It has been more than 25 years since the last major structural reform of the U.S. system for financing higher education. In 1973, the Basic Educational Opportunity Grant program, later renamed Pell Grants, effectively created a federally funded voucher program for postsecondary education, shifting the federal focus from campus-based to student-based subsidies. Since then, reforms have been incremental rather than structural in nature, consisting of changes in the need analysis formula (such as the exclusion of home equity), increases in federal grant and loan maxima, and changes in interest rates.

Even the advent of federal direct lending was hardly a paradigm shift, similar to a homeowner signing up with a new utility to supply power but leaving all their basic wiring unchanged. The basic structure of financial aid—and the implied incentives encouraging institutions to raise tuition or cut costs, and students and their families to find the greatest bargains—have changed very little.
However, there are at least four reasons to re-evaluate that which has become so familiar. First, public anxiety over the rising cost of college has generated a receptiveness among voters to proposals for change, however ill-considered. For instance, the higher education community played little role in the formulation of the tax proposals that eventually became the Taxpayer Relief Act of 1997. The present thirst for ideas and the absence of well-thought-out proposals is a dangerous combination. Unless the higher education policy community can provide clear thinking in the area of finance reform, expedient solutions are likely to continue to dominate the public discussion.

Second, as educational attainment has risen, the threshold level of education at which parents, students, and policy makers are deciding whether and how much to invest in additional education has been shifting upward. In 1980, 65 percent of high school graduates went on to college. By 1992, 74 percent of high school graduates went on to college. (Over the same period, high school graduation rates also rose.) As educational attainment has grown, the margin along which students and parents are making decisions about whether or not to continue their education has shifted, with a larger share of students considering college.

Third, the decision is an increasingly portentous one for youths and their families, as the earnings of college entrants rises relative to high school graduates. Between 1980 and 1997, the percentage difference in annual earnings between 25- to 34-year-old males with a high school degree and those with a college degree more than doubled from 19 percent to 50 percent. The rising payoff to college was not limited to those completing four years, since the gap also grew from 4 to 11 percent between high school graduates and those with “some college” (college entrants without a bachelor’s degree).

Fourth, a decline in the size of college-age cohorts between 1980 and 1995 allowed America to raise the percentage of young people attending college without greatly raising the number of college students. Between 1980 and 1997, the proportion of 18- to 24-year-olds enrolled in college grew by more than 40 percent, but the number of 18- to 24-year-olds in the population declined by 15 percent. However, these demographic trends are reversing, with the number of college-age youths predicted to grow by nearly a quarter over the next 20 years. The change is likely to be even more dramatic in a handful of important states, such as California, where the college-age population is projected to grow by 50 percent over the next two decades. If college enrollment rates remain high (or continue their increase), public budgets for higher education are likely to be stretched thin.

**Evidence on How Well the Financial Aid System Is Working**

Before proceeding to a discussion of the advantages and disadvantages of the key elements in our financial aid system, I briefly summarize the most recent evidence on how well the financial aid system seems to be serving the goals of maintaining access and allowing for worthwhile educational investments.

**Persistent and Widening Gaps in College-Going by Family Income**

As is well known, there are very large gaps in college-going by family income. The top panel of Table 1 reports differences in college-going among seniors from the high school classes of 1980/82, as reported by Ellwood and Kane (2000). Eighty percent of students from the top income quartile attended some type of postsecondary institution within 20 months of their high school graduation, compared to 57 percent of those from the lowest income quartiles. The gaps by family income were particularly large in four-year college entrance, with 55 percent of the highest-income youths attending a four-year college at some point and only 29 percent of the lowest-income youths doing so.
These gaps appear to be widening over time. Although college entry rates grew for all groups between the high school classes of 1980/82 and 1992, the increases were larger for middle- and higher-income families. For example, there was a 10-percentage-point increase in the proportion of the highest-income youths attending some postsecondary institution between 1980/82 and 1992. Moreover, the increase in postsecondary schooling was largest for high-income youths attending four-year colleges, rising from 55 percent to 66 percent. In contrast, we estimate that there was only a three-percentage-point rise in postsecondary entry for youths from the lowest income quartile and a one-percentage-point decline (albeit statistically insignificant) in the proportion of low-income youth attending a four-year college.

In other words, the persistent large gaps in college-going by family income appear to be widening. However, it is important to note that even if the gaps in college-going by family income were not widening, the rising payoff to college since 1980 has magnified the consequences of any pre-existing gap in college entry by family income. While the gap in postsecondary training between the highest and lowest income quartiles grew by one-third (from 23 percentage points to 30 percentage points), the earnings differentials between college entrants and high school graduates more than doubled between 1980 and 1997.

Much of the difference in college entry by family income remains, even after one attempts to control for test scores, high school grades, and elementary schools attended by different youths. Table 2 reports differences in college-going by family income and by students’ scores on a standardized test of basic math skills administered in the 12th grade. Among students with test scores in the bottom third of the class of 1992, the differences in enrollment by family income are particularly large: 73 percent of youths from the highest income category went on to postsecondary schooling despite low test scores, while

Table 1.

<table>
<thead>
<tr>
<th>Parental Income Quartile</th>
<th>Total</th>
<th>Vocational, Technical</th>
<th>2-Year College</th>
<th>4-Year College</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottom</td>
<td>0.57</td>
<td>0.12</td>
<td>0.16</td>
<td>0.29</td>
</tr>
<tr>
<td>3rd</td>
<td>0.63</td>
<td>0.11</td>
<td>0.19</td>
<td>0.33</td>
</tr>
<tr>
<td>2nd</td>
<td>0.71</td>
<td>0.10</td>
<td>0.22</td>
<td>0.39</td>
</tr>
<tr>
<td>Top</td>
<td>0.80</td>
<td>0.06</td>
<td>0.19</td>
<td>0.55</td>
</tr>
<tr>
<td>Total:</td>
<td>0.68</td>
<td>0.10</td>
<td>0.19</td>
<td>0.39</td>
</tr>
<tr>
<td>Bottom</td>
<td>0.60</td>
<td>0.10</td>
<td>0.22</td>
<td>0.28</td>
</tr>
<tr>
<td>3rd</td>
<td>0.70</td>
<td>0.07</td>
<td>0.25</td>
<td>0.38</td>
</tr>
<tr>
<td>2nd</td>
<td>0.79</td>
<td>0.06</td>
<td>0.25</td>
<td>0.48</td>
</tr>
<tr>
<td>Top</td>
<td>0.90</td>
<td>0.05</td>
<td>0.19</td>
<td>0.66</td>
</tr>
<tr>
<td>Total:</td>
<td>0.75</td>
<td>0.07</td>
<td>0.23</td>
<td>0.45</td>
</tr>
</tbody>
</table>

Note: Based upon tabulations of the High School and Beyond Survey and National Education Longitudinal Study of 1992. Parental income was reported by parents. Figures were reported in Ellwood and Kane (2000).
only 48 percent of low-income students with such test scores went on to college. However, differences remain even among students with test scores in the top third of their class: 96 percent of high-income, high-test-score students went on to postsecondary schooling compared with 82 percent of low-income, high-test-score youths. The differences are particularly striking in four-year college entry. Only 68 percent of the low-income, high-test-score youths went on to a four-year college within 20 months of high school graduation compared to 84 percent of high-income, high-test score youths.

Although Table 2 accounts for only one difference between high- and low-income youths (math test scores), Ellwood and Kane (2000) included a longer list of student characteristics in attempting to control for other differences in academic preparation between high- and low-income students. Although the differences in college enrollment rates can be partially attributed to differences in measured academic preparation among high school seniors, a substantial difference in college entry remains. Thus, nearly three decades since the establishment of the Pell Grant program, large differences in college-going remain even among similarly academically prepared youths.

**Consistently Large Estimates of Tuition Impacts, Less Evidence of Pell Grant Impacts**

Over the years, a large literature has developed about the impact on college-going of various types of tuition and financial aid policies. In their review of the literature on student responsiveness to changes in college cost, Leslie and Brinkman (1988) report a consensus estimate that a $1,000 change in college costs (in 1990 dollars) is associated with an approximately five-percentage-point difference in college enrollment rates.

Table 2.

<table>
<thead>
<tr>
<th>Parental Income Quartile</th>
<th>Bottom</th>
<th>Middle</th>
<th>Top</th>
<th>Overall Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowest</td>
<td>48% (1.6)</td>
<td>67% (1.8)</td>
<td>82% (2.1)</td>
<td>60% (1.1)</td>
</tr>
<tr>
<td>Second</td>
<td>50% (1.9)</td>
<td>75% (1.6)</td>
<td>90% (1.2)</td>
<td>71% (1.0)</td>
</tr>
<tr>
<td>Third</td>
<td>64% (2.1)</td>
<td>83% (1.3)</td>
<td>95% (1.8)</td>
<td>82% (1.0)</td>
</tr>
<tr>
<td>Highest</td>
<td>73% (2.4)</td>
<td>89% (1.2)</td>
<td>96% (1.6)</td>
<td>90% (1.7)</td>
</tr>
<tr>
<td>Overall Average</td>
<td>55% (1.0)</td>
<td>79% (1.8)</td>
<td>93% (1.6)</td>
<td>76% (1.5)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parental Income Quartile</th>
<th>Bottom</th>
<th>Middle</th>
<th>Top</th>
<th>Overall Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowest</td>
<td>15% (1.1)</td>
<td>33% (1.8)</td>
<td>68% (2.5)</td>
<td>30% (1.0)</td>
</tr>
<tr>
<td>Second</td>
<td>14% (1.3)</td>
<td>37% (1.8)</td>
<td>69% (1.8)</td>
<td>39% (1.1)</td>
</tr>
<tr>
<td>Third</td>
<td>21% (1.8)</td>
<td>47% (1.8)</td>
<td>78% (1.5)</td>
<td>52% (1.1)</td>
</tr>
<tr>
<td>Highest</td>
<td>27% (2.3)</td>
<td>59% (2.0)</td>
<td>84% (1.1)</td>
<td>67% (1.0)</td>
</tr>
<tr>
<td>Overall Average</td>
<td>17% (.7)</td>
<td>44% (.9)</td>
<td>77% (.8)</td>
<td>47% (.5)</td>
</tr>
</tbody>
</table>

Note: Standard errors in parentheses. Based on authors’ tabulation of 8,313 observations from the National Education Longitudinal Study of 1988. Figures reported in Ellwood and Kane (2000).
Despite strong evidence of student and parent responsiveness to tuition costs, evidence for the impact of the Pell Grant program is much weaker. Lee Hansen (1983) first noted that there had been little evidence of a disproportionate rise in college enrollment by low-income youths during the 1970s, when the Pell Grant program was established. Although that paper was criticized for relying too heavily on two years of data and for including males, whose decisions may have also been affected by the end of the Vietnam War, later work (Kane 1994) confirmed that the result was not sensitive to the choice of annual end points or to the inclusion of males. Manski (1993) also reported little evidence of a disproportionate growth in B.A. completion by low-income youths graduating from high school between 1972 and 1980.

One hypothesis to reconcile the estimates of tuition impacts with the failure to find an increase in enrollment by low-income youths following the establishment of the Pell Grant program is that students are expected to make a significant up-front investment to apply to college and for financial aid before they learn anything about the amount of aid available, whereas they can read about a tuition increase in the newspaper or see it in college application materials.

Comparatively Sluggish Response to Rising Returns to College

Parents and students appear to be extremely sensitive to tuition policies, at least relative to their responsiveness to the rise in the labor market payoffs to college. Recall from Table 1 that there was a seven-percentage-point increase in college entry by high school graduates between 1980/82 and 1992, from 68 to 75 percent. This seems large, until you realize that the rise in college enrollment we witnessed during the 1980s was roughly as large as we might have expected to see in response to a $1,000 to $1,500 decline in annual tuition, based upon the empirical estimates cited above. For someone considering being in school for four years, this would have amounted to a $3,700 to $5,500 increase in anticipated expense over four years, using a discount rate of 6 percent. However, between 1980/82 and 1992, the present value of a college degree increased by far more than $3,700 to $5,500.

Although parents did seem to respond to the estimated increase in the present value of earnings differentials earned by college graduates, the increase was only about as large as we would expect from a much smaller increase in tuition. People are either hypersensitive to tuition or making a much more conservative estimate of the value of a college degree. However, the estimated responses to tuition suggest much more price sensitivity than the estimated responses to the rising payoff to schooling.

Inaccurate Expectations and Lack of Planning by Parents

The decision about whether to attend college poses increasingly high stakes for parents and students. One function of the financial aid system is to send clear signals to parents about what to expect and how much to set aside to help pay for college. It is remarkable, however, how inaccurate students’ perceptions regarding their college prospects are, even as late as their senior year in high school, and how few parents do anything to prepare for their children’s college tuition bills.

Indeed, in the National Education Longitudinal Study (NELS), which began with a sample of 8th grade students in 1988, parents were asked when their children were in 12th grade whether they had done anything to begin to prepare financially for their children’s college education. Even many of the parents who expected their children to attend college had done nothing to begin to prepare: 37 percent of the parents who expected their child to attend “some college,” 22 percent of those who expected their child to complete a bachelor’s degree, and 21 percent of those who expected their child to complete a graduate degree reported no financial preparation for it. Moreover, close to half of those in the bottom income quartile who expected their child to attend college re-
ported having done nothing to prepare for it. To the extent that one role of the financial aid system is to send clear signals to help parents prepare for college, it seems to be failing for a large portion of parents.

**Salient Components of the Financial Aid System**

Over the last 25 years, the policy debates over financial aid have focused so exclusively on the narrow, incremental questions dictated by the internal logic of our existing system that we run the risk of forgetting the answers to the bigger questions about why the financial aid system was structured in this manner in the first place. In this section, I describe three of the most salient characteristics of the nation’s financial aid system and highlight some of the important trade-offs underlying their design.

**Large Across-the-Board Subsidies Versus Means-Tested Aid**

The “low-tuition, low-aid” versus “high-tuition, high-aid” debate is one of the oldest in U.S. higher education. Where one stands on the appropriate mix of across-the-board subsidies and means-tested subsidies should depend upon at least three considerations: the proportion of aid going to “inframarginal” students, i.e., those who would have gone to college anyway; the efficiency of the available means-testing formula; and the political importance of subsidizing the education of youths from middle- and higher-income families.

Although largely unrecognized in the policy debate, the magnitude of these trade-offs has changed over time. Aside from the need to garner political support from the middle class, one of the primary arguments for broad-based subsidies is avoidance of the confusion and inefficiencies that come with targeting aid and identifying eligible students. One cannot means test without implicitly taxing family income and/or savings. Moreover, one cannot means test without creating a system for determining eligibility, which implies some degree of uncertainty among potential recipients about the amount of aid available. The lack of any strong evidence on the impact of Pell Grants on enrollment by low-income youths simply highlights the inefficiencies of means-tested aid. (Arthur Okun [1975] compared the trade-off between equity and efficiency in means-testing benefits to attempting to deliver water with a “leaky bucket.”) As an alternative, broad-based institutional subsidies to keep tuition low tend to be more transparent and do not require tax rates as high as the tax rates usually implicit in the need analysis formulae (although they certainly require tax support to be paid). Across-the-board subsidies have become a relatively more expensive route to maintaining access for low-income youths simply because a higher proportion of high school graduates are ready to take up the offer of low tuition. McPherson and Schapiro (1998) have documented the increasing reliance of middle-income families on the subsidies available at public institutions. The cost of the low-tuition strategy is likely to become particularly striking as cohort sizes grow. For this reason alone, it may be worth reconsidering whether we have the mix right.

**Student-Based Eligibility, Campus-Based Packaging**

As noted above, the Pell Grant program is essentially the higher education equivalent of a school voucher program, because eligibility is attached to the student rather than the institution. Ever since the percentage of cost of attendance one’s Pell Grant could cover was raised from 60 percent to 100 percent, students effectively qualify for the same Pell Grant wherever they choose to go to school. If one knows the rules and can estimate one’s estimated family contribution, one can usually estimate the size of the Pell Grant without knowing the college one plans to attend.

However, the American higher education financial aid system still relies upon campuses to market the availability of federal financial aid through student aid “packaging.” Students typically have to wait until after they have
filled out their college application, applied for financial aid, and received an institutional award letter simply to learn the size of the Pell Grant for which they would qualify. To the extent that some students and parents may have difficulty filling out applications, or are deterred by the sticker prices, or miss an important deadline, they may forego an option they would have chosen if they had better, earlier information about the amount of aid available.

Use of Time Requirements as “Co-Payments”
The availability of large public subsidies justifies public interest in the quality and content of postsecondary education. Although it is arguable that there is a social interest in facilitating investments in occupational skills or fundamental research, the public clearly has no interest in subsidizing consumption. Yet the potential for abuse is clear when a $3,300 Pell Grant or a $1,500 tax credit is offered.

The federal government has exercised little leverage in regulating fraud in higher education, and it is difficult to imagine ever doing a much better job of direct regulation. First, the federal Department of Education’s charter explicitly proscribes intervention in curricular issues. Historically, the values of academic freedom have been given more weight than the potential cost savings from identifying fraudulent programs or ineffective pedagogy. Second, there are few outcome measures with which to evaluate such programs. The primary indicator available to regulators—loan default rates—only partially reflects the “output” of the colleges and may largely mirror the baseline characteristics of the students these institutions serve. We might expect them to fare poorly on all of these measures even if the value added by the programs is well worth the federal investment.

Communications technology will increasingly allow students to take courses from home and over great distances. Students generally cannot use the student loan programs to help finance such investments unless they are enrolled at least half time in an institution where more than half of the student body engages in traditional classroom learning rather than distance learning. Given the potential for fraud, it would be foolish to drop such time-based “co-payment” requirements from our current aid programs. However, we might think of other forms of co-payments—such as minimum payments (similar to medical deductibles) or percentage payments (requiring students to pay at least 20 percent of the cost, for instance)—for types of education and training that occur outside traditional lengthy academic programs.

A Research Agenda

Many parallels have been drawn recently between U.S. higher education and the U.S. health care system 20 years ago. Some of those comparisons are appropriate, while others are not. However, when it comes to understanding the effect of tuition schedules and financial aid programs on the decisions Americans are making about whether to attend college, where to attend college, and how much to save beforehand, we know no more than those in the health insurance field knew in 1974. The main difference, so far at least, is that we have yet to admit our ignorance and fund the type of careful research that would allow us to fill that gap in our understanding.

Future research on the impact of tuition and financial aid on the demand for higher education should focus on three important questions: First, how does the method of delivery of public subsidies—across-the-board subsidies,
in-school interest subsidies on student loans, or Pell Grants—determine the “bang for the buck” achieved for different groups of students? The existing higher education literature cited in this article suggests that higher tuition levels and well-publicized aid programs that operate outside the usual need analysis system—such as the Social Security Student Benefit program and the Hope Scholarship program—have relatively large impacts on college-going, while the available evidence on the impact of the Pell program is much more ambiguous. Of course, the failure to find much of an effect of the Pell program on college entry rates may simply be due to the difficulties of trying to find an effect with nonexperimental data (i.e.,

States and the federal government have a number of arrows in the quiver for improving access to higher education for low-income youths and very little basis for comparing the bang for the buck achieved for each. Despite the lack of evidence, one might believe that the impact of a dollar in Pell Grants is larger than the impact of a dollar in subsidized loans. But, at least according to congressional cost accounting, a dollar in Pell Grants costs roughly six times as much as an additional dollar in eligibility for the Stafford Loan program. Does a dollar in grants have six times the impact of a dollar in loans? Unless we know more about how different forms of aid are perceived (parents and students probably cannot be expected to act like good economists and calculate the present value of the different types of subsidies offered), we cannot know the answer to that question.

There are opportunities for nonexperimental research designs as well. For instance, beginning in the fall of 2000, the residents of the District of Columbia (starting college within three years of their high school graduation) can qualify for a scholarship to cover the difference between in-state and out-of-state tuition at any public institution in the United States (up to $10,000) or receive a $2,500 scholarship to attend an independent institution in the Washington metropolitan area. By comparing the change in college entry rates for recent graduates of District of Columbia high schools to the change in college entry for similar graduates attending urban schools in surrounding states, we might be able to learn something about the impact of such tuition subsidies on postsecondary enrollment rates.

A second area deserving of more research is the impact of different incentive programs for encouraging parents to prepare financially for their children’s college education. A surprisingly large share of parents report that they are doing nothing specific to prepare for their children’s education. This lack of preparation by parents imposes political constraints on state and federal policy for financial

How does the method of delivery of public subsidies...determine the "bang for the buck" achieved for different groups of students?

there may have been other changes over the period before and after the Pell program, such as the large numbers of Baby Boom students seeking a college education, which simply offset any program impact). An experiment that provides some dollars above the Pell Grant maximum for one group of randomly assigned youths, allows students in another group to borrow more under the same terms as the Stafford subsidized loan program in another, and provides additional help in navigating the federal financial aid system to yet another group could help resolve many of these questions. If one were concerned about the ethical issues implied by random assignment, the different groups could be provided with treatments with the same expected value in financial terms—a grant supplement equivalent to the value of the interest subsidy on the loan supplement, which is equivalent to the cost of the additional financial aid advice.
aid, requiring greater use of across-the-board subsidies for college. Those interested in retirement and pension issues have done much work on the impact of various types of savings incentives and IRAs on families’ saving behavior. We can learn from that literature and design experiments for evaluating the impact of different incentive schemes on parents’ saving for college. For instance, one could begin with a sample of sixth grade students, randomly choosing a subgroup to provide intensive marketing of existing state savings plans and educational IRAs, and then compare subsequent savings decisions of the two groups of parents.

A third area deserving greater attention is the effectiveness of different pricing structures for financial aid for online courses. Current reliance on time-based “co-payments” is likely to be tested in the near future if distance-learning technology fulfills its promise to transform post-secondary education and training. This approach may reduce the amount of frivolous coursework being funded by public subsidies, but it also is slowing the progress of online learning. New distance learning models may require different types of co-payments—deductibles, percentage sharing of costs, greater reliance on loan financing—to provide access to capital to finance such education while reducing the risk of fraud.

Conclusion

The U.S. system for financing higher education is at least as misunderstood today as the health care finance system was 20 years ago. Not only are parents paying for their children’s college education in more ways than they realize—through direct subsidies to institutions, financial aid programs to colleges, and generous new tax benefits for college tuition payments—the impact of each of those subsidies on the decisions of various groups of youths is not well understood by policy makers. It has been nearly three decades since the Pell Grant program was established, yet differences in college-going by family income remain wide and, according to some recent evidence, appear to be widening. The higher education policy debate has become too bogged down with incremental questions involving issues such as changes in the need analysis formula to notice the bigger questions: Why is it that there is no apparent impact of the Pell Grant program on college enrollment rates of low-income youths? What is the bang for the buck achieved with different types of public subsidies—across-the-board subsidies to keep tuition low, Pell Grants, or loan subsidies? We will not make progress in closing the gaps in college enrollment by family income until we discover answers to questions such as these.

REFERENCES


