DOCUMENT RESUME

ED 380 048 HE 028 202

AUTHOR	Shires, Michael A.; And Others
TITLE	The Changing Environment in Higher Education.
INSTITUTION	Rand Corp., Santa Monica, CA. Inst. for Education and Training.
SPONS AGENCY	Lilly Endowment, Inc., Indianapolis, Ind.
REPORT NO	RAND-DRU-394-IET
PUB DATE	Mar 94
NOTE	71p.; For an earlier related document, see ED 363 210.
PUB TYPE	Reports - Evaluative/Feasibility (142)
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	Change Strategies; Costs; *Demography; *Economic Factors; Educational Change; Educational Economics; *Educational Environment; Educational Finance; *Educational Trends; Enrollment Projections; Financial Problems; *Higher Education; Student Characteristics; *Trend Analysis

ABSTRACT

This paper describes the national demographic and economic context of higher education and offers interpretations of what it portends, in order to illuminate the changing environment of higher education. The discussion focuses on: (1) demographic trends, such as the projected annual enrollment growth in the 1990s of 1.2 percent and the increasing heterogeneity of the student body; (2) fiscal trends, such as flat or declining public revenues per full-time equivalent student, widespread tax limitation movements, and growth in private support; and (3) cost trends, such as consistently rising costs for instruction, administration, and research since the early 1960s, which have outstripped prices common to other sectors. Temporizing responses, or even neglect, might be the best answer to problems that stem from short-term, ephemeral perturbations in long-term trends, but substantial changes in institutions and systems may be needed to address problems engendered by fundamental shifts in the underlying demographic and economic forces. Higher education's institutions and systems will need to be substantially restructured to effectively serve society's future needs and expectations with the limited resources likely to be available to them in the future. (JDD)

RAND

The Changing Environment in Higher Education

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DRU-394-IET

March 1994

Prepared for the Institute on Education and Training

PREFACE

This report is the first step in an on-going environmental scan of the factors and trends affecting the structure and governance of modern higher education. It describes the confluence of demographic and economic forces that underlie a remarkable era of growth in higher education that peaked in the mid-1960s and abruptly ended in the mid-1970s. We do not attempt to forecast the exact future course of these trends. Rather we seek to illuminate higher education's changing environment to help legislators, policy makers and analysts, administrators, and members of the higher education community assess and adapt to what the future might hold.

The research reported here was supported by a grant from the Lilly Endowment Inc. to RAND's Institute on Education and Training. The work was conducted by the RAND Center for Higher Education Reform, a component of the Institute. The Center earlier published a related report: Roger Benjamin, et. al., *The Redesign of Governance in Higher Education*, MR-222-LE, 1993.

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SUMMARY

Owing to a confluence of demographic and economic forces, higher education enjoyed a remarkable era of growth that peaked in the mid-1960s and ended abruptly early in the 1970s. This paper presents a factual description of the national demographic and economic context of higher education in general, and offers interpretations of what it portends. Rather than attempting to forecast the exact future course of these trends, we seek to illuminate the changing environment of higher education and the implications of those changes for educational planners who must adapt to what the future may bring.

DEMOGRAPHIC TRENDS

Through the first half of this century, college enrollments grew steadily at an annual average rate of about 5 percent, regularly doubling every 14 or 15 years. Enrollments in higher education exploded in the three decades following World War II. This growth was particularly rapid during the 1960s and the early 1970s. This growth was fueled by two trends: (1) the overall growth of the U.S. population during this period and (2) a marked increase in participation rates by the population overall.

Since the mid 1970s, however, there has been a leveling off of the growth rate in enrollments. In fact, average annual enrollment growth in the 1990s is projected to average only 1.2 percent, a very anemic rate when contrasted with the eight percent average annual growth rates of the 1960s.

While the rate of growth in total enrollments was falling, higher education's student body has become increasingly heterogeneous. The so-called "traditional" student of the past—the white male under 35 years of age attending on a full-time basis—was increasingly joined by large cohorts of students of different characteristics:

Participation by female students soared five-fold in this period, growing from about one-third of all students in the early 1960s to more than one-half in the 1980s.

Students of color rose from 17 percent of all student enrollments in the mid-1970s (the earliest detailed data available) to more than 24 percent in 1992. Much of that growth is fueled by trends in the overall population as Hispanics represent an increasingly larger share of the overall population. This trend may be even further amplified if Hispanic and African-American students begin to participate in higher education at levels comparable to those of white and Asian-American students.

There has also been a significant gentrification of the American higher education student population. Students over 35 years of age, which in 1965 totaled only four percent of higher education enrollments, accounted for 20 percent of all enrollments in 1992. This trend is expected to continue into the next decade, rising to nearly 25 percent by 2002.

Finally, while both full-time and part-time enrollments have increased over the past 15 years, there has been a marked increase in part-time enrollments as well, rising from 40% to 44% of all enrollments.

FISCAL TRENDS

There have been significant changes in the overall rates of growth and in the relative rates of growth of the sources of revenues available to higher education institutions over time. The principal sources of public revenues, state and federal support, have provided flat or declining revenues per FTE. The combination of constraints imposed by federal deficit concerns and escalating demands for increased spending in response to a variety of domestic concerns has led to real federal support per FTE declining steadily from $2,756 in 1963 to $1,650 in 1983 before rising slowly to $2,050 in 1990, roughly the level that had obtained in 1977.

At the same time, widespread tax limitation movements and competing demands for state spending have precluded sizable increases in real support per student at the state level in the 1980s. Real state revenue per FTE grew rapidly throughout the 1960s and 1970s, increasing from $2,440 in 1959 to $4,414 in 1979. From 1979 to 1990, real state revenue

per FTE was either flat or declining. Real state support per FTE declined in the early 1980s before rising back to its 1979 level of $4,400 in 1990.

The lack of growth in state and federal support has resulted in public support taking on a smaller role as a source of revenue to higher education institutions, with private support taking on a greater role. By 1990, public support provided 41 percent of total revenues to higher education institutions, while private support provided 59 percent.

The growth in private support has largely come from increases in tuition and fees. Real tuition and fee revenue per FTE has increased from about $2,050 in 1959 to about $4,180 in 1990. The increases in tuition and fee revenue per FTE have been particularly large since 1981. The future trend for tuition increases is not clear. There are growing pressures to cap tuition increases, but at the same time the trends suggest that it is doubtful that state and federal support will see sizable increases in the near future.

COST TRENDS

The overall costs facing the higher education sector have risen consistently since the early 1960s. One measure of such price changes, the Higher Education Price Index, has risen more than five-fold over this time. This means that it costs, on average, five times as much today as it did in 1961 to produce the product called "higher education".

Furthermore, this growth in prices has far outstripped the prices common to other sectors in the society. In fact, the HEPI has outgrown the Consumer Price Index (CPI) in all but the hyper-inflationary, oil shock years of the early 1970s and the late 1970s/early 1980s. This has particular relevance to higher education finance because the CPI is often used to determine cost-of-living adjustments for public finance decisions. Subsequently, even if the common vision of inflation (as measured by the CPI) is funded, the sector may still experience a real decrease in the amount of goods it is able to purchase with those resources.

One example of this trend is in the area of instructional costs. A primary component of the costs of instruction is the cost of faculty salaries. While these salaries grew faster than inflation in the explosive-growth period of the 1960s, they were well outpaced by the inflation of the 1970s and have grown only mildly faster than inflation in the 1980s. Faculty salaries' growth premium over inflation tapered off toward the end of the 1980s and early 1990s with the onset of public fiscal crises, especially at the state level.

The future trend for faculty salaries is not altogether clear. The prospects are strong for a younger, and hence less expensive, faculty as older faculty members hired during the high growth of the 1960s retire. Concurrently, there will be increased competition for what is likely to be an increasingly smaller pool of new faculty.

Beyond the costs of instruction, the costs of simply administering the institution have outstripped inflation. Not only are institutions becoming more complex and providing more services, but the costs of providing and administering those services has also grown significantly. One major area where this growth is particularly evident is in the growth in the cost of the fringe benefits provided to institutional staff. The cost of fringe benefits has outstripped inflation in every year since 1961 except 1979 during the peak of the hyperinflationary second oil-shock. This cost has exceeded inflation by as much as 12.5 percent.

Finally, higher education's costs have outstripped inflation in another important category—research costs. The costs associated with direct research expenditures have also outstripped inflation in all but the hyperinflationary oil-shock years. Inasmuch as instruction and research account for much of the fiscal expenditures at higher education institutions, it is easy to see why the sector's overall costs have outstripped inflation.

IMPLICATIONS

Higher education is now faced with an increasingly diverse student population, new and changing demands from both students and society, limited or even declining resources, and escalating costs. Any single

set of changes in the environment would present a significant new challenge to the higher education sector. However, the combination of changes now under way adds up to a whole that exceeds the capacity of the current system. New demands require new responses which, in turn, require new combinations of inputs. But, because resources are limited, changes in the input mix can only be accomplished by redirecting resources. To effectively respond to changing demands, higher education institutions and systems may have to reallocate limited resources among competing demands.

Temporizing responses, or even neglect, might be the best answer to problems that stem from short-term, ephemeral perturbations in long term trends. But substantial changes in institutions and systems may be needed to address problems engendered by fundamental shifts in the underlying demographic and economic forces that shape higher education's environment. Higher education's institutions and systems will need to be substantially restructured to effectively serve society's future needs and expectations with the limited resources likely to be available to them in the future.

ACKNOWLEDGMENTS

Many people have contributed to the effort whose end result has been this report. In particular, we would like to thank our RAND colleagues Adele Palmer and Anne Pebley for their careful and constructive comments during the review of this report.

We are also indebted to the RAND Institute on Education and Training and RAND for its on-going support of this preliminary stage of research.

1. INTRODUCTION

Postindustrialism in the United States has signaled unprecedented wealth, but it has also been characterized as a period of rapid and "turbulent change, competitiveness, information overload, organizational decline, and uncertainty."[1] This period is characterized, by significant demographic changes in the American population, continual demands for increasing productivity and quality of life, escalating requirements for the rapid and effective interpretation of growing information sets, and increased competition for a constrained pool of public resources. These pressures present great challenges to public and private organizations and agencies; while their ability to successfully respond to the pressures presents great opportunities to society.

The higher education sector and its constituent institutions is not exempt from the pressures of postindustrialization. Postsecondary education institutions, like other public and private agents, are expected to respond to the increasingly complex and constantly changing social context. Recent economic, demographic, political, and social changes in American society have come together to dramatically alter the purposes the higher education sector is asked to serve, the resources available to it, and the environment in which it operates.

The information revolution has vastly accelerated the rate by which information and resources can be moved, requiring institutions to learn new ways of operating, as well as expanding the types of training institutions must provide to their students. The modern labor market requires new skills from the sector's graduates. The system is expected to prepare the next generation of Americans to live in an interdependent world in an information centered economy. Demographic trends in the

[1]Daniel Bell, The Coming of Post-Industrial Society. New York, Basic Books, 1973. Bell defined postindustrialization as the growing dominance of the information society, especially the service, including the public sector, over the industrial sector. Kim S. Cameron and Mary Tschirhart. "Postindustrial Environments and Organizational Effectiveness in Colleges and Universities," *Journal of Higher Education*, Vol. 63, No. 1 (January/February 1992), p. 87.

American population have quickly changed the attributes of the " raditional" populations participating in higher education. Fiscal trends are forcing the sector's institutions to seek new efficiencies and explore new teaching technologies.

Society expects higher education institutions to provide increasing levels of applied research in addition to the basic research the sector has traditionally provided. Furthermore, the sector is now called upon to provide immediate answers to the complex social problems that postindustrialization has brought. Legislatures, accrediting agencies, and the K-12 education sector are providing a steady increase in the number and types of miscellaneous services higher education institutions are expected to provide their communities.

The pressures associated with any one of these trends is important in its own right. Individually they hold tremendous implications for the sector and warrant attention. Together and simultaneously, they represent a new universe of challenges which may indeed reshape the future organization and topology of the sector.

It is with an eye toward this new universe of challenges that this report is offered. Before one can fully dissect the implications of the wide ranging trends affecting the higher education sector, one must first understand the nature and pervasiveness of the individual trends. Ideally, this study would contain a detailed and elaborate environmental scan of all of the trends affecting America's higher education sector. Unfortunately, such a comprehensive effort is beyond the scope of the resources available to this research. This report will focus, instead, on trends in three areas which lend themselves well to quantification and which have apparent and important consequences to the sector: (1) the demographic trends and changes in the student population; (2) the trends and changes in the sector's fiscal resources; and (3) the trends and changes in the sector's cost structure.

In selecting these three areas, the authors do not intend to downplay the importance of the plethora of other areas and trends which affect the sector. Rather, this report offers a description of the trends in these three areas as a starting point and basis for further discussions and research into the myriad of trends affecting the sector.

In keeping with this role as a discussion base, the report also does not address the direct and indirect implications to the sector of the trends presented in this report. This is again beyond the scope of the resources available and is left for subsequent discussions and research.

Each of the three dimensions detailed above will be discussed in some detail using commonly available indicators to present the trends over time. This is intended to allow the reader to understand the history of the trends as well as their magnitude and their direction of change. Only by casting a wide net over the last several decades can one fully appreciate the extent of the change.

ORGANIZATION OF THE REPORT

This report is organized in the three areas it will review. It first addresses the trends and changes in student demographics, Chapter Two. Chapter Three presents changes in the composition and volume of the financial resources committed to higher education. Chapter Four discusses the changes in some of the costs associated with the product we call higher education. Chapter Five summarizes these separate trends and introduces questions that may serve as a starting point for discussions regarding the sector's future in light of the trends presented in this report.

2. CHANGING STUDENT DEMOGRAPHICS

While modern postsecondary institutions have a wide range of demands and missions, students are their primary clients. Inasmuch as students are the primary consumers of the higher education market, changes in the quantity and composition of students have significant influences on the demands faced by modern postsecondary institutions. This chapter describes some of the trends and changes in the quantity and composition of this important constituent population.

There are many dimensions along which one could analyze the changes in student demographics in higher education. They generally fall into two categories—changes in the numbers of students participating in the sector and changes in the composition of the student population. This report will discuss both of these important dimensions.

WHY STUDENT DEMOGRAPHICS ARE IMPORTANT

It is useful to suggest how changes in these dimensions are important to the sector. First, changes in the number of students directly entering higher education institutions affect the way institutions respond to the demands for capacity placed upon them. Increasing student enrollments, for example, implies a need for increasing capacity within the institutions or the opening of new institutions.

Second, and perhaps more important than the changes in the absolute number of students in higher education institutions, is the increasing diversity of those students that it serves. Diversification of student enrollments places a range of adaptive pressures on higher education institutions and systems. The growth of traditionally under-represented populations in higher education is simultaneously one of the most impressive achievements, and most difficult challenges of the higher education sector. In order to tap the tremendous resource pool that this diversity represents, higher education institutions must reform themselves to address the needs and access the contributions of these populations.

The growth of students from historically under-represented groups has stimulated calls for reform in higher education curricula, pedagogy, support services and extracurricular activities and has stimulated calls for changes in policies ranging from admissions to faculty hirings. Increased diversity presents new demands on higher education because of changing student needs, values, and aspirations. Some of these changes stem from students' increasing need to balance school, work, and family obligations. Some stem from increasing numbers of under-prepared students entering the higher education sector. Others reflect fundamental challenges to the nature and substance of intellectual inquiry. But, regardless of the source of these changes, traditional ways of doing business are proving increasingly inadequate.

This chapter, consequently, will provide a description of the trends in student demographics along these two important dimensions.

INCREASING QUANTITIES OF STUDENTS OVERALL, BUT SLOWER GROWTH

Overall, higher education enrollments have riser steadily over the past century. There are two important dimensions in this growth. The first is the phenomenal rate of growth overall in student populations. The second dimension concerns the marked slowdown of this growth in the past two decades, a slowdown projected to continue into the future.

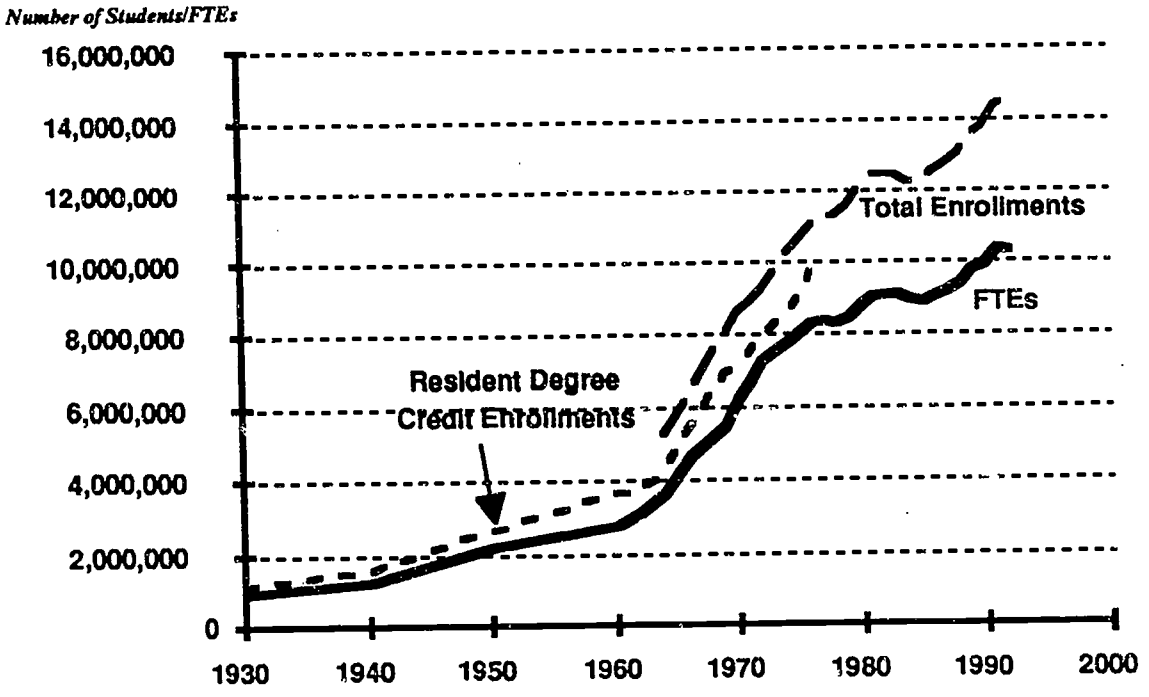
Higher Education Enrollments Have Exploded

Figure 2.1 depicts the long-term trend in enrollments since 1930. We have plotted three measures of enrollment in the higher education sector. The line labeled "Resident Degree Credit" represents those students enrolled in institutions of higher education and taking courses for credit toward a degree.[2] In the earlier part of this century, this was the measure that was commonly used to measure the size of the sector and was the only series readily available. "Total enrollments" includes

[2]Resident degree credit enrollment includes all non-extension students (both full and part-time) enrolled in programs leading to at least a bachelor's degree. Non-degree credit students accounted for a historically small proportion of students, totaling 6.4 percent in 1964 and rising to 13.0 percent in 1975, the last year for which the series is readily available. It is used here due to the unavailability of the alternative total count through the 1950s and for comparability through the 1970s.

all students enrolled in higher education institutions as reported by the institutions in the Integrated Postsecondary Education Data System (IPEDS). The final series, "FTEs," represents a measure of how many students would be enrolled if an equivalent number of full-time students were enrolled.[3]

Much of the remarkable growth in enrollment occurred during the 1960s, rising from 1.1 million students in 1930 to 3.6 million students in 1960 and then doubling to 7.1 million (all in resident degree credit enrollments) by 1970. In the ensuing two decades, enrollments have continued to grow, rising from 8.9 million in 1970 (in total enrollments) to 14.4 million in 1991.



SOURCE: NCES, *Digest of Education Statistics*, various years.

Fig. 2.1—Enrollments in Institutions of Higher Education

[3]A full-time equivalent is defined as the number of full-time students enrolled plus an estimate of the equivalent number of full-time slots occupied by part-time students. It is generally estimated by taking one-third of the part-time enrollment total and adding it to the full-time enrollment total.

Similarly, there is significant growth in enrollments as measured in full-time equivalents (FTEs) in higher education. As Figure 2.1 shows, enrollments measured in full-time equivalents has risen from less than one million in 1930 to more than ten million in 1991.

The growth in enrollments, both total and full-time equivalents, has been fueled by two factors—a growing population which simultaneously exhibits increasing participation rate. The U.S. population has grown rapidly in the last one hundred years and explains a large part of the increase in enrollment. The U.S. population has more than doubled from 123.0 million in 1930 to 250.0 million in 1990.[4] However, since enrollments have grown more than two-fold since 1930, 1990 enrollment levels are 925 percent of the enrollment levels in 1930, the growth in enrollment is not explained by population growth alone.

The answer lies in the phenomenal increase in participation in higher education by the American population. Not only are there more people, but progressively more are pursuing education beyond high school. In fact, this participation rate, shown in Figure 2.2, has more than tripled between 1960 and 1990 and is expected to rise to four times the 1950 level by the year 2000. This increase in participation has been distributed across all segments of the population, but is increasingly represented by particular segments of the overall population (examined in more detail below).[5]

The population explosion in conjunction with heightened levels of participation has increased the number of enrollees on the campuses of America's colleges and universities. Not only has there been substantial growth in enrollments over the past several decades, but this growth is expected to continue into the next century. This expectation is fueled in large part by the expected overall growth of the U.S. population. Figure 2.3 shows that the U.S. population is

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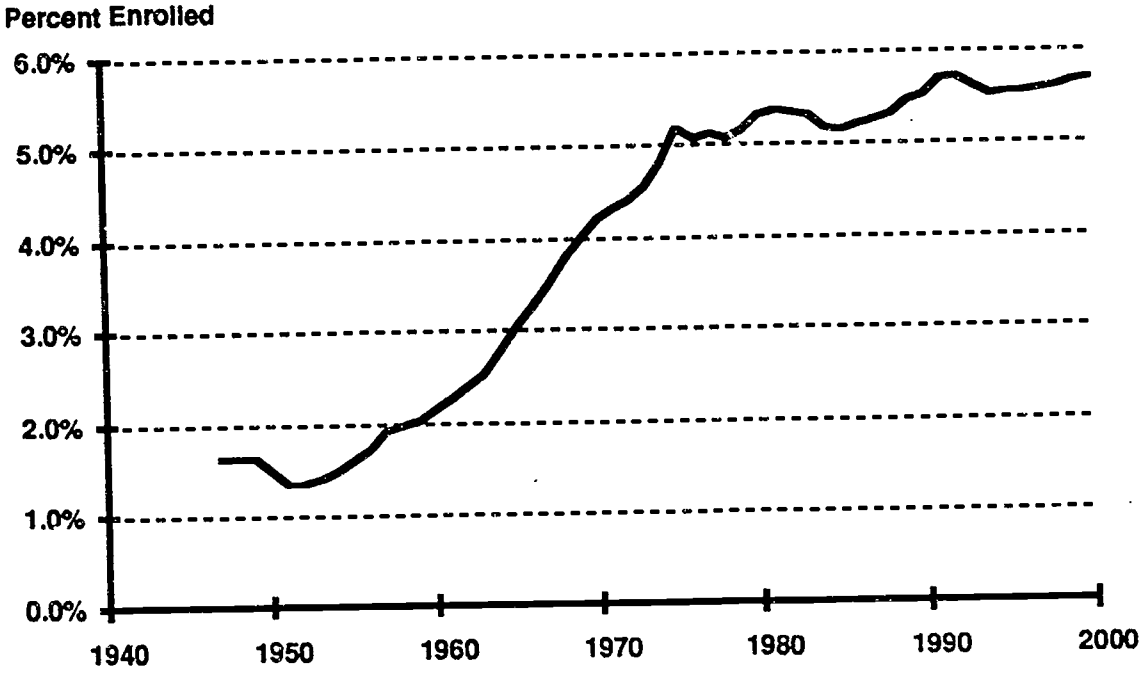
[4]NCES, *Digest of Education Statistics*, various years.

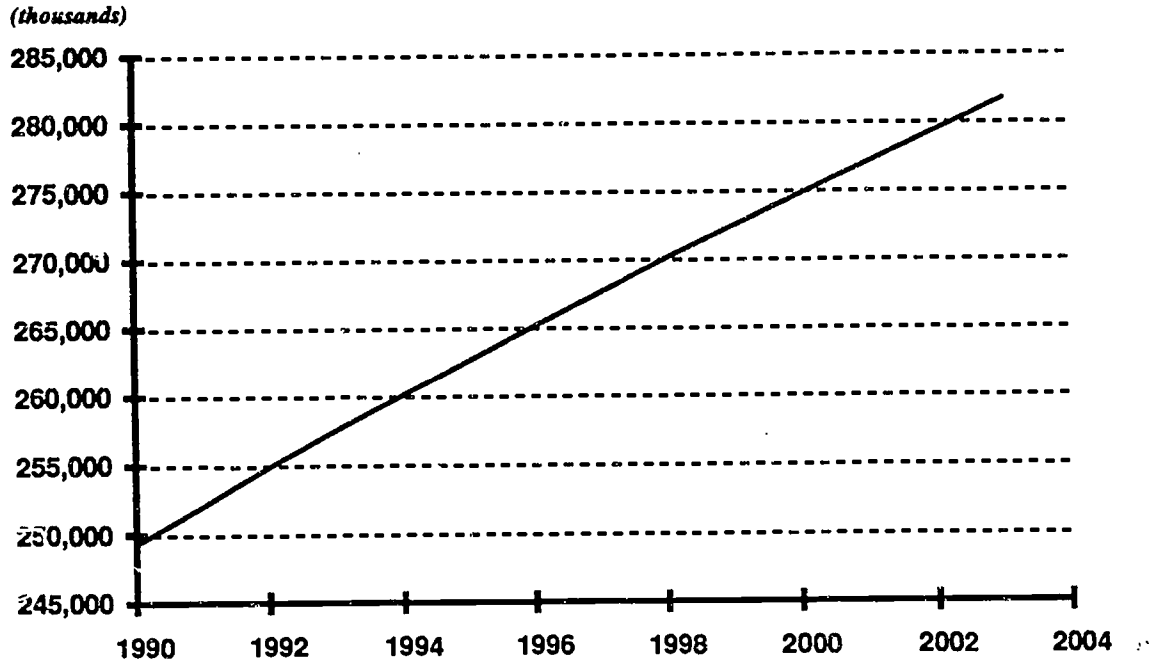
[5]While a detailed analysis of the reasons for this increasing participation rate are beyond the scope of this paper, one explanation frequently advanced is the rise in demands throughout postindustrial America and the increasing need for more and better trained workers. See Ronald Inglehart (1990), Culture Shift in Advanced Industrial Society. Princeton, N.J.: Princeton University Press.

expected to grow continuously over the next decade from 250 million to nearly 282 million in 2003.



SOURCE: NCES, *Digest of Education Statistics*, various years.

Fig. 2.2—Percent of Total Population Enrolled in Higher Education



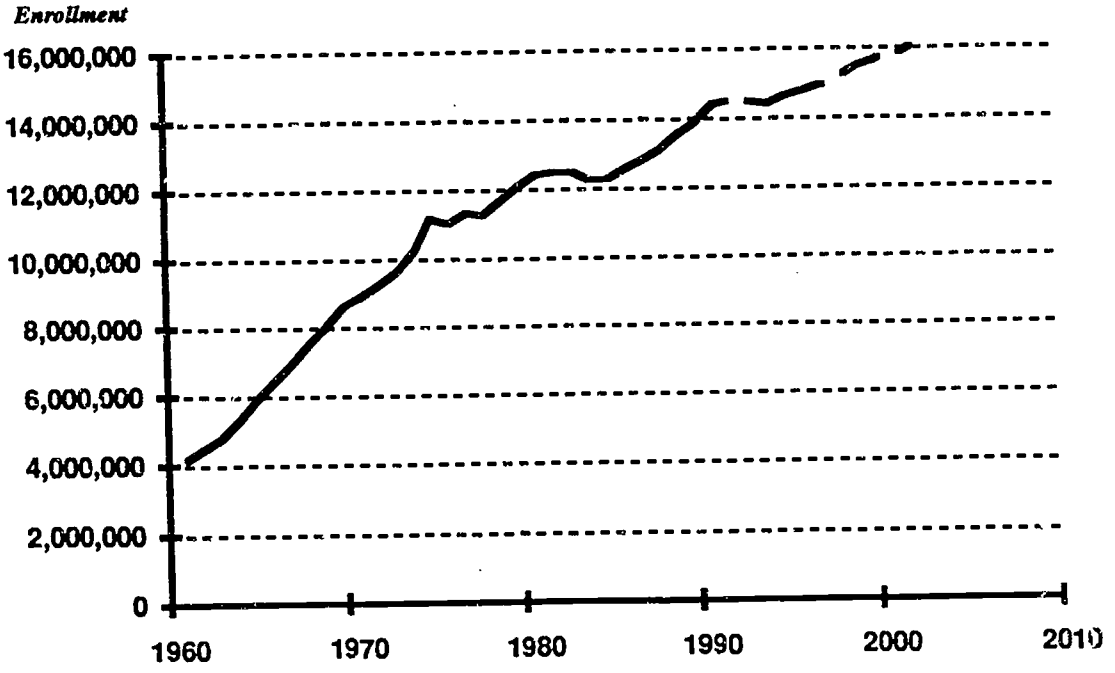
SOURCE: Bureau of the Census, "Population Projections of the United States, by Age, Sex, Race, and Hispanic Origin: 1992 to 2050," *Current Population Reports*, P25-1092, November 1992, Resident Population (Middle Series).

Fig. 2.3-U.S. Population Projections, 1990 to 2003

Combining an increasing population with an increasing participation rate indicates that enrollments are likely to continue to increase. This is precisely the expectation of the National Center for Education Statistics which has similarly projected growth, albeit slower, in enrollments over the same period, as shown in Figure 2.4. Enrollments are expected to increase continuously from approximately 14 million now to 16 million at the turn of the century. The bottom line is that enrollments are expected to grow and that the sector should anticipate the continuation of the challenges that accompany this growth.

The Growth Rate is Slowing

While enrollments are expected to continue to grow during this period, the rate of growth is expected to decline. Overall enrollment[6] growth has averaged only 1.3 percent during the 1980s (1.2 percent in FTE terms), down from 3.5 percent average annual growth in the 1970s and 7.0 percent in the 1960s (2.7 percent and 9.0 percent, respectively, for FTE enrollments). This relatively low growth level is expected to continue into the next century, with enrollment levels expected to grow at only 1.2 percent (1.3 percent in FTE terms) annually through 2000.



SOURCE: NCES, *Projections of Education Statistics to 2003*, NCES 92-218, Table XX, p. XX.

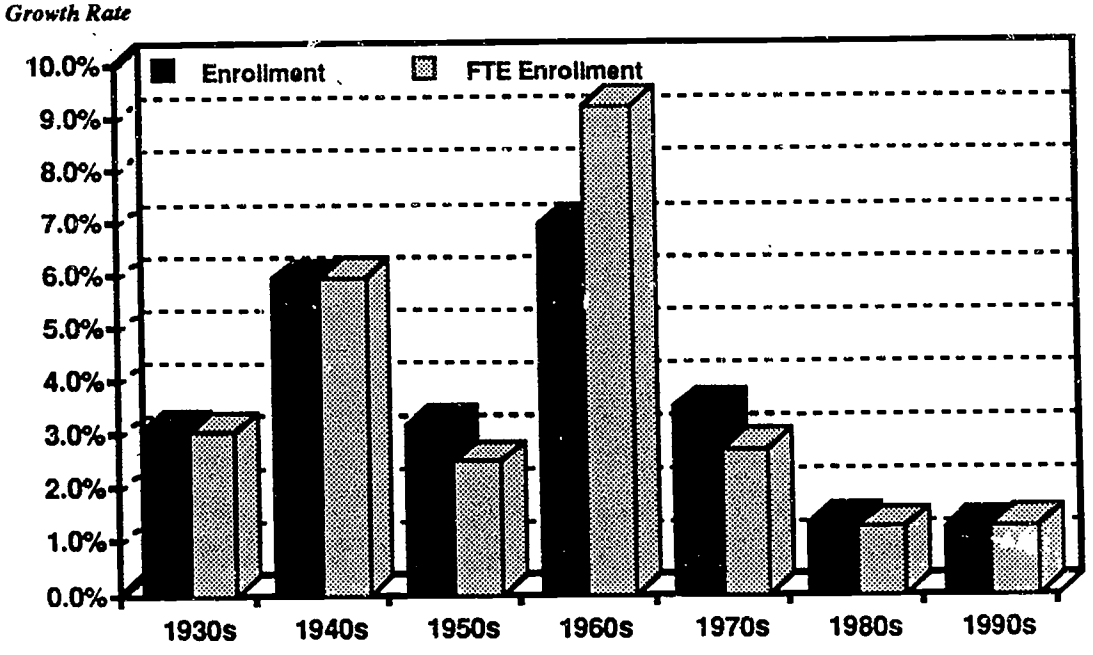
Fig. 2.4-Past and Projected Enrollment Levels, 1961 to 2003

This decrease in the growth rates of student enrollments over the past decade and through the turn of the century could have a range of

[6]In the context of this paper, enrollment will used to indicate general, headcount enrollments. Other measures of enrollment, such as FTE and resident degree credit enrollment, will be identified explicitly as such.

implications on the sector and its constituent institutions, especially in terms of the governance systems and organizational culture. The exploration of these implications are beyond the scope of this paper, however.

In summary, as shown in Figure 2.5, the trend shows more student enrollments in higher education, both in headcount and FTE terms. At the same time, the rate of growth in student enrollments is expected to decrease to levels lower than the rate of growth exhibited during the 1980s. We will now examine some of the demographic trends that add to and complicate the effects of these general trends.



SOURCE: NCES, *Digest of Education Statistics*, various years; NCES, *Projection of Education Statistics to 2003*.

Fig. 2.5--Average Annual Growth Rate of Enrollments and FTE Enrollments, by Decade 1930 to 2000

A CHANGING STUDENT POPULATION

Before the Morrill Act, postsecondary education was targeted on young, white males. The structure of the institutions, the disciplines addressed in their colleges and divisions, and the organizatio al cultures of the institutions developed to serve this audience. As Figure 2.6 shows, as recently as 1965,[7] higher education primarily served this constituency; white males under 35 years of age comprised 56.2 percent of all students in higher education. Since that time, however, the composition of the student population has cha ged; white males comprised only 30.1 percent of all students in 1991, a decrease of 55 percent. This means an increasingly diverse student population with increasingly diverse interests and needs. In order to more fully understand this trend, it is useful to tease out some of the axes along which this increasing diversity has developed.

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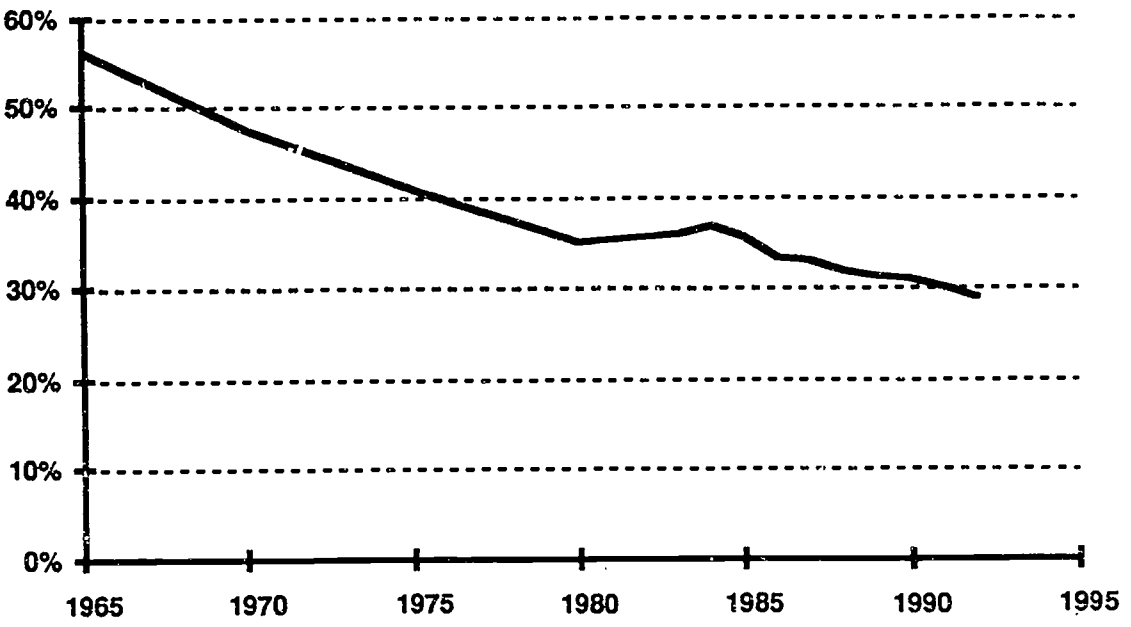
[7]1965 is the most recent year for which this level of data is available. As will be discussed below, male students comprised nearly 80% of all students in 1870. It is likely therefore, that the proportion of young, white, male students was even higher in the earlier part of the 20th century.



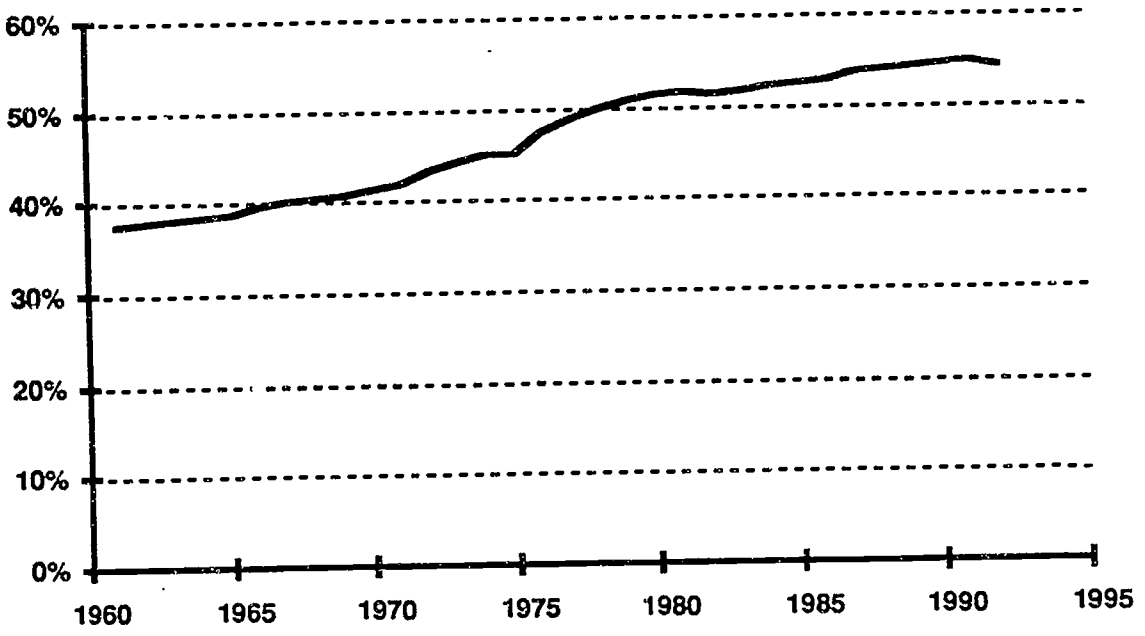
SOURCE: NCES, *Digest of Education Statistics 1993*, Tables 168 and 206, pp. 174 and 210.

Fig. 2.6—White Males Under 35 as a Percentage of All Enrollment in Higher Education

More Participation by Women

One significant change has been the increase in postsecondary attendance by women. Female enrollment has risen from about 35 percent in 1960 to 54.5 percent of all enrollment in 1991. Moreover, female enrollment rates have grown faster than those of men in every decade since 1870, except for the Depression-mired 1930s and the post-war 1920s and 1940s.[8]

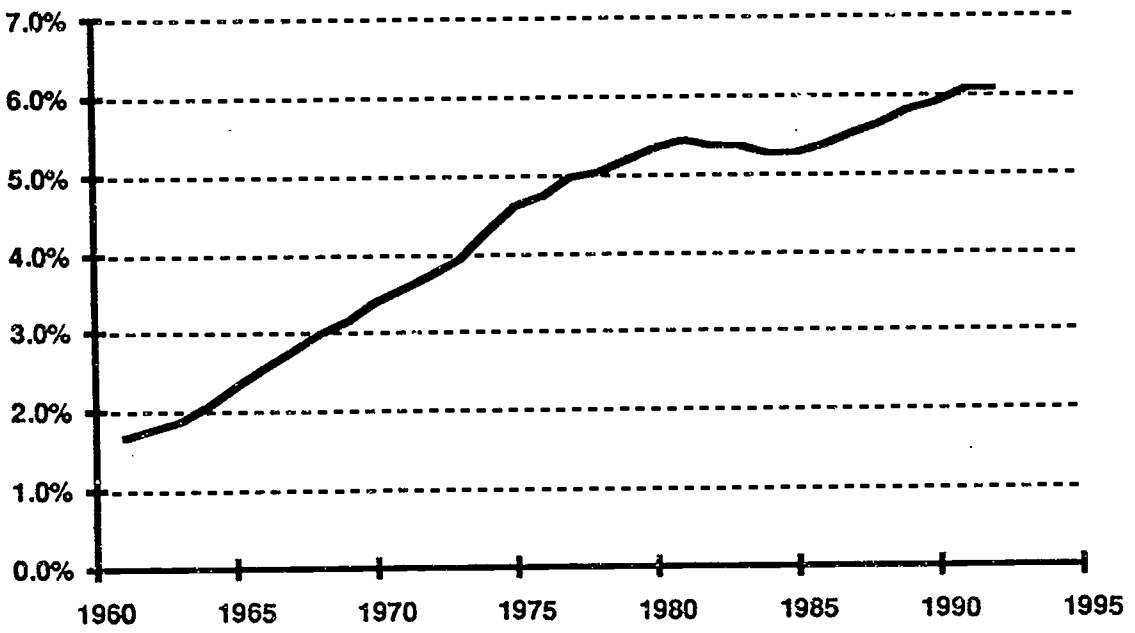
[8]Overall, female enrollments have increased at an annual average rate of 5.6% for the period 1870 to 1989. Male enrollments grew at an average annual rate of only 4.3%. (NCES, *Digest of Education Statistics*, various years.)



SOURCE: NCES, *Digest of Education Statistics*, various years.

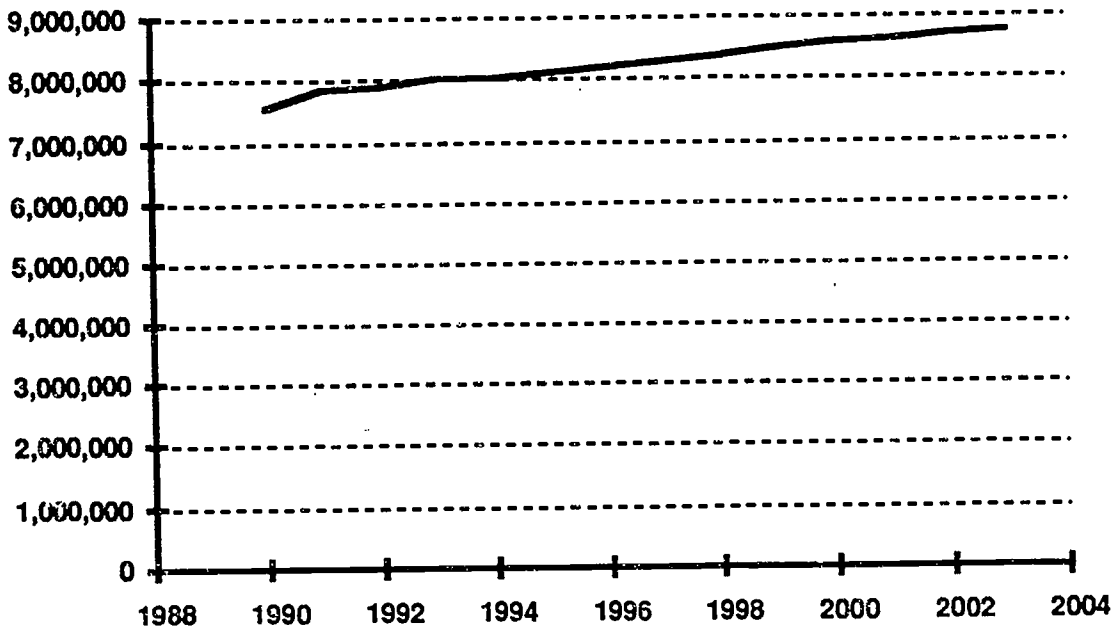
Fig. 2.7—Female Students as a Percentage of All Students

This growth trend is a function of the significantly increased participation of women in the higher education sector itself, (Figure 2.8) rising from less than two percent in to more than six percent in 1992. Correlated with the general demographic increases presented earlier (Figure 2.3), the number of women in higher education is expected to continue to grow over the next decade (Figure 2.9) rising to nearly nine million by the turn of the century.



NCES, *Digest of Education Statistics*, various years; Bureau of the Census, "Population Estimates and Projections--Estimates of the Population of the United States, by Age, Sex, and Race: April 1, 1960 to July 1, 1973," *Current Population Reports*, P25-519, April 1974, Resident Population; Bureau of the Census, "Population Estimates and Projections--Estimates of the Population of the United States, by Age, Sex, and Race: 1970 to 1977," *Current Population Reports*, P25-721, April 1978, Resident Population; Bureau of the Census, "Population Estimates and Projections--Estimates of the Population of the United States, by Age, Sex, and Race: 1976 to 1978," *Current Population Reports*, P25-800, April 1979, Resident Population; Bureau of the Census, "U.S. Population Estimates, by Age, Sex, Race, and Hispanic Origin: 1980 to 1992," *Current Population Reports*, P25-1095, February 1993, Resident Population.

Fig. 2.8-Female Students Enrolled in Higher Education as a Percentage of All Women



SOURCE: NCES, *Projections of Education Statistics to 2003*, NCES 92-218.

Fig. 2.9-Projected Number of Female Students Enrolled in Higher Education, 1990 to 2003

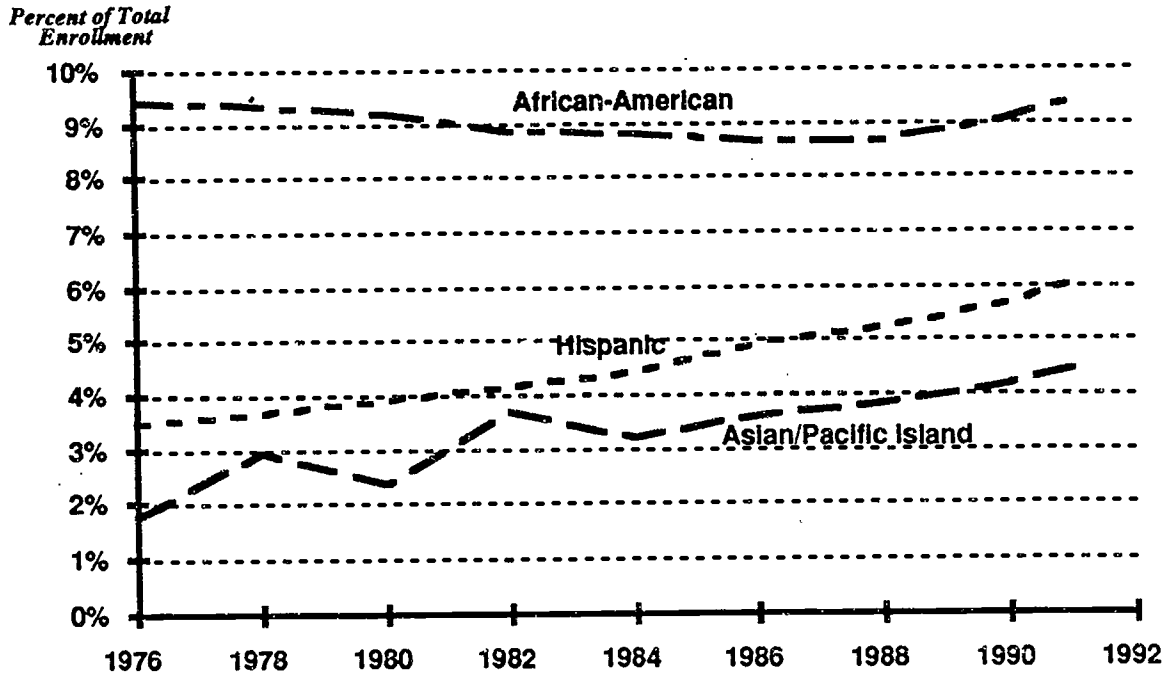
An Ethnically More Diverse Population

Another aspect of the increasing diversity in higher education is the sector's increased ethnic diversity composition. Although enrollment data by ethnicity is only recently available, minorities have shown marked increases even during this short interval. Figure 2.10[9] shows the increasing levels of enrollment by minority populations.[10] As this figure shows, African-American enrollments remain relatively flat at about nine percent of enrollments, while Hispanic and Asian/Pacific Islander student populations grow to 6.0 and 4.5 percent respectively.

[9]Note that the trend for white students has been omitted to highlight the trends in the other ethnicities. White students have slowly declined from 82 to 77 percent of all enrollments over this time.

[10]In this paper, the "African-American", "White", and "Asian/Pacific Islander" groups are the Non-Hispanic components of these populations.

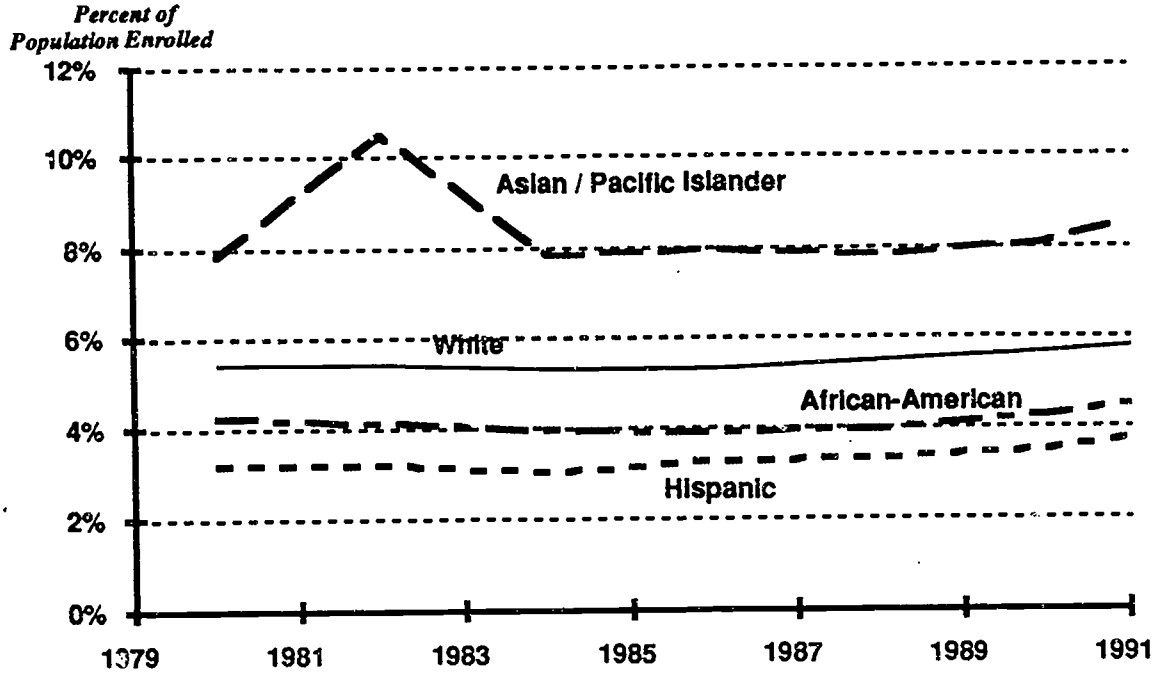
While the individual totals do not seem overly dramatic, the cumulative total is consequential. Furthermore, the effects of this ethnic diversification will be particularly felt in the large point-of-entry states such as New York, California, Florida, and Texas.



SOURCE: NCES, *Digest of Education Statistics*, various years; NCES, *Projections of Education Statistics to 2002*, 91-460, Table 45, p. 141.

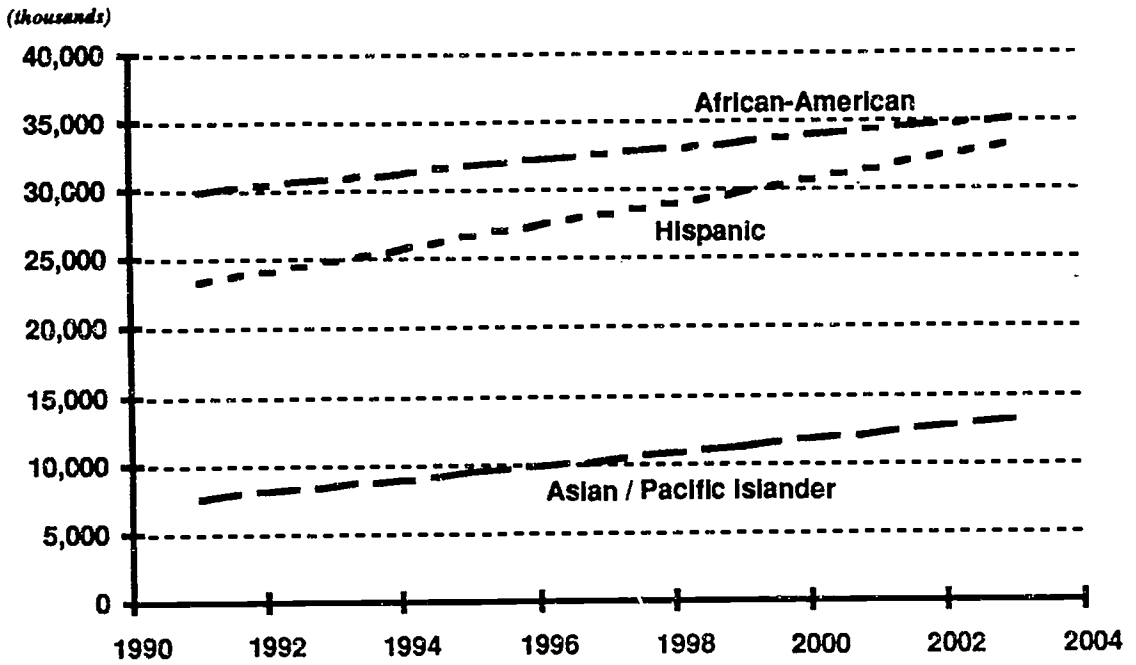
Fig. 2.10-Higher Education Enrollment, By Ethnicity, 1976 to 1990

These increased levels of enrollment are a combination of both increases in the size of minority populations and sustained levels of participation. Figure 2.11 presents the participation levels for the four largest ethnic groups, showing that these levels have remained essentially flat over this entire period.



SOURCE: NCES, *Digest of Education Statistics*, various years; Bureau of the Census, "U.S. Population Estimates, by Age, Sex, Race, and Hispanic Origin: 1980 to 1992," *Current Population Reports*, P25-1095, February 1993, Resident Population.

Fig. 2.11-Participation in Higher Education, by Ethnicity, 1980 to 1990

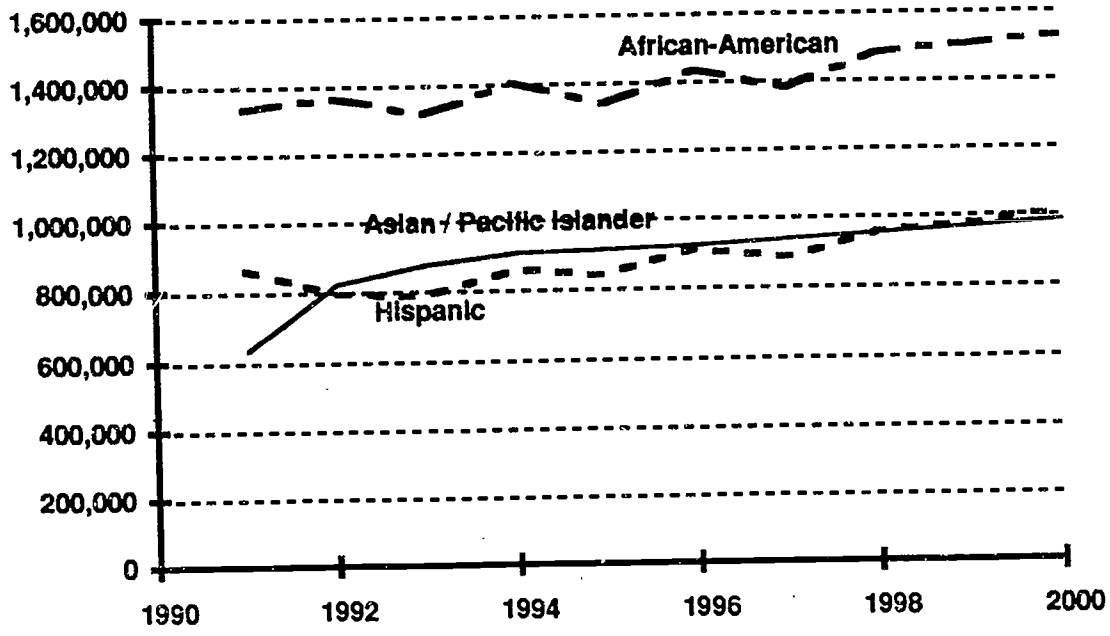


SOURCE: Bureau of the Census, "Population Projections of the United States, by Age, Sex, Race, and Hispanic Origin: 1992 to 2050," *Current Population Reports*, P25-1092, November 1992, Resident Population (Middle Series).

Fig. 2.12-Projections of U.S. Population, by Ethnicity, 1991 to 2003

This trend is expected to continue. NCES estimates indicate that the participation rates are expected to remain flat over the next decade.[11] However, the population of each of these four ethnic groups is expected to increase. Figure 2.12 shows continued, low growth among African-Americans, growth of nearly 50 percent among Hispanics, and nearly 100 percent among Asians. This general population growth, coupled with the expectation of participation levels comparable to the present, will result in dynamic growth in minority enrollments, (Figure 2.13).

[11]See NCES, *Projections of Education Statistics to 2002*, NCES 91-460, Table 45, p. 141.



SOURCE: NCES, *Projections of Education Statistics to 2002*, NCES 91-460, Table 45, p. 141.

Fig. 2.13-Projections of Student Enrollments, By Ethnicity, 1991 to 2000

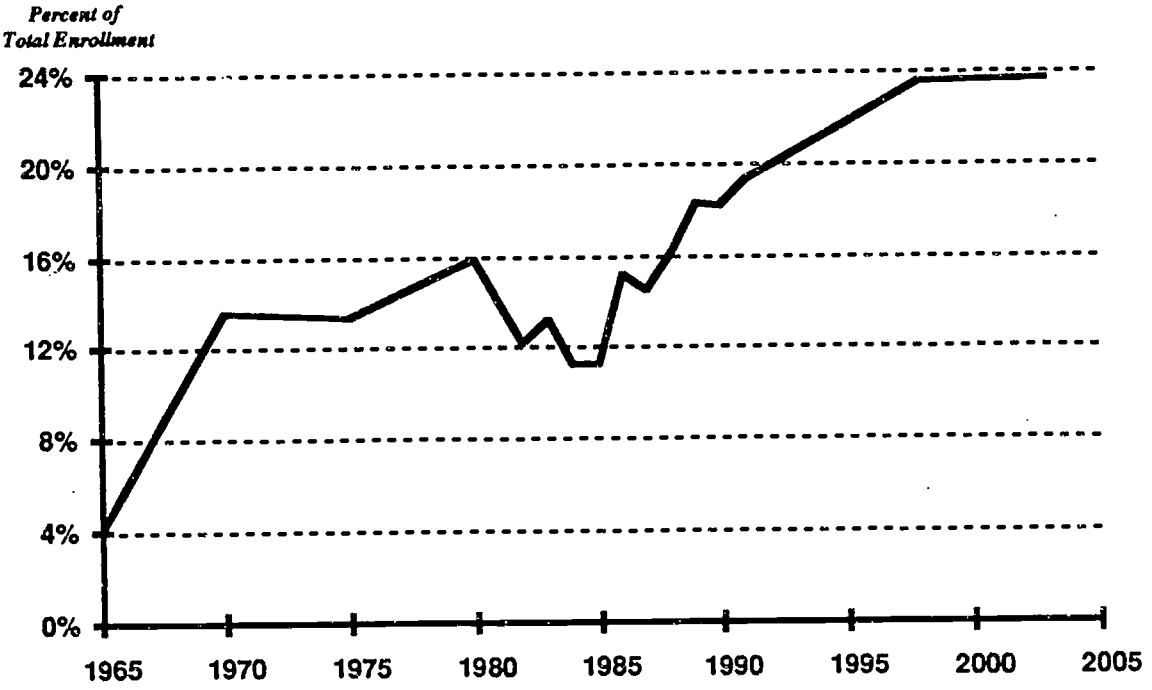
Not only are the numbers of minority enrollments increasing, but they represent an increasing proportion of total higher education enrollments. Hispanic enrollments are expected to increase by 27 percent in the next decade (from 5.1 percent in 1990 to almost 6.5 percent by the year 2000) and Asian enrollments by nearly 22 percent (from 5.1 percent in 1990 to 6.3 percent in 2000). NCES estimates that minorities will account for almost 26 percent of all enrollments in higher education by the year 2000, up from 18 percent in 1976.[12]

An Older Student Population

Another group that has increased its participation in higher education is the "older than average" students. Students over 35 (Figure 2.14), have risen from 4 percent of total enrollment in 1965 to

[12]NCES, *Projections of Education Statistics to 2002*, NCES 91-460, Table 45, p. 141.

20 percent in 1992 and are projected to rise to nearly 24 percent by 2003. Broken down between full and part-time, these students tend to be part-time and by 2003, 41 percent of all part-time students and 7 percent of all full-time students are expected to be over 35 years of age.[13]



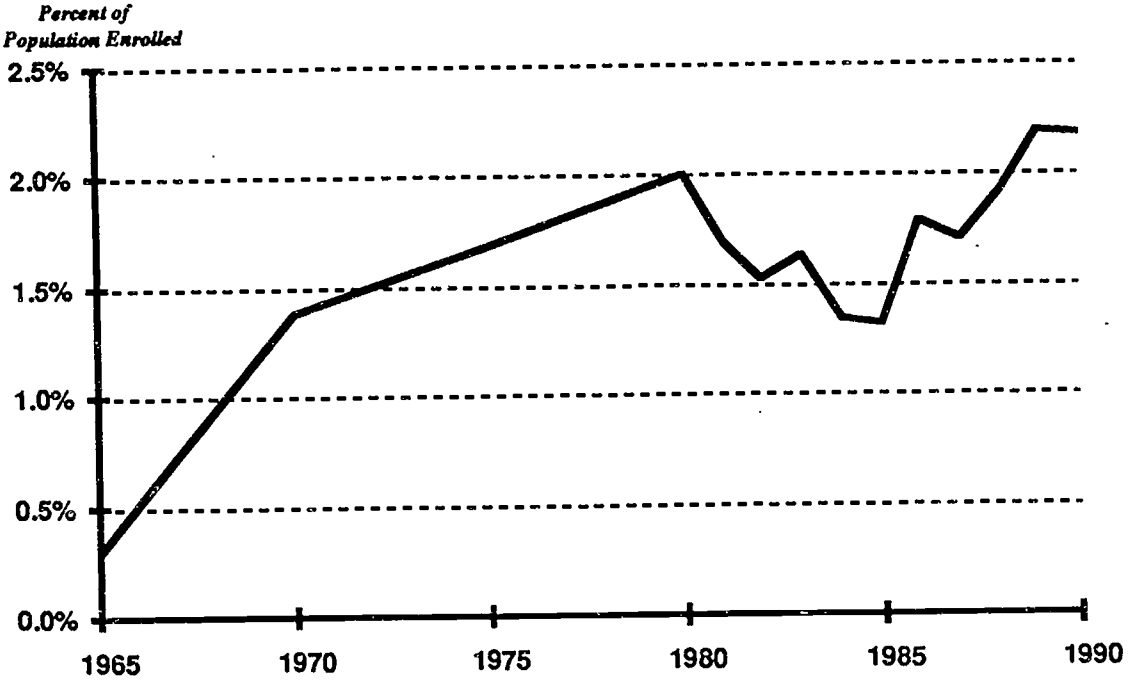
SOURCE: NCES, Digest of Education Statistics 1993, Table 201, p. 205; NCES, Projections of Education Statistics to 2003, NCES 92-218, Table XX, p. XX.

Fig. 2.14—Proportion of Students in Higher Education Over 35 Years of Age

As is the case with the other student demographic trends discussed above in this paper, this increased representation in the sector is due to a combination of an increasing population pool and an increased participation rate. Figure 2.15 shows the changes in the level of participation by the over 35 age group, which has risen from less than

[13]NCES, *Projections of Education Statistics to 2003*, NCES 92-218, Table 6, pp. 27.

0.5 percent in the 1960s to nearly 2.5 percent by 1990. Although there was some fall-off in participation by older students during the early 1980s, the trend seems to have returned to one of increasing participation during the late 1980s.

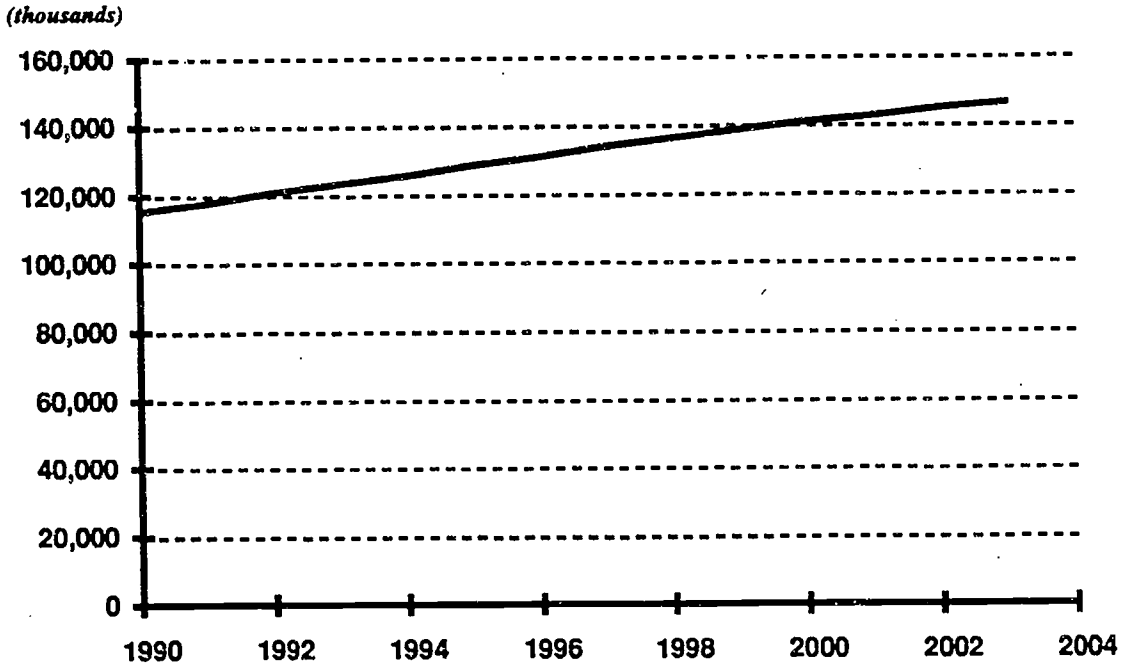


SOURCE: NCES, *Digest of Education Statistics*, various years; Bureau of the Census, "Population Estimates and Projections--Estimates of the Population of the United States, by Age, Sex, and Race: April 1, 1960 to July 1, 1973," *Current Population Reports*, P25-519, April 1974, Resident Population; Bureau of the Census, "Population Estimates and Projections--Estimates of the Population of the United States, by Age, Sex, and Race: 1970 to 1977," *Current Population Reports*, P25-721, April 1978, Resident Population; Bureau of the Census, "Population Estimates and Projections--Estimates of the Population of the United States, by Age, Sex, and Race: 1976 to 1978," *Current Population Reports*, P25-800, April 1979, Resident Population; Bureau of the Census, "U.S. Population Estimates, by Age, Sex, Race, and Hispanic Origin: 1980 to 1992," *Current Population Reports*, P25-1095, February 1993, Resident Population.

Fig. 2.15-Participation of Over 35-Year-Olds in Higher Education

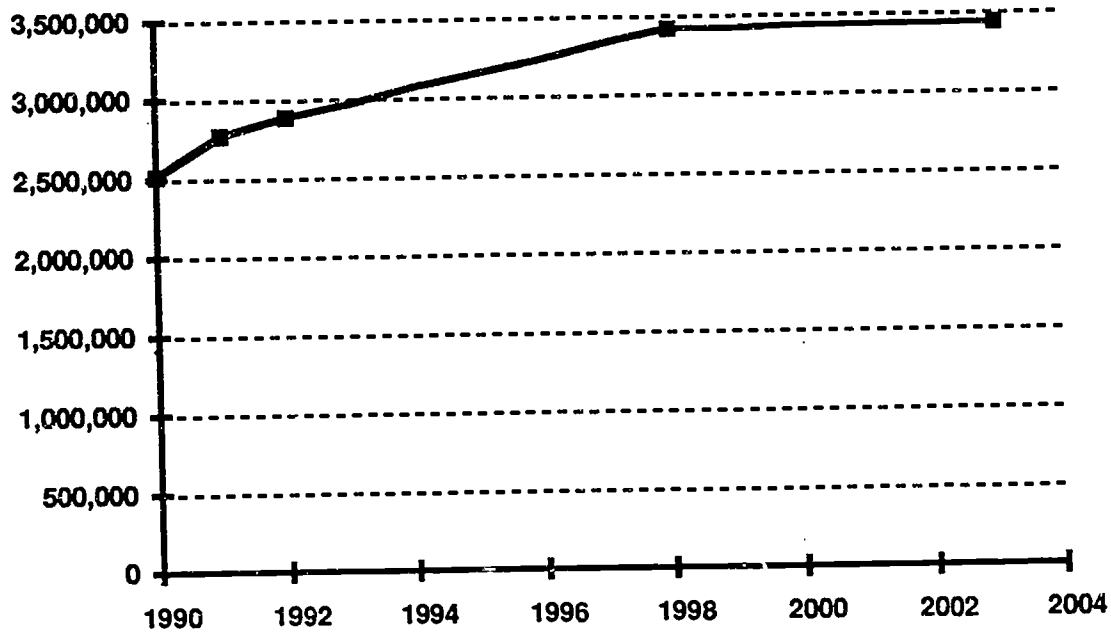
The relative size of this group in higher education will grow over the next several years as the gentrification of the U.S. population

continues. Figure 2.16 shows the expected continued growth of the size of the population over 35 over the next decade, increasing by nearly 25 percent or 25 million people. Applying the current and expected levels of participation to this population, NCES estimates that the total number of students over 35 years of age will increase about 40 percent to nearly 3.5 million students, up from 2.5 million in 1990.



SOURCE: Bureau of the Census, "Population Projections of the United States, by Age, Sex, Race, and Hispanic Origin: 1992 to 2050," *Current Population Reports*, P25-1092, November 1992, Resident Population (Middle Series).

Fig. 2.16-Projections of U.S. Population Over 35 Years of Age, 1990 to 2003



SOURCE: NCES, *Projections of Education Statistics to 2003*, NCES 92-218.

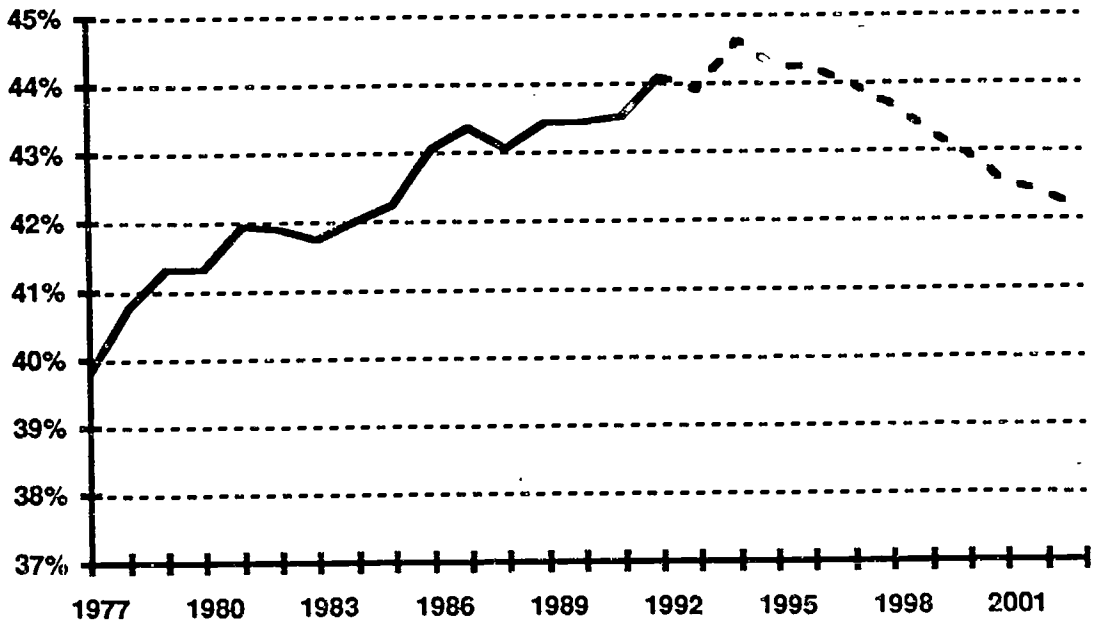
Fig. 2.17–Projected Numbers of Students Over 35 Years of Age, 1990 to 2003

More Part-Time Student Enrollments

Finally, the part-time student population is increasing in postsecondary institutions. Driven by tighter economic conditions, more competition for full-time attendance slots, and competing career opportunities, more students are attending on a part-time basis. Figure 2.18[14] captures this trend for the past 15 years as well as shows that the trend is projected to continue over the next decade before leveling out in the next century. While Figure 2.18 shows a downward trend in the proportion of part-time enrollments in the period from 1994 onward, this is not produced by a decrease in the number of part-time students, but rather an anticipated greater increase in the number of full-time

[14]NCES, *Projections of Education Statistics to 2002*, NCES 91-460, Table 10-13, pp. 35-38.

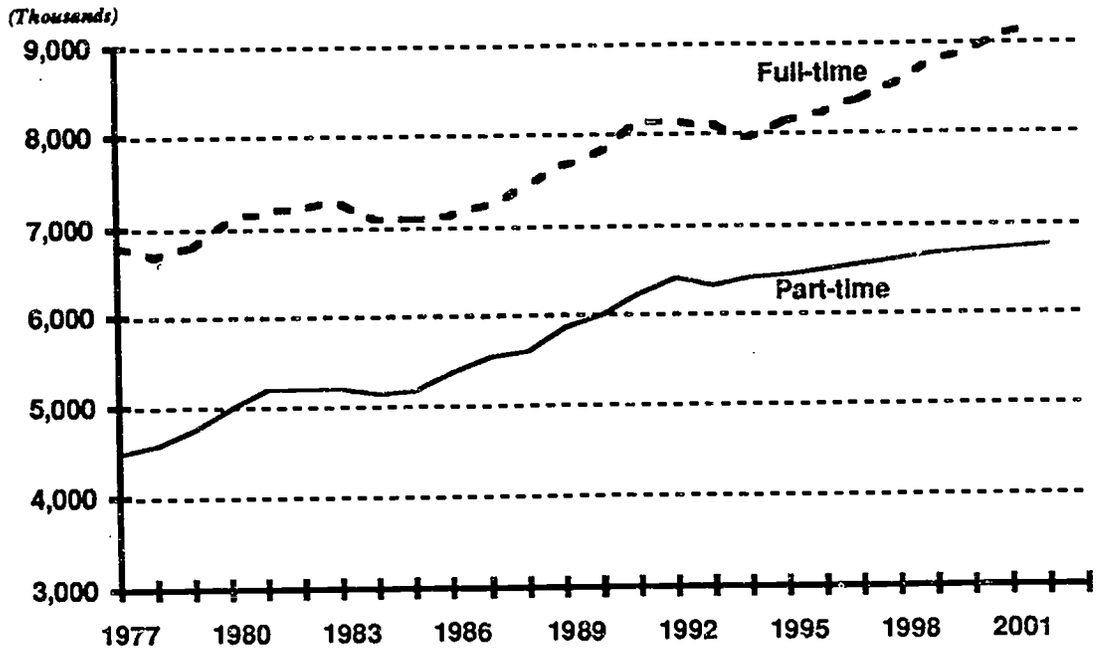
students. This can be seen in Figure 2.19,[15] where both full and part-time enrollments are projected to increase over the entire period.



SOURCE: NCES, *Digest of Education Statistics*, various years.

Fig. 2.18—Part-time Students as a Percentage of Total Enrollment

[15]NCES, *Projections of Education Statistics to 2002*, NCES 91-460, Table 10-13, pp. 35-38.



SOURCE: NCES, *Digest of Education Statistics*, various years.

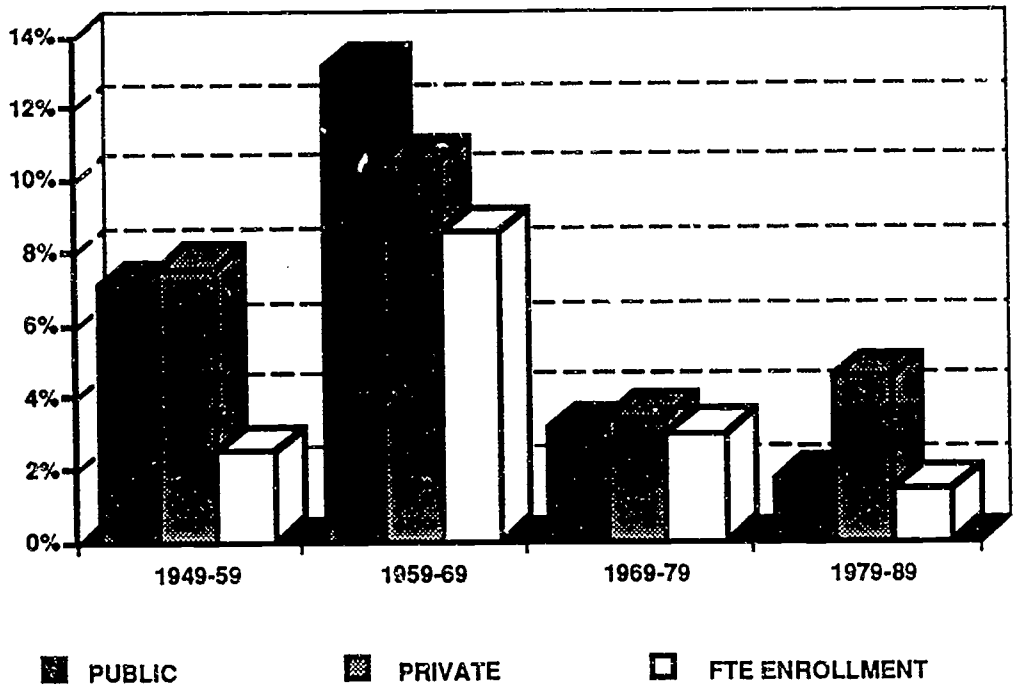
Fig. 2.19—Total Enrollments, by Attendance status

SUMMARY

This section has presented several dimensions of the changes in the student demographics. Absent from this description, sometimes almost conspicuously, has been a discussion of the direct implications of these trends on this sector. This is precisely the goal of this paper—to raise questions in the reader's mind and inspire discussion. In many cases, there are bodies of research that answer the questions raised by this section—sometimes not. At the conclusicn of this report, we will suggest some of the questions that arise from considering the trends we have set forth in this chapter.

3. THE CHANGING RESOURCE BASE

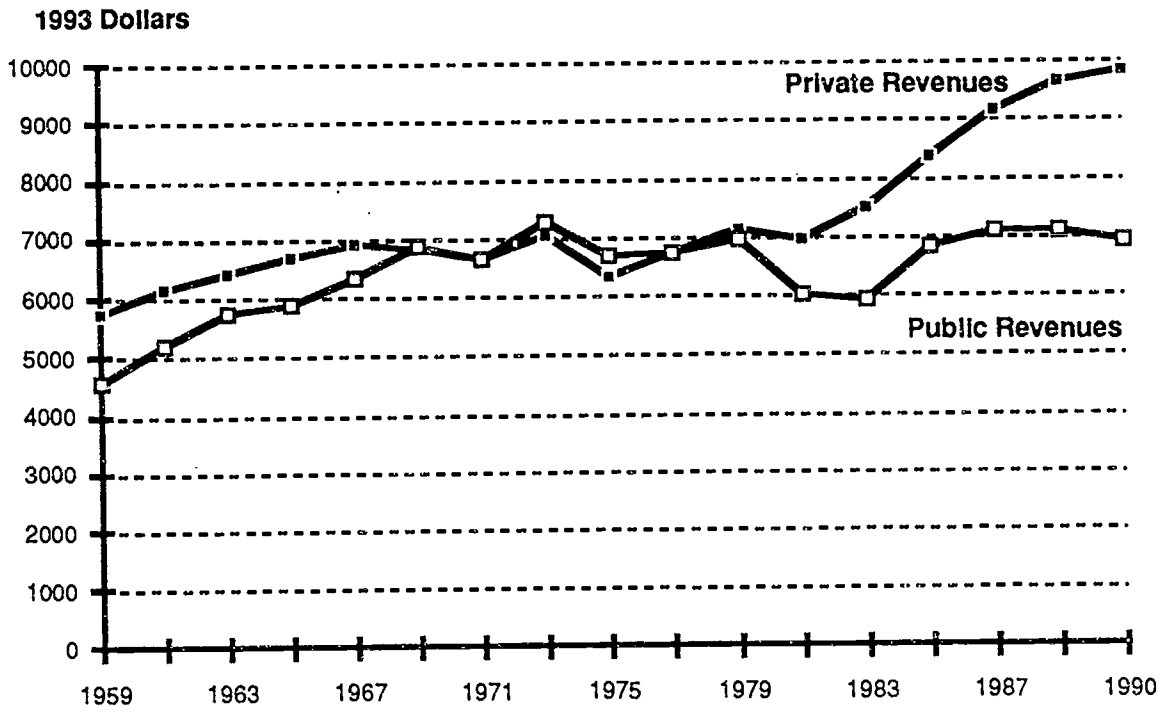
The availability of resources directly affects an institution's ability to respond to the demands imposed upon it. Of particular interest are the long-term trends in the resources that can be used for projecting what resources higher education institutions can expect to receive in the future. The relative contributions from public and private sources of revenues have changed over time. As real public support has remained relatively flat or declined, private support, primarily in the form of tuition and fees, has taken on a greater role in funding postsecondary education. Figure 3.1 shows average annual growth in real public and private revenues and FTE enrollments over the past four decades. There have been significant changes in both the overall rates of growth and in the relative rates of growth of public and private revenues over time. Real public and private revenues grew rapidly and well above enrollments in the 1950s and 1960s. The 1970s and 1980s saw slower growth in both real revenues and FTE enrollments. Whereas in the 1950s and 1960s revenue growth well exceeded enrollment growth, this was not true in the 1970s and 1980s. In the 1970s, public and private revenue growth slowed considerably with revenue growth slightly below enrollment growth. To the extent that the 1980s saw growth in revenues above enrollments, it was due to growth from private sources, primarily tuition and fees.



SOURCE: NCES, *Digest of Education Statistics*, various years.

Fig. 3.1-Average Annual Percentage Change In Real Revenues And FTE Enrollments

Growth in both public and private revenues per FTE peaked in the 1960s. They declined in the 1970s and continued to decline in the 1980s and private revenues rebounded slightly. These trends can be seen in Figure 3.2. In 1993 dollars, public revenues per FTE have remained essentially flat since the late 1960s at about $7,000. Since 1979, private support has increasingly taken on a larger role as a source of revenue to postsecondary institutions. In 1993 dollars, private support per FTE grew from about $7,100 in 1979-80 to about $9,850 in 1990-91. By 1990, private support provided 59 percent of total revenues to higher education institutions.



SOURCE: NCES, Digest of Education Statistics, various years.

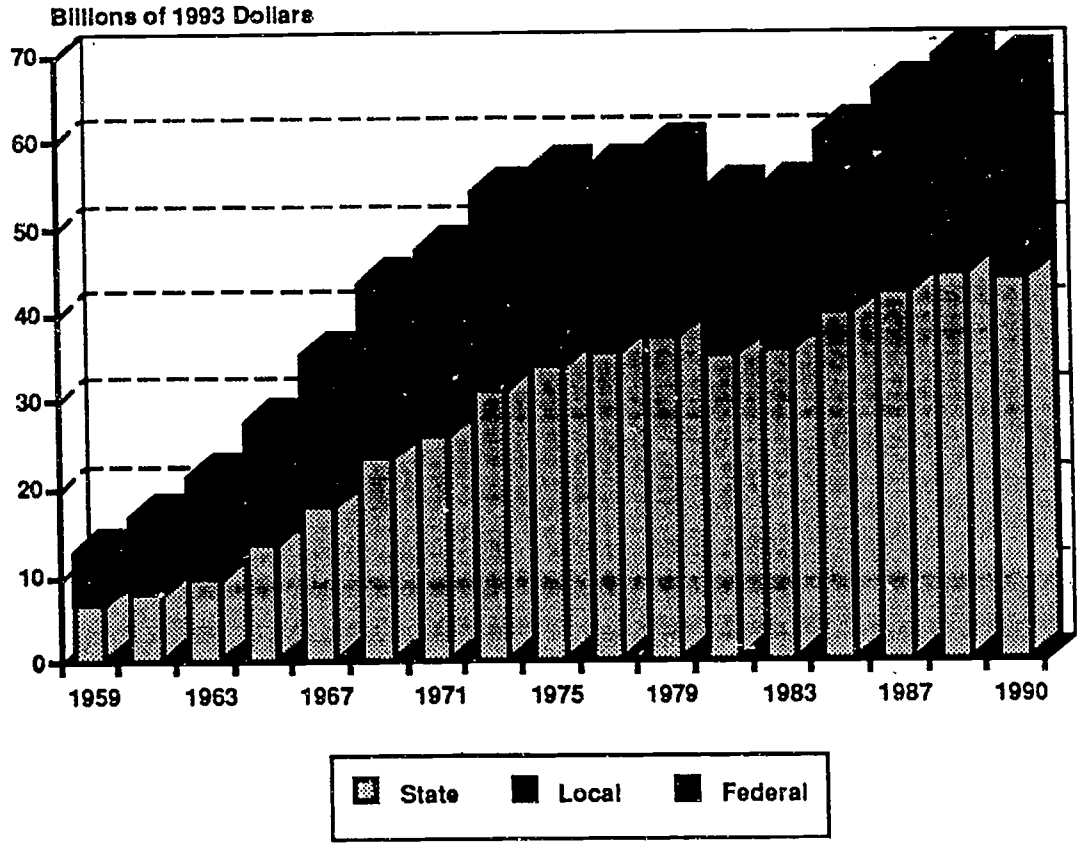
Fig. 3.2-Revenues of Institutions of Higher Education Per FTE[16]

In this section, we will look in greater detail at both public and private support for higher education to get a better understanding of what is behind the trend of slower overall growth and behind the growing disparity between public and private sources of revenue. As will be shown, these appear to be long-term trends that have continued regardless of changing economic conditions.

[16]Figures for most of the trends in this chapter were available only for odd years before the mid-1980s. Because of this, most of the charts document revenues for odd years only in order to be able to include trends before 1980. The exception to this is that the charts also include numbers for 1990. As 1990 is the latest year for which many of these figures are available, we felt that it was important to include them in the analysis.

PUBLIC SUPPORT FOR HIGHER EDUCATION

The public sources of revenue to postsecondary institutions include state, local, and federal support. The relative contribution of each of these sources of revenue is shown in Figure 3.3. State support over the past three decades has taken on a steadily increasing role as a source of public revenue and is the largest source of revenue to higher education institutions. In 1993 dollars, state governments provided $44 billion or 26 percent of total revenues to postsecondary institutions in 1990. The federal government provided $20 billion or 12 percent of total revenues and local governments provided $4 billion or 2 percent of total revenues in 1990.



SOURCE: NCES, *Digest of Education Statistics*, various years.

Fig. 3.3—Public Sources Of Revenue To Higher Education Institutions

While real public revenues have grown slowly over the past two decades (Figure 3.1), the role of public support to total higher education revenues has declined over time. State and local governments' contribution to total postsecondary revenues grew throughout the 1960s and 1970s to about 35 percent of total revenues by the late 1970s. Their contribution to total revenues began to drop in the early 1980s and fell to about 28 percent of total revenues by 1990. The federal government provided about 20 percent of total revenues to higher education institutions throughout the 1960s. Federal support dropped steadily throughout the 1970s and 1980s to about 12 percent of total revenues by 1990.

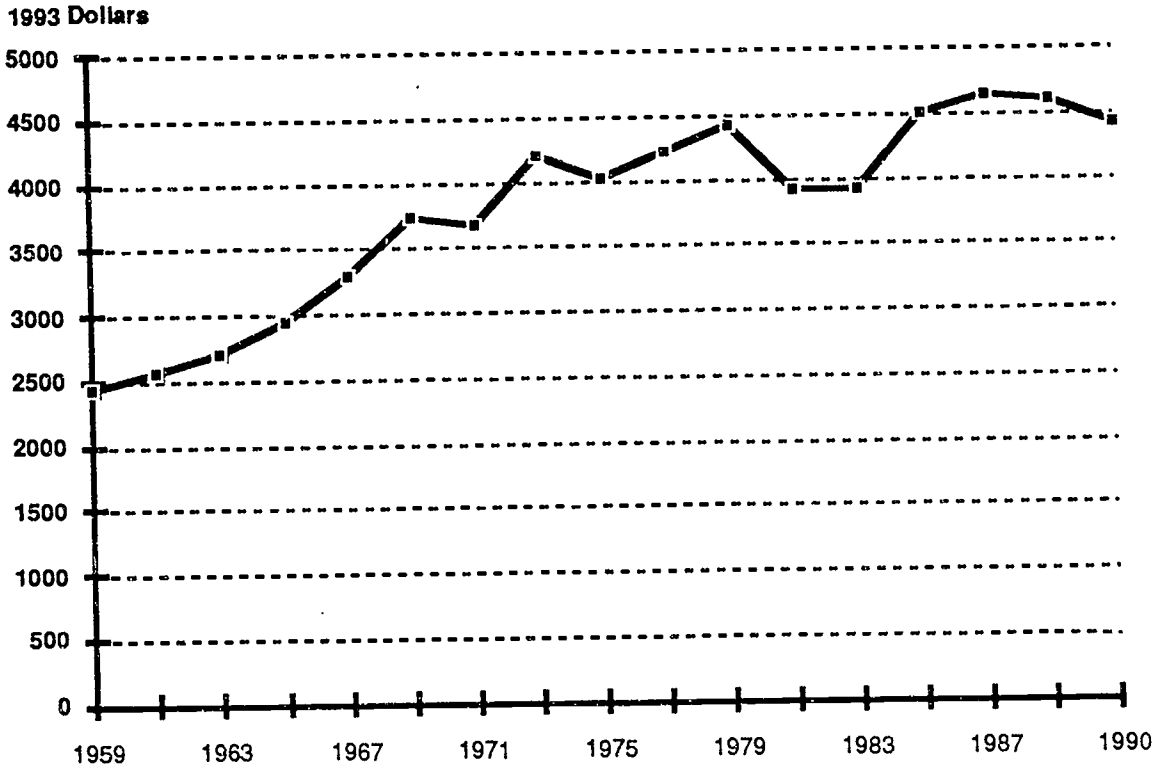
State Support

During the 1990-91 academic year, the most recent year for which data are available, postsecondary institutions reported receipts of about $39 billion in state support, including appropriations and restricted grants and contracts. This figure represents a significant portion, 26 percent, of all public and private higher education current-fund revenue.

Virtually all of the state support for higher education goes to public institutions, $38 billion out of the $39 billion in 1991. State support is the largest source of funding for public higher education. The state share of public higher education revenue grew throughout the 1960s and 1970s, peaking at about 46 percent in 1979. However, the state share has declined steadily during the 1980s, representing 40 percent of all current fund revenues for public institutions by 1990. Moreover, as shown in Figure 3.4,[17] state support per FTE has been essentially flat since the early 1970s. Postsecondary institutions received steady real gains in state revenue per FTE throughout the 1960s, slow real gains in state revenue per FTE in the 1970s, and no real gains in the 1980s. State revenue per FTE increased from $4,414 in

[17]Figure 3.4 shows state revenue per fte enrollment at both public and private institutions for consistency throughout the paper. As most state support to higher education goes to public institutions, one could also look at state support per fte enrollment at public institutions only. The pattern of state support per fte at public institutions only would be virtually identical to that in figure 3.4.

1979 to $4,410 in 1990 after real decreases in state revenue per FTE in the early 1980s.



SOURCE: NCES, *Digest of Education Statistics*, various years.

Fig. 3.4—State Revenue per FTE

State support for higher education can be measured in a number of ways. State support is often measured, as above, as revenues received in a given year by higher education institutions. These revenue numbers are collected by a survey of all postsecondary institutions conducted by the Department of Education. Certain types of state support, like state sponsored financial aid, are excluded from the numbers. There is a delay in the reporting of these numbers so that the latest data currently available is for academic year 1990. Another measure of state support is state appropriations to higher education. State appropriations represent total state tax dollars allocated to higher

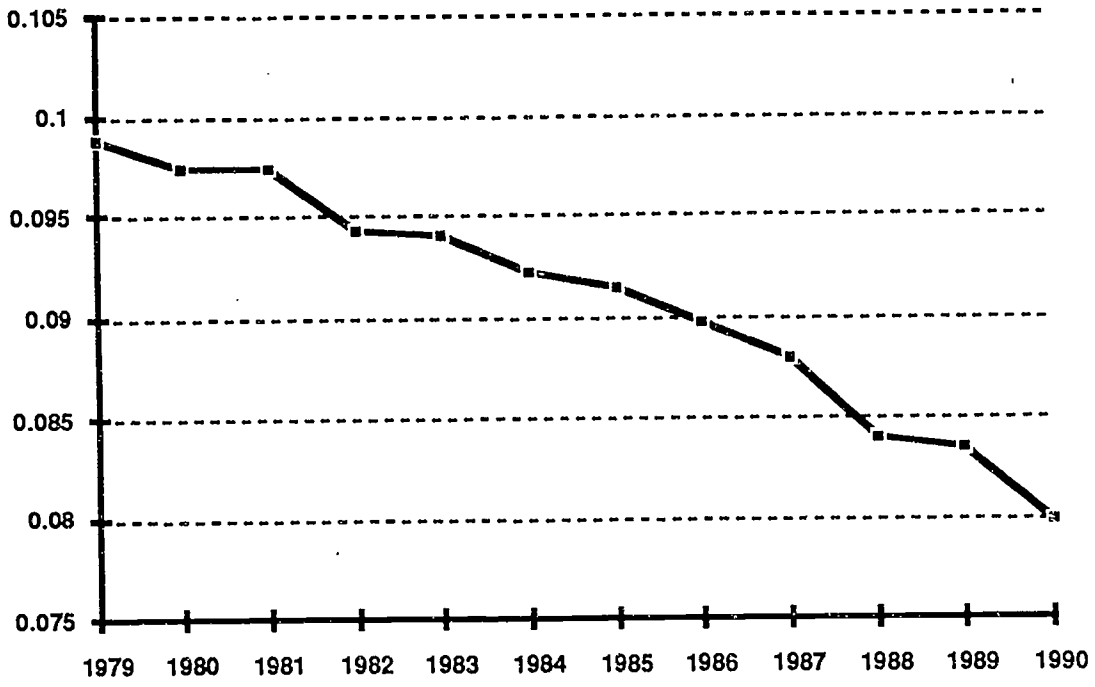
education programs in a given year. This includes state dollars going to state scholarship and loan programs. State appropriations tend to be higher than state revenues reported by institutions because of both reporting and timing differences between revenues and appropriations.

Figure 3.5 shows annual growth in state appropriations for higher education. Annual growth in state appropriations for higher education has been declining steadily. Growth in state appropriations reached a peak of about 16 percent in 1974 which was well above inflation of about 9 percent in that year. Since then, higher education has seen a long-term trend of declining growth in state support. The 1990s have seen particularly slow, and even negative, growth in state appropriations. Between 1990 and 1991, state appropriations to higher education increased by about $80 million, from $39,641 million in 1990 to $39,721 million in 1991. Between 1991 and 1992, state support for higher education declined to $39,407 million. This is the first time on record that nominal state appropriations to higher education declined from one year to the next. Between 1992 and 1993, state appropriations to higher education increased by about 3.5 percent, slightly higher than the rate of inflation, as measured by the CPI, of 3 percent. This growth rate is still considerably smaller than any rate of growth seen in the 1970s or 1980s.

SOURCE: Illinois State University, Center for the Study of Educational Finance.

Fig. 3.5—Annual Growth In State Appropriations To Higher Education

The future availability of state support for higher education will depend on the availability of future tax revenues and on the competing demands for these funds. The trend in nominal state appropriations for higher education as shown in Figure 3 5 suggests a fundamental change over time in state support for higher education. This can be explained in part by a change in the priority given to higher education in state budgets. Figure 3.6 shows that state governments have been allocating a declining share of their budgets towards higher education. Approximately 8.0 percent of state budgets were allocated to higher education in 1990, in contrast to 9.9 percent in 1980—a decrease of almost 20 percent.



SOURCE: *State Profiles: Financing Public Higher Education 1978 to 1991;* Illinois State University, Center for the Study of Educational Finance.

Fig. 3.6—Percent Of State Tax Revenues Allocated To Higher Education

This reduction reflects the greater competition from other public services for tax dollars. Expansion of public service needs such as health care, crime prevention, and public welfare have edged out higher education in budget competitions. The reduction in state support for higher education that has been seen in the 1990s cannot be considered a reflection of the current recession. Figures 3.5 and 3.6 suggest a more fundamental trend toward a smaller share of state support going to higher education.

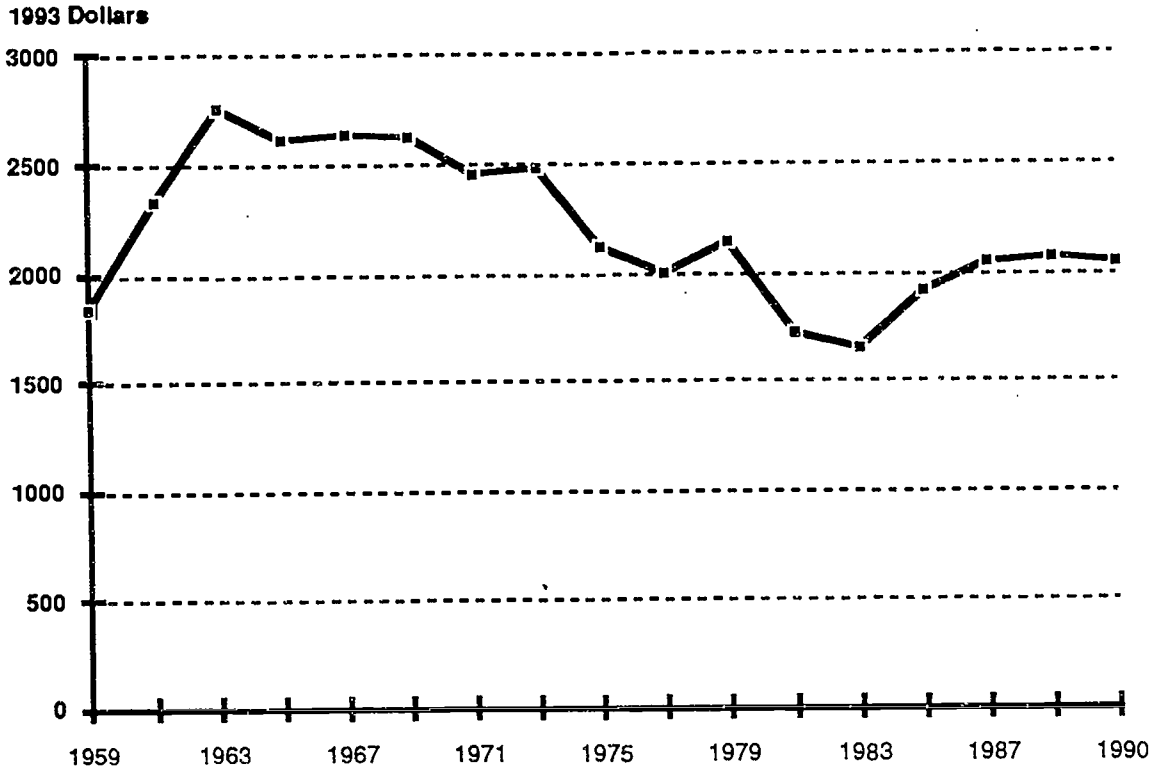
Federal Support

For the 1990-91 academic year, excluding financial aid, the federal government provided about $18 billion in revenue to higher education institutions. This figure represents 12 percent of all current-fund

revenue to higher education institutions for 1990. The percentage of total revenues provided by the federal government has steadily declined since the 1960s; representing about 20 percent of total revenues in the 1960s, declining to about 12 percent of total revenues by 1990.

Federal revenues provide limited and specialized funds for educational purposes. Federal revenues to higher education institutions are highly concentrated in restricted grants and contracts and federally funded research and development centers (FFRDC's). Of the $18 billion in federal revenues received by higher education institutions in 1990, about $10.4 billion, or 57 percent, was for restricted grants and contracts and another $3.4 billion, or 19 percent, went to FFRDC's.

The percentage of total postsecondary institutions' revenues provided by the federal government has declined as real federal support per FTE has fallen. As shown in Figure 3.7, real federal revenue per FTE has declined from its peak of about $2,750 in 1963 to about $2,050 by 1990. This decline has occurred for nearly 30 years despite changing economic conditions over time and can only be expected to continue in the near future.



SOURCE: NCES, *Digest of Education Statistics*, various years.

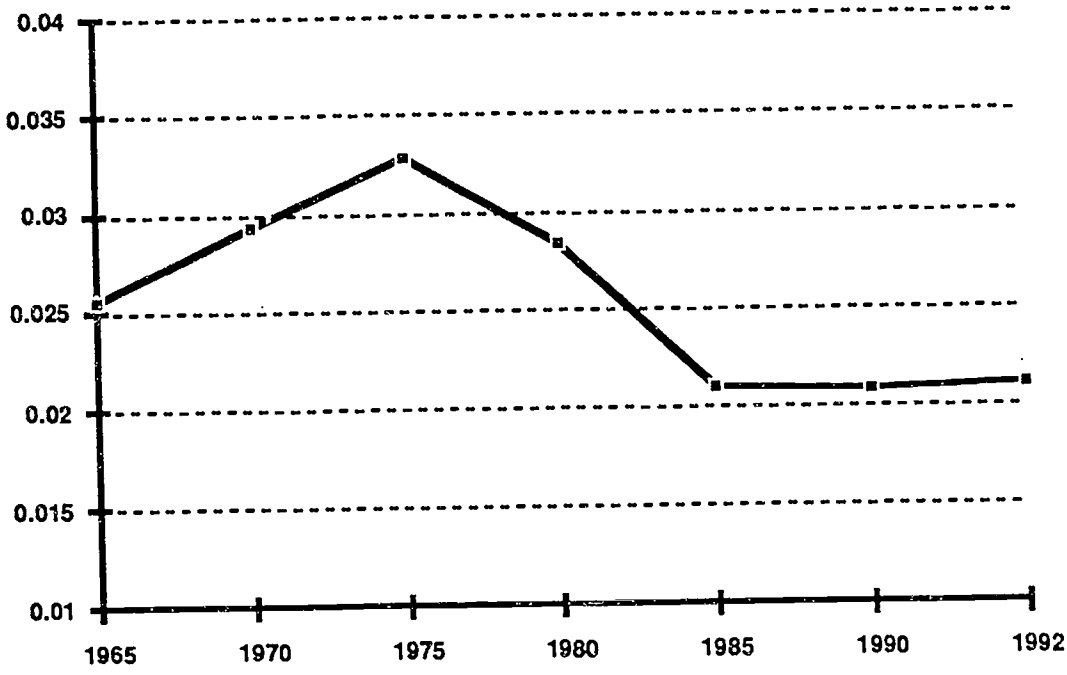
Fig. 3.7—Federal Revenue Per FTE

As with state support, federal support can be measured in a number of different ways. Federal funding can be measured, as above, as federal revenues reported by higher education institutions for a given year. As with state support, only certain federal support is included for reporting purposes in federal revenues. For example, federal revenues exclude Pell grants and student financial aid.

Federal support is also often measured by looking at federal outlays to higher education programs in a given year. The federal government through legislative action appropriates a given amount of money each year to higher education programs. For some programs, the appropriated money is given out over a number of years. Federal outlays represent the amount of the appropriation that gets paid out in a given year. This money supports a wide variety of programs, including student

financial aid, military service academies, health professions' training programs, and veterans' educational assistance.

As shown in Figure 3.8, the share of total federal outlays going to higher education has been flat since the mid-1980s. This is after large increases from 1965 to 1975 and large decreases from 1975 to 1985. In view of today's deficit concerns and the absence of any announced major initiatives by the Clinton Administration, a reversal in this long-term trend of federal non-financial aid support for higher education seems unlikely.



Source: NCES, *Digest of Education Statistics*, various years.

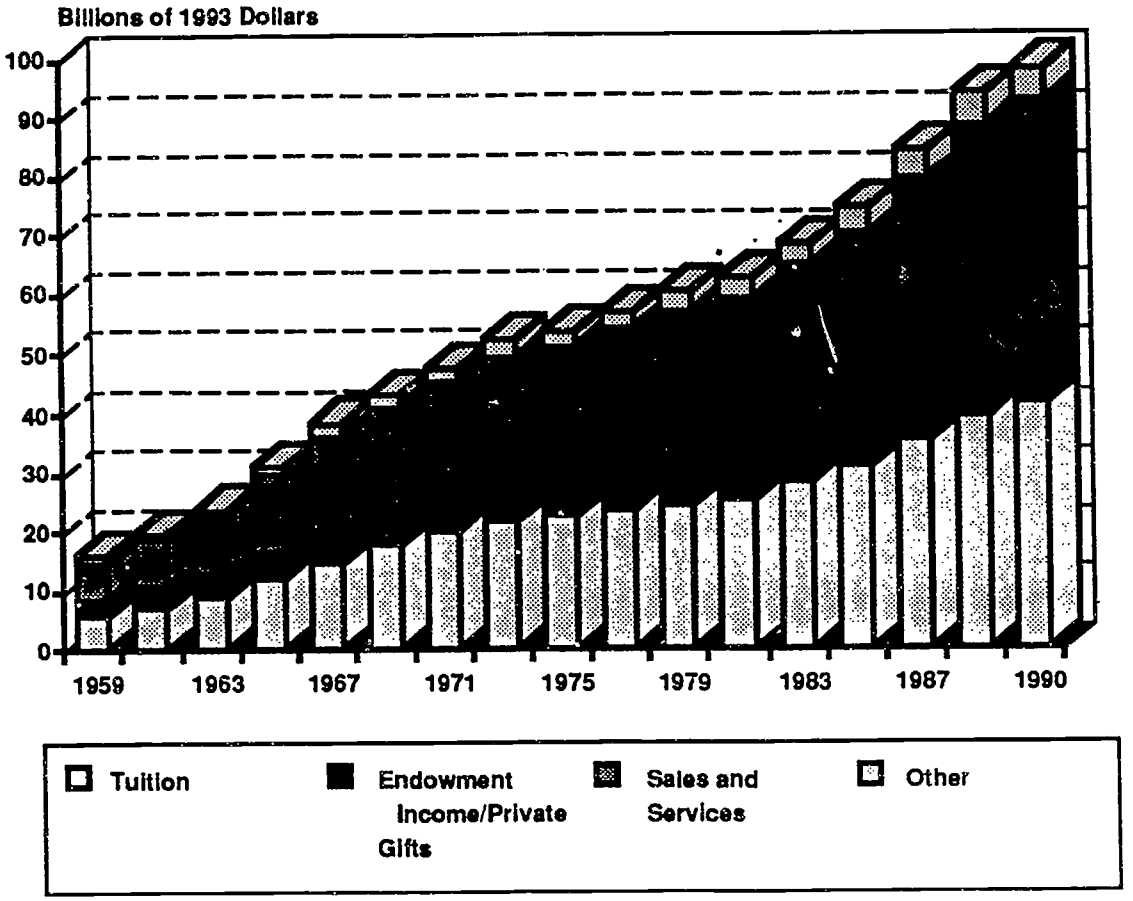
Fig. 3.8-Federal Higher Education Outlays as a Percentage of Total Federal Outlays

It is important to note that about one-half of federal outlays to higher education goes to research programs at universities. While total federal outlays to higher education have remained constant in real terms since the mid-1970s, the share of support going to research and to all

other higher education programs has changed considerably over time. In 1965, research received about 62 percent of total on-budget funding of higher education. This changed dramatically beginning in the early 1970s as veterans' educational programs and student financial aid programs experienced rapid growth. Declines in funding for veterans' educational programs beginning in the mid 1970s was partially offset by growth in federal student financial aid programs. Federal funding for research continued to increase over time and by 1992 research and other higher education programs each received about one-half of the total on-budget support for higher education of $28 billion.

PRIVATE SUPPORT FOR HIGHER EDUCATION

The private sources of revenue to postsecondary institutions include tuition and fees, sales and services, private gifts and grants and contracts, and endowment income. The relative contribution from each of these sources of revenue is shown in Figure 3.9. Tuition and fees over the past three decades has taken on a steadily increasing role as a source of private revenue. Tuition and fees is the largest source of private revenues. In 1993 dollars, tuition and fees amounted to about $42 billion or 25 percent of total revenues to postsecondary institutions in 1991. Tuition and fees represented about 20 percent of total revenues to higher education institutions in 1959, remained fairly constant at 20 percent until 1980, and then grew to 25 percent of total revenues by 1990.



SOURCE: NCES, *Digest of Education Statistics*, various years.

Fig. 3.9-Private Sources Of Revenue To Higher Education Institutions

Endowment income accounted for about 2 percent of total revenues in 1990 and has been remarkably consistent over time. Endowment income tends to be concentrated in a small number of institutions, and so while of little consequence to higher education institutions as a whole, may be a significant source of revenue to a few institutions. Private gifts, grants, and contracts accounted for about 6 percent of total revenues in 1990 and have also been a consistent source of revenue since 1959.

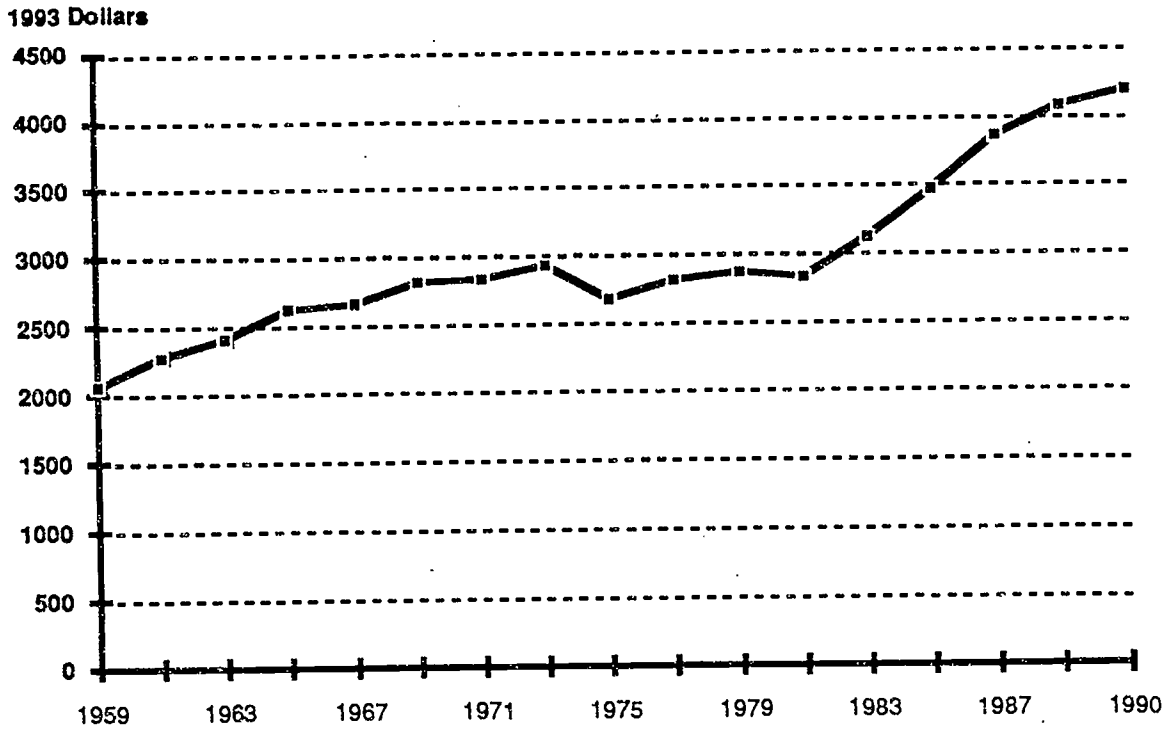
Sales and services of institutions, including hospitals and auxiliary enterprises, accounted for about 22 percent of total revenues

in 1990. This is consistent with the percent of total revenues received from sales and services in the 1960s and 1980s, while the percent of revenues from sales and services averaged around 19 percent in the 1970s. These revenues come from the production of sales and services that consume real resources. On balance, it is expected that real production costs offset a large portion of the revenues that the institutions derive from the sale of the goods and services. Hence, these items likely have little net impact on higher education's fiscal condition.

Tuition and Fees

With postsecondary institutions receiving flat or declining real public support, many institutions have turned to large tuition and fee increases.

Tuition and fee revenue per FTE has grown rapidly, as shown in Figure 3.10. In 1993 dollars, tuition and fee revenue per FTE has increased from about $2,050 in 1959 to about $4,180 in 1990. Real increases in tuition and fee revenue per FTE have been particularly large since 1981. As a result, institutional tuition and fee income today accounts for about 25 percent of all higher education receipts, up from about 20 percent in the 1960s and 1970s.



SOURCE: NCES, *Digest of Education Statistics*, various years.

3.10-Tuition And Fee Revenue Per FTE

Average annual increases in public and private tuitions have well outpaced inflation throughout the 1980s. This is in sharp contrast to the 1970s when average annual increases in both public and private tuitions were either below or equal to inflation. Average annual tuition growth in public institutions was about 13 percent between 1980 and 1985 and 8 percent between 1985 and 1990. Average annual tuition growth in private institutions was about 14 percent between 1980 and 1985 and 11 percent between 1985 and 1990. Over these same time periods, average annual inflation, as measured by the CPI, was 7 percent and 4 percent, respectively.

SUMMARY

This section has documented the changes in resources available to higher education institutions. Higher education institutions have faced

flat or declining real public support. The combination of constraints imposed by federal deficit concerns and escalating demands for increased spending in response to a variety of domestic concerns has led to decreases in real federal support per student for higher education. At the same time, widespread tax limitation movements and competing demands for state spending have precluded sizable increases in real support per student at the state level. As public resources available to the sector have been cut back, the higher education sector has dramatically increased tuition and fees. At the conclusion of this report, we will suggest some of the questions that arise from considering the trends we have set forth in this chapter.

4. THE CHANGING COST STRUCTURE OF HIGHER EDUCATION

In light of the changes in the resource base shown in the previous chapter, it is important to understand the changes in the cost structure of the sector. There has been much discussion regarding the escalating costs of producing the product "higher education" and the purpose of this chapter is to explore the components of these changing costs.

This chapter will examine these changing costs from several perspectives. Postsecondary education is a complex sector with a financial structure that blurs the distinction between the costs and expenditures used in attaining its various missions, such as instruction, research, and service. Therefore, it is difficult to assess the changes in costs associated with the specific missions of the institutions themselves and the associated implications of these changing costs. This analysis will accordingly focus on a few sets of broad measures of the overall costs of the sector. It will consider the changes in the costs of the sector along four lines: (1) overall measures of costs in the sector; (2) instructional costs; (3) administrative overhead costs; and (4) research costs. We are particularly interested in long-term trends in costs that suggest at what rate we can expect the costs of higher education institutions to grow in the future.

OVERALL COSTS

A rising cost structure is important to the sector, especially if the increases in higher education costs outstrip the inflation rate,[18] and hence the average of the costs in other sectors of the society (i.e. the CPI). Since governmental agencies tend to use the CPI[19] to discount

[18]This would imply that the real value of dollars expended in higher education would depreciate at a faster rate than dollars discounted by the inflation rate (in the case of the previous chapter, the CPI).

[19]The Consumer Price Index is an index series produced by the Bureau of Labor Statistics which measures the cost of a comparable "basket" of goods and services which are selected to represent the goods and services consumed by a "typical" consumer.

budgetary appropriations and expenditures, an increase in the costs of the sector which outstrips the CPI would produce an underestimation of the resources actually required by the sector to remain at the same effective service level.

One such measure of the costs facing the postsecondary sector is the Higher Education Price Index (HEPI), produced by Research Associates of Washington.[20] It is designed to measure the costs institutions encounter in their day-to-day operations. It is comprised of the costs of goods and services purchased by postsecondary institutions and includes the prices of faculty and administrators; clerical and support personnel; contracted services such as supplies, materials, transportation, and communications; library acquisitions; and utilities.[21]

The changes in this index reflect the real increases in costs to higher education institutions for comparable bundles of goods over the periods available. The values for HEPI for the years 1961 to 1993 are presented in Figure 4.1. The cost of the goods and services typically used in higher education have risen more than five-fold since 1961. The costs have risen particularly rapidly since the late 1970s and Figure 4.1 suggests that we cannot expect the trend to reverse in the near future.

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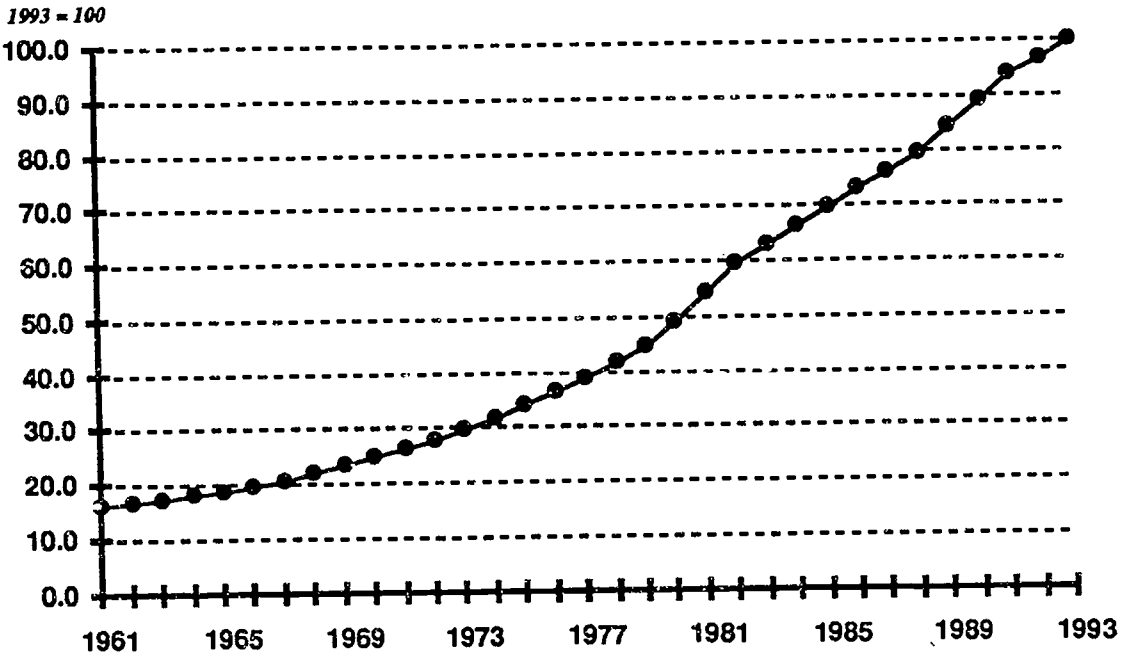
[20]Research Associates of Washington. *Inflation Measures for Schools and Colleges, 1993 Update*, (Washington, DC: Research Associates, 1993), Table A, p. 4.

[21]As an index it does not attempt to capture any element of changes in the quality of the goods and services purchases, only changes in the prices for component items.



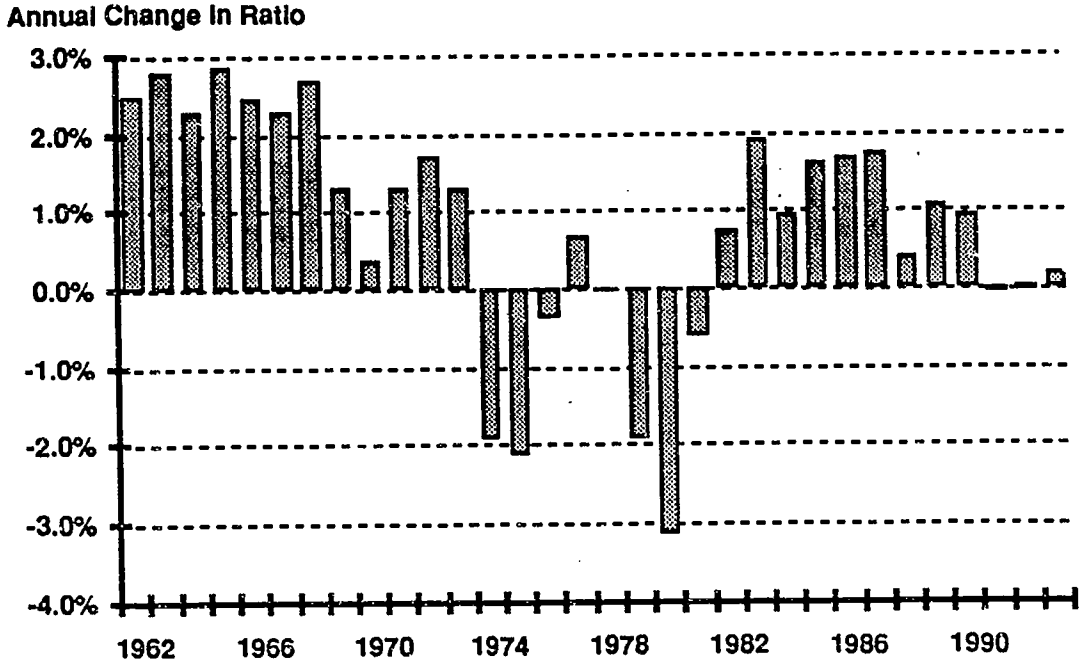
SOURCE: Research Associates, *Inflation Measures for Schools and Colleges: 1993 Update*, Table A, pp. 4-5.

4.1—Higher Education Price Index, 1961-1993[22]

An important issue in the context of this analysis is how fast these costs have risen relative to other costs in society and especially relative to those used by legislators (inflation as measured by the CPI). Figure 4.2 makes this comparison, showing the annual changes in the ratio of the HEPI to the CPI. A positive change in this ratio indicates that the costs in higher education are rising at a faster rate than the CPI. This is the case in all years except the hyper-inflationary years associated with the two oil shocks in the middle 1970s and early 1980s.[23]

[22]This figure converts series in 1983 prices to 1993 prices linearly. This implicitly assumes that the distribution of expenditures in higher education today is the same as in 1983.

[23]The oil shocks affect the CPI because heating oil and gasoline are two important components of the goods "basket" used to calculate the CPI.



SOURCE: Research Associates, *Inflation Measures for Schools and Colleges: 1993 Update*, Table A, pp. 4-5.

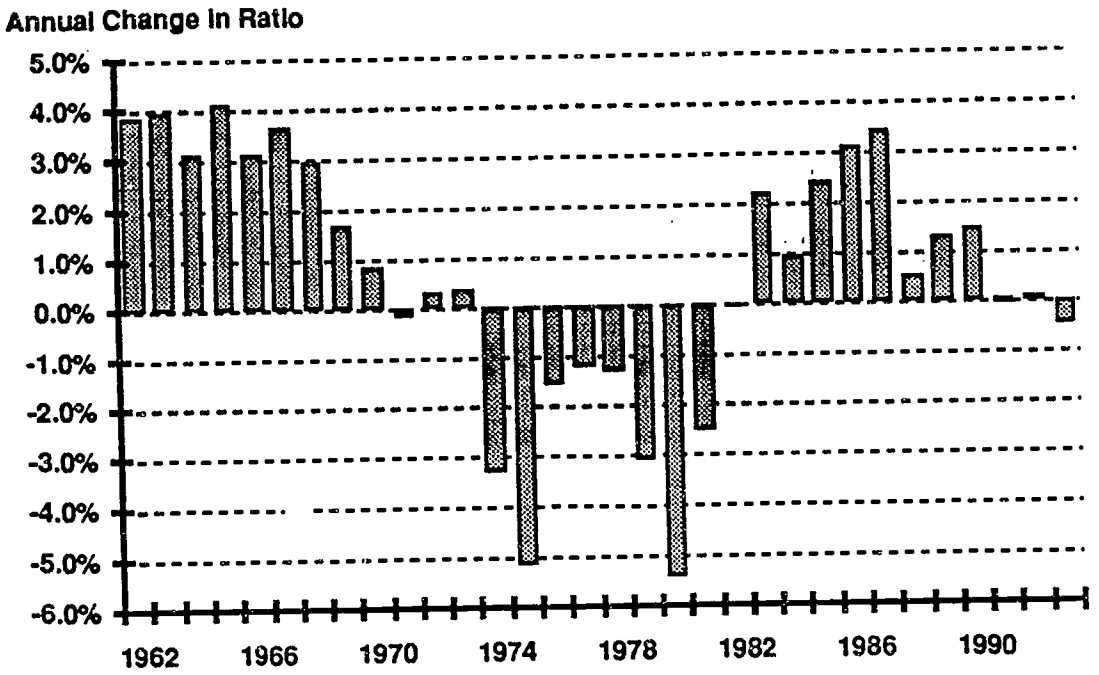
4.2—Annual Change in the Ratio of the HEPI to the CPI

This indicates that the costs of the sector have generally risen at a faster rate than those of consumers. This increasing cost structure exacerbates the concerns raised regarding the flat to decreasing resources available to the sector.

INSTRUCTIONAL COSTS

The instructional costs in the sector are driven by the costs of the primary inputs into the instruction process—faculty and instructors.[24] As Figure 4.3 shows, increases in faculty salaries have outpaced the CPI except for the period 1974-1983 which was characterized by inflation and small nominal salary increases.

[24]Another significant cost component of instruction is classroom space. Since institutions do not depreciate these structures (therefore no expense estimates) and construction costs are handled in the capital and plant budgets, there are no year-to-year estimates of this cost component.



SOURCE: Research Associates, *Inflation Measures for Schools and Colleges: 1993 Update*, Tables 2-E and 2.1, pp. 24, 33.

4.3—Annual Change in the Ratio of Professional Salaries Index in Higher Education to the CPI

The recent rise in real faculty salaries is commonly attributed to two major factors: 1) increasing competition from the private sector in fields such as business and engineering and 2) the ratcheting up of salaries overall. Because these fields are attracting an increasing proportion of the student body, institutions have employed increasing numbers of these relatively expensive faculty. The competition from the private sector and students' interest in these fields are likely to continue, and so faculty salaries are likely to continue to grow at similar rates in the future.

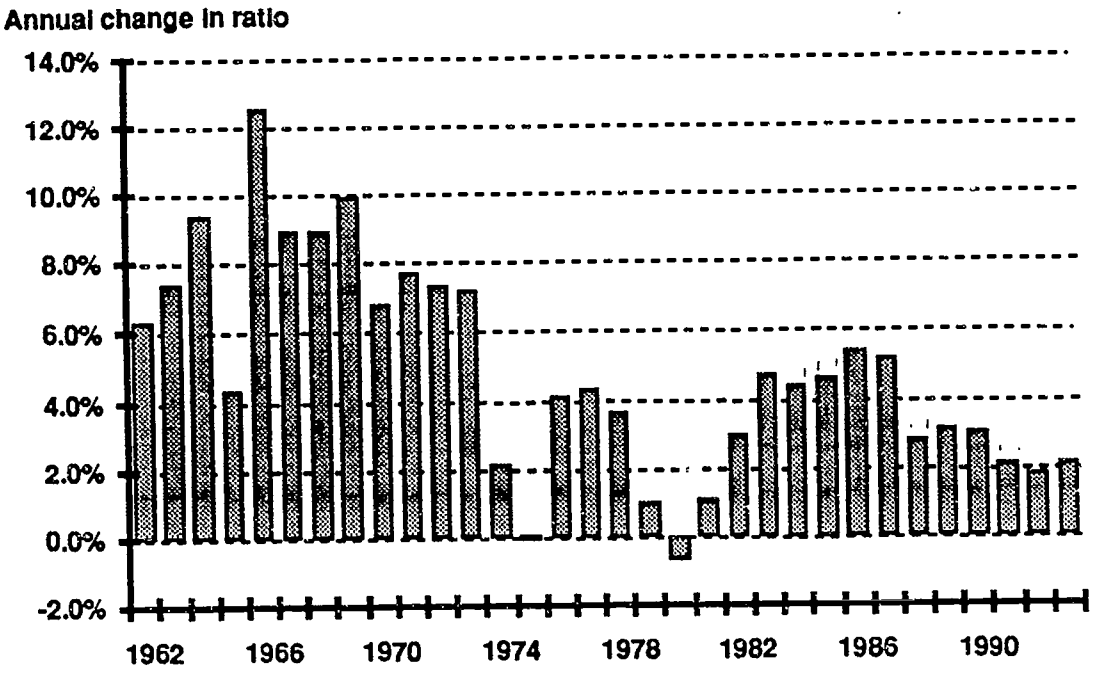
The overall ratcheting of faculty salaries is, in part, a function of the salary history of the sector. In the 1960s, when the sector was growing rapidly, high demand for faculty drove salaries up. In the recession-plagued 1970, the sector's salaries were basically frozen or shrunk. The 1980s saw a thriving period for the American economy and

faculty salaries regained some of the ground lost in the 1970s. Overall, the sector now faces not only escalating salary costs, but also an older, more expensive faculty. The rejuvenation of faculty roles in the future may serve to mitigate some of the rising costs in this area of the sector.

ADMINISTRATIVE OVERHEAD

Another area where the costs to institutions are rising rapidly is administrative overhead. A variety of factors contribute to this increase in costs including complex regulations governing such areas as student financial aid, research, and personnel management as well as significant increases in the levels and ranges of ancillary services provided by the university, such as child care, expanded counseling services, and legal assistance. These factors coupled with growth in other areas have increased costs to higher education institutions for organizational administration.

Part of the increasing overhead costs arises from the increase in fringe benefits paid to both the professional and administrative staffs at postsecondary institutions. Figure 4.4 shows the growth in the ratio of the fringe benefit component of the HEPI in relation to the CPI. The fringe benefit factor has grown on average about 5.0 percent faster than the CPI. Given the persistence of this relations over time, the continuation of fringe benefit costs growing faster than the CPI seems likely.



SOURCE: Research Associates, *Inflation Measures for Schools and Colleges: 1993 Update*, Tables 2-E and 2.1, pp. 24, 33.

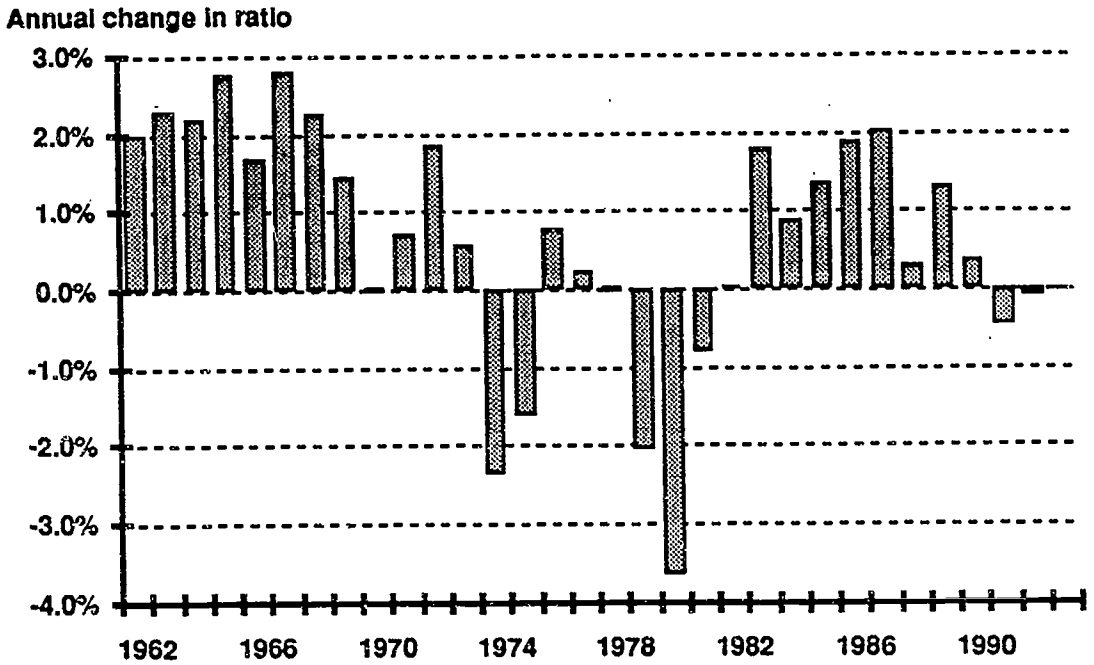
4.4—Annual Change in the Ratio of the Fringe Benefits Cost Index to the CPI

RESEARCH COSTS

Another area of costs faced by postsecondary institutions is research costs. One measure of the costs of research, again prepared by Research Associates of Washington, is the Research and Development Price Index [R&DPI].[25] This index is derived specifically to assess the costs that postsecondary institutions face in their current direct expenditures for sponsored research. Two significant components of research costs, indirect/overhead costs and major capital equipment expenditures, are excluded from this index. The changes in the R&DPI in

[25]An important corollary issue when attempting to separate out both instructional and research costs is the issue of cross-subsidization between the teaching and research missions. Since the series in question move similarly, we do not choose to focus on this issue in this report.

Figure 4.5 are very similar to those seen in the HEPI in Figure 4.2, with higher growth in the R&DPI than the CPI in all but the hyper-inflationary, oil-shock years.[26]



SOURCE: Research Associates, *Inflation Measures for Schools and Colleges: 1993 Update*, Table A, pp. 4-5.

4.5--Annual Change in the Ratio of the R&DPI to the CPI

Including indirect costs, such as setting up and operating a research laboratory which are excluded from the R&DPI, would further increase the discrepancy between the two indices. Indirect research costs are rising rapidly as a proportion of the research dollars expended on research.

SUMMARY

The costs of operating a university are rising, not only in real terms as defined by the CPI, but at a higher rate than the CPI. With

[26]This is not surprising, as one of the major drivers of both series is professional salaries.

the exception of the hyper-inflationary years of the two oil shocks, higher education prices, as measured by HEPI, have outstripped inflation in every year in which they have been calculated. This trend can only be expected to continue in the near future. Moreover, our assessment of the cost escalation is conservative because it does not take into account several large items not properly catalogued: deferred physical plant maintenance, and instructional and research equipment, especially computers.

These rising costs hold serious implications for the sector, which we address in the concluding section.

5. SUMMARY AND IMPLICATIONS

The preceding three chapters described important demographic and economic trends affecting the higher education. This chapter reviews these trends and suggests their implications for higher education leaders.

STUDENT TRENDS

College enrollments grew rapidly through the first half of this century, averaging about 5 percent per year. Enrollments began to grow more rapidly in the 1950s, then exploded in the 1960s. Between 1960 and 1970, enrollments grew at an annual average rate of just under 8 percent, more than doubling over the decade. The rate of enrollment growth fell off in the early 1970s, returning to the levels seen in the 1950s.

Since the late 1970s, there has been a leveling off of the growth rate in enrollments. In fact, the annual rate of enrollment growth in the 1980s averaged less than two percent and is projected to average only 1.2 percent through the 1990s.

Concurrent with this trend toward near constant numbers of students was a trend toward heterogeneity. The so-called "traditional" student of the past—the white male under 35 years of age attending on a full-time basis—was increasingly joined by large cohorts of students of different characteristics. Participation by female students soared five-fold in this period and they rose from about one-third of all students in the early 1960s to more than one-half in the 1980s.

Students of color rose from 17 percent of all students in the mid-1970s (the earliest detailed data available) to more than 24 percent in 1992. Much of that growth is fueled by trends in the overall population as Hispanics represent an increasingly larger share of the overall population. This trend may be even further amplified if minority populations, such as Hispanics and African-Americans begin to participate in higher education at levels comparable to those of white and Asian-American students.

There has also been a significant gentrification of the American higher education student population. Students over 35 years of age, which in 1965 totaled only four percent of higher education enrollments, accounted for 20 percent of all enrollments in 1992. This trend is expected to continue into the next decade, rising to nearly 25 percent by 2002.

Finally, while both full-time and part-time enrollments have increased over the past 15 years, there has been a marked increase in part-time enrollments as well, rising from 40% to 44% of all enrollments.

FISCAL TRENDS

There have been significant changes in the overall rates of growth and in the relative rates of growth of the sources of revenues available to higher education institutions over time. The principal sources of public revenues, state and federal support, have provided flat or declining revenues per FTE. The combination of constraints imposed by federal deficit concerns and escalating demands for increased spending in response to a variety of domestic concerns has led to real federal support per FTE declining steadily from $2,756 in 1963 to $1,650 in 1983 before rising slowly to return in 1990 to the 1977 level of about $2,050.

At the same time, widespread tax limitation movements and competing demands for state spending have precluded sizable increases in real support per student at the state level in the 1980s. Real state revenue per FTE grew rapidly throughout the 1960s and 1970s, increasing from $2,440 in 1959 to $4,414 in 1979. From 1979 to 1990, real state revenue per FTE was either flat or declining. Real state support per FTE declined in the early 1980s before rising back to its 1979 level of $4,400 in 1990.

The lack of growth in state and federal support has resulted in public support taking on a smaller role as a source of revenue to higher education institutions, with private support taking on a greater role. By 1990, public support provided 41 percent of total revenues to higher education institutions, while private support provided 59 pe. :ent.

The growth in private support has largely come from increases in tuition and fees. Real tuition and fee revenue per FTE has increased from about $2,050 in 1959 to about $4,180 in 1990. The increases in tuition and fee revenue per FTE have been particularly large since 1981. The future trend for tuition increases is not clear. There are growing pressures to cap tuition increases, but at the same time the trends suggest that it is doubtful that state and federal support will see sizable increases in the near future.

COST TRENDS

The overall costs facing the higher education sector have risen consistently since the early 1960s. One measure of such price changes, the Higher Education Price Index, has risen more than five-fold over this time. This means that it costs, on average, five times as much today as it did in 1961 to produce the product called "higher education".

Furthermore, this growth in prices has far outstripped the prices common to other sectors in the society. In fact, the HEPI has outgrown the Consumer Price Index in all but the hyper-inflationary years of the two oil shocks in the early 1970s and late 1970s/early 1980s. This has particular relevance to higher education finance because the CPI is often used to determine cost-of-living adjustments for public finance decisions. Subsequently, even if the common vision of inflation (as measured by the CPI[27]) is funded, the sector may still experience a real decrease in the amount of goods it is able to purchase with those resources.

One example of this trend is in the area of instructional costs. A primary component of the costs of instruction is the cost of faculty salaries. While these salaries grew faster than inflation in the explosive-growth period of the 1960s, they were well outpaced by the inflation of the 1970s and have grown only mildly faster than inflation in the 1980s. Faculty salaries' growth premium over inflation tapered

[27]In the balance of this discussion, the generic term "inflation" will be used to indicate the change in prices measured by the CPI.

off toward the end of the 1980s and early 1990s with the onset of public fiscal crises, especially at the state level.

The future trend for faculty salaries is not altogether clear. The prospects are strong for a younger, and hence less expensive, faculty as older faculty members hired during the high growth of the 1960s retire. Concurrently, there will be increased competition for what is likely to be an increasingly smaller pool of new faculty.

Beyond the costs of instruction, the costs of simply administering the institution have outstripped inflation. Not only are institutions becoming more complex and providing more services, but the costs of providing and administering those services has also grown significantly. One major area where this growth is particularly evident is in the growth in the cost of the fringe benefits provided to institutional staff. The cost of fringe benefits has outstripped inflation in every year since 1961 except 1979 during the peak of the hyperinflationary second oil-shock. This cost has exceeded inflation by as much as 12.5 percent.

Finally, higher education's costs have outstripped inflation in another important category—research costs. The costs associated with direct research expenditures have also outstripped inflation in all but the hyperinflationary oil-shock years. Inasmuch as instruction and research account for much of the fiscal expenditures at higher education institutions, it is easy to see why the sector's overall costs have outstripped inflation.

POLICY IMPLICATIONS

The higher education sector has faced, and continues to face, tremendous changes in the factors that determine its goals, purposes, and missions. The sector is experiencing dramatic changes simultaneously occurring in the demographic composition of students, the availability of public support, and the costs of instruction and research. Any of these changes by itself would present significant new challenges to the sector. However, the combination of changes now under way adds up to a threshold transformation of the sector's environment.

The simultaneous changes across these three dimensions of change points to a much broader challenge for the sector than the occurrence of any one dimension alone. Consider, for example, the increasing diversity of the sector in conjunction with the decreases of public support for higher education. In the past, when the demand for new courses and programs arose as the result of changes in the student population and the external environment, the sector could generally fund these new enterprises from the growing resources made available to it. Programs already in existence could be left relatively untouched. In today's environment, such new programs can generally only be undertaken at the expense of other existing programs. When the decreasing public support pie is coupled with the significant cost inflation within the sector, the availability of real spending power within the sector is further curtailed.

Due to both declining growth rates in enrollments and declining fiscal resources, the sector has shifted from a growth-oriented focus to a reallocative focus. To effectively respond to these changes, higher education institutions and systems must be able to reallocate limited resources among competing demands. New demands require new responses that, in turn, require new combinations of inputs. However, because resources are limited, changes in the input mix can only be accomplished by redirecting resources.

This is a new challenge to the sector. In the past, continuous, rapid growth provided higher education a stream of new resources that could be used to respond to changing demands without disturbing existing allocations. For example, as the economy shifted from agriculture to manufacturing, America looked to higher education to produce the increasing numbers of scientists and engineers needed by an rapidly growing manufacturing sector. Higher education dramatically departments, schools, and colleges in these, and other growing areas. But this expansion was accomplished through the allocation of new resources to these areas. Although agriculture was declining in importance, there was no need to consider reallocation of resources away from agriculture, closing agriculture schools or colleges, or the like.

Now our economy is changing again, this time from manufacturing to the information industries. At the same time, our society is becoming increasingly pluralistic and oriented toward a multinational world. Both the society and students are posing new demands on higher education. Can the sector respond as before, using new resources to meet new demands while leaving prior resource allocations in place?

Temporizing responses, or even neglect, might be the best answer to problems that stem from short-term, ephemeral perturbations in long term trends. But substantial changes in institutions and systems may be needed to address problems engendered by fundamental shifts in the underlying demographic and economic forces that shape higher education's environment. Higher education's institutions and systems may need to be substantially restructured to effectively serve society's future needs and expectations with the limited resources likely to be available to them in the future.

This places the policy focus squarely on restructuring. In fact, the long term question of whether higher education needs to be restructured is largely moot. Current fiscal pressures, accelerating the long term changes, are already forcing higher education institutions and systems across the country to restructure themselves. And there are no signs of fiscal relief anytime in the foreseeable future. If anything, the numbers of institutions and systems forced to address the problems of identifying priorities, focusing on central missions, and reallocating resources are likely to grow. The central question is how, not whether, higher education's governance system should be restructured.