 2 shows that in general the amount spent in any expenditure category is positively related to institutional wealth at both private universities and private four year colleges.⁶ This relationship is particularly strong for the important categories of instruction and research. The large differences in spending on new plant are also noteworthy. Indeed, the most striking difference with regard to growth rates is in the plant additions category, where investment in new plant has approximately tripled at the wealthiest private universities and four year colleges. Notice though that at each wealth level, spending on new plant has grown more rapidly at universities than at four year colleges. This may well reflect the increasing cost of research-related capital investments.

Turning to shares of expenditure growth (displayed in graphical form in Figure 2), instructional spending was an important contributor to cost growth for institutions at all wealth levels. At the least wealthy universities, institutional support was also a very large contributor to cost growth, but at other

⁶There are very few private two year colleges with endowments above \$4000 per student, so we have not included breakdowns for this institution type.

groups of universities, institutional support played a much less important role. The contribution of instruction (and self-supported research) at the wealthiest private universities is noteworthy: 64% of cost growth is accounted for by this one category. At private four year colleges both institutional support and student services are important contributors to cost growth. This growth presumably reflects in part the provision of additional services to students, but it also reflects more intense marketing and fund-raising efforts at private institutions.

A final observation about these tables is the following. Neither library expenditures nor spending on operation and maintenance of plant has been a major contributor to cost growth. This is somewhat surprising in light of the tendency of college presidents to cite these costs in explaining rising tuition. However, spending in both these categories may be important to preservation of quality in the longer run. These data suggest the possibility that some categories of institutions may be deferring needed expenditures in these areas, thus contributing to a potential quality problem in the future.

CONCLUSION

This analysis of changes in expenditures over time shows that at many categories of institutions major increases of expenditures were directed toward areas which appear to be quality-related. At the same time, within certain categories of institutions, major budgetary increases were devoted to types of spending that appear

to be largely unrelated to the quality of undergraduate instruction.

Perhaps surprisingly, in light of the controversy surrounding tuitions at the highest-priced institutions, the evidence reviewed here suggests that there may be more reason to worry about trends in quality at public colleges and universities than elsewhere. Relatively slow growth in state funding for higher education in the 1980's has apparently produced a revenue squeeze in much of public higher education, while a substantial share of expenditure growth has been devoted to non-instructional expenses such as sponsored research (at universities) and institutional support (at four year institutions). Some observers have suggested that recent developments in the higher education marketplace reflect an increase in the quality of private higher education relative to its public competition.⁷ The evidence developed here is consistent with that hypothesis.

Higher education is an important national investment. It is very important that these resources be used productively, and this implies that it is vital that the spending-quality link should be strong. A finer disaggregation of these expenditure categories - not currently available on a national basis - would permit a more precise analysis of this link. Further study of these relationships, both at the level of individual institutions and on a national basis, is warranted.

⁷See Benjamin, 1990.

Table 1. Expenditure data for public and private institutions by type

1986 levels (1979 dollars)

		N	netspend	instruct	research	pubserv	acadsupp	library	studserv	instsupp	opmnexp	other	student aid	spending	capital	spending
													sclunres	sclrest		plantadd
public	univ	70	6906.73	2752.73	1327.95	604.84	441.82	239.93	276.65	577.39	621.49	63.93	116.94	302.80		1312.85
	four year	278	3979.19	1926.30	164.91	106.79	217.63	165.05	295.55	556.43	448.98	97.56	63.94	281.77		521.21
	two year	650	2652.31	1346.29	2.46	56.94	152.28	78.83	246.83	409.81	319.45	39.42	13.77	216.91		273.24
private	univ	54	11591.27	4715.70	2422.72	346.93	630.54	445.50	481.11	1308.39	1085.25	155.14	722.73	523.62		1616.39
	four year	790	4670.95	1927.50	129.30	55.04	224.37	189.25	506.55	943.45	569.20	126.30	425.71	478.38		641.71
	two year	94	3095.59	1099.07	0.52	14.43	141.60	88.14	438.77	797.86	410.45	104.75	188.06	527.51		384.83

percentage change, 1979-86

		N	netspend	instruct	research	pubserv	acadsupp	library	studserv	instsupp	opmnexp	other	sclunres	sclrest		plantadd
public	univ	70	11.57	a.54	15.97	6.46	14.59	15.70	10.71	26.64	5.89	14.94	38.15	127.76		74.78
	four year	278	9.50	5.97	26.98	28.90	11.79	1.43	9.10	36.08	-1.63	-11.19	54.47	237.32		7.99
	two year	650	6.57	5.68	-46.52	16.71	27.55	-8.98	13.36	8.91	9.43	-43.35	12.90	402.48		-19.68
private	univ	54	20.55	24.05	6.96	39.34	37.52	7.90	38.72	29.35	15.96	15.91	76.39	24.12		119.95
	four year	790	18.40	14.15	11.62	0.97	30.48	9.01	32.38	26.04	12.62	21.55	76.58	118.49		23.93
	two year	94	21.42	15.45	-50.77	-10.95	42.56	7.34	29.48	29.42	16.01	16.90	68.44	275.76		22.67

share in expenditure change, 1979-86

		N	netspend	instruct	research	pubserv	acadsupp	library	studserv	instsupp	opmnexp	other
public	univ	70	100.00	30.26	25.53	5.12	7.86	4.55	3.74	16.96	4.83	1.16
	four year	278	100.00	31.42	10.15	6.94	6.65	0.67	7.14	42.74	-2.15	-3.56
	two year	650	100.00	44.29	-1.31	4.99	20.11	-4.76	17.79	20.50	16.83	-18.45
private	univ	54	100.00	46.26	7.97	4.96	8.71	1.65	6.79	15.02	7.56	1.08
	four year	790	100.00	32.92	1.85	0.07	7.22	2.15	17.07	26.85	8.78	3.08
	two year	94	100.00	26.93	-0.10	-0.32	7.74	1.10	18.29	33.21	10.37	2.77

Table 2. Expenditure data for private universities and four year colleges by endowment per student, 1979-86

1986 spending level (1979 dollars)															
type of school	endow/student	N	netspend	instruct	research	pubserv	acadsupp	library	studserv	instsupp	opmexp	other	student aid spending		capital spending
													sclunres	sclrest	plantadd
university	250-1000	7	4817.72	2195.23	124.76	53.31	378.63	209.69	379.28	879.58	458.72	138.51	448.65	341.54	682.68
	1000-4000	19	7222.78	3263.48	732.59	104.80	364.56	274.04	443.94	1144.63	769.37	125.36	515.06	314.82	1046.46
	4000-25,000	19	11840.65	4665.24	2561.62	798.04	671.56	397.56	398.21	1106.20	1036.96	205.26	706.76	561.06	1802.69
	>25,000	9	23854.28	9194.51	6908.28	148.97	1239.38	1020.12	771.69	2267.36	2173.74	130.23	1332.22	982.97	2951.14
four year	<250	152	3641.12	1439.89	40.26	31.25	189.54	114.72	393.92	826.28	426.23	179.02	256.40	382.90	481.84
	250-1000	182	4056.49	1699.06	85.69	38.16	188.93	153.25	434.53	861.07	481.68	114.13	360.99	414.93	507.02
	1000-4000	230	4225.50	1783.48	75.47	71.41	195.83	171.75	462.60	857.73	513.26	93.97	405.00	466.57	555.72
	4000-25,000	201	5792.51	2414.70	218.97	68.66	245.33	247.27	639.72	1103.73	720.05	134.08	590.08	581.51	778.68
	>25,000	25	10172.16	3852.23	709.12	63.94	722.69	557.51	1036.67	1728.66	1330.99	170.36	791.96	801.51	2126.61
Growth of real spending, 1979-86															
type of school	endow/student	N	netspend	instruct	research	pubserv	acadsupp	library	studserv	instsupp	opmexp	other	student aid spending		capital spending
													sclunres	sclrest	plantadd
university	250-1000	7	24.64	12.44	-11.14	34.66	78.05	11.57	54.89	63.63	-1.83	67.55	60.72	183.00	45.77
	1000-4000	19	22.48	22.57	-2.34	94.72	40.38	28.61	44.20	25.83	19.79	28.01	70.37	62.34	81.90
	4000-25,000	19	13.83	11.05	6.01	49.96	29.33	7.67	36.38	15.30	12.01	10.02	68.69	14.76	102.53
	>25,000	9	19.06	36.21	3.25	-46.91	31.70	-5.66	28.25	38.40	14.15	-11.15	86.70	-0.96	205.55
four year	<250	152	17.41	14.40	13.11	-43.62	30.37	2.26	28.63	20.08	14.84	39.23	71.60	153.84	2.91
	250-1000	184	16.75	13.49	-5.74	-22.05	20.36	1.02	32.32	30.25	13.45	-0.55	64.77	145.08	18.98
	1000-4000	230	16.54	11.58	-3.27	35.30	29.67	15.68	31.70	23.29	10.28	11.01	76.42	145.30	25.11
	4000-25,000	201	21.74	18.00	33.83	15.14	31.42	11.79	32.12	27.75	12.97	40.72	83.53	90.06	9.42
	>25,000	25	27.42	20.48	16.12	-8.47	59.12	17.94	53.97	35.10	22.51	22.57	125.19	55.89	197.93

Expenditure data for private universities and four year colleges by endowment per student, 1979-86 (cont.)

Percentage shares of change in ed and general spending (net of student aid spending)

type of school	endow/student	N	netspend	instruct	research	pubserv	acadsupp	library	studserv	instsupp	opmexp	other
university	250-1000	7	100.00	25.50	-1.64	1.44	17.43	2.28	14.11	35.91	-0.90	5.86
	1000-4000	19	100.00	45.33	-1.32	3.85	7.91	4.60	10.26	17.72	9.59	2.07
	4000-25,000	19	100.00	32.27	10.09	18.48	10.59	1.97	7.38	10.20	7.73	1.30
	>25,000	9	100.00	64.00	5.69	-3.45	7.81	-1.60	4.45	16.47	7.05	-0.43
four year	<250	152	100.00	33.57	0.86	-4.48	8.18	0.47	16.24	25.60	10.20	9.34
	250-1000	184	100.00	34.69	-0.90	-1.85	5.49	0.27	18.24	34.36	9.81	-0.11
	1000-4000	230	100.00	30.85	-0.42	3.11	7.47	3.88	18.57	27.02	7.98	1.55
	4000-25,000	201	100.00	35.62	5.35	0.87	5.67	2.52	15.04	23.18	7.99	3.75
	~25,000	25	100.00	29.92	4.50	-0.27	12.27	3.87	16.60	20.52	11.17	1.43

Figure 1. Share in spending change, public and private insts, 1979-86

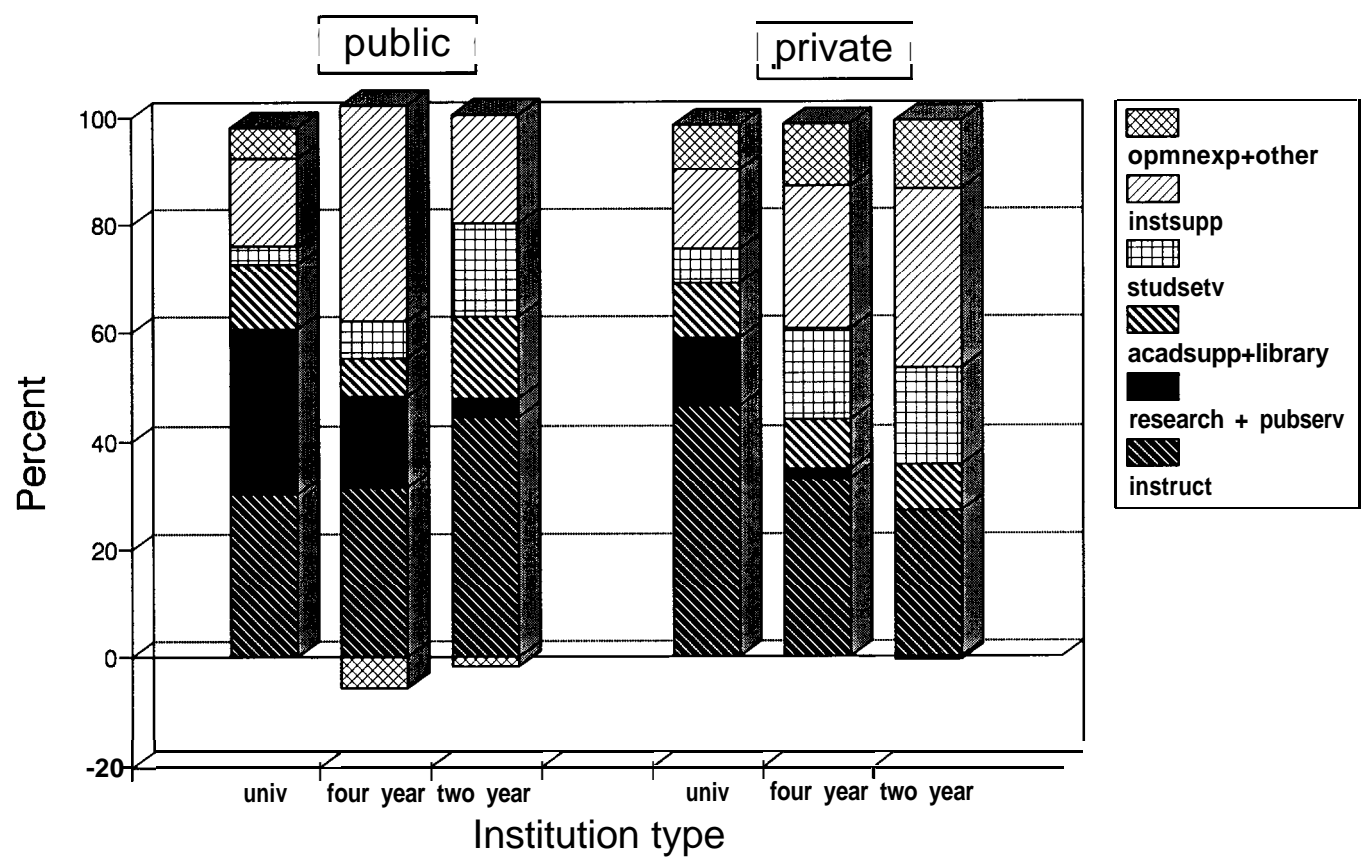
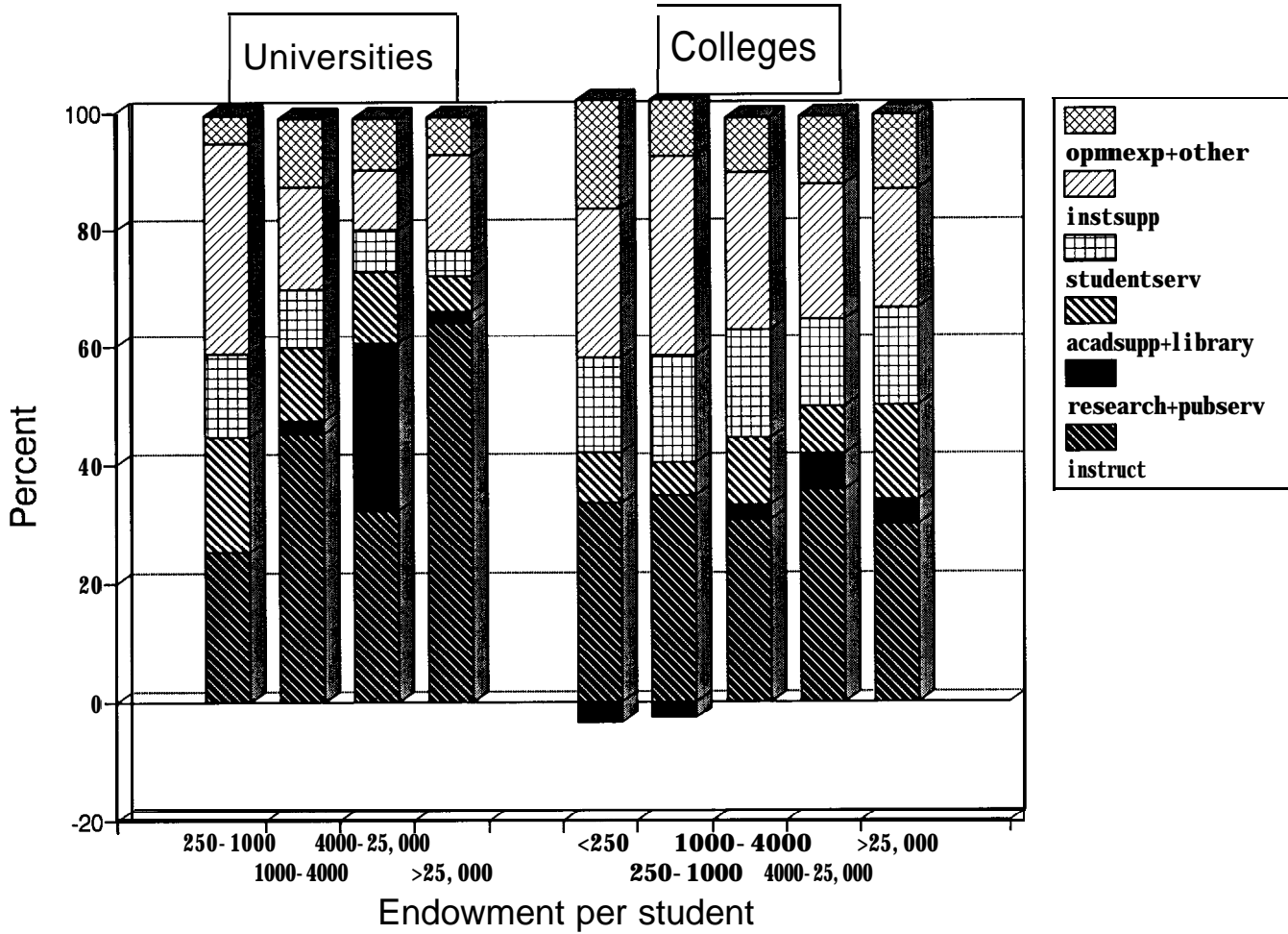


Figure 2. Share in spending change, private 4-year institutions, 1979-86



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