

**Projections of College Costs and Affordability:  
1990-2010**

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## ***ABSTRACT***

This paper presents alternative forecasts of future trends in the “affordability” of higher education. In presenting simulations of future college prices, student aid, and family income, we consider the effects of variation in economic growth, governmental support, and costs of providing higher education. Two principal findings are (1) that the higher education sector is highly vulnerable to persistent weak performance of the economy and (2) that under a variety of circumstances the relative affordability of private four-year institutions compared to public four-year and two-year institutions is likely to decline.

## I. Introduction

The purpose of this paper is to present alternative forecasts of future trends in the “affordability” of higher education. Our principal objectives are: (1) to present a series of forecasts for key cost ratios over the next twenty years that represent a range of plausible variation in the higher education environment and (2) through comparing these forecasts, to determine the significance of particular cost determinants by contrasting the results of different assumptions about their rates of increase. By identifying key variables and considering factors that are likely to influence them, we can offer some judgments about which of these forecasts are more likely to be realized.

What a particular student can afford will depend on whether or not we consider the resources of the student’s parents in judging ability to pay. The traditional view in the U. S. (unlike some European countries) is that parents should be expected to pay for their children’s education at least in the years immediately after high school (Johnstone, 1986). But this notion of parental responsibility does not extend readily to the increasing fraction of adult students who are no longer considered “dependent” on their parents. This paper will adhere to the standard assumption in the U. S. that parents are assumed to have a responsibility to contribute to the costs of the education of their children of traditional college age. Our focus throughout is on full-time attendance by students of traditional college age.

In presenting simulations of future college prices, student aid, and family income, we emphasize the multiple interdependencies among the variables to be forecast. Inflation plainly affects both family income and college costs; trends in economic growth affect family income as well as the ability and willingness of governments to subsidize higher education. Trends in institutional costs, non-tuition educational revenues, and student aid from federal and other sources all affect trends in future net prices. We have developed simple models elucidating these relationships which help us to identify the crucial variables that are likely to influence the future affordability of college.

Section II describes the simulation model and presents the projection results. Section III

focuses on concerns about future affordability that are implied by our simulation results. Section IV concludes.

## II. Model and Results

Our simulation model works from initial conditions that we set based on recent data and assumed rates of growth in those conditions. Any simulation model has imbedded in it certain relationships among the variables and we have tried to create a model that is simple yet captures the main forces at work. In formulating a model of cost determination, we work from the following accounting identity: institutions' educational costs per student equal the sum of tuition revenue (gross of student aid) per student and non-tuition educational revenues per student.<sup>1</sup> We then project educational costs and non-tuition educational revenues separately, and therefore calculate tuition charges as the residual. Our model assumes that "costs of attendance" (from the student's point of view) are equal to the sum of living costs (which we assume will stay constant in real terms) and gross tuition charges (via the residual calculation mentioned above). We project separately per student values for federal student aid grants, other student aid grants, and loans, and we use these projected values in the calculation of price net of grants and a net price figure which treats the subsidy value of loans as half the award amount.<sup>2</sup>

In developing our projections, we establish different initial conditions and growth rates for each of three post-secondary education sectors: public 2-year colleges, public 4-year colleges and universities, and private 4-year colleges and universities.<sup>3</sup> In calculating living costs, we treat students attending public 2-year colleges as commuters, while those attending 4-year institutions are considered to be residents. Thus, for all students, board and transportation costs are included in living costs but room charges are applied only to 4-year students.

For comparative purposes we project family incomes for students at these categories of institutions, with initial conditions in each sector set equal to the inflation-adjusted median income of families of freshman students attending that institution type in a recent year. In our

projections we track the ratio of net price to family income and the ratio of gross tuition to educational costs. This allows us to forecast two key variables - the burden borne by families and the degree of tuition dependency.

We used a variety of data sources in setting the initial conditions for each variable described above. We relied on the most recent available data found in the College Board's Annual Survey of Colleges (College Board (1988)), Trends in Student Aid (Lewis (1988)), and College Cost Book (College Board (1989)), the Department of Education's HEGIS files, and data from the American Freshman Survey, and adjusted those values to correspond to the 1989-90 academic year.<sup>4</sup>

We establish a baseline for real rates of growth in each of our variables using data from the 1978-85 period.<sup>5</sup> All variables are expressed on a per full-time-equivalent enrollment basis. The baseline rates of growth are used to provide a baseline scenario over the period 1991 (referring to the academic year 1990-91) to 2010. This baseline is computed simply by applying 1978-85 growth rates to each of the variables discussed in the preceding paragraph, and stepping the calculation forward one year at a time. It is important to note that our baseline scenario assumes a continuation of the recent past, rather than representing our "best guess" of the future. This recent period is of special interest because it has involved exceptionally high rates of growth in real tuition charges. If we were to try to establish such a "best guess" formulation, it would most plausibly be based on a considerably longer time period. Alternative scenarios examine the consequences of various divergences from these recent growth rates.

In each set of scenarios, we hold the values of variables that are not the focus of attention to their baseline trends. Specifically, we examine the results of three broad categories of variation. The first category (Group A) isolates the effect of varying rates of growth of federal aid support. Scenario A1 assumes no real growth in federal aid support; scenario A2 assumes growth at an annual real rate of 4%; scenario A3 assumes a 2% annual real decline in support. Group B varies the performance of the economy. B1 assumes strong economic growth, with

median family income increasing at an annual real rate of 2.5% and non-tuition revenues growing at a rate of 1 percentage point above the recent growth rate. B2 assumes weak economic growth, with median family income constant in real terms (this continues the recent trend), and non-tuition revenues growing at a rate of 1 percentage point below the recent growth rate. Note that we assume trends in real cost growth at higher education institutions are unaffected by the overall performance of the economy. Finally, group C examines the effects of various educational cost/institutional aid combinations. C1 and C2 assume a high rate of cost increase equal to 1 percentage point above the recent trend. C1 assumes that institutional aid (institutional aid is the bulk of the “other grants” category in our tables) increases at the recent high rates of real annual growth while C2 assumes no real growth in institutional aid. C3 and C4 assume a low rate of cost increase equal to 1 percentage point below the recent trend. The assumed growth rates for institutional aid for C3 and C4 correspond to those in C1 and C2. Thus, C3 presents a low cost growth/high aid growth scenario while C4 presents a low cost/low aid scenario.

We report annual results through 2000, and the years 2005 and 2010. (Obviously, point forecasts for 2010 should not be taken at all seriously. The purpose of extending the projection period is to make trend differences more apparent.)

We begin by examining the baseline projection. The initial conditions and recent growth rates that underlie this projection are reported in the first page of Table 1. [TABLE 1 ABOUT HERE] The growth rates in our variables over the period 1978-85 show some interesting variation across institutional types. While there were real increases in educational costs in each of the three cases, the annual real increase was much faster at private institutions (3.2%) than at public 4-year (2.0%) or public 2-year (1.8%) schools. Non-tuition educational revenues show a similar pattern. On the other hand, the real rate of growth in Pell support per student was substantial at public institutions (3.5% at 4-year and 2-year schools) and non-existent at private colleges and universities. Private institutions, however, had remarkable real growth in institutional aid (other grants), with a growth rate of 5.4% compared with 1.6% and 1.7% at public institutions. Loans

also increased at a rapid rate at private schools (5.0% annually), while increasing at a slower rate (3.0%) in the public sector. Lastly, over this period there was no real growth in the median income of families with household heads aged 45-64 (reflecting very slow growth in productivity in the economy), leading us to adopt zero real growth rates for family income of students attending each type of institution.

Forecasts using the baseline rates (presented on the second page of Table 1) would give us a reasonable picture of the future if these rates were to persist over the next two decades. For public 4-year institutions, costs of attendance would increase from \$5,200 in 1990 to around \$7,000 in 2010 (in 1989-90 \$). The price net of grants is expected to rise from \$4,590 to about \$6,000 and, most importantly, the net price rises from \$4,270 to almost \$5,400. In nominal terms, the net price is expected to rise to around \$14,300 (assuming, as we do throughout, an annual inflation rate of 5%). The first of our two ratios indicates that the burden borne by parents would increase over the period as the ratio of net price to income rises from 9% to 12%. At the same time, tuition dependency increases from 20% to 27%. The increase in the burden on families, of course, reflects a forecast of persistent increases in college costs in the face of constant real incomes of families. Growth in tuition dependency reflects a slight lag in the growth of non-tuition revenues relative to educational costs.

Forecasts for private institutions show the same general pattern as that just described. Costs of attendance rise from \$12,600 to around \$20,500, and the net price increases from \$10,120 to about \$14,100. The latter figure would be around \$37,500 in nominal dollars. The ratio of net price to income increases from 18% to 25% while tuition dependency rises from 60% to 61%. At public 2-year institutions, the net price increases from \$2,800 to \$3,200 (around \$8,400 in nominal dollars), net price/income rises from 8% to 9% and tuition dependency increases from 19% to 24%. The average across sectors shows a real increase in net price from \$3,947 to about \$5,200 (\$13,700 in nominal terms).

The baseline projections indicate some reasons to worry about the future of affordability

of higher education if recent trends continue although they do not forecast a disaster of catastrophic proportions. The increase in burden borne by parents (for students attending 4-year public and private institutions) may have some unfortunate effects on enrollment rates. In fact, according to estimates from a recent study of the enrollment effects of financial aid (McPherson and Schapiro, forthcoming), a real increase in net price of \$1,229 (the increase in real net price implied by the baseline projection, averaged over sectors), if shared equally by all income classes, is expected to reduce enrollment rates of students from families with low incomes by 15.3%. (Since the baseline projects student aid to rise more rapidly than college costs, the net price increase would in fact be somewhat smaller for low income students than others in this scenario. Thus this estimate is an upper bound of the expected enrollment effect.) In addition to this general problem with affordability, it is important to note that the burden borne by parents of students attending private institutions increases relative to their counterparts with children attending 4-year public colleges and universities - the private burden ratio rises by 7 percentage points to 25% while the public burden ratio rises by only 3 percentage points to 12%. The growth in the percentage of income spent on private education relative to public education may very well lead to further decline in the share of students educated at private colleges and universities, along with even larger differences in median incomes of parents than at present.

Of course, there is no reason to believe that the recent growth rates used in the baseline model will continue over the next two decades. By varying these rates we produce alternative scenarios that lead to a range of affordability estimates and indicate the importance of different variables.

Group A simulations produce relatively small differences in projections across models assuming wide differences in federal aid support.<sup>6</sup> Keeping in mind a baseline prediction for net price at private institutions in 2010 of about \$14,100 (\$37,500 in nominal terms), this number rises to \$15,400 (\$40,900) with a real decline in federal support, \$15,100 (\$40,100) with no growth in support, and falls to \$14,000 (\$37,200) with rapid growth (see Table 2 and Figure 1 for a

summary of the real net price values). [TABLE 2 AND FIGURE 1 ABOUT HERE] The net price/income ratio for this sector is slightly higher with a decline in federal aid (28%) or no real growth (27%) relative to either rapid growth or the baseline (25%) (see Table 3 and Figure 2). [TABLE 3 AND FIGURE 2 ABOUT HERE] At public 4-year institutions the net price/income ratio varies from 11% for the rapid growth scenario and 12% for the baseline scenario, to 14% for the real decline scenario, with the no growth scenario leading to an intermediate value of 13%. A similar pattern is produced at public 2-year colleges. The general lack of response to changes in the amount of federal aid makes sense in light of the relatively small contribution that this type of aid makes to the determination of net price. As indicated in Table 1, Pell per student in 1989-90 amounted to only \$150 at public 2-year colleges, \$290 at public 4-year institutions, and \$320 at private colleges and universities (in 1978 dollars). Given the fact that comparable net price figures were \$2,800, \$4,270, and \$10,120, the surprise is probably not that federal aid matters so little, but that it matters as much as it does.

A look at the group B simulations shows considerable differences in net price (Table 2 and Figure 1), net price/income (Table 3 and Figure 2), and tuition dependence (Table 4 and Figure 3) based on the performance of the economy. [TABLE 4 AND FIGURE 3 ABOUT HERE] The baseline values for private institutions of a net price in 2010 of \$14,100 (\$37,500 in nominal terms), a burden ratio of 25% and tuition dependence of 61% rise, in the event of a weak economy, to \$16,000 (\$42,600), 29% and 68%. For public 4-year and 2-year institutions, these changes are even more dramatic: net price in 2010 for 4-year institutions rises from \$5,400 (\$14,300) in the baseline scenario to \$7,000 (\$18,600) for a weak economy, the burden ratio rises from 12% to 16%, and tuition dependence rises from 28% to 41%; for 2-year colleges, these values rise from \$3,200 (\$8,400) in the baseline scenario to \$4,000 (\$10,600) for a weak economy, 9% to 11%, and 24% to 37%. Hence, the educational sector is quite vulnerable to a prolonged recession, particularly the public sector. Of course, strong economic growth would have a highly favorable effect on the future of these cost variables. Net price, net price/income and tuition dependence

fall to \$11,900 (\$31,500), 13% and 53% for private institutions; \$3,400 (\$9,000), 5% and 12% at public 4-year institutions; and \$2,200 (\$5,800), 4% and 7% at public 2-year colleges. The affordability implications of economic performance are rather remarkable with the burden ratio varying from 13% to 29% at private institutions, 5% to 16% at public 4-year institutions and 4% to 11% at community colleges, depending on whether the economy is strong or weak. (Tuition dependence tells a similar story with projections ranging from 53% to 68%, 12% to 41%, and 7% to 37%.)

The finding that the future of the educational sector is so strongly tied to the course of an unpredictable economy is obviously quite unsettling. Our projections build in several assumptions about how variations in overall economic performance will impinge on the higher education sector. First, of course, we assume that the growth in family income is closely related to overall economic conditions. Second, we assume that the growth of non-tuition educational revenues is similarly responsive. For public institutions, this translates into an assumption that state appropriations for higher education are sensitive to economic conditions, while for private institutions we assume that endowment and gift performance are similarly sensitive to economic conditions. We should also reemphasize that we do not assume that college cost growth is sensitive to overall economic conditions. One could argue the reverse: that a strong economy will both raise the demand for and the real resource costs of higher education, resulting in more rapid growth both in educational costs and tuitions. This assumption could easily be incorporated in our projections. Yet it is worth noting that the historical experience is different: the rapid tuition growth of the 1980's has occurred in the face of slow or no growth in productivity and incomes.

Group C simulations highlight the effects of different combinations of cost growth and increases in institutional aid. (Note that Figures 1 through 3 summarize differences in cost growth but do not track variations in institutional aid -- both the high cost and the low cost scenarios in the figures assume high institutional aid.) An examination of projections C1 and C2 shows that the assumption of high rates of cost increase leads to a major change from the baseline

projections, with institutional aid playing a mediating role. In the worst case scenario - high costs and low institutional aid (C2) - net price in 2010 at private institutions rises to \$22,900 (\$60,800 in nominal terms) as opposed to \$20,000 (\$53,000) if institutional aid increases at a rapid rate (see Table 2). In either case, this figure is well above the baseline projection of \$14,100 (\$37,500). The corresponding net price/income ratios are 41% and 36% compared to the 25% baseline prediction (Table 3). At public 4-year institutions, the high cost/low aid scenario leads to a net price of \$8,200 (\$21,800) and a burden of 18%, quite close to the figures for the high cost/high aid scenario (\$8,100 (\$21,500) and, again, 18%), both of which far exceed the baseline projections of \$5,400 (\$14,300) and 12%. At public 2-year colleges, for both the high cost/low aid and high cost/high aid scenarios, net price is about \$4,500 (\$11,900 to \$12,000) with a 12% burden, compared to \$3,200 (\$8,400) and 9% for the baseline. Hence, while high cost growth has a major effect on affordability in both the private and public sectors, the prominent role of institutional aid at private institutions enables these schools to reduce the effect of cost growth by a non-trivial amount by similarly increasing aid.

The low cost growth scenarios presented in C3 and C4 offer a much rosier view of the future. Even in the case of low institutional aid (C4), the net price for private institutions in 2010 falls to \$12,200 (\$32,500 in nominal terms), implying a burden of 22%. The figures are \$3,200 (\$8,600) and 7% at public 4-year institutions and \$2,100 (\$5,700) and 6% at community colleges. The combination of low cost growth and high institutional aid growth improves these numbers to \$9,300 (\$24,700) and 17% at private colleges and universities, \$3,100 (\$8,300) and 7% at public 4-year institutions, and \$2,100 (\$5,600) and 6% at public 2-year colleges. Again, it is clear that the effects of cost growth dominate those of changes in institutional aid, especially in the public sector.

The various scenarios described above provide very different pictures of the future of affordability of higher education. Do some of these scenarios seem more likely than others? The most important factor is the economic performance of the nation. Our most favorable scenario -

sustained high rates of economic growth -appears unlikely for at least two reasons. For one, we are currently in the eighth year of the longest peacetime economic expansion in history and to assume that this steady growth will be followed by another two decades of economic progress is likely to be overly optimistic. Further, current national policies, including large government deficits and low national investment rates, do not bode well for future growth.

If growth performance is poor, the prospects for avoiding a college affordability problem are not good. In the face of slow or no growth in family incomes, the burden on families of paying for college will probably rise unless one of three things happen: (1) the underlying costs of providing college education do not grow; (2) non-tuition sources of educational revenue grow steadily; or (3) student financial aid, presumably mainly from the federal government, grows steadily. Since most observers predict shortages in faculty labor markets which are likely to make that major component of college costs grow, it is difficult to see how existing levels of educational costs could be held down without permitting the quality of college education to decline. Few observers would find a solution to college affordability problems which took the form of declining college quality satisfactory. The other two alternatives -- growing non-tuition revenues or growing federal aid support -- are themselves likely to depend on a healthy economy. It thus appears that a promising future for college affordability depends critically on good performance of the economy in the coming decades.

That said, what other factors will crucially impinge on future affordability? It is clear in our simulations that the next most important factor (after overall economic performance) is the behavior of the educational costs of institutions. Over twenty years, the burden on families of paying for college differs by a factor of around two or more depending on whether college costs rise at a percentage point above or below the trend established in the 1978-85 period. There has been a quite persistent tendency for college costs to grow more rapidly than inflation over the last fifty years. The reasons for this long run tendency are fairly fundamental, having to do with the slow rate of technical progress in this industry compared to the economy as a whole. What is

distinctive about the 1980's, however, is a pattern of rapid real cost growth in colleges during a period when productivity was fairly stagnant in the rest of the economy. Beginning in the mid-1990's, growth in the population of young people is likely to lead to fairly rapid increases in college enrollment (although not so rapid as in the 1960's). The resulting growth in demand may lead to pressures for cost increases as colleges attempt to expand facilities and numbers of faculty in response. On the other hand, the intensity of competitive recruiting efforts at the highest priced colleges will be likely to abate, and this may reduce cost pressures at these highly visible institutions. Our best judgment is that the most likely future trend would have college costs grow ahead of inflation, but probably less rapidly than their unusual behavior of the 1980's. Thus, the most likely picture would probably lie somewhere between the baseline and the "Low Cost, High Institutional Aid" scenario, C3.

### III. Implications for future affordability

Our projections lead us to focus on two principal concerns about future affordability. First, if the economy is persistently weak over the foreseeable future, families' burden of paying for college is likely to increase at all types of institutions. Depending on decisions about state and federal policy, the result could be serious threats to access for some populations. Second, under most of the alternative assumptions we consider, the relative affordability of private four year colleges, compared to public four year and two year institutions, is expected to decline. This could well lead to a further shift of students from private to public higher education. This may in itself be considered a threat to the value of "choice" in higher education; at the same time, since students at public institutions receive larger government subsidies (principally through state government support of these institutions), such an enrollment shift would have significant budgetary implications for the nation.

A persistently weak economy is very likely to lead to tuition increases outpacing increases in family incomes; at the same time, a weak economy will imply that resources to subsidize such

rising tuitions will be very scarce at both the state and federal levels. The most important implication of these facts is that such a development will compel governments to make hard choices about which categories of students and institutions they wish to support.

For example, our “weak economy” projection (B2) has the financing burden at public two year colleges rising by two percentage points, relative to the baseline, over the next twenty years. At public four year institutions and at private institutions, the difference in the burden under the two scenarios is almost four percentage points. How much difference can federal aid support make in influencing these trends? Comparing scenarios A2 (rapid growth in federal support) and A3 (real decline in federal support) suggests that a strong versus a weak federal effort can influence the burden modestly for the average student, with a strong effort reducing the burden by about two percentage points at public and private four year institutions, and by about one percentage point at public two year institutions. This would be the result if the incremental federal resources were spread equally over all students. Obviously, under existing policies, these resources would be focused to some degree on needier students. The more sharply these resources are focused on the neediest students, the more these limited federal resources can do to reduce the burden facing that group. This is particularly important given the evidence that enrollment decisions of needier students are much more affected by changes in net price than are those of their more affluent counterparts (McPherson and Schapiro, forthcoming).

Governments may also face tough choices about which sectors of higher education to support. A heavy emphasis on access at the federal level might argue for concentrating resources on community colleges and low cost public four year institutions, while a concern with choice might argue for devoting more federal resources to private institutions. States face similar dilemmas in allocating their higher education funds among sectors. Of course, these dilemmas always exist, but a persistently weak economy will make the decisions more difficult and more contentious.

Our baseline projection indicates that the ratio of prices at private vs. public four year

institutions will rise from 2.37 currently to 2.63. A number of the other scenarios would result in similar increases in the ratio of private to public institution costs of attendance and net prices.<sup>7</sup>

Such a development might well lead to a further decline in the share of private enrollment in total enrollment -- a share which declined substantially from 1960 to the early 1970's but has been rather stable since then. Such a trend would be almost sure to increase the already substantial difference in median income levels in the two sectors (as detailed in the initial conditions of our projections). It further seems likely that such a shift of enrollment between sectors would be concentrated on "middle class" students. This would tend to make private colleges and universities into places attended by very needy and very affluent students. The "missing middle" is considered by many observers a serious threat to the viability and educational effectiveness of private higher education.

#### IV. Conclusion

Affordability of higher education is a major national concern, influencing prospects both for economic growth and economic justice. By examining a variety of alternative scenarios regarding factors affecting future trends in affordability, we have produced a reasonable sketch of likely future developments concerning college costs and family ability to pay, as well as an analysis of the principal factors that will influence these future trends. Finally, we have used this analysis to identify some major concerns about future affordability. Our analysis by no means supports the view that we are facing an immediate "crisis" in college affordability. Nonetheless, we have identified some worrisome trends which argue for close attention to this issue and a serious examination of alternative policies.

## ENDNOTES

1. This assumes that current revenues equal current expenditures and that auxiliary enterprises break even.
2. The estimate that the subsidy value of loans is half the face value is roughly consistent with findings reported by Bosworth et al (1987) and Hauptman (1985).
3. We don't attempt to forecast for the proprietary sector due to a lack of data.
4. For details on the calculation of initial conditions see the footnotes to Table 1.
5. The choice of a baseline period for establishing historical values is somewhat arbitrary. The endpoint of the period is dictated by availability of financial data; we chose the starting point to provide a period of adequate length which would capture the years during which rapid growth in college costs became an important phenomenon.
6. Detailed reports on the simulation results for each set of assumptions are available from the authors upon request.
7. The "weak economy" scenario (B2), however, has the ratio of private to public net price falling slightly, to 2.28 (because of the importance of non-tuition educational revenue at public institutions).

Table 1 : Baseline Scenario, p. 1

Growth rates	pub. 2	pub. 4	private
educational costs(1)	1.018	1.020	1.032
non-tuition ed. revenues (2)	1.015	1.015	1.031
Pell	1.035	1.035	1.000
Other grants	1.017	1.016	1.054
Loans	1.030	1.030	1.050
family income	1.000	1.000	1.000
Initial conditions			
educational costs(1)	4200	8500	14600
living costs(3)	2300	3500	3800
non-tuition ed. revenues(2)	3400	6800	5800
costs of attendance(4)	3100	5200	12600
Pell	150	200	320
Other grants	80	320	1580
family income	36600	45400	56100
Loans (5)	140	640	1160

(1) educational costs -- educational and general costs per student, based on IEGIS data. Auxiliary enterprises are excluded, on the assumption that costs and revenues of auxiliary operations are equal.

(2) non-tuition educational revenues -- per student revenues from sources other than (gross) tuition. For public institutions, the main such revenue source is state subsidies; for private institutions it is gifts and endowment earnings. Notice that student aid revenues are not included here; they are treated as revenues from students and accounted for separately below. We adjusted figures for educational costs and non-tuition educational revenues to make them reconcile with (a) 1989-90 costs of attendance and (b) 1985-86 ratios of non-tuition educational revenues to educational costs. These numbers yield relationships that are reasonably consistent with relative costs at these categories of institutions in 1985-86.

(3) living costs -- for public two year institutions, we assume commuter status. Living costs include board and transportation costs (from College Cost Book). For public and private four year institutions, we assume resident status. Costs include room and board and transportation from College Cost Book. We assume living costs grow at the general rate of inflation.

(4) costs of attendance -- this is the sum of educational costs and living costs, less non-tuition educational revenues. This figure is checked for consistency with the figures in the College Cost Book.

(5) loan values from College Board Annual Survey of Colleges. In computing net price, loans are valued at a subsidy rate of 50%.

Table 1: Baseline Scenario, p. 2

Public four year projection	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2005	2010
costs of attendance	5200	5268	5338	5410	5483	5559	5637	5717	5799	5883	5970	6438	6972
Pell	290	300	311	322	333	344	356	369	382	395	409	486	577
Other grants	320	325	330	336	341	346	352	358	363	369	375	406	440
Loans	640	659	679	699	720	742	764	787	811	835	860	997	1156
income	45400	45400	45400	45400	45400	45400	45400	45400	45400	45400	45400	45400	45400
price net of grants	4590	4643	4697	4753	4810	4868	4929	4990	5054	5119	5186	5546	5955
net price	4270	4313	4357	4403	4450	4497	4547	4597	4648	4701	4756	5048	5378
nominal income	45400	47670	50054	52556	55184	57943	60840	63882	67076	70430	73952	94383	120460
nominal net price	4270	4529	4804	5097	5408	5740	6093	6468	6868	7293	7747	10494	14268
net price/income	9	10	10	10	10	10	10	10	10	10	10	11	12
tuition dependence	20	20	21	21	22	22	22	23	23	23	24	26	27
Private projection	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2005	2010
costs of attendance	12600	12887	13184	13491	13807	14134	14471	14820	15180	15551	15935	18049	20532
Pell	320	320	320	320	320	320	320	320	320	320	320	320	320
Other grants	1580	1665	1755	1850	1950	2055	2166	2283	2406	2536	2673	3177	4523
Loans	1160	1218	1279	1343	1410	1480	1555	1632	1714	1800	1890	2412	3078
income	56100	56100	56100	56100	56100	56100	56100	56100	56100	56100	56100	56100	56100
price net of grants	10700	10902	11109	11321	11537	11759	11985	12217	12453	12695	12941	14252	15688
net price	10120	10293	10469	10649	10832	11018	11208	11400	11596	11795	11997	13046	14149
nominal income	56100	58905	61850	64943	68190	71599	75179	78938	82885	87030	91381	116628	148850
nominal net price	10120	10808	11543	12328	13167	14063	15020	16042	17133	18298	19541	27122	37542
net price/income	18	18	19	19	19	20	20	20	21	21	21	23	25
tuition dependence	60	60	60	60	60	60	61	61	61	61	61	61	61
Public two year projection	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2005	2010
costs of attendance	3100	3125	3150	3176	3202	3229	3257	3285	3314	3344	3374	3538	3721
Pell	150	155	161	166	172	178	184	191	198	204	212	251	298
Other grants	80	81	83	84	86	87	89	90	92	93	95	103	112
Loans	140	144	149	153	158	162	167	172	177	183	188	218	253
income	36600	36600	36600	36600	36600	36600	36600	36600	36600	36600	36600	36600	36600
price net of grants	2870	2888	2906	2925	2944	2964	2984	3004	3025	3046	3068	3184	3311
net price	2800	2816	2832	2849	2866	2883	2900	2918	2936	2955	2974	3074	3184
nominal income	36600	38430	40352	42369	44488	46712	49048	51500	54075	56779	59618	76089	97111
nominal net price	2800	2957	3122	3298	3483	3679	3887	4106	4339	4584	4844	6392	8449
net price/income	8	8	8	8	8	8	8	8	8	8	8	8	9
tuition dependence	19	19	20	20	20	20	20	21	21	21	21	23	24
Average over sectors	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2005	2010
Cost of attendance	4733	4819	4908	5000	5095	5192	5293	5397	5504	5615	5729	6356	7087
Net price	3947	4000	4053	4108	4163	4220	4277	4336	4395	4456	4517	4837	5176
Nominal net price	3947	4200	4469	4755	5060	5385	5732	6101	6494	6912	7358	10056	13732

Table 2: Projections summary - real net price, p. 1

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2005	2010
<b>Public four year Institutions</b>													
Baseline projection	4270.1	4313.2	4357.5	4402.9	4449.6	4497.4	4546.5	4596.9	4648.5	4701.4	4755.7	5048.0	5377.5
Historical baseline													
Varying federal support													
A1 No growth	4270.1	4333.0	4397.6	4464.1	4532.5	4602.8	4675.1	4749.4	4825.7	4904.2	4984.8	5422.4	5922.5
A2 Rapid growth	4270.1	4308.6	4347.9	4388.0	4428.9	4470.7	4513.3	4556.7	4600.9	4646.0	4691.9	4933.9	5198.0
A3 Real decline	4270.1	4345.2	4421.8	4500.0	4579.9	4661.4	4744.7	4829.8	4916.7	5005.6	5096.4	5581.8	6125.2
Varying performance of the economy													
B1 Strong	4270.1	4245.2	4218.8	4190.7	4160.9	4129.4	4096.0	4060.7	4023.5	3984.2	3942.8	3701.2	3393.6
B2 Weak	4270.1	4381.2	4494.9	4611.0	4729.8	4851.2	4975.4	5102.2	5231.8	5364.3	5499.6	6221.3	7022.9
Varying rates of growth in cost and institutional aid													
C1 High/high	4270.1	4398.2	4531.7	4670.9	4815.7	4966.6	5123.6	5287.0	5456.9	5633.7	5817.6	6850.8	8088.9
C2 High/low	4270.1	4403.3	4542.1	4686.5	4836.7	4993.0	5155.6	5324.6	5500.3	5682.9	5872.6	6836.9	8218.5
C3 Low/high	4270.1	4228.2	4184.9	4140.2	4094.0	4046.3	3997.1	3948.2	3893.7	3839.5	3783.5	3476.4	3118.6
C4 Low/low	4270.1	4233.3	4195.3	4155.8	4115.0	4072.8	4028.0	3983.8	3937.0	3888.6	3838.8	3562.4	3238.2
<b>Private Institutions</b>													
Baseline projection	10120.0	10293.1	10469.5	10649.2	10832.2	11018.4	11207.8	11400.5	11596.2	11794.9	11996.6	13045.9	14149.3
Historical baseline													
Varying federal support													
A1 No growth	10120.0	10322.1	10528.9	10740.6	10957.2	11178.6	11405.1	11636.6	11873.1	12114.7	12361.4	13671.7	15108.2
A2 Rapid growth	10120.0	10286.1	10455.5	10628.2	10804.3	10983.7	11166.3	11352.2	11541.4	11733.7	11929.2	12950.9	14036.2
A3 Real decline	10120.0	10340.1	10564.6	10793.5	11027.0	11265.1	11507.8	11755.3	12007.4	12264.3	12526.0	13907.0	15407.4
Varying performance of the economy													
B1 Strong	10120.0	10235.1	10349.3	10462.4	10574.2	10684.3	10792.5	10898.4	11001.7	11102.1	11199.0	11617.5	11874.8
B2 Weak	10120.0	10351.1	10588.5	10832.3	11082.7	11339.8	11603.5	11874.1	12151.6	12436.1	12727.6	14293.0	16041.0
Varying rates of growth in cost and institutional aid													
C1 High/high	10120.0	10439.1	10772.3	11120.2	11483.4	11862.6	12258.4	12671.5	13102.7	13552.5	14021.9	16690.6	19980.4
C2 High/low	10120.0	10524.4	10947.5	11390.2	11853.4	12337.9	12844.6	13374.7	13928.1	14509.0	15115.3	18588.1	22823.9
C3 Low/high	10120.0	10147.1	10169.6	10187.2	10199.6	10206.3	10206.9	10201.2	10188.5	10168.4	10140.5	9863.6	9288.5
C4 Low/low	10120.0	10232.4	10344.8	10457.2	10569.5	10681.5	10793.2	10904.4	11015.0	11124.9	11233.9	11761.1	12242.0

Table 2: Projections summary - real net price, p. 2

Public two year Institutions Baseline projection	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2005	201
Historical baseline	2800.0	2815.9	2832.1	2848.7	2865.5	2882.8	2900.3	2918.2	2936.5	2955.1	2974.1	3074.5	3184.
Varying federal support													
A1 No growth	2800.0	2823.2	2847.1	2871.5	2896.4	2922.1	2948.3	2975.2	3002.7	3030.9	3059.7	3214.9	3389.
A2 Rapid growth	2800.0	2814.4	2829.1	2844.0	2859.1	2874.4	2889.9	2905.7	2921.6	2937.7	2954.1	3038.6	3127.
A3 Real decline	2800.0	2827.6	2855.8	2884.4	2913.5	2943.2	2973.4	3004.2	3035.5	3067.4	3100.0	3272.4	3462.
Varying performance of the economy													
B1 Strong	2800.0	2781.9	2762.7	2742.5	2721.2	2698.7	2675.1	2650.2	2624.0	2596.5	2567.6	2401.1	2192.
B2 Weak	2800.0	2849.9	2900.8	2952.7	3005.7	3059.7	3114.7	3170.9	3228.2	3286.5	3346.0	3661.2	4007.
Varying rates of growth in cost and institutional aid													
C1 High/high	2800.0	2857.9	2918.0	2980.5	3045.4	3112.8	3182.7	3255.2	3330.5	3408.6	3489.6	3941.3	4480.
C2 High/low	2800.0	2859.3	2920.8	2984.7	3051.0	3119.8	3191.2	3265.3	3342.1	3421.7	3504.3	3964.3	4512.
C3 Low/high	2800.0	2773.9	2747.0	2719.4	2690.9	2661.6	2631.5	2600.5	2568.6	2535.9	2502.2	2319.1	2109.
C4 Low/low	2800.0	2775.3	2749.8	2723.5	2696.5	2668.6	2640.0	2610.5	2580.2	2549.0	2516.9	2342.1	2141.

Table 3: Projections summary - net price divided by family income, p. 1

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2005	2010
<b>Public four year Institutions</b>													
Baseline projection													
historical baseline	9.4	9.5	9.6	9.7	9.8	9.9	10.0	10.1	10.2	10.4	10.5	11.1	11.8
Varying federal support													
A1 No growth	9.4	9.5	9.7	9.8	10.0	10.1	10.3	10.5	10.6	10.8	11.0	11.9	13.0
A2 Rapid growth	9.4	9.5	9.6	9.7	9.8	9.8	9.9	10.0	10.1	10.2	10.3	10.9	11.4
A3 Real decline	9.4	9.6	9.7	9.9	10.1	10.3	10.5	10.6	10.8	11.0	11.2	12.3	13.5
Varying performance of the economy													
B1 Strong	9.4	9.1	8.8	8.6	8.3	8.0	7.8	7.5	7.3	7.0	6.8	5.6	4.6
B2 Weak	9.4	9.7	9.9	10.2	10.4	10.7	11.0	11.2	11.5	11.8	12.1	13.7	15.5
Varying rates of growth in cost and institutional aid													
C1 High/high	9.4	9.7	10.0	10.3	10.6	10.9	11.3	11.6	12.0	12.4	12.8	15.1	17.8
C2 High/low	9.4	9.7	10.0	10.3	10.7	11.0	11.4	11.7	12.1	12.5	12.9	15.3	18.1
C3 Low/high	9.4	9.3	9.2	9.1	9.0	8.9	8.8	8.7	8.6	8.5	8.3	7.7	6.9
C4 Low/low	9.4	9.3	9.2	9.2	9.1	9.0	8.9	8.8	8.7	8.6	8.5	7.8	7.1
<b>Private Institutions</b>													
Baseline projection													
historical baseline	18.0	18.3	18.7	19.0	19.3	19.6	20.0	20.3	20.7	21.0	21.4	23.3	25.2
Varying federal support													
A1 No growth	18.0	18.4	18.8	19.1	19.5	19.9	20.3	20.7	21.2	21.6	22.0	24.4	26.9
A2 Rapid growth	18.0	18.3	18.6	18.9	19.3	19.6	19.9	20.2	20.6	20.9	21.3	23.1	25.0
A3 Real decline	18.0	18.4	18.8	19.2	19.7	20.1	20.5	21.0	21.4	21.9	22.3	24.8	27.5
Varying performance of the economy													
B1 Strong	18.0	17.8	17.6	17.3	17.1	16.8	16.6	16.3	16.1	15.8	15.6	14.3	12.9
B2 Weak	18.0	18.5	18.9	19.3	19.8	20.2	20.7	21.2	21.7	22.2	22.7	25.5	28.6
Varying rates of growth in cost and institutional aid													
C1 High/high	18.0	18.6	19.2	19.8	20.5	21.1	21.9	22.6	23.4	24.2	25.0	29.8	35.6
C2 High/low	18.0	18.8	19.5	20.3	21.1	22.0	22.9	23.8	24.8	25.9	26.9	33.1	40.9
C3 Low/high	18.0	18.1	18.1	18.2	18.2	18.2	18.2	18.2	18.2	18.1	18.1	17.6	16.6
C4 Low/low	18.0	18.2	18.4	18.6	18.8	19.0	19.2	19.4	19.6	19.8	20.0	21.0	21.8

Table 3: Projections summary - net price divided by family income, p. 2

Public two year Institutions	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2005	2010
Baseline projection	7.7	7.7	7.7	7.8	7.8	7.9	7.9	8.0	8.0	8.1	8.1	8.4	8.7
historical baseline													
Varying federal support													
A1 No growth	7.7	7.7	7.8	7.8	7.9	8.0	8.1	8.1	8.2	8.3	8.4	8.8	9.3
A2 Rapid growth	7.7	7.7	7.7	7.8	7.8	7.9	7.9	7.9	8.0	8.0	8.1	8.3	8.5
A3 Real decline	7.7	7.7	7.8	7.9	8.0	8.0	8.1	8.2	8.3	8.4	8.5	8.9	9.5
Varying performance of the economy													
B1 Strong	7.7	7.4	7.2	7.0	6.7	6.5	6.3	6.1	5.9	5.7	5.5	4.5	3.7
B2 Weak	7.7	7.8	7.9	8.1	8.2	8.4	8.5	8.7	8.8	9.0	9.1	10.0	10.9
Varying rates of growth in cost and institutional aid													
C1 High/high	7.7	7.8	8.0	8.1	8.3	8.5	8.7	8.9	9.1	9.3	9.5	10.8	12.2
C2 High/low	7.7	7.8	8.0	8.2	8.3	8.5	8.7	8.9	9.1	9.3	9.6	10.8	12.3
C3 Low/high	7.7	7.6	7.5	7.4	7.4	7.3	7.2	7.1	7.0	6.9	6.8	6.3	5.8
C4 Low/low	7.7	7.6	7.5	7.4	7.4	7.3	7.2	7.1	7.0	7.0	6.9	6.4	5.9

Table 4: Projections summary - tuition dependency, p. 1

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2005	2010
<b>Public four year institutions</b>													
Baseline projection													
Historical baseline	20.0	20.4	20.8	21.2	21.6	21.9	22.3	22.7	23.1	23.5	23.8	25.7	27.5
Varying federal support													
A1 No growth	20.0	20.4	20.8	21.2	21.6	21.9	22.3	22.7	23.1	23.5	23.8	25.7	27.5
A2 Rapid growth	20.0	20.4	20.8	21.2	21.6	21.9	22.3	22.7	23.1	23.5	23.8	25.7	27.5
A3 Real decline	20.0	20.4	20.8	21.2	21.6	21.9	22.3	22.7	23.1	23.5	23.8	25.7	27.5
Varying performance of the economy													
B1 Strong	20.0	19.6	19.2	18.8	18.4	18.0	17.6	17.2	16.8	16.4	16.0	13.9	11.8
B2 Weak	20.0	21.2	22.3	23.5	24.6	25.7	26.8	27.9	28.9	30.0	31.0	35.9	40.5
Varying rates of growth in cost and Institutional aid													
C1 High/high	20.0	21.2	22.3	23.4	24.6	25.7	26.7	27.8	28.9	29.9	30.9	35.8	40.3
C2 High/low	20.0	21.2	22.3	23.4	24.6	25.7	26.7	27.8	28.9	29.9	30.9	35.8	40.3
C3 Low/high	20.0	19.6	19.2	18.8	18.4	18.0	17.6	17.2	16.8	16.4	16.0	13.8	11.7
C4 Low/low	20.0	19.6	19.2	18.8	18.4	18.0	17.6	17.2	16.8	16.4	16.0	13.8	11.7
<b>Private institutions</b>													
Baseline projection													
Historical baseline	60.3	60.3	60.4	60.4	60.4	60.5	60.5	60.5	60.6	60.6	60.7	60.8	61.0
Varying federal support													
A1 No growth	60.3	60.3	60.4	60.4	60.4	60.5	60.5	60.5	60.6	60.6	60.7	60.8	61.0
A2 Rapid growth	60.3	60.3	60.4	60.4	60.4	60.5	60.5	60.5	60.6	60.6	60.7	60.8	61.0
A3 Real decline	60.3	60.3	60.4	60.4	60.4	60.5	60.5	60.5	60.6	60.6	60.7	60.8	61.0
Varying performance of the economy													
B1 Strong	60.3	59.9	59.6	59.2	58.9	58.5	58.1	57.8	57.4	57.0	56.7	54.7	52.7
B2 Weak	60.3	60.7	61.1	61.5	61.9	62.3	62.7	63.1	63.5	63.9	64.3	66.2	67.9
Varying rates of growth in cost and Institutional aid													
C1 High/high	60.3	60.7	61.1	61.5	61.9	62.3	62.7	63.1	63.5	63.9	64.3	66.1	67.9
C2 High/low	60.3	60.7	61.1	61.5	61.9	62.3	62.7	63.1	63.5	63.9	64.3	66.1	67.9
C3 Low/high	60.3	59.9	59.6	59.2	58.9	58.5	58.1	57.8	57.4	57.0	56.6	54.7	52.7
C4 Low/low	60.3	59.9	59.6	59.2	58.9	58.5	58.1	57.8	57.4	57.0	56.6	54.7	52.7

Table 4: Projections summary - tuition dependency, p. 2

Public two year Institutions Baseline projection	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2005	2010
historical baseline	19.0	19.3	19.5	19.8	20.0	20.2	20.5	20.7	20.9	21.2	21.4	22.6	23.7
Varying federal support													
A1 No growth	19.0	19.3	19.5	19.8	20.0	20.2	20.5	20.7	20.9	21.2	21.4	22.6	23.7
A2 Rapid growth	19.0	19.3	19.5	19.8	20.0	20.2	20.5	20.7	20.9	21.2	21.4	22.6	23.7
A3 Real decline	19.0	19.3	19.5	19.8	20.0	20.2	20.5	20.7	20.9	21.2	21.4	22.6	23.7
Varying performance of the economy													
B1 Strong	19.0	18.5	17.9	17.4	16.8	16.2	15.6	15.1	14.5	13.9	13.3	10.3	7.2
B2 Weak	19.0	20.1	21.1	22.1	23.1	24.1	25.1	26.0	27.0	27.9	28.8	33.2	37.4
Varying rates of growth in cost and institutional aid													
C1 High/high	19.0	20.1	21.1	22.1	23.1	24.0	25.0	25.9	26.9	27.8	28.7	33.1	37.2
C2 High/low	19.0	20.1	21.1	22.1	23.1	24.0	25.0	25.9	26.9	27.8	28.7	33.1	37.2
C3 Low/high	19.0	18.5	17.9	17.3	16.8	16.2	15.6	15.0	14.4	13.8	13.2	10.2	7.0
C4 Low/low	19.0	18.5	17.9	17.3	16.8	16.2	15.6	15.0	14.4	13.8	13.2	10.2	7.0

Figure 1. Projections to 2010 Net price

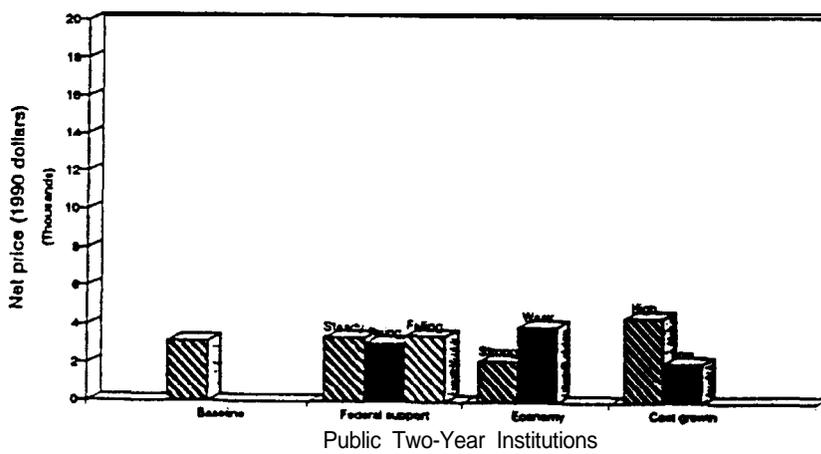
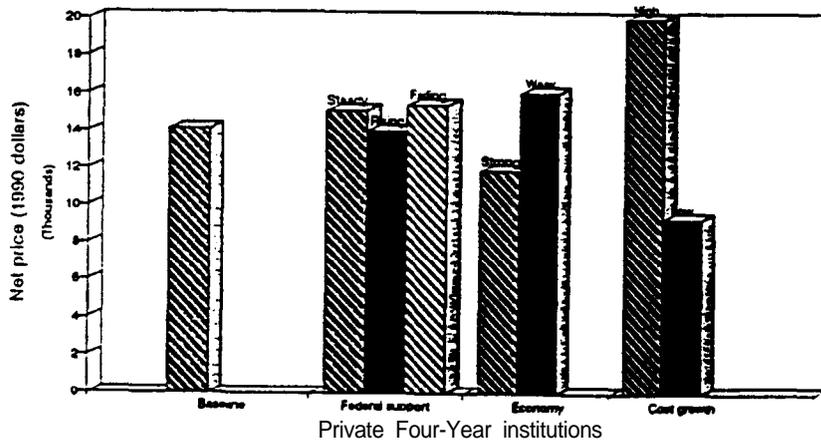
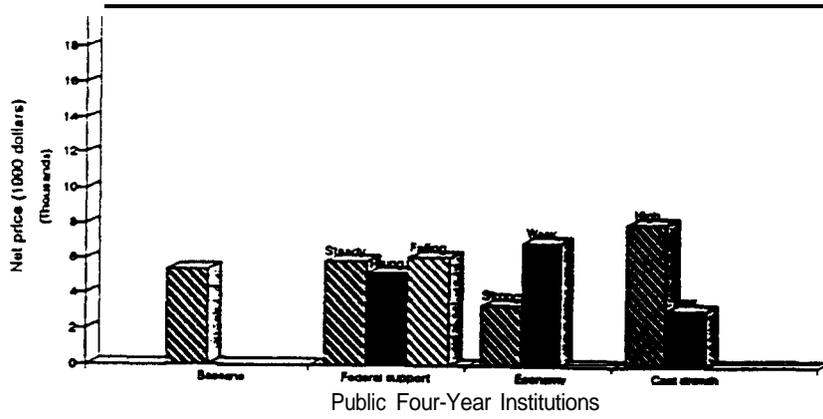
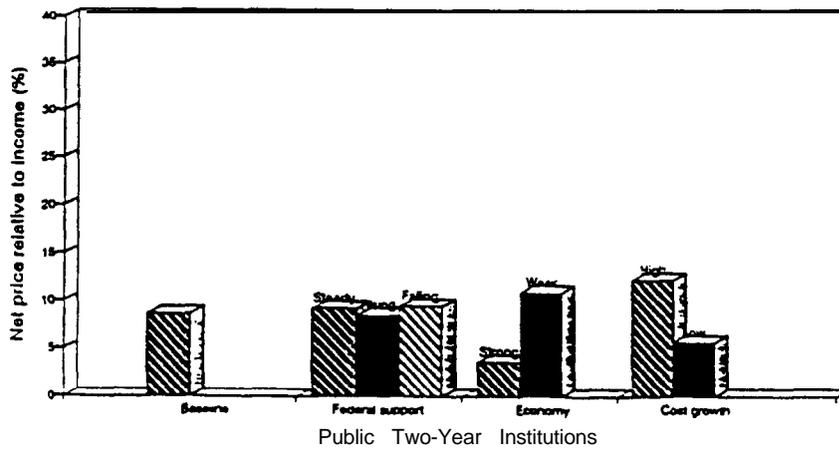
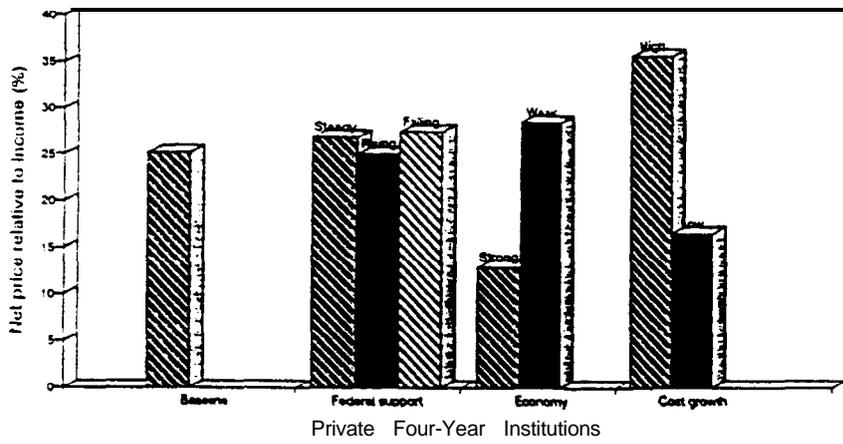
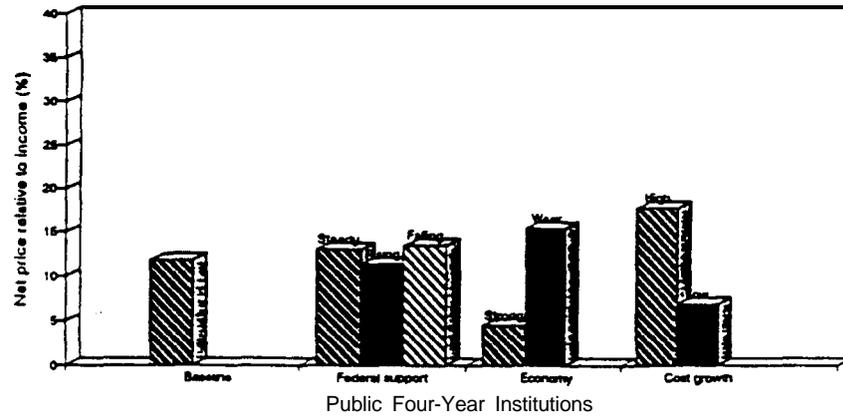
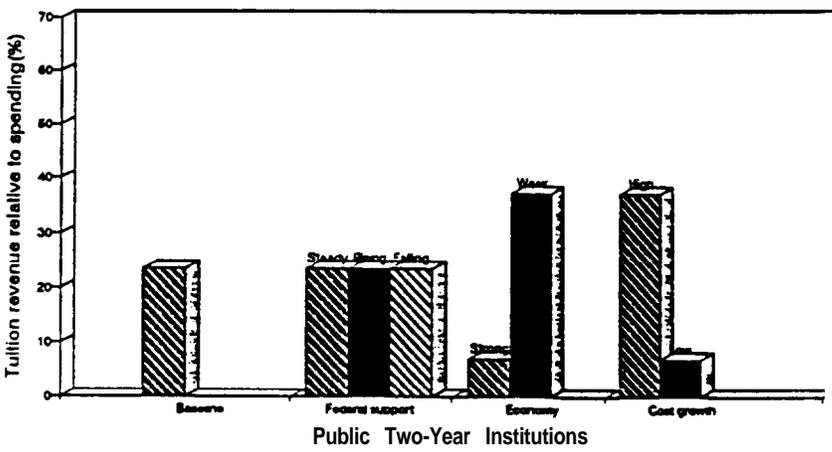
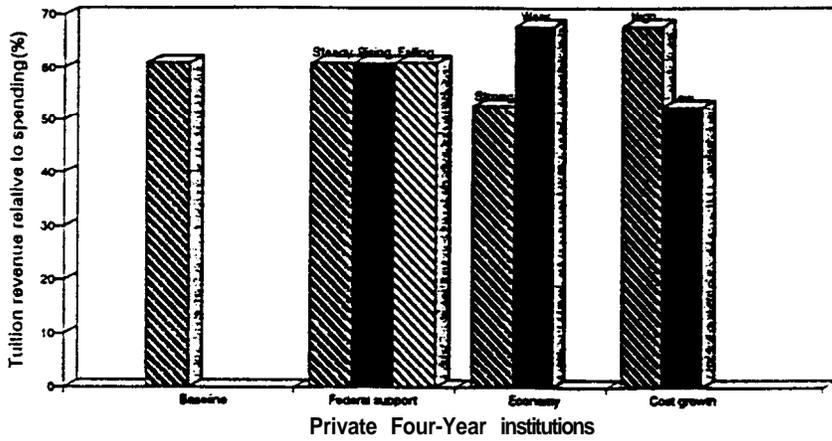
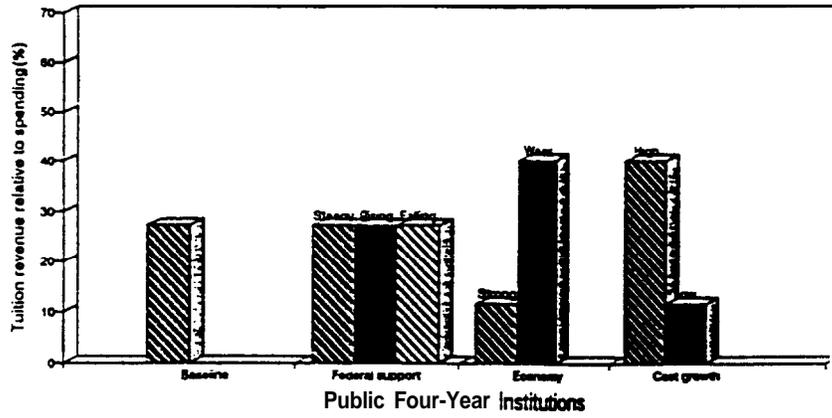


Figure 2 -- Projections to 2010: Net price relative to income



**Figure 3.** Projections to 2010 Tuition dependency



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