

**A Bigger Bang for the Public Buck:
Achieving Efficiency and Equity in Higher Education**

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for the
Minnesota Private College Research Foundation
January 2002



MINNESOTA'S PRIVATE COLLEGES
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*Providing a Tradition of Quality for a Changing World,
One Student at a Time*

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A Bigger Bang for the Public Buck: Achieving Efficiency and Equity in Higher Education

Jenny B. Wahl

EXECUTIVE SUMMARY

Minnesotans value higher education. Nearly one-third of state residents aged 25 and older hold at least a bachelor's degree. The Minneapolis-St. Paul community ranks among the top five urban areas in the proportion of college-educated adults: almost 40 percent have earned at least a B.A. Minnesotans attend college at a rate 15 percent higher than the national average.

Higher education helps both individuals and society. One benefit is greater expected income: wages for college graduates exceed those of high-school graduates by more than 50 percent. More income means better living standards and more tax dollars. More education arguably also improves critical thinking skills, creates flexibility in the job market, and heightens citizen awareness and civic involvement.

But financial constraints can cause people to stop their education too early. People of equal ability can end up with different schooling and different jobs, simply because they were born into families with different incomes. Consequently, Americans have long thought that public funding should play a role in providing higher education.

What is the best way to fund higher education so people make choices that yield socially efficient and equitable results and that use public dollars wisely? Economic theory, as well as overwhelming evidence, clearly suggests a cost-based-tuition, need-based-aid approach. The alternative—a low-tuition, taxpayer-financed approach—leads to large subsidies to students from middle- and high-income families, too little education for youths from low-income families, lower quality of education, and wasted public funds.

Minnesota clings to the second alternative, despite inefficiencies, growing inequities and increased demands on the public purse. All students at public institutions—regardless of family income—are heavily subsidized. Almost 90 percent of higher education spending goes directly to public institutions rather than to individuals. Without distinguishing full- from part-time students, per-student subsidies are about \$11,000 per year in the University of Minnesota system and \$4,000 in the Minnesota State Colleges and Universities system.

Students from higher-income families take particular advantage of these generous tuition subsidies. In Minnesota and elsewhere, median family income is actually higher at public institutions—particularly flagship state schools—than at most private ones. So is the percentage of students with family income of \$60,000 or more. In fact, among the most striking nationwide movements is the shift of middle- and upper-income students to

public universities, while private colleges and two-year institutions enroll students from more economically and socially diverse backgrounds.

Public funding of higher education is meant to help all qualified persons continue their schooling regardless of family circumstances. Yet, under the current system, only half of youths from low-income families go on to college or university. Those who do enroll drop out much more often or take longer to finish their degrees than their middle- and high-income contemporaries. Despite public support of post-secondary institutions, only one-quarter of *high*-ability, low-income high-school graduates ever enroll in higher education. By comparison, nearly two-thirds of *low*-ability, high-income high-school graduates go on to college, mostly to state-subsidized schools. Budget constraints clearly remain a problem for lower-income families with college-age children.

Subsidized tuition for public institutions also distorts the choice process, encouraging some students to decide where to go to school primarily on the basis of the price rather than quality. Students accept a lower-quality education in order to obtain tuition subsidies. Lower-quality schooling leads in turn to a lower social payoff from higher education.

Adopting a cost-based-tuition, need-based-financial-aid approach would improve access considerably, channeling funds to those who need them most. Low-income families are quite sensitive to the net price of higher education whereas middle- and higher-income families are not. Moving away from the current tax-subsidized approach would mean higher enrollment among low-income youths but no significant drop-off in enrollments among other youths. Enrollments of wealthier students may actually increase as tuition goes up.

A cost-based-tuition, need-based-aid approach could also improve the quality of higher education. Students and families from all income ranges would see more similar prices for public and private institutions. Consequently, they would choose programs on the basis of quality rather than artificially low prices. By voting with their feet, they would give schools incentives to invest in effective teaching, strong student support services, and course offerings designed to promote timely graduation.

Using the financial aid system to accomplish higher-education access and equity goals would also reduce the waste inherent in taxpayer financing. Compared to subsidized tuition, a direct need-based funding approach would cost less to run, as well as put more money in the pockets of the needy.

Demographic trends reinforce the need to examine policies concerning higher education. In Minnesota, the size of the newly college-eligible population will decrease by one-fifth over the next 20 years. But, over the next ten years, students of color will account for as much as three-quarters of the growth in Minnesota public high school graduates. These youths are less likely to have a parent who is college-educated—an important influence on college attendance—and more likely to be from a lower-income

family. Recent federal education policies—Hope and Lifetime Learning tax credits and educational IRAs, for example—will not benefit most of these students and their families.

Minnesota struggles to maintain a low-tuition, taxpayer-subsidized system to fund higher education, even though tuition increases seem inevitable because of other demands upon state budgets. Putting a cost-based-tuition, need-based-aid policy into place explicitly is certainly better than letting tuition and aid fluctuate yearly with the budget. Acknowledging honestly that higher public tuition is a fact of life, rather than surprising people with large percentage increases on an artificially low base, will help shape families' expectations about the true costs of higher education. All in all, a cost-based-tuition, need-based-aid approach offers the best strategy for improving access to higher education, increasing school quality, and using public funds wisely and well.

A Bigger Bang for the Public Buck: Achieving Efficiency and Equity in Higher Education

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Those of us who are in the middle- and upper-income classes have conned the poor into subsidizing us on a grand scale – yet we not only have no decent shame, we boast to the rooftops of our selflessness and public-spiritedness.

-- Milton Friedman, Higher Schooling in America (1968)

Income and prices affect choices. This is as true for decisions about higher education as it is for purchases of food, furniture, and fashion. People decide whether to go to college – and where to attend – based on the benefits and costs to them and their families, given their family resources and the price they pay.

Yet the benefits of post-secondary education reach well beyond any one individual or family. So do the costs. Individuals make their own choices about pursuing education, but no college student pays the full cost of his or her education.¹ Because the social costs and stakes are high, individual choices need to add up to decisions that are affordable and beneficial from the point of view of society as well.

What do we know about the choices people make? Our current low-tuition, taxpayer-subsidized approach to higher education results in too little schooling for youths from low-income families, large subsidies to students from middle- and high-income families, a relatively low quality of education, and wasted public funds.

As Milton Friedman did more than three decades ago, we must challenge the prevailing assumptions about how we pay for higher education and who benefits. In a time of escalating demands upon the public dollar, increased need for a well-educated populace, and population growth among groups traditionally less likely to attend college, our current policy is highly unsatisfactory. An alternative approach—cost-based-tuition, need-based-aid—would lead us closer to equity, efficiency, and a wise use of public money.

WHERE DOES MINNESOTA STAND?

Before I review the evidence that supports this argument, let's look first at where Minnesota stands with respect to critical aspects of higher-education finance, participation, and quality.

- ***Public institution tuition subsidies.*** Regardless of family income, all students at state institutions benefit from significant subsidies, paid for with tax dollars. Per-student, annual subsidies are about \$11,000 at the University of Minnesota (UMinn) and \$4,000 in the Minnesota State Colleges and Universities (MnSCU) system. Nearly half the students in the MnSCU system receiving this subsidy are enrolled only part-time.
- ***Institutional choice and family income.*** Median family income often is higher at public institutions than at private ones, as is the percentage of students with family income of \$60,000 or more. Among all Minnesota college students, median family income is highest among those at UMinn.
- ***Price sensitivity and participation.*** Low-income families are much more sensitive to the price they pay for higher education than higher-income families. In addition, youth from low-income families are much less likely to continue their education past high school. In Minnesota, only about half of low-income youth ever enroll in college.
- ***Quality of higher education and use of public money.*** College students and their families implicitly accept a lower-quality education when they pay a lower net price. States like Minnesota tolerate a lower-quality system when they subsidize the price that many students and families would and could pay. In addition, the inherent inefficiencies in taxing mean that tax-subsidized funding of higher education can waste nearly half of the total revenue raised.
- ***Pricing and demographic trends.*** Pricing trends in higher education increasingly favor wealthier families. Yet an ever-larger proportion of college-age youths will come from minority and lower-income families. In Minnesota, the only growth in school-age population for the foreseeable future will be among students of color.

INDIVIDUAL CHOICES AND SOCIAL OBJECTIVES

The Decision To Attend College

When does someone choose to go to college? When the perceived benefits of doing so surpass the costs. Certainly, people go to college for several reasons – to learn something, to qualify for the jobs they want, to please parents, to avoid work, to spend time with friends.

Chief among the benefits of higher education is higher expected income. Wages earned by college graduates are far greater than those of high-school graduates.ⁱⁱ Wage premiums are somewhat bigger on average for graduates of private institutions, particularly non-white graduates of selective private colleges and universities.ⁱⁱⁱ

Balanced against these benefits are the costs of higher education to the students and their families. Direct costs of higher education to students and their families include tuition and fees, net of financial aid, and the cost of room and board above what they would be at home.^{iv} Table 1 shows a range of college costs for various institutions in Minnesota and surrounding states over time.^v

Another significant cost, particularly for low-income families, is the income foregone by an individual attending school instead of working.^{vi} Time spent in the classroom and the library takes hours away from work. For families living from paycheck to paycheck, this cost of college can loom especially large.

The Bigger Social Picture

Although the decision to enroll in college lies mainly with individuals and their families, society has a stake as well. College attendance generates social as well as individual benefits. College arguably improves critical thinking skills, which creates more flexibility in the job market and greater awareness of the impact of political and policy decisions. Higher income for the college-educated also means more tax dollars for the public till.

Still, most commentators agree that the social benefits of higher education pale in comparison with those associated with K-12 schooling.^{vii} In short, most of the benefits of higher education go to the individual.^{viii}

Does this mean that everyone who would benefit from college will attend? No. In Milton Bradley's "The Game of Life," any player can choose to work and earn money immediately, or to borrow for college and make a higher salary later on. In real life, credit constraints make it difficult or impossible for many lower-income families to come up with the necessary cash for schooling at the appropriate time. Borrowing for education is different than, say, borrowing to buy a boat. Although college typically leads to greater future earnings, these cannot serve as collateral like a boat can. As a result, schooling and occupation can differ significantly for two people of equal ability, just because they were born to parents with different incomes.

Americans have long thought that both efficiency and equity call for a social solution to this liquidity problem. With the Morrill Act, many states established public colleges and universities financed partly by tax revenues.^{ix} A century later, people clamored for federal policies that would eliminate ability to pay as a factor in college choices. This led to the Higher Education Act of 1965, re-authorized in 1972 and several times thereafter. Private institutions have likewise responded to calls for need-blind admission and need-based aid, setting up endowment funds and soliciting private donations to defray the costs of school.^x

The social costs of higher education far exceed the private costs, and virtually all consumers of higher education are subsidized. Gross tuition and fees cover less than a

quarter of the costs of a public institution and about half the costs of a private one. And families pay just a fraction of even these costs. The share of gross tuition paid by families went from an average of 40 percent in the 1949-50 school year down to a low of 25 percent in 1969-70, then back up to 35 percent in 1992-93.^{xi} Add to this the fact that colleges use accounting methods that do not recognize the full cost of capital.^{xii} What families pay for higher education—even accounting for foregone wages—falls well short of the true cost of college.

TWO WAYS TO APPROACH PUBLIC FINANCING OF HIGHER EDUCATION

The Current Approach: Blanket Subsidies Financed By Taxes

One way to open the doors of higher education is to subsidize it via low tuition for every student at a public institution, financed by general tax revenues. Minnesota and many other states take this approach. Although it is well-intended, the policy is a blunt instrument that gives money to those who would attend college anyway, penalizes taxpayers whose family members do not attend, fails to help some qualified individuals who cannot afford to attend, and leads to lower-quality education. Let's examine each of these points in detail.

Low tuition subsidizes all students at public institutions regardless of family income. Taxpayer subsidies constitute a huge portion of the funding of public higher-education institutions. State and local governments provided \$49 billion in operating subsidies to public colleges and universities in 1997-98, a figure more than eight times as large as the largest federal grant program for low-income students.^{xiii}

Table 2 shows that Minnesota spent 12 percent (about \$1.3 billion) of the FY 1999 general fund budget on higher education. This proportion has declined over the last decade and, as Table 3 reveals, Minnesota falls short of its neighbors in the rate of increase in appropriations.^{xiv} Still, Minnesota ranks high. In 1995, state appropriations per capita were tenth highest in the nation and 38 percent above the national average. At the same time, Minnesotans attended college at a rate 15 percent higher than average, with more than one-fifth of Minnesota undergraduate enrollment at private institutions.^{xv}

Table 2 also shows that almost 90 percent of higher education spending went directly to state institutions, helping keep tuition rates low. The UMinn system received the lion's share – 44.6 percent of the total. And, because UMinn has one-third as many undergraduates as the MnSCU system (see Table 4), a UMinn student enjoys much more institutional support than a MnSCU student. Similar patterns arise in other states – flagship state institutions receive far more support (both federal and state) than regional universities or community colleges.^{xvi}

Every student attending one of the Minnesota public systems receives the same tuition subsidy regardless of family income. If the total institutional funding for UMinn were used solely for undergraduate tuition subsidies, the average subsidy would come to

about \$11,600 per student. Adding in graduate students, the figure still hovers around \$10,000 per student. The average tuition subsidy for a MnSCU student (regardless of full- or part-time status) is just under \$4,000.^{xvii} Recent literature from MnSCU-Twin Cities makes no bones about it: a flyer entitled *Real Value* boasts that “for every \$1 students pay in tuition, the state of Minnesota pays \$1.79.”

The remaining 10 percent of state expenditures goes directly to students as financial aid or to institutions that have reciprocity agreements with Minnesota. Table 5 shows the type and source of aid received by Minnesota students. Students from lower-income families receive the bulk of state grants.^{xviii}

Enrollment rates by income: tuition subsidies penalize taxpayers whose family members do not attend college. Let’s take a look at who could go—and who does go—to college. Family income and pre-college preparation are certainly related. Wealthier families spend more on housing, food, and property taxes. Consequently, their children attend better elementary and secondary schools and go to school more ready to learn.

Table 6 reveals that, nationwide, high-school graduates from high-income families are far more likely to qualify for college than graduates from low-income families. Only about half of non-Asian minorities are prepared to undertake more education after finishing high school. And these figures do not account for high-school dropouts, who are disproportionately poor and non-white. Any policy that taxes those for whom higher education is impossible transfers money away from them.^{xix}

Enrollment figures suggest that lack of qualifications may prevent some low-income youths from continuing their education. Fewer than half of high-school graduates from low-income families enroll immediately in college.^{xx} Minnesota prides itself on being second in the country in the percentage of low-income youths that go on for higher education, yet between 1992 and 1997 the proportion was only 52 percent.^{xxi} Among 1999 Minnesota high-school graduates, only 59 percent from low-income families planned to continue their education as compared to 86 percent from high-income families. Only 37 percent of graduates with family income less than \$25,000 actually enrolled in fall 1999, compared to over 60 percent of graduates with family income over \$90,000.^{xxii}

But lack of money to continue schooling is clearly also a significant barrier for low-income families. As Table 7 shows, the proportion of college-qualified youths from low-income families who actually enroll is far lower than the proportion from middle- and high-income families. Nationwide, over 22 percent of qualified low-income high-school graduates fail to enroll in college within two years. The same figure for qualified high-income graduates is a mere 3 percent.^{xxiii} A shocking one-quarter of youths of *high* ability from low-income families do not enroll in college. By comparison, 64 percent of students of *low* ability from high-income families do enroll.^{xxiv}

Completion rates: lower-income students benefit less from low tuition. Lower enrollment in higher education is not the only characteristic that sets apart youth from

lower-income families. As Table 8 shows, college students from poorer families are likelier to leave school or take longer to finish. Higher dropout rates and longer time to completion mean a lower payoff to college. Dropouts earn lower wages on average than graduates; taking more time to finish also reduces the years of employment and earning.

These patterns hold in Minnesota as they do elsewhere. MnSCU students tend to be from families with less income than UMinn students. Only 39 percent of students who enrolled in a Minnesota state university in 1993 had graduated by 1999, as compared to 47 percent of those at the University of Minnesota (all campuses).^{xxv}

Choice of college: Students from higher-income families increasingly take advantage of tuition subsidies at four-year public institutions. Youths from higher-income families clearly go on to college more frequently than youths from low-income families. But where do they go? Not surprisingly, many take advantage of the generous subsidy afforded them by low public tuition. Prices do matter. Tables 9, 10, and 11 show, in fact, that the median family income of undergraduates in public institutions exceeds that of undergraduates in private institutions.

What is more, students attending flagship public institutions come from higher-income families than those attending other public colleges and universities.^{xxvi} Table 10 shows this for Minnesota. In 1999, 77 percent of first-year college students from families making less than \$60,000 enrolled in UMinn, MnSCU, or reciprocity four-year institutions. Only one-sixth attended UMinn, and less than 10 percent attended reciprocity schools. But 83 percent of first-year students from families making \$60,000 to \$150,000 enrolled at public institutions, with much larger proportions attending UMinn (about one-quarter) or reciprocity schools (over 20 percent). More than 21 percent of the lower-income group went to Minnesota private four-year colleges, whereas only about 16 percent of the higher-income group did.^{xxvii}

Table 4, referred to earlier, reinforces these findings. The proportion of Minnesota students receiving federal Pell grants (which are based on family income) is far lower at the University of Minnesota than on MnSCU campuses. The proportion of Pell grant recipients at four-year MnSCU campuses is in turn lower than at four-year private institutions. Plus, as we already know, state-tax-based institutional support at UMinn is nearly three times as large as at MnSCU, despite the relative prosperity of UMinn students.

In short, even before the development of recent policies aimed at making college more affordable for middle- and upper-income families, students from wealthier backgrounds had an edge, both in Minnesota and in the nation as a whole. One scholar estimates that 1992 high-school graduates from families with incomes of \$90,000 or more could expect about twice the higher-education subsidy from federal, state, and local government as graduates from families with incomes of less than \$20,000.^{xxviii} In their comprehensive research, Michael McPherson and Morton Schapiro find that the gap is growing as undergraduates from wealthier families increasingly attend four-year public institutions.^{xxix} Table 12 shows that some of the biggest shifts among wealthier students

are from private four-year and public two-year institutions to public four-year colleges and universities.^{xxx}

Public subsidies can mean lower-quality higher education. Public financing of higher education is meant to help people pursue more schooling. An unintended consequence, unfortunately, is that public subsidies directly to institutions can lead to a lower quality of education.^{xxx1} Let's see why.

Suppose that the private and public sectors can provide reasonably similar goods and services—in higher education, for example—and college-bound students and their families therefore have a choice among public or private institutions. As they contemplate this important decision, two factors come into play. What is the price we pay? What is the quality we obtain?^{xxxii}

Although we would all like to pay less to get more, most of us will take a little less quality if we pay a little lower price. Students at private institutions tend to pay a greater proportion of the cost of higher education, particularly those whose families can afford it. Subsidized tuition at public institutions therefore looks like a lower price to families. Quite reasonably, students might accept a lower quality for a cheaper item.

This is not to say that all private colleges offer a higher-quality education than all public institutions.^{xxxiii} (As the product of a public undergraduate education, I would be reluctant to make that argument!) Yet studies reveal that students are indeed prepared to accept a lower-quality education at a public school in order to obtain the tuition subsidy. And greater reliance on public funding is associated with significantly lower rankings of teaching quality.^{xxxiv}

These results are not surprising – we all consider quality and price jointly when we make purchases, whether the decision is about cars, clothes, or college education. The difference between college and other purchases, however, is that the price paid by the purchaser falls short—way short, in the case of public institutions—of the true cost of the item. Public institutions cost as much as private ones to run, perhaps more. For example, public colleges within a state employ roughly 40 percent more labor than private colleges with the same size capital stock.^{xxxv} Faculty and administrative salaries tend to be higher at Minnesota public institutions as well.

Consequently, lower *social* costs do not accompany the lower quality accepted by students who pay a subsidized price for tuition. But the lower-quality schooling associated with subsidized tuition does lead to a smaller payoff, both for the student (via lower wage premiums) and for society.

An Alternative Approach: Cost-Based Tuition and Need-Based Aid That Will Reduce Waste and Improve Access, Choice, and Quality

An alternative to the tax-subsidized, low-tuition-for-all approach is to base tuition more upon true costs and target state financial aid to the needy. I believe the result would be greater access to higher education for youths of lower-income families, better matching of students with institutions, and more efficient and equitable use of public funds. My argument is based in part upon the expected reaction of students and their families.

Reaction of lower-income families: price sensitivity would lead to greater enrollments. A cost-based-tuition, targeted-aid policy would reduce the net price of higher education to youth from lower-income families. Poorer students are quite responsive to price changes.^{xxxvi} Minorities and community-college students—who tend to come from poorer families—are sensitive to price as well. Enrollments of youths from poorer families drop significantly as the price they pay for education rises, partly because working to pay the higher bills takes more time away from studying and attending classes. By the same token, enrollments would increase if the net price fell.^{xxxvii}

Reaction of higher-income families: price insensitivity means unaffected enrollments. A cost-based-tuition, targeted-aid program would raise the perceived price of public higher education to students from higher-income families. In contrast to students from poorer families, however, these students are not deterred from enrolling in college even by substantial hikes in tuition.^{xxxviii} Enrollments of students from wealthier families may actually increase as tuition goes up. Why? Because these students use price partly as a proxy for the quality of education they expect to receive.^{xxxix}

Potential improvements in equity. Would cost-based tuition and targeted aid improve equity? Perhaps, perhaps not. At the least, however, cost-based tuition and targeted aid would not make inequality worse. Let's look in more detail at the arguments and evidence.

Some commentators claim that subsidized-tuition policies transfer money from the poor to the rich, in part because the beneficiaries of subsidized tuition earn higher income on average than taxpayers. If so, a subsidized-tuition policy not only creates artificially low prices for public higher education, it also gives income to richer people. Subsidized tuition therefore worsens inequality; targeted aid would achieve greater equity.^{xi}

But the full picture of who benefits from subsidized tuition must account for financing sources. If the bulk of tax revenue comes from wealthier taxpayers, low tuition rates are made possible by an initial transfer from higher-income families.^{xii}

Who pays the Minnesota tax devoted to higher-education expenditures? Table 13 shows that the effective state and local tax rates on Minnesotans do not vary much by income. In fact, the tax system overall is somewhat regressive.^{xlii} The uniformity in effective tax rates does not mean that all Minnesotans pay the same amount of tax, of course; people in higher income brackets pay more total tax than those in lower brackets.

So perhaps subsidized-tuition policies are funded primarily by taxes upon higher-income families. Then, although students from wealthier families enjoy a subsidized price along with everyone else, at least their families paid for the privilege. Of course, low-income families that pay taxes but do not send family members to college unambiguously lose from subsidized-tuition policies.^{xliii} Aside from this unfairness, however, cost-based tuition and targeted aid might have the same equity implications as tax-subsidized tuition.^{xliv}

Improved efficiency Even if we cannot condemn subsidized-tuition policies on the basis of equity, we certainly can invoke efficiency arguments. Subsidized-tuition policies unambiguously distort the choice of institution, waste public money, and prevent some deserving lower-income youths from attending college.

To see why, go back to the initial decision to enroll at a specific school. Taxes collected from individual taxpayers are not earmarked for a particular purpose. In Minnesota, for example, funding of public higher education comes from general tax revenues. Even though my tax dollars are used to keep state-school tuition low, no direct relationship exists between the tax I pay and the price my children face for public tuition. People pay the same taxes regardless of the colleges their children attend.

Put another way, everyone faces the same subsidized price for public higher education, regardless of family income or taxes paid. We know that price does not significantly influence the decision to enroll in college for youths from higher-income families. But all that means is that these people usually go on to school, even if they pay a lot.^{xlv} What is affected, however, is the *choice* of institution. Given a lower tuition bill for a public institution and a higher one for a private institution of comparable quality, most people would choose the cheaper alternative. Some might even take lower quality in exchange for a break on price. Tax-subsidized tuition thus means a misallocation of students across schools because people do not face the true costs of their decisions at the time they pay, and the price distortion is far greater for public institutions.^{xlvi}

Subsidized tuition wastes public money as well. To evaluate the efficiency of any program, we must account for the administrative costs of obtaining funds. Studies have found that the cost of raising an extra dollar in tax revenue falls between 17 and 80 cents.^{xlvii} But only the tax revenue itself generates a benefit, in the form of subsidized tuition. Using the tax system to accomplish a goal indirectly thus costs more – maybe much more -- than the actual tax dollars raised.

Once public funds are raised, are they efficiently channeled to those who need them? Tax-subsidized tuition puts money in the pockets of those who would attend college regardless. Other things being equal, this redirects available resources away from those for whom price matters a lot. As a result, some lower-income youths will not go on for more schooling even when doing so would be socially beneficial.

Subsidized-tuition programs also waste public funds because individuals care less about spending other people's money wisely than they do their own. Of course, some

observers worry that a switch to targeted aid would generate recipients who would not take their responsibilities seriously.^{xlvi} But keep in mind that the current system of subsidized tuition means free money for *every* student. Currently, a student who chooses to party rather than to study, or who takes extra time to graduate, or who fails to complete school, has no obligation to make up for wasted taxpayer money. Tellingly, the British expression applied to dropouts and delayed performers is “wastage,” a term that emphasizes the loss to society arising from heavy subsidization of all participants in higher education.

Net effects of converting from a low-tuition to a cost-based-tuition, need-based-aid approach. Suppose we were to reduce the blanket subsidy inherent in low tuition and move toward a policy that helped finance the costs of higher education for those who need the support. One result would be a better matching of the benefits and costs of higher education for those who pay a greater proportion of the costs. Instead of bearing one-third or less of the costs and reaping nearly all the benefits, students and families with financial resources would pay a higher percentage of costs in acknowledgment of the benefits they recoup.^{xlix}

Another result is that we would be more likely to subsidize those for whom higher education produces a net social benefit but who couldn't afford to go on their own. Why? Because we would cut subsidies to those who would attend college anyway. This would make funds available for needy youths.

We would also reduce subsidies to those who currently enjoy the benefits of low tuition but fail to contribute much in return. Blanket subsidies make higher education attractive to those who would not go if they had to pay more of the costs. Recall that two-thirds of high-income, low-ability high-school graduates enroll in college. Surely some of these students fare less well than would the 25 percent of low-income, high-ability high-school graduates who never get a chance to pursue higher education under the current system. What we have now is tuition that is often out of reach for the latter, but so artificially low that the former find college worth attending.¹

Higher public tuition might cause some students to shift to private institutions.^{li} Yet we must think of this as undoing an existing distortion rather than creating a new one. Closing the gap between private and public tuition will encourage students to choose institutions best suited to their needs rather than being unduly influenced by a subsidized price.

Will private schools expand to meet the demand? Possibly. Recall, however, that one of the selling points of many private schools is their small size. What of new private institutions? Presumably, the state can limit financial aid to students who attend accredited schools. Some new schools may spring up, but students will attend them only if they perceive that the start-ups compare favorably to existing alternatives.

Higher in-state tuition will also make out-of-state schools more attractive to some students, particularly if reciprocity states do not raise public tuition.^{lii} Keep in mind,

however, that Minnesotans tend to come home.^{liii} Consequently, a shift to out-of-state public institutions could well mean that other states pay the costs and Minnesota reaps the benefits of investments in higher education.

A note on intergenerational matters. Most discussions of financial aid policy lump parents and children together into a single unit. Two important intergenerational issues are worth emphasizing.

Children of college graduates are more likely to attend college regardless of parental income. What this means is that the payoffs from investing in the education of lower-income youth could continue for multiple generations. Starting now with a policy that encourages capable but poor youth to continue their schooling means encouraging their children as well. Higher education is a vehicle for changes that tend to continue across generations.

A second issue is the backward determination of need. Parental income from a single year is the basis for determining a child's need and, therefore, the burden of costs borne by the family. But the benefit of higher education accrues primarily to the child. In past years, some of these benefits made their way back to the parents; today, most intergenerational flows tend to go the other direction. We currently have a system that mismatches benefits and costs across generations. Revisions to public funding for higher education might consider this matter.^{liv}

RECENT TRENDS

Pricing Trends in Higher Education: More Goodies for the Wealthy, Fewer for the Poor

Low tuition is not the only potential subsidy for those contemplating college. Students can receive federal or state grants, loans, and subsidized work-study wages. They can also obtain institutional or outside private support. Direct federal, state, and private funds can be need-based or non-need-based. Increasingly, these funds are flowing away from those for whom outside aid makes enrollment possible.

The trend toward aiding middle- and high-income families goes back nearly twenty-five years. The Middle-Income Student Assistance Act of 1978 started it, although one must keep in mind that this legislation passed as an alternative to educational tax credits—which came into being two decades later, anyway.^{lv} At several important points, Pell grant eligibility for middle income families was relaxed and federal guaranteed and subsidized loans for higher education were made available to all regardless of need, among other measures.

Although some of the federal largesse has been withdrawn, the current focus of financial aid still is not the needy.^{lvi} Borrowing difficulties take a larger toll on lower-income students as the purchasing power of federal Pell grants falls and state, federal, and

institutional funds shift away from need-based aid.^{lvii} (For details, see Tables 14, 15, and 16.) Lower-income students and families have found their choices shrinking over time. As public institutions subsidize all comers, need-based aid dwindles, and many private institutions scramble to offer the best deal to meritorious students, fewer and fewer funds are earmarked for the needy.^{lviii} Youths from lower-income families, in contrast to students of wealthier backgrounds, increasingly attend two-year institutions if they go to school at all. Two-year institutions can certainly offer a good education for many students. What is disconcerting, however, is that two-year colleges may become the only alternative for lower-income students, some of whom would be better suited to a different sort of learning experience.

And what of recent legislation? Most benefits of Hope and Lifetime Learning tax credits and educational IRAs will go to families with income in the \$60-80,000 range who would send their children to college anyway. This contrasts sharply with the recipients of Pell grants and Stafford loans, 90 percent of whom grew up in families with income less than \$40,000.^{lix} To add to the asymmetry, lower-income families must fill out a lengthy application for financial aid, whereas the new educational incentives require far less paperwork. Plus, tax credits are open-ended whereas Pell grants and Stafford loans are subject to budgetary appropriations.^{lx}

Demographic Trends: Less-Traditional Students Are Coming Of Age in the New Millenium

Demographic trends reinforce the need to examine policies concerning higher education. Nationally, the size of the newly college-eligible population fell by 15 percent between 1980 and 1997, but it is projected to grow by about one-fifth over the next 15 years.^{lxi} Youth of college age at the turn of the millenium also look different from those who came before.

Recent and projected population growth is concentrated among those historically less likely to attend or be able to afford college. In 1972, Hispanics accounted for only 6.7 percent of five- and six-year-olds and African-Americans accounted for 14.3 percent. By 1988, the same age group was 11.2 percent Hispanic and 15.3 percent African-American. Almost 80 percent of the national growth in the college-age population in 2015 will be non-white, with 50 percent being Hispanic.^{lxii}

In Minnesota, during the next 10 years, students of color will account for 55 to 71 percent of the growth in numbers of public-high-school graduates. These youths are less likely to have a parent who is college-educated – an important influence upon college attendance -- and more likely to be from a lower-income family than white students.^{lxiii} And in contrast to national trends, the cohort of Minnesotans ages 10 to 19 is projected to decrease by more than 20 percent by the year 2020. Consequently, Minnesota will need to consider new ways to attract much larger proportions of students of color into higher education.

POTENTIAL ISSUES ASSOCIATED WITH A COST-BASED-TUITION APPROACH

What About Administrative Costs?

One of the drawbacks of low public tuition is also one of its advantages: everyone gets it. Consequently, no one has to determine eligibility. A switch to a cost-based-tuition, need-based-aid approach would entail deciding who gets aid and who does not.

Yet much of the relevant paperwork is already part of the process. Eligibility for federal money requires families to fill out the Free Application for Federal Student Aid (FAFSA).^{lxiv} States piggyback on the FAFSA to pass out state grants and loans. So these administrative costs may not change much under a cost-based-tuition, targeted-aid program; all that will happen is that poorer students will get more help. At the same time, costs associated with tax collection will fall.

Does A Cost-Based-Tuition Targeted-Aid Policy Create Different Prices for Different People?

Yes. But if our social objective is the equitable and efficient use of higher-education resources, cost-based tuition accompanied by financial aid for the needy gets us closer to our goal.

Why do people tend to dislike price discrimination? In the business context, the answer seems obvious. Firms charge different prices to different people to obtain higher profits. Even here, though, the practice also opens up a market to poorer people. Take a look at the pricing policies of some magazines, fast-food joints, and sports arenas, for instance. Students and seniors get significant price discounts. Admittedly, the seller gets more money that way, but less-wealthy consumers also can afford the item whereas they might go without under a single-price policy.

Now consider price discrimination in the context of non-profits. By nature, these institutions make no profit. Higher tuition for those who can afford it simply generates a bigger pool of funds for the needy. For example, the University of Michigan-Ann Arbor has high tuition (\$7,126 in school year 2000) compared to other public schools in the region. Yet 90 percent of its students had their need fully met: the average financial package was \$7,226 and the average need-based grant \$5,993. By contrast, the University of Iowa charged tuition of \$3,204, offered an average financial package of \$6,149, but dispensed an average need-based grant of only \$2,396. Only 61 percent of its students had their need fully met.^{lxv}

In fact, a low-tuition, taxpayer-subsidized approach to financing higher education fails to discriminate when it should. Price discrimination in higher education—in other words, need-based financial aid—is the only way to ensure that able students have access to schooling regardless of family income.^{lxvi}

Will Needy Students Benefit From Cost-Based Tuition and Targeted Aid?

A potential hazard of switching subsidies from institutions to individuals is that the net price paid by needy students may not fall.^{lxvii} But, because state authorities have some control over the budgets of public colleges and universities, presumably they could set tuition and financial aid so that lower-income youths would indeed pay less. In addition, students with money in their pockets (rather than the institution's bank account) could vote with their feet if the net price and quality of public institutions are unsuitable.

To be sure, tuition and need-based aid must be linked for a cost-based-tuition policy to work. Increased public tuition unaccompanied by increases in need-based aid could have a devastating effect on poorer families with college-age children. Cost-based-tuition targeted-aid policies can potentially increase equity and efficiency, but a failure to tie aid to tuition would have a great cost.^{lxviii}

Is A Cost-Based-Tuition Targeted-Aid Approach Politically Feasible?

A cost-based-tuition, need-based-aid approach will take political leadership to implement. Higher tuition for public education will not be popular among many voters. In fact, higher-income families have come to expect greater discounts for college than lower-income families.^{lxix} Politicians are naturally motivated in part by their desire to gain and keep office, and political support for tuition subsidies is far easier to get than funding for financial aid.^{lxx}

Yet tuition increases seem inevitable, given other demands upon state budgets. Putting a cost-based-tuition, need-based-aid policy into place explicitly is certainly better than allowing tuition and aid to fluctuate yearly with the budget. Acknowledging honestly that higher public tuition is a fact of life, rather than surprising people with large percentage increases on an artificially low base, will help families shape better expectations about the true costs of higher education. And asking families to bear a greater portion of those costs when they can afford to will also mean better individual decision-making about higher education, more accessibility and choice for poorer families, and smarter use of public funds.

CONCLUSION

One purpose of state colleges and universities is to provide a suitable educational choice for students of all economic backgrounds. To achieve that purpose, we devote

some public funds to higher education. Here is the question: for a given amount of money expended on higher education, how can we best raise and spend the money to ensure accessibility and choice to qualified individuals, treat equally qualified persons equally, and minimize waste?

I argue that a cost-based-tuition, need-based-aid policy is superior to our current taxpayer-subsidized approach. Families and students have less of an incentive to spend society's educational resources productively when public subsidies cover a large share of the costs of higher education.^{lxxi} Ask yourself this as well: are the social benefits of public higher education really two-thirds of the value of college?^{lxxii} I think most people would say no. College clearly has its merits, but most are enjoyed directly by the students themselves.

This is not to say that no subsidies are in order. In fact, every college student, regardless of institution, is significantly subsidized.^{lxxiii} But subsidies are better devoted to those for whom college creates net social benefits yet who could not afford to fund education out of their own current resources. Tuition discounting might make sense if enrollments were declining and public institutions had unused capacity.^{lxxiv} These days, this is far from true.

What would happen under a cost-based-tuition, need-based-aid program? College enrollments of youths from poorer families would rise. Wealthier families would pay more for education but their children would not stop attending college. Some students would switch to private schools as the existing price distortion is corrected. Some would switch to public schools in other states, enjoying subsidies paid by non-Minnesota taxpayers. The quality of public education would increase.

The merits of a cost-based-tuition, targeted-aid policy to funding higher education are well-grounded in both theory and empirical evidence. Budgetary concerns underline the need for thinking about such an alternative in Minnesota, as well as elsewhere.^{lxxv} I suggest that this new approach offers the best strategy for improving access to higher education, increasing the quality of schooling, and using public funds wisely and well.

ENDNOTES

ⁱ For details, see Ehrenberg (2000) and Winston and Zimmerman (2000). I occasionally use the term “college” to refer either to any post-secondary training or to college and university training. Context should make usage clear.

ⁱⁱ Wages earned by college graduates exceeded those of high-school graduates by 40 percent in 1966, 48 percent in 1971, 37 percent by the end of the 1970s, and 58 percent in 1989. Wage premiums in 1977 were 19 percent for men and 25 percent for women; the numbers were 42 and 48 percent in 1987 and 54 and 53 percent in 1993. More recent estimates put the college wage premium higher still. Murphy and Welch (1989), Clotfelter (1996), Kane (1997), MHESO (2001c). Figures from the Panel Study of Income Dynamics indicate that 1994 median family income for a household head with less than a high-school degree was \$17,918. For heads who were high-school graduates, the median was \$31,648, for those with some college \$42,160, and for those with college degrees \$64,294. These numbers are uncorrected for the age of the household head. University of Michigan Institute for Social Research (1998). Most researchers estimate that the average rate of return to people from an undergraduate education falls somewhere between 10 and 15 percent. See for example Areas and McMahan (2001). The literature on returns to schooling is vast. Becker (1993) is the seminal work.

ⁱⁱⁱ The average 1997 income for 1993 graduates of private institutions that granted doctoral degrees was \$38,806; graduates of public doctoral-granting institutions earned an average of \$34,340. Comparable figures for graduates of four-year non-doctoral-granting institutions were \$33,858 and \$31,967. NAICU (2001). Data from the National Longitudinal Survey of Youth indicate that whites who attend a public institution earn less than those who attend private school, whereas non-whites who graduate from a selective private institution earn significantly more than those who graduate elsewhere. Monks (2000).

^{iv} Why does the price of higher education rise faster than overall consumer prices? In part, it is a technology issue. By nature, education tends to be labor-intensive. Most technological advances – which have led to lower prices or lower rates of growth in prices – are associated with capital inputs. Higher education simply cannot take advantage of the cost efficiencies achieved in other industries. Prices grow faster because the costs to supply higher education grow faster than input costs in other industries. But the increasingly higher payoff to education means that demand for it has also increased, which tends to raise prices as well. People are willing to pay more because they in turn reap greater benefits. For additional reasons, see Ehrenberg (2000).

^v Minnesota students are expected to bear 46 percent of tuition/fees/standard living expenses. Family and taxpayers are responsible for the remaining 54 percent. The family share increases with family income and assets, although families can under federal law shelter home equity and under state law shelter an additional \$25,000 in net worth. Unmarried students with dependents or married independent students have lower family responsibilities. Counted first against the taxpayer responsibility is any federal need-based aid money awarded the student. The maximum Pell grant for needy undergraduates, for example, is \$3,750 for school year 2001. MHESO (2001b, 1999).

^{vi} Minnesota sets tuition rates at about one-third of the cost of providing higher education. For a brief history, see Brandl and Weber (1995). In determining eligibility for state financial aid, Minnesota recognizes that student costs include extra living expenses as well as tuition and fees. Foregone wages are not acknowledged explicitly, so students and their families fully bear this loss.

Statistics for graduate school attendance reinforce the importance of foregone wages: during the booming 1990s, grad school enrollments dropped significantly because job opportunities were plentiful and lucrative. As the economy has slowed, enrollment rates are rising.

^{vii} See Wellman (2001), Paulsen (1998), and Birdsall (1996), for example. A recent poll indicates that Minnesotans strongly support public funding of K-12 education but are less enthusiastic about funding higher education through tax revenue. Smetanka (2001c).

^{viii} Among those who argue that social benefits of higher education are minimal are Hansen (1993), Quigley and Rubinfeld (1991), and Nerlove (1972). Some scholars even argue that the private return to higher education is greater than the social return, in part because tax financing is expensive to implement and maintain, and in part because higher education may function more as a screening mechanism for employers than a way of increasing knowledge. See West (1995, 1994) for a general discussion. A good review of the screening literature is Weiss (1995).

^{ix} For a history, see Quigley and Rubinfeld (1991) and Sommers (1995).

^x Ehrenberg (2000).

^{xi} Gross tuition accounted for only 25, 15, and 24 percent of costs for public institutions in these same years. Comparable figures for private institutions are 57, 44, and 54 percent. McPherson and Schapiro (1998), tables 3.1 and 3.2.

^{xii} See Ehrenberg (2000) and McPherson and Schapiro (1993) for details.

^{xiii} Kane (1999).

^{xiv} The Minnesota Department of Finance (2000) reports that the increase in spending on higher education from the 1998 biennium to the 2000 biennium is expected to be 8.8 percent.

^{xv} Larson et al. (1997).

^{xvi} Kane (1999).

^{xvii} I obtained these figures by spreading \$571 million over the estimated number of UMinn undergraduates, then over the total UMinn student population. Similarly, I spread \$549 million over the estimated number of MnSCU undergraduates, then over the total MnSCU population. If the proportions of undergrads in 1999 in the various systems were the same as in 1998, 1999 UMinn undergrad enrollment was about 49,297 and MnSCU undergrad enrollment was about 145,057. I do not account for differences in fees across colleges in the university system. Nor do I break out the costs of extension services. Also, because nearly half of MnSCU students go to school part-time, the subsidy per full-time-equivalent student is far higher than \$4000.

^{xviii} Among those receiving grants, the average state grant to students from the highest-income families exceeds the average to students from the lowest-income families. One must take care in interpreting this result, however. Lower-income students receive more federal support, and overall outside support is what matters to families. Grants are the state's primary means of helping students: they comprise on average more than 60 percent of the total financial aid package extended by the state. Other aid comes in the form of loans to parents or students and work-study wages.

^{xix} Some poor families do not pay taxes or receive net transfers. Still, many working poor pay taxes but do not send family members to college. Creedy (1995) notes one instance in which the majority of the population theoretically would vote for tax-based financing when only a minority attends college. Suppose that skilled (college-educated) workers complemented unskilled (non-college-educated) workers in the production process. Suppose also that greater productivity of skilled workers translated into greater productivity overall and, most importantly, higher wages for unskilled workers. Then unskilled workers could be willing to pay taxes that go toward higher-education expenditures even if they themselves never attend college.

^{xx} Choy (1999).

^{xxi} Minnesota Department of Finance (2000).

^{xxii} Bunnett (2001), MHESO (2001c).

^{xxiii} U.S. Department of Education (1998b).

^{xxiv} McPherson and Schapiro (1999).

^{xxv} Minnesota Department of Finance (2000). Larson et al. (1997) report that graduation rates for the University of Minnesota-Twin Cities are the lowest from any Big Ten University, with only 50 percent of those entering in the fall of 1987 graduating within 6 years. By comparison, the University of Wisconsin-Madison graduation rate was 72 percent, whereas the rate at Bemidji was 35 percent. More recent figures put the four-year graduation rate at UMinn-TC at 18 percent, the 5-year rate at 43 percent, and the 6-year rate at 51 percent. See <http://www.usnews.com/usnews/edu/college/directory>.

Time to completion shows up in debt figures as well. Table 12 indicates that the average debt for public-school graduates is nearly as high as that for private-school graduates. In part, this is because the sticker price of private schools is typically much greater than the price students actually pay, especially lower-income students. But completion rates matter as well: a faster finishing time means less accumulated debt, and 67 percent of those who enrolled in private four-year Minnesota colleges in 1993 had graduated by 1999.

^{xxvi} See for example MHESO (2001c), Hoenack (1971).

^{xxvii} These figures are calculated from the proportions in each income group and the percentages attending each type of institution.

^{xxviii} Kane (1999).

^{xxix} See particularly their works from 1999, 1998, 1997, 1993, and 1991.

^{xxx} One interesting recent trend is for four-year college students to earn community college credits while still in high school or during summers. These students gain the four-year credential but utilize the two-year system, perhaps at the expense of those who may not have another point of entry into higher education. Townsend (2001).

^{xxxi} In a highly influential paper, Peltzman (1972) made this argument about publicly financed goods generally.

^{xxxii} Other factors are relevant, of course. One of the more amusing statistics I found is that a 25 point increase in the winning percentage of a school's football team was correlated with a 1.3 percent increase in the number of applicants. Dynarski (1994).

^{xxxiii} A recent report ranks the University of Minnesota quite highly on many factors -- although, revealingly, not on the quality of entering undergraduates. Smetanka (2001a). Some of the colleges in the UMinn system have recently announced plans to tighten admissions standards.

^{xxxiv} Ganderton (1992), Brown (2001).

^{xxxv} Orzechowski, cited in Sommers (1995).

^{xxxvi} In a well-known study, Hansen (1983) found that increased grants did not seem to increase enrollments by lower-income students. A number of studies have found fault with his methods, data, and conclusion; the current consensus is that poorer youths are indeed sensitive to the price of higher education. The

classic report is Leslie and Brinkman (1987), who review 25 research papers written by others. Heller (1997) updates Leslie and Brinkman. He refers to McPherson and Schapiro (1989, 1993), St. John (1990), Savoca (1990), McPherson (1991), Rouse (1994), and Heller (1998), among others. Also see Paulsen (1998), McPherson and Schapiro (1998), Thompson and Zumeta (1998), and Kane (1999). For an early simulation study, see Manski and Wise (1983). They estimate that Pell grants raised enrollments by 21 percent, with the greatest effect on youths from low-income families. Leslie and Brinkman (1988) estimate that grants are responsible for the enrollment of 20 to 40 percent of lower-income students and of 13 percent of middle-income students. See also the critique of Hansen's data and analysis in McPherson and Schapiro (1997, 1991). Most recently, Dynarski (2001) evaluated the Social Security student benefit program, which at its peak provided \$3.9 billion of aid per year. She found that offering \$1000 of aid raised the probability of attending college by 3.6 percentage points as well as increasing the years of completed schooling.

^{xxxvii}The form of a net price fall probably matters to low-income families. St. John and Starkey (1995) argue, for example, that response rates may differ depending on whether net price changes come about via aid or tuition. Also see Jensen (1983), Hauptmann and McLaughlin (1988), Leslie and Brinkman (1988), McPherson and Schapiro (1993). Because tuition rates are typically more visible and widely reported than available financial aid, any initiative that targets low-income students via more grants or loans must be well-publicized.

I do not formulate a specific plan for financial aid in this work. Here are some cursory observations, however: Grants are more likely to stimulate enrollment, particularly for risk-averse lower-income students and families who may be less informed about the rigors of college education and who face uncertainty in later job markets and possible difficulty in paying back loans. See St. John (1990) for discussion. On the other hand, loans might encourage students to make greater efforts in school to enhance their probability of success in the labor market. See for example Hauser (1993). The credit-constraint issue argues for at least some deferral of interest on loans while students are still in school.

^{xxxviii} See McPherson and Schapiro (1999, 1998, 1993, 1989) and Kane (1999).

^{xxxix} McPherson and Schapiro (1989, 1991).

^{xl} See particularly Hansen and Weisbrod (1969).

^{xli} See Pechman (1970) for this argument.

^{xlii} Minnesota Department of Revenue (2000).

^{xliii} That is, unless a Creedy effect occurs. See note 19.

^{xliv} Empirical studies differ about the direction and degree of transfer. Hight and Pollock (cited in Lee et al. 1999) find that lowest-income families lose the most from a low-tuition policy. Garcia-Peñalosa and Walde (2000) suggest that reverse redistribution (from the poor to the rich) occurs in most countries that subsidize higher education via low or no tuition. Hansen (1972) and Baum and Sjogren (1996) report similar findings. On the other hand, Lee et al. (1999) discovered that Illinois policies did not redistribute income from the poor to the rich. Depending on the degree of regressivity of tax within a jurisdiction, redistribution of income from a low-tuition policy could go from rich to poor or vice versa.

^{xlv} Naturally, this presumes that the college wage premium remains adequate to justify the price paid for schooling. Given the increasing premiums over the last several decades, the presumption seems appropriate.

^{xlvi} Both public and private colleges subsidize tuition. Because the subsidy is relatively much greater for public institutions, however, the price of public school to the consumer – particularly the high-income family -- is distorted relatively more.

^{xlvii} For review, see West (1994, 1995).

^{xlviii} Dynarski (1994) reports that defaults on loans are greater among lower-income students, minorities, and attendees of two-year institutions. Certainly, grants and loans to lower-income families can be risky. Yet we must be mindful of the successes as well. Overcoming credit constraints means opening up possibilities to low-income, high-ability youths who otherwise could not make full use of their potential.

Targeted state programs will not generate the same perverse institutional issues as targeted federal ones. William Bennett (1987) criticized increases in federal funding of student aid, saying that institutions – particularly private colleges -- would simply raise tuition to capture the money. In fact, McPherson and Schapiro (1993) found that private four-year institutions increased internal aid by 20 cents for every \$1 increase in federal aid. Private colleges recruited more lower-income students, maintained quality, and did not raise gross prices. In contrast, public institutions hiked fees 50 cents on average for every \$1 increase in federal funds, acting more as Bennett had feared. The interaction between federal and state funding disappears for public institutions when we consider a change in state funding only.

Perhaps the one remaining issue lies with proprietary two-year colleges, which created headaches for federal aid programs as well. States that extend aid to students rather than institutions must take care that students attend accredited programs to be eligible for funding. This is not a new issue: many commentators have called for separate funding and aid programs for proprietary and trade schools in order to curb abuse generally. See for example Gladieux and Hauptmann (1995).

^{xlix} To estimate the change in costs, one would want to account for any changes in length of time to complete a degree.

^l This is vaguely reminiscent of the initial abuses of the federal Pell grant program. When lower-income students suddenly had a little money in their pockets for schooling, trade and proprietary schools sprang up to serve them. Some of these programs were aboveboard; some were not. Some were well-targeted; some were not. The initial result was an increase in institutions that took the federal money but turned out untrained students or students with economically worthless skills. Certainly the students themselves lost out, but so did the federal government. Consequently, accreditation procedures tightened. Public institutions do not present the same issue from the institutional side. But the outcome of an education depends on the quality of the student as well as the quality of the institution. So artificially low tuition for public schools may encourage attendance by marginal students even if the net social benefit is negative.

^{li} Thompson and Zumeta (1998) and Astin and Inouye (1988) have found empirically that increases in public tuition raise enrollment at private schools.

^{lii} Bezman and Dipkin (1998) confirm this empirically.

^{liii} As of the 1990 census, 73.6 percent of Minnesota residents were born in the state. This compares to 61.8 percent for the nation as a whole. Outside of Southern states (Alabama, Kentucky, Louisiana, and Mississippi), the only other states with such a high percentage were Iowa, Michigan, North Dakota, Wisconsin, West Virginia, Ohio, and Pennsylvania.

^{liv} To match costs and benefits more closely, some countries have experimented with income-contingent loans made directly to students. Graduates (and dropouts, in some cases) then pay back loans based upon post-college income. Although these programs can generate some perverse incentives – for graduates to take lower-salary, higher-benefit jobs, perhaps – they have succeeded in overcoming credit constraints for poorer students. Chapman (1997) and Miller and Volker (1993) relate the Australian experience; Barr (1993) notes experiments in Sweden. All consider the programs successful, noting that enrollments of lower-income students have not fallen and, in some cases, have increased. The U.S. does have income-contingent loans available but few students take advantage of them.

Such programs would also discourage game-playing with single-year income -- and hiding assets in home equity -- relative to the current U.S. scheme. Although I do not formulate a specific loan/grant program in this study, I suspect that state-financed income-contingent loan schemes are worth

contemplating. Cohn and Johnes (1994) suggest increasing income tax rates for those who use public funds for education. But this is still an indirect, inefficient means of linking costs and benefits. Alternatively, a graduate tax could be implemented. See Garcia-Peñalosa and Walde (2001) for a nice evaluation of various alternatives. We must keep in mind, however, that grants will encourage more students to try college. If getting youths from lower-income families in the door is a high priority, grants will do the job better than loans.

^{lv} See Sommers (1995) for legislative history.

^{lvi} For example, the requirements for claiming independence from parents are now fairly stringent and oversight of proprietary programs increased in the wake of large loan defaults. For reviews, see Gladieux and Hauptman (1995) and Kane (1999).

^{lvii} Heller (1999) and Heller and Laird (1999) used the National Post-Secondary Student Aid Survey to make several findings: (1) although the number of need-based awards at four-year institutions grew relatively faster between 1989 and 1995, the amount of the average non-need-based award increased relatively more; (2) the growth in the number of “need” awards was greatest at public institutions and among high-income students; and (3) high-income students increased their proportion of both need and non-need grants awarded.

^{lviii} One recent initiative aimed toward needy students is an agreement by 28 selective colleges and universities to adopt guidelines endorsing need-based financial aid. The schools are Yale, Cornell, Stanford, MIT, Duke, Macalester, Amherst, Boston College, Bowdoin, Claremont-McKenna, Columbia, Davidson, Emory, Georgetown, Haverford, Middlebury, Northwestern, Pomona, Rice, Swarthmore, University of Chicago, Notre Dame, Penn, Vanderbilt, Wake Forest, Wellesley, Wesleyan, and Williams. Harvard and Princeton agreed with the approach but did not sign because doing so would reduce the aid they currently give. This agreement contrasts with the antitrust violation pursued by the Justice Department ten years ago against a group of elite universities. In that case, universities collaborated on financial aid awards to individual students. Here, institutions agree only on general aid principles. Arenson (2001), Ehrenberg (2000). To participate in the agreement, a school must offer need-blind admissions. This requires a very substantial endowment, which only a few private schools enjoy. Many private institutions adhere to similar need-based programs, even though they are ineligible for this particular agreement. Some, however, have chosen to use financial aid as a means of attracting good (but not necessarily needy) students to campus. Winston and Zimmerman (2000). For a good review of trends, see Mortenson (2001).

^{lix} Kane (1997), Dynarski (2000) and Wolanin (2001).

^{lx} The experience in Georgia with HOPE scholarships (available only to in-state attendees) is suggestive: attendance rates in-state went up 11.4 percentage points for students from upper-income families and did not change for poorer students. Georgia has a relatively low overall college-attendance rate and state HOPE scholarships went only to those who attended college in Georgia. Accordingly, overall enrollment effects from the federal initiatives are likely to be smaller even for wealthier students. In all likelihood, these programs will simply create windfalls for higher-income families. Other unintended consequences may also arise: grade inflation or a shift in courses chosen (to meet the required grade average), re-labeling of costs by institutions, and an increase in what Thomas Kane (1997) calls “leisure-oriented” instruction.

^{lxi} Kane (1997).

^{lxii} Hauser (1993), Advisory Committee on Student Financial Assistance (2001).

^{lxiii} Minnesota Department of Finance (2000). According to the Minnesota State Demographer, the only growth in the college-age population after 2004 in the state will be among those of color. In Minnesota, 53 percent of white students from the high school class of 1999 enrolled in college in the fall after graduation, but only 36 percent of students of color. For graduates with at least one parent having a post-secondary degree, 57 percent enrolled in college. For graduates with non-degree parents, only 45 percent enrolled.

(MHESO 2001c.) Regional trends in Minnesota overlap with demographic and income movements: the percentage of new high-school graduates enrolling in college the following fall dropped from 1987 to 1996 for many regions. In particular, the percentage in the Arrowhead region fell from 46 percent to 33 percent. Minnesota House of Representatives (1998).

^{lxiv} Streamlining aid application forms – at both federal and state levels -- probably makes sense regardless of tuition policy. Kane (1999) suggests a simpler form based on family size and income for multiple years, with no questions on assets. He and others also advocate raising borrowing limits, extending funds to part-time students, strengthening income-contingent-loan programs, and front-loading grants. Because students tend to drop out in the first two years of college, some (including Kane) think grants should be the initial aid instrument with loans more prevalent in later years. This timing would encourage students to try college with little fear of defaulting on loan payments if they fail to continue. Of course, this could also be a recipe for disaster if marginal students receive the bulk of the grants. Consequently, others have called for alternating grants and loans by year to avoid this possibility and to prevent grant funds from accumulating at two-year institutions. See Ehrenberg (2000).

^{lxv} Unfortunately, neither the University of Minnesota-Twin Cities nor the University of Wisconsin-Madison gives comparable information. See <http://www.usnew.com/servlets/CoWorks>. Because other characteristics differ across schools as well -- namely average family income and quality of incoming students -- these numbers must be interpreted cautiously. Still, they are revealing, and common sense suggests that reducing subsidies to those without need means more for the needy.

^{lxvi} McPherson and Schapiro (1993) especially emphasize this point.

^{lxvii} In a study of 502 private institutions that raised tuition in order to increase need-based aid, Rose and Sorenson (1992) found that only some needy students faced a lower net price. Some incremental tuition went instead toward higher administrative and instruction costs. Apart from data problems, this study may appear to condemn cost-based-tuition policies. I suggest, however, that, needy students might well have benefited overall from the cost-based-tuition, targeted-aid approach. Many students actually did pay a lower net price and, depending on the nature of the incremental expenditures, all may have received a higher-quality education due to better teaching and greater student support. As I emphasize in the text, public institutions may have more control over the translation of tuition into aid than private ones.

^{lxviii} For discussion, see Hossler et al. (1997), Hauptman (1993), Hearn and Longanecker (1985), Kane (1999), Thompson and Zumeta (1998), Wetzel et al. (1998), McPherson and Schapiro (1998), Hearn et al. (1996), and Savoca (1991).

^{lxix} Wellman (2001).

^{lxx} Hoenack and Pierro (1990) drive the point home in their theoretical model of funding and enrollment at the University of Minnesota. Empirical studies by Griswold and Marine (1996), Fernandez and Rogerson (1995), Mingle (1992), and Sav (1987) bear this out. Also see Kemnitz (1999) for an interesting intergenerational approach.

^{lxxi} Kane (1999) emphasizes this. Pozdena (1997) makes a similar argument for the state of Oregon.

^{lxxii} Kane (1999), Clotfelter (1996), Ehrenberg (2000), and Carmichael (1999) ask a similar question.

^{lxxiii} Ehrenberg (2000), Winston and Zimmerman (2000).

^{lxxiv} McPherson and Schapiro (1991).

^{lxxv} Hovey (1999) suggests that most states will find it increasingly difficult to maintain higher-education funding within current tax structures.

TABLE 1
COSTS OF HIGHER EDUCATION TO STUDENTS, NOT INCLUDING FOREGONE
INCOME, Minnesota and elsewhere

*Gross tuition and fees for full-time undergraduates (sticker price)**

	% change FY84-FY94	FY1995 (\$)	% change FY95-FY99	FY2000 (\$)	FY2001 (\$)	% change FY00-FY01	% change FY91-FY01
PUBLIC							
UMinn (resident)	41%			4,060-5,567	4,626-6,141	13.3% (average)	67%**
MnSCU (resident)	32					10.9 (average)	
4-year				2,943-3,575			59%
2-year				2,283-2,663			55
Average 4-year		3,900	25%				
PRIVATE							
Minnesota 4-year				5,140-24,384			62%***
Average 4-year		13,300	31%	16,322			
Average 2-year		1,300	25	7,458			

In-state costs (\$), various states

	public 4-year institutions, weighted by FT undergraduate enrollment average tuition and fees (FY 1999)	flagship campus			
		tuition and fees		room and board ****	
		FY1999	FY2000	FY 1999	FY2000
Minnesota	3,881	4,649	4,877	4,670	4,914
Iowa	3,019	3,038	3,204	4,188	4,594
Wisconsin	3,412	3,738	3,780	4,383	5,470
Michigan	4,447	6,270	7,126	5,614	5,810
North Dakota	2,819				
South Dakota	3,162				
US	3,355				

SOURCES: MHESO (2001b), AASCU (2000), Minnesota House of Representatives (2001), Draper (2001), Smetanka (2001b), NAICU (2001), US GAO (2000), Choy (1999), Brandl and Weber (1995), <http://www.usnews.com/servlets/CoWorks>

*Note that 80 percent of full-time undergraduates at private 4-year institutions received aid in 1995-96, with the average aid package totaling \$10,794. NAICU (2001).

**Twin Cities campus only

***Minnesota Private College Council campuses

****These figures indicate total room and board, not living costs above what non-students pay.

**TABLE 2
PUBLIC SPENDING ON HIGHER EDUCATION IN MINNESOTA**

	1987 proportion	1999 proportion	1999 amount (\$million)
General fund budget spent on higher education	15.5%	12.0%	1,300
Proportion of higher education budget for:			
UMinn		44.6%	571
MnSCU		42.8	549
MHESO		12.5	160
Financial aid and reciprocity		10.5	135
Mayo Medical		0.1	1

SOURCE: Minnesota House of Representatives (2001).

**TABLE 3
PERCENTAGE CHANGE IN STATE APPROPRIATIONS FOR HIGHER EDUCATION
selected states, FY1999-FY2000**

State	% change
Minnesota	3.3%
Michigan	10.2
Iowa	5.3
North Dakota	8.3
South Dakota	3.5
Wisconsin	3.4

SOURCE: McKeown-Moak (2000).

**TABLE 4
ENROLLMENTS AND PELL GRANT RECIPIENTS AT MINNESOTA INSTITUTIONS**

	Total enrolled Fall 1999	Undergrad enrollment Fall 1998	Number receiving Pell Grants 1998	% receiving Pell Grants 1998
UMinn	58,161	47,891	8,693	18.2%
MnSCU				
2-year	98,509	93,711	27,000	28.8%
4-year	55,815	46,739	11,590	24.8
Private				
2-year		8,828	6,915	78.3%
4-year		41,487	10,452	25.2
Coll/univ	54,228			
Career	9,286			
Grad/prof	5,620			
TOTAL	281,619			
UNDERGRAD	246,486	238,656		

SOURCES: MHESO (2000), <http://www.mheso.state.mn.us>

**TABLE 5
TYPE AND SOURCE OF FINANCIAL AID RECEIVED BY MINNESOTA STUDENTS**

	1989 (\$million)	1999 (\$million) (number of recipients 72,845)
Grants	258	470
Loans to students and parents	214	525
Work-study earnings	68	87
Federal spending		594
Institutional spending		241
State spending		196
Private donors and others		51

Number Of Minnesota State Grant Recipients And Average Grant Size By Family Income, FY 1998

Annual family income (\$)	Number of recipients	Total grants (\$million)	Ave. grant(\$)
<10,000	18,003	19.74	1,096
10-20,000	11,933	18.36	1,539
20-30,000	10,008	18.50	1,848
30-40,000	8,849	15.92	1,799
40-50,000	6,644	11.27	1,696
50-60,000	3,364	5.32	1,581
60-70,000	1,236	1.78	1,440
>70,000	430	0.55	1,279

SOURCES: Minnesota House of Representatives (2001), Table 64; MHESO (1999).

**TABLE 6
PROPORTION OF HIGH-SCHOOL GRADUATES QUALIFIED FOR HIGHER EDUCATION
BY FAMILY INCOME, national data**

STUDY and DATA

US Department of Education (1998), 1994 data
also reported in Choy (1999)

IMPORTANT RESULTS

high income (75,000+) qualified	86%
middle income qualified	68
low income (<25,000) qualified	53
minorities (non-Asian) qualified	50%
Asian/Pacific Islanders	73
White	68

NOTE: GPA, senior class rank, aptitude test scores, ACT/SAT scores, and rigor of coursework were measures used to determine whether an individual was "qualified".

TABLE 7
ENROLLMENT RATES BY FAMILY INCOME, national and Minnesota data

STUDY and DATA

IMPORTANT RESULTS

McPherson/Schapiro (1999), 1994 data	<p>Percentage enrolled in higher education:</p> <table border="0" style="margin-left: 40px;"> <thead> <tr> <th></th> <th style="text-align: center;">high-income</th> <th style="text-align: center;">low income</th> </tr> </thead> <tbody> <tr> <td>low ability</td> <td style="text-align: center;">64%</td> <td style="text-align: center;">29%</td> </tr> <tr> <td>medium ability</td> <td style="text-align: center;">81</td> <td style="text-align: center;">49</td> </tr> <tr> <td>high ability</td> <td style="text-align: center;">95</td> <td style="text-align: center;">75</td> </tr> </tbody> </table>		high-income	low income	low ability	64%	29%	medium ability	81	49	high ability	95	75												
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Kane (1999), 1988-94 data	<p>difference in percentage points of students in top income quintile relative to those in bottom quintile:</p> <table border="0" style="margin-left: 40px;"> <tbody> <tr> <td>controlling for race</td> <td style="text-align: right;">34</td> </tr> <tr> <td>controlling for race, math and reading skills</td> <td style="text-align: right;">21</td> </tr> <tr> <td>controlling for race, math and reading skills, parents' education</td> <td style="text-align: right;">15</td> </tr> </tbody> </table> <p>difference in percentage points of students in fourth income quintile relative to those in bottom quintile:</p> <table border="0" style="margin-left: 40px;"> <tbody> <tr> <td>controlling for race</td> <td style="text-align: right;">11</td> </tr> <tr> <td>controlling for race, math and reading skills</td> <td style="text-align: right;">8</td> </tr> <tr> <td>controlling for race, math and reading skills, parents' education</td> <td style="text-align: right;">6</td> </tr> </tbody> </table> <p>difference in percentage points of students in top income quintile relative to those in bottom quintile:</p> <table border="0" style="margin-left: 40px;"> <tbody> <tr> <td>lowest test scores</td> <td style="text-align: right;">27</td> </tr> <tr> <td style="padding-left: 20px;">controlling for parents' education</td> <td style="text-align: right;">18</td> </tr> <tr> <td>top test scores</td> <td style="text-align: right;">14</td> </tr> <tr> <td style="padding-left: 20px;">controlling for parents' education</td> <td style="text-align: right;">12</td> </tr> <tr> <td>similar class ranks at same high school</td> <td style="text-align: right;">18</td> </tr> <tr> <td style="padding-left: 20px;">controlling for parents' education</td> <td style="text-align: right;">14</td> </tr> </tbody> </table>	controlling for race	34	controlling for race, math and reading skills	21	controlling for race, math and reading skills, parents' education	15	controlling for race	11	controlling for race, math and reading skills	8	controlling for race, math and reading skills, parents' education	6	lowest test scores	27	controlling for parents' education	18	top test scores	14	controlling for parents' education	12	similar class ranks at same high school	18	controlling for parents' education	14
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Advisory Committee (2001), 1994 data	<p>Percentage of highly and very highly qualified high-school graduates who enroll in a four-year institution;</p> <table border="0" style="margin-left: 40px;"> <tbody> <tr> <td>High-income</td> <td style="text-align: right;">66.9%</td> </tr> <tr> <td>Low-income</td> <td style="text-align: right;">47.1</td> </tr> <tr> <td colspan="2"> </td> </tr> <tr> <td>White</td> <td style="text-align: right;">60.6%</td> </tr> <tr> <td>Hispanic</td> <td style="text-align: right;">44.3</td> </tr> <tr> <td>African American</td> <td style="text-align: right;">28.6</td> </tr> </tbody> </table>	High-income	66.9%	Low-income	47.1			White	60.6%	Hispanic	44.3	African American	28.6												
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Wolanin (2001), 1998 data	<p>An 18-24-year-old from family in top quartile of income (>\$75,000) is more than twice as likely to reach college as one from the bottom quartile (<\$25,000)</p>																								

TABLE 7 (cont.)

US Department of Education (1998a, b), 1994 data	Percentage of qualified high-school graduates who did NOT attend a postsecondary institution within 2 years:	
	low-income	22.3%
	middle-income	10.1
	high-income	3.6
Choy (1999), 1992-97 data	Percentage immediately enrolled in college/university after high school for 1996 high school graduates	
	low-income	49%
	middle-income	63
	high-income	78
	Percentage immediately enrolled in college/university after high school for 1996 high school graduates	
	parents' education less than high school	45%
	parents' education more than B.A.	85
	Among those qualified 1992 graduates who took steps to enroll in college, percentage actually enrolled in 4-year institution by 1994:	
	low-income	83%
	high income	92
	Percentage of seniors in highest quartile of test scores going to 4-year institution within 2 years of high-school graduation	
	highest SES quartile	lowest SES quartile
	1972	85%
	1992	86
Bunnett (2001), 1999 data	Reported plans of 1999 Minnesota high-school graduates, percentage of population	
	low-income	high-income
	(<\$30,000)	(>\$70,000)
	4-year school	70%
	2-year school	16
	work/military/apprentice	14
MHESO webpage, 1999 data	Percentage of Minnesota high-school graduates enrolling immediately in higher-education institutions	
	White non-Hispanic	41%
	Hispanic	35
	Black	29
	Asian/Pac. Islander	46
	American Indian	32
	family income < \$25,000	37%
	family income > \$60,000	60%

TABLE 8
COMPLETION RATES BY FAMILY INCOME, national and Minnesota data

STUDY	IMPORTANT RESULTS						
Mortenson (2001)	<p>Number of times more likely a student from top income quartile (family income >\$75,000 in 1999\$) was to complete a BA by age 24 than a student from the bottom quartile (family income <\$25,000)</p> <table border="0" style="margin-left: 40px;"> <tr> <td>1970</td> <td>6 times</td> </tr> <tr> <td>1980</td> <td>4 times</td> </tr> <tr> <td>mid 1990s</td> <td>10-12 times</td> </tr> </table>	1970	6 times	1980	4 times	mid 1990s	10-12 times
1970	6 times						
1980	4 times						
mid 1990s	10-12 times						
Advisory Committee (2001)	Only 6% of those in lowest SES obtained a BA compared to 40% in highest SES.						
US Department of Education (1998a)	Family income is positively related to completion of B.A.						
Hauser (1993)	About half of white college entrants finish by ages 25-29; about one-third of minority entrants finish by ages 25-29.						
Minnesota Private College Council (2001)	Predictive odds for 9 th graders (completion of college within 6 years of enrollment): American Indian 4%, Asian/Pacific Islander 16%, Hispanic 6%, Black 5%, White 18%.						

TABLE 9
MEDIAN FAMILY INCOME (\$) FOR UNDERGRADUATES
various years and regions

	Selective Public	Private
California 1997	55,557	54,390
US 1995	51,231	46,863
Florida 1993	50,750	45,850
US 1992	49,658	47,735
Oregon 1992	47,210	45,734
Minnesota 1991	48,250	45,500

SOURCE: NAICU (2001).

TABLE 10
ENROLLMENT BY INSTITUTION TYPE AND FAMILY INCOME
Minnesota high-school graduating class of 1999

	% total MN state universities	MN state colleges	UMinn	Reciprocity 4-yr insttns	MN private 4-yr insttns	
Family income						
<\$25,000	11.6	17.4	37.5	15.8	5.2	21.3
25-39,999	17.5	17.8	36.0	17.0	10.1	18.5
40-59,999	27.0	17.7	32.4	14.8	10.3	22.6
60-89,999	24.9	16.3	24.5	21.5	20.5	15.4
90-149,999	15.5	15.3	12.8	29.3	21.7	18.6
150,000+	3.4	16.0	4.7	24.0	26.4	27.2

SOURCE: MHESO (2001c).

TABLE 11
PUBLIC/PRIVATE INSTITUTIONS, VARIOUS CHARACTERISTICS
national data

	Private	Public
Proportion of students	21%	79%
Average enrollment	1,851 students	6,953 students
Proportion of minorities	24% (4-year)	25%
% with family income <\$30,000	27%	28%
dependent first-time students (1995-96)		
% family income >\$60,000	25%	34% (2-yr), 37% (4-yr)
Median family income		
1995	\$46,863	\$51,231
1992	\$47,735	\$49,658
% graduating in 4 years	65%	34%
% African-American first-generation		
graduating in 5 years	60%	37%
Average debt for 1996 graduate	\$14,300	\$12,000

SOURCES: NAICU (2001), MHESO webpage.

TABLE 12
PROPORTION OF ATTENDANCE BY TYPE OF INSTITUTION
BY FAMILY INCOME FROM PREVIOUS YEAR (national data, 1998 \$)

Family Income	PRIVATE			PUBLIC		
	university	4-year	2-year	university	4-year	2-year
Richest (>\$200,000)						
1981	18.6%	32.4%	3.0%	22.8%	10.0%	13.2%
1994	22.4	27.3	3.8	24.6	13.3	8.6
1998	23.4	26.1	2.6	24.6	14.3	8.1
Upper (\$100-200,000)						
1981	11.3%	21.9%	3.5%	25.9%	16.9%	20.4%
1994	13.2	22.2	2.8	27.8	20.1	13.9
1998	12.1	21.6	1.8	28.6	23.0	12.9
Upper Middle (\$60-100,000)						
1981	5.4%	16.3%	3.6%	22.0%	21.6%	31.2%
1994	6.6	18.4	2.2	24.9	25.9	22.1
1998	5.8	18.0	2.3	22.9	25.3	25.7
Lowest (<\$20,000)						
1981	2.2%	13.6%	6.2%	10.1%	23.4%	44.6%
1994	2.6	12.8	3.1	10.9	23.2	47.3
1998	2.9	13.5	2.8	12.3	21.8	46.7

SOURCES: McPherson and Schapiro (1999, 1998).

TABLE 13
MINNESOTA EFFECTIVE STATE/LOCAL TAX RATES BY DECILE,
RANKED BY INCOME
1998 and 2003

DECILE	1998	2003
Lowest*	20.2%	22.0%
Second	11.3	10.4
Third	10.8	10.0
Fourth	12.0	11.4
Fifth	12.1	11.7
Sixth	13.1	12.6
Seventh	12.9	12.1
Eighth	12.9	11.9
Ninth	12.5	11.6
Highest	10.6	10.3
Average	11.8%	11.2%

SOURCE: Minnesota Department of Revenue (2000)

*This effective tax rate is estimated with lower precision because actual income received tends to be underreported at a relatively higher rate in the lowest decile.

TABLE 14
RELATIONSHIPS AMONG DIRECT COSTS, FAMILY INCOME, AND MAXIMUM PELL GRANTS, national data

	1971-72	1975-76	1997-98	1999-00
Proportion of direct (family-borne) costs at 4-year public institutions covered by maximum Pell grant		84%		39%
Direct (family-borne) cost of attendance at 4-year public institutions as proportion of family income				
lowest quintile	40%		60%	
highest quintile	7		8	

SOURCES: Advisory Committee on Student Financial Assistance (2001), AASCU (2000)

TABLE 15
FUNDING TRENDS FOR HIGHER EDUCATION NEED-BASED VERSUS NON-NEED-BASED GRANTS state and federal data

	proportion need-based	% increase in need-based	% increase in non-need-based
STATES			
1982	90.9%		
1999	80.5		
FY93-FY99 (real \$)		88%	336%
FEDERAL			
FY1975	37%		
FY1985	86		
FY1998	61 (before federal tax credits and educational IRAs)		

SOURCES: Mortenson (2001), Advisory Committee on Student Financial Assistance (2001).

TABLE 16
AVERAGE PER-STUDENT INSTITUTIONAL GRANT (\$) BY FAMILY INCOME national data

	Private	Public
Low-income		
1986-87	2,133	277
1995-96	3,473	539
Middle-income		
1986-87	2,151	259
1995-96	3,830	332
High-income		
1986-87	977	138
1995-96	1,738	209

SOURCE: Advisory Committee on Student Financial Assistance (2001), courtesy of M. McPherson and M. Schapiro.

RESOURCES

- Advisory Committee on Student Financial Assistance. *Access Denied: Restoring the Nation's Commitment to Equal Educational Opportunity*. Washington, Feb 2001.
- American Association of State Colleges and Universities (AASCU). *Student Charges and Financial Aid, 1999-2000*. Microfiche, 2000. ERIC Accession No. ED444401.
- Areas, O., and McMahon, W. Dynamic Rates of Return to Education in the US. *Econ Ed Rev* (Apr 2001): 122ff.
- Arenson, Karen. Leading Colleges Adopt New Guidelines for Awarding Financial Aid. *New York Times* (Jul 6, 2001).
- Astin, A., and Inouye, C. How Public Policy at the State Level Affects Private Higher Education Institutions. *Econ Ed Rev* 7, no. 1 (1988): 47-63.
- Balderston, Frederick. Tuition and Financial Aid in Higher Education: The Case of California. *Econ Ed Rev* 16, no. 3 (June 1997): 337-43.
- Barr, Nicholas. Alternative Funding Resources for Higher Education. *Econ J* 103 (May 1993): 718-28.
- Baum, Sandra, and Sjogren, Jane. The Distribution of Subsidies to Postsecondary Students. *Eastern Econ J* 22, no. 2 (Spring 1996): 195-204.
- Becker, Gary. *Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education* (3d ed.) Chicago: University of Chicago Press (1993).
- Bennett, William. Our Greedy Colleges. *New York Times* (Feb 18, 1987), A31.
- Bevc, Milena. Sharing the Costs of Higher Education among Different Bearers – Slovenia in International Perspective. *J Econ and Bus* 17, no. 1 (1999): 39-56.
- Bezman, Trisha, and Dipkin, Craig. School Characteristics and the Demand for College. *Econ Ed Rev* 17, no. 2 (1998): 205-210.
- Birdsall, Nancy. Public Spending in Higher Education in Developing Countries. *Econ Ed Rev* 15, no. 4 (1996): 407-19.
- Brandl, John, and Weber, Vin. *An Agenda for Reform*, <http://www.mnplan.state.mn.us>, 1995.
- Breneman, David. *Summary of Midwestern Higher Education Policy Summit*, <http://www1.umn.edu/mhec/summit/issue2.htm>, 2001.
- Brown, William. Sources of Funds and Quality Effects in Higher Education. *Econ Ed Rev* 20 (2001): 289-95.
- Bunnett, Nancy. Director, Research & Program Services, Minnesota Higher Education Services Office. Email Correspondence (July 9, 2001).
- Cabrera, A.F., and La Nasa, S.M. Understanding the College Choice of Disadvantaged Students. *New Directions for Institutional Research*, No. 107. San Francisco: Jossey-Bass, 2000.
- Carmichael, H. Lorne. Restructuring the University System: What Level of Public Support? *Canadian Pub Pol* 25, no. 1 (Mar 1999): 133-40.
- Carnegie Commission. *Higher Education: Who Pays? Who Benefits? Who Should Pay?* Berkeley: Carnegie Foundation, 1971.
- Carnevale, A.P., and Fry, R.A. *Crossing the Great Divide: Can We Achieve Equity when Generation Y Goes to College?* Princeton: ETS, 2000.
- Chapman, Bruce. Conceptual Issues and the Australian Experience with Income Contingent Charges for Higher Education. *Econ J* 107 (May 1997): 738-51.
- Choy, Susan. *College Access and Affordability*. Washington: Department of Education, National Center for Education Statistics (NCES 1999-108), 1999.
- Clotfelter, Charles. *Buying the Best: Cost Escalation in Elite Higher Education*. Princeton: Princeton University Press, 1996.
- Clotfelter, Charles, and Rothschild, Michael, eds.. *Studies of Supply and Demand in Higher Education*. Chicago: University of Chicago Press, 1991.
- Cohn, Elchanan, and Johnes, Geraint. *Recent Developments in the Economics of Education*. London: Elgar, 1994.
- College Board. *Trends in College Pricing 2000*. New York, 2000.
- College Board. *Trends in Student Aid 2000*. New York, 2000.
- Creedy, John. *The Economics of Higher Education: An Analysis of Taxes versus Fees*. London: Elgar, 1995.
- Dickson, Vaughan; Milne, William; and Murrell, David. Who Should Pay for University Education? Some Net Benefit Results by Funding Source for New Brunswick. *Canadian Pub Pol* 22, No. 4 (Dec. 1996): 315-29.
- Draper, Norman. It's Official: MnSCU Tuition to Rise. *Minneapolis Star Tribune* (July 19, 2001).
- Dynarski, Mark. Who Defaults on Student Loans? *Econ Ed Rev* 13, no. 1 (1994): 55-68.

- Dynarski, Susan. Does Aid Matter? Measuring the Effect of Student Aid on College Attendance and Completion. *JFK School of Government Working Paper RWP01-034* (September 2001).
- Dynarski, Susan. Hope for Whom? Financial Aid for the Middle Class and its Impact on College Attendance. *NBER Working Paper 7756*, June 2000.
- Dynarski, Susan. *Student Aid and College Attendance: Analysis of Government Intervention in the Higher Education Market*. Dissertation, 1999.
- Edlin, Aaron. Is College Financial Aid Equitable and Efficient? *J Econ Persp* 7, no. 2 (Spring 1993): 143-58.
- Ehrenberg, Ronald. *Tuition Rising: Why College Costs So Much*. Cambridge: Harvard University Press, 2000.
- Fernandez, Raquel, and Rogerson, Richard. On the Political Economy of Education Subsidies. *Rev Econ Stud* 62, no. 2 (Spr 1995): 249-62.
- Friedman, Milton. Higher Schooling in America. *Public Interest* (Spring 1968): 108-12.
- Ganderton, Philip. The Effect of Subsidies in Kind on the Choice of a College. *J Pub Econ* 48, no. 3 (Aug 1992): 269-92.
- Ganderton, Philip, and Santos, Richard. Hispanic College Attendance and Completion. *Econ Ed Rev* 14, no. 1 (1995): 35-46.
- Garcia-Peñalosa, Cecilia, and Walde, Klaus. Efficiency and Equity Effects of Subsidies to Higher Education. *Oxford Econ Pap* 52, no. 4 (Jan 2001): 702-22.
- Gladieux, Lawrence, and Hauptman, Arthur. *The College Aid Quandary: Access, Quality, and the Federal Role*. Washington: Brookings, 1995.
- Griswold, Carolyn, and Marine, Ginger. Political Influences on State Policy: Higher-Tuition, Higher-Aid, and the Real World. *Rev Higher Ed* 19, no. 4 (Sum 1996): 361-89.
- Hansen, W. Lee. The Financial Squeeze on Higher Education Institutions and Students: The Balance Between Quality and Access. In E. Hoffman, ed., *Essays on the Economics of Education*. Kalamazoo: Upjohn, 1993, 139-62.
- Hansen, W. Lee. Impact of Student Financial Aid on Access. In J. Froomkin, ed., *The Crisis in Higher Education*. New York: The Academy of Political Science, 1983. 84-96.
- Hansen, W. Lee. Equity and the Finance of Higher Education. *J Polit Econ* 90, no. 3, part II (May/June 1972): 60-73.
- Hansen, W. Lee, and Weisbrod, Burton. The Distribution of Costs and Direct Benefits of Public Higher Education: The Case of California. *J Hum Res* 4, no. 2 (Spring 1969): 176-91.
- Hauptmann, Arthur. Higher Education Finance Issues in the Early 1990s. *CPRE Research Series, RR-027*. Rutgers: Consortium for Policy Research and Education, Feb 1993.
- Hauser, Robert. Trends in College Entry among Whites, Blacks, and Hispanics. In C. Clotfelter and M. Rothschild, eds. *Studies of Supply and Demand in Higher Education*. Chicago: University of Chicago Press, 1993, 61-120.
- Hearn, James; Griswold, Carolyn; Marine, Ginger. Resources and Reason: A Contextual Analysis of State Tuition and Student Aid Policies. *Res Higher Ed* 37, no. 3 (1996): 241-78.
- Hearn, James, and Longanecker, David. Enrollment Effects of Alternative Postsecondary Pricing Policies. *J Higher Ed* 56, no 5 (1985): 485-508.
- Heller, Donald, and Laird, Thomas. *Trends in the Use of Need-based and Non-need Financial Aid in American Colleges and Universities*. Paper presented at the Annual Association for Institutional Research Forum, Seattle, June 1999.
- Heller, Donald. *Institutional Use of Need and Non-need Financial Aid: What Can We Learn from NPSAS?* NASSGAP/NCHELP Conference Paper, 1999.
- Heller, Donald. *Rising Public Tuition Prices and Enrollment in Community Colleges and Four-Year Institutions*. ASHE Annual Meeting Paper, 1998. ERIC Accession No. ED 402837.
- Heller, Donald. Price Response in Higher Education: An Update to Leslie and Brinkman. *J Higher Ed* 68, no 6 (1997): 624-59.
- Hight, Joseph. The Demand for Higher Education in the US, 1927-72. *J Hum Res* 10, no. 4 (Fall 1975): 512-20.
- Hoenack, Stephen. *Economic Behavior within Organizations*. Cambridge: Cambridge University Press, 1983.
- Hoenack, Stephen. The Efficient Allocation of Subsidies to College Students. *Am Econ Rev* 61, no. 3 (June 1971): 302-11.
- Hoenack, Stephen, and Pierro, Daniel. An Econometric Model of a Public University's Income and Enrollments. *J Econ Behvr Org* 14, no 3 (1990): 1-21.
- Hoenack, Stephen, and Collins, Eileen, eds.. *The Economics of American Universities*. Albany: SUNY Press, 1990.

- Hoffman, Emily, ed.. *Essays on the Economics of Education*. Kalamazoo: Upjohn, 1993.
- Hossler, Lund, Rosen, Westfall, and Irish. State Funding for Higher Education. *J Higher Ed* 68, no. 2 (Mar/Apr 1997).
- Hovey, Harold. *State Spending for Higher Education in the Next Decade: The Battle to Sustain Current Support*. National Center for Public Policy and Higher Education, Report 99-3, 1999.
- Hoxby, Caroline. Tax Incentives for Higher Education. In *Tax Policy and the Economy*, Vol. 12, Cambridge: NBER, 1998, 49-81.
- Hsing, Yu, and Chang, Hui. Testing Increasing Sensitivity of Enrollment at Private Institutions to Tuition and Other Costs. *Am Economist* 40, no. 1 (Spring 1996): 40-45.
- Jeffries, Ellen, and Smith-Tyge, Nathaniel. *Higher Education in the 50 States: A Survey of Higher-Education Funding, Governance, and Other Related Topics*. Lansing: Senate Fiscal Agency, Michigan Legislature.
- Jensen, Jens-Jorgen. Research on Higher Education in Denmark. *Higher Ed Eur* 18, no. 1 (1983): 37-41. ERIC Accession No. EJ299839.
- Johnson, George. Subsidies for Higher Education. In E. Cohn and G. Johnes, eds., *Recent Developments in the Economics of Education*, London: Elgar, 1994, 67-82.
- Kane, Thomas. *The Price of Admission*. Washington: Brookings, 1999.
- Kane, Thomas. Beyond Tax Relief: Long-Term Challenges in Financing Higher Education. *Natl Tax J* 50, no. 2 (June 1997): 335-49.
- Kane, Thomas. College Cost, Borrowing Constraints, and the Timing of College Entry. *E Econ J* 22, no. 2 (Spring 1996): 181-94.
- Kane, Thomas. College Entry by Blacks Since 1970. *J Pol Econ* 102, no. 5 (Oct 1994): 878-911.
- Kemnitz, Alexander. Demographic Structure and the Political Economy of Education Subsidies. *Public Choice* 101, no. 3-4 (Dec 1999): 235-49.
- King, J.E. *Financing a College Education: How it Works, How it's Changing*. Phoenix: The Oryx Press, 1999.
- Larson, Mark; Rubinstein, Mitchell; Pile, Deborah, and others. *Degrees of Excellence: Higher Education in Minnesota*. Microfiche, 1997. ERIC Accession No. ED425787.
- Lee, John. How Do Students and Families Pay for College? In J.E. King, *Financing a College Education*. Phoenix: Oryx Press, 1999.
- Lee, Seong Soo; Ram, Rati; and Smith, Charles. Distributive Effect of State Subsidy to Undergraduate Education: The Case of Illinois. *Econ Ed Rev* 18, no. 2 (Apr. 1999): 213-21.
- Lenth, Charles. *The Tuition Dilemma – State Policies and Practices in Pricing Public Higher Education*. Denver: State Higher Education Executive Officers, 1993.
- Leslie, Larry, and Brinkman, P. *The Economic Value of Higher Education*. Washington: American Council on Education, 1988.
- Leslie, Larry, and Brinkman, Paul. Student Price Response in Higher Education: The Student Demand Studies. *J Higher Ed* 58, no 2 (1987): 181-204.
- Lowry, Robert. The Effects of State Political Interests and Campus Outputs on Public University Revenues. *Econ Ed Rev* 20, no. 2 (Apr 2001): 105-19.
- McKeown-Moak, Mary. *Financing Higher Education in the New Century: The Second Annual Report from the States*. Microfiche, 2000. ERIC Accession No. ED443366.
- McPherson, Michael, and Schapiro, Morton. *Reinforcing Stratification in American Higher Education: Some Disturbing Trends*. Paper presented at the Macalester Forum on Higher Education Conference: Diversity and Stratification in American Higher Education (May 1999). ERIC Accession No. ED440578.
- McPherson, Michael, and Schapiro, Morton. *The Student Aid Game: Meeting Need and Rewarding Talent in American Higher Education*. Princeton: Princeton University Press, 1998.
- McPherson, Michael, and Schapiro, Morton. Financing Undergraduate Education: Designing National Policies. *Natl Tax J* 50, no. 3 (Sept 1997): 557-71.
- McPherson, Michael, and Schapiro, Morton. College Choice and Family Income. Williamstown, MA: *Williams Project on the Economics of Higher Education Discussion Paper* no. 29 (1994).
- McPherson, Michael, and Schapiro, Morton. *Paying the Piper: Productivity, Incentives, and Financing in US Higher Education*. Ann Arbor: University of Michigan Press, 1993.
- McPherson, Michael, and Schapiro, Morton. *Keeping College Affordable: Government and Educational Opportunity*. Washington: Brookings, 1991a.
- McPherson, Michael, and Schapiro, Morton. Does Student Aid Affect College Enrollment? *Am Econ Rev* 81, no 1 (1991b).

- McPherson, Michael, and Schapiro, Morton. Paying for College: Rethinking the Role of the States and the Federal Government. *Brookings Rev* 9 (Summer 1991c): 14-19.
- McPherson, Michael; Schapiro, Morton; and Winston, Gordon. Recent Trends in US Higher Education Costs and Prices: The Role of Government Funding. *Amer Econ Rev* (May 1989): 253-57.
- Manski, C., and Wise, D. *College Choice in America*. Cambridge: Harvard University Press, 1983.
- Massy, William. *Resource Allocation in Higher Education*. Ann Arbor: University of Michigan Press, 1996.
- Miller, Paul, and Volker, Paul. Youth Wages, Risk, and Tertiary Finance Arrangements. *Econ Record* 69 (March 1993): 1-9.
- Mingle, James. Low Tuition, Progressive Taxation. *AGB Reports* (Nov/Dec 1992).
- Minnesota Department of Finance. *Spending by Function Summary* (9/2000).
- Minnesota Department of Revenue. *Tax Incidence Study, 1999*, <http://www.taxes.state.mn.us/reports>.
- Minnesota Higher Education Services Office (MHESO). *Investing in Success: Access to Higher Education*. Report to the Governor and 2001 Legislature, 2001a.
- Minnesota Higher Education Services Office (MHESO). *Background on Minnesota Student Financial Aid*, <http://www.mheso.state.mn.us/cfdocs>, 2001b.
- Minnesota Higher Education Services Office (MHESO). *The 1999 Minnesota High School Follow-up Survey*, 2001c.
- Minnesota Higher Education Services Office (MHESO). *Financial Aid Awarded, Fiscal Year 1999, 2000*.
- Minnesota Higher Education Services Office (MHESO). *Report to the Governor and Legislature, 1999*. Section II on Student Financing (Jan 1999).
- Minnesota House of Representatives. *Type and Source of Financial Aid/Student Financing for Higher Education/Tuition and Fees*, <http://www.house.leg.state.mn.us/hrd/issinfo/tuitfin.htm>, 2001.
- Minnesota House of Representatives. House Research Department. *Participation of New Higher School Graduates in Higher Education*, <http://www.house.leg.state.mn.us/hrd/issinfo>, Dec. 1998.
- Minnesota Office of the Legislative Auditor. *Higher Education Tuition and State Grants*. [Http://www.auditor.leg.state.mn.us/ped/1994/hied.htm](http://www.auditor.leg.state.mn.us/ped/1994/hied.htm), Feb 1994.
- Minnesota Private College Council. *Timely Completion of College in Minnesota: "Predictive Odds" for 9th Graders*. Draft tables prepared November 5, 2001.
- Minnesota Private College Research Foundation. *Ways and Means: How Minnesota Families Pay for College*. St. Paul, 1992.
- Monks, James. The Returns to Individual and College Characteristics: Evidence from the NLSY. *Econ Ed Rev* 19 (2000): 279-89.
- Mortenson, Thomas. Poverty, Race, and the Failure of Public Policy: The Crisis of Access in Higher Education. *Academe*. <http://www.aaup.org/ND00Mort.htm>, 2001.
- Mumper, Michael. *Removing College Price Barriers: What Government has Done and Why it Hasn't Worked*. Albany: SUNY Press, 1996.
- Murphy, Kevin, and Welch, Finis. Wage Premiums for College Graduates. *Educational Researcher* 18, no. 4 (1989): 17-26.
- National Association of Independent Colleges and Universities (NAICU). *Median Family Income for Dependent Undergraduates Attending Four-Year Institutions*, <http://www.naicu.edu>, 2001.
- Nerlove, Marc. On Tuition and the Costs of Higher Education. *J Pol Econ* 80, no. 3 (1972): 178-218.
- Noll, Roger. *Challenges for Research Universities*. Washington: Brookings, 1998.
- Parker, Jeffrey, and Summers, Jeffrey. Tuition and Enrollment Yield at Selective Liberal Arts College. *Econ Ed Rev* 12, no. 4 (Dec 1993): 311-24.
- Paulsen, Michael. Recent Research on the Economics of Attending College: Returns on Investment and Responsiveness to Price. *Res Higher Ed* 39, no. 4 (Aug 1998): 471-89.
- Pechman, Joseph. The Distributional Effects of Public Higher Education in California. *J Hum Res* 5, no. 3 (Summer 1970): 361-70.
- Peltzman, Sam. The Effect of Government Subsidies-in Kind on Private Expenditures: The Case of Higher Education. *J Pol Econ* 81, no. 1 (Jan/Feb 1973): 1-27.
- Pozdena, Randall. Power to the Student: An Alternative to Higher Education Funding Increases. *Policy Insight Education Report #101, Cascade Policy Institution* (January 1997).
- Psacharopoulos, George. Public Spending on Higher Education in Developing Countries: Too Much Rather than Too Little. *Econ Ed Rev* 15, No. 4 (Oct 1996); 421-22.

- Quigley, John, and Rubinfeld, Daniel. Public Choices in Public Higher Education. In C. Clotfelter and M. Rothschild, eds. *Studies of Supply and Demand in Higher Education*. Chicago, University of Chicago Press, 1991.
- Robst, John. Do State Appropriations Influence Cost Efficiency in Public Higher Education? *Appl Econ Ltrs* 7, no. 11 (Nov 2000): 715-19.
- Rose, David, and Sorensen, Robert. High Tuition, Financial Aid, and Cross-subsidization: Do Needy Students Really Benefit? *Southern Econ J* 59, no. 1 (July 1992): 66-76.
- Rouse, Cecilia. What to Do after High School. In R. Ehrenberg, ed. *Choices and Consequences: Contemporary Policy Issues in Education*. Ithaca: ILR Press, 1994, 59-88.
- St. John, E.P. Price Response in Enrollment Decisions., *Res Higher Ed* 31, no. 2 (1990): 161-70.
- St. John, E.P., and Starkey, J.B.. An Alternative to Net Price. *J Higher Ed* 66 (Mar/Apr 1995): 156-86.
- Sav, Thomas. Institutional Structure, Finance, and Race in Higher Education: Public-Private Sectoral Differences. *Pub Choice* 55, no. 3 (Oct 1987): 257-64.
- Savoca, Elizabeth. The Effect of Changes in the Composition of Financial Aid on College Enrollments. *Eastern Econ J* 17, no. 1 (Jan/Mar 1991): 109-21.
- Savoca, Elizabeth. Another Look at the Demand for Higher Education: Measuring the Price Sensitivity of the Decision to Apply to College. *Econ Ed Rev* 9, no. 2 (1990): 123-34.
- Smetanka, Mary Jane. U Finds Itself in the Top of Latest College Ranking. *Mpls Star Trib* (Aug 23, 2001a).
- Smetanka, Mary Jane. U Finalizes 13.3% Tuition Increase. *Mpls Star Trib* (July 13, 2001b).
- Smetanka, Mary Jane. Poll sees Strong Support for Schools, Less for Colleges. *Mpls Star Trib* (April 18, 2001c).
- Sommers, John, ed. *The Academy in Crisis*. New Brunswick: Transaction, 1995.
- Thompson, Fred, and Zumeta, William. Effects of Key State Policies on Private Colleges and Universities: Sustaining Private-Sector Capacity to Respond to the Higher Education Access Challenge. *Econ Ed Rev* (1998).
- Townsend, Barbara. *Four-Year College Students' Use of the Community College: A Middle-Class Takeover?* Paper presented at ASHE Annual Conference, Richmond, VA, November 2001.
- University of Michigan Institute for Social Research. *Financial Value of Higher Education Increased in the 1990s*. News release <http://www.umich.edu/newsinfo/Releases/1998/Mar98/r030398a.html>. (Mar 3, 1998).
- US Department of Education, National Center for Educational Statistics. *Condition of Education 2000* (NCES 2000-062). Washington, 2000.
- US Department of Education, National Center for Educational Statistics. *Condition of Education 1998*. Washington, 1998a.
- US Department of Education, National Center for Educational Statistics. *Statistical Analysis Report: Access to Postsecondary Education for 1992 High-School Graduates*. (NCES 98-105). Washington, 1998b.
- US Department of Education, National Center for Educational Statistics. *Middle Income Undergraduates: Where they Enroll and How they Pay for their Education*. Washington, 1998c.
- US General Accounting Office. *College Tuition and Fees: Changes in the 1995-96 to 1999-2000 Period* (GAO/HEHS-00-198R), 1998.
- US General Accounting Office. *Higher Education Restructuring Student Aid Could Reduce Low-Income Student Dropout Rate* (GAO/HEHS-95-48/B-253597) Washington, 1995.
- Weiss, Andrew. Human Capital versus Signalling Explanations of Wages. *J Econ Persp* 9, no. 4 (Fall 1995): 133-54.
- Welch, Finis. Equity and the Finance of Higher Education: Comment. *J Pol Econ* 80, no. 3 (May/June 1972): S277-79.
- Wellman, Jane. *Looking Back, Going Forward: The Carnegie Commission Tuition Policy*. Working Paper, The New Millenium Project, Institute for Higher Education Policy, Jan 2001.
- West, Edwin. The Economics of Higher Education. In *The Academy in Crisis*, ed. J. Sommers, New Brunswick: Transaction, 1995, 135-69.
- West, Edwin. Public Schools and Excess Burdens. *Econ Ed Rev* 10, no. 2 (1991): 159-69.
- Wetzel, James; O'Toole, Dennis; and Peterson, Steven. An Analysis of Student Enrollment Demand. *Econ Ed Rev* 17, no. 1 (Feb. 1998): 47-54.
- Winston, Gordon, and Zimmerman, David. Where is Aggressive Price Competition Taking Higher Education? *Change* (July/Aug 2000): 10-18.
- Wolanin, Thomas. *Rhetoric and Reality: Effects and Consequences of the HOPE Scholarship*. Working Paper, The New Millenium Project, Institute for Higher Education Policy, Apr 2001.
- Zimmerman, Dennis. Expenditure-Tax Incidence Studies, Public Higher Education, and Equity. *Natl Tax J* 26, No. 1 (Mar 1973): 65-70.

Zumeta, William. Meeting the Demand for Higher Education Without Breaking the Bank: A Framework for the Design of State Higher Education Policies for an Era of Increasing Demand. *J Higher Ed* 67, no. 4 (1996): 367-425.

----- "Real Value." Flyer from the Minnesota