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What Is Known About the Impact of Financial Aid? Implications for Policy

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Abstract

Years of research support the notion that financial aid *can* influence students' postsecondary decisions, but questions remain about the best ways to design and implement such programs and policies. This paper serves as a discussion of the research literature on the effectiveness of financial aid with special attention to its implications for policy. As such, the goal of this paper is to address issues central to today's debates about how to improve college access and affordability while encouraging researchers to continue to advance the line of inquiry.

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1. Introduction

Since the introduction of the Guaranteed Student Loan program in 1965 and the Pell Grant in 1972, governments, institutions, and outreach programs have experimented with using financial aid to increase college access, choice, and affordability.¹ However, after several decades of aid policy, the likelihood of attending college still varies substantially by family income. Among high school graduates in 2004, only 43 percent of students from families with incomes under \$30,000 immediately entered a postsecondary institution. In contrast, 75 percent of students from families with incomes over \$50,000 did so.² Even after accounting for differences in academic preparation and achievement by income, the gaps remain. Low-income high school graduates in the top academic quartile attended college at only the same rate as high-income high school graduates in the bottom quartile of achievement (Advisory Committee on Student Financial Assistance, 2001). There are also significant gaps by income level in outcomes such as college persistence and completion. Only 36 percent of low-income students judged as college-qualified completed a bachelor's degree within eight years, while 81 percent of high-income students did so (Adelman, 2006).³ Similar gaps are found by race and ethnicity suggesting that the aid system has not yet equalized access to higher education.

There is a long research literature that has examined why college attendance gaps exist by family income. While academic preparation is important, as noted above, it does not completely explain differences; therefore, much of the research literature has focused on the role of price and financial aid. Years of research support the notion that financial aid can influence students' postsecondary decisions, but questions remain about the best ways to design and implement such programs and policies. In particular, debate continues about which types of aid are most cost effective in influencing behavior. More specifically, how do students respond to grants versus loans versus other forms of aid? What are the tradeoffs between different kinds of aid programs? These questions are especially important given significant shifts over time in the types of aid available to help students pay for college. Since the 1992 Higher Education Reauthorization, there has been tremendous growth in student loans. The 1990s also witnessed the advent of state merit-based grant programs and the federal higher education tax credits. As much of government policy has shifted from need-based grants to merit-based aid, student

¹The National Defense Student Loan Program began in 1958, but it was not until the 1960s that wider access began to be a serious goal of the federal government.

²Author's calculations using Current Population Survey data from October 2004.

³The definition of "college-qualified" is from Berkner and Chavez (1997). Students were judged to be "college qualified" if they met any of five criteria that would place them among the top 75 percent of four-year college students for that criterion. The minimum values for "qualified" were: a class rank of the 46th percentile, an academic GPA of 2.7, an SAT combined score of 820, an ACT composite score of 19, or a NELS-88 test score of the 56th percentile.

loans, and tax credits, what are the implications of these trends for college access, choice, and affordability? Additional questions exist due to conflicting results and the estimated differential responses to aid by different types of students.

Although there is a belief that financial aid could greatly improve educational outcomes, there are also many reasons to question the efficacy of the current American system of financial aid. A review of the aid system by the federal Commission on the Future of Higher Education, which was appointed by Secretary of Education Margaret Spellings, concluded that federal financial aid programs are not addressing the problems currently facing students. The Commission noted that some students “don’t enter college because of inadequate information and rising costs, combined with a confusing financial aid system” (2006, p. vii). Moreover, the shift in resources from need-based to merit-based aid at both the government and institutional levels has made many assert that the original goals of using aid to increase access have long been forgotten.

Meanwhile, there has been a great deal of research on the effectiveness of financial aid policy in improving college enrollment and choice. The lessons learned from these studies could help inform current debates about how to improve the financial aid system. This paper serves as a discussion of the research literature on the effectiveness of financial aid with special attention to its implications for policy. This is obviously not the first review of the literature on the subject. During the last thirty years, there have been several reviews with different goals and foci (Leslie & Brinkman, 1987; St. John, 1991; Heller, 1997). However, while past reviews have asked general questions about the impact of financial aid, most do not emphasize concrete lessons that should be taken into account when determining policy. Therefore, they do not entirely address the issues central to today’s debates about how to improve college access and affordability. In contrast, the goal of this paper is to distill this information into a useful tool for a policy audience as well as encourage researchers to continue to advance the line of inquiry and develop additional policy-relevant information. In most cases, research reviewed here has undergone some form of peer review (though not necessarily publication) to ensure the quality of the results highlighted. Additionally, the bulk of the research discussed in this paper, particularly the later sections, attempts to establish causal links between financial aid and student outcomes. Stated another way, more credence is given to analyses that isolate the impact of a policy from most other factors to avoid basing conclusions on work that demonstrates only the correlation of two patterns that may or may not be directly related to each other.

One can learn three main lessons from the numerous studies on financial aid. The first is the importance of information in determining whether a policy is effective in improving access. Related to this is the significance of simplification in program design. While there are strong arguments to improve the targeting of aid and ration limited resources by using means-

tested aid eligibility criteria, making such application systems too complicated is likely to be detrimental for the students who are most in need of financial aid.

Second, the research literature highlights the fact that there has been a substantial shift in the focus of aid policy. Although financial aid programs are meant to accomplish a number of goals, enabling college access by students who would not otherwise be able to attend is one of the original and most prominent aims. In contrast to this, newer aid programs such as merit-based grants, tax credits, and savings incentives have been shown to not serve the needs of low-income students. With limited resources, attention should be refocused on using aid in ways to actually change college enrollment behavior rather than help inframarginal students, i.e., those who would attend college and graduate regardless of support.

The third major conclusion relates to the relative effectiveness of grants versus loans and other forms of aid. Grants have been shown to be an effective way to increase college attendance. However, the main federal grant program has failed to keep its value over time and does not cover the same proportion of expenses as originally designed. In contrast, loans have become the predominant form of financial aid. While they may be less costly for the government, they are far more complicated for the student and could have substantial long-term costs that are difficult to put in monetary terms. The complexity of the loan system has implications for who decides to use loans, and it raises concerns about student debt burden and the impact of loans on academic, employment, and other decisions. As a result, much more careful consideration should be given to the appropriate balance between grants and loans, as the current system already appears to be showing signs of stress in terms of its impact on student behavior.

The rest of the paper details research on the effectiveness of aid and the rationale behind these three major conclusions. Section 2 gives a summary of the costs of higher education as well as an overview of current financial aid policy and the degree to which students' financial needs are currently being met. Section 3 discusses what families know about financial aid and the role of information in the federal application process for aid. This section will also introduce the question of whether the design of an aid program influences the impact it has on students. This theme will be carried throughout the paper as special attention is paid to the design features of the most effective financial aid programs.

Sections 4 and 5 review the long literature on the effects of financial aid on student behavior by examining the role of grants, loans, and other forms of financial aid. What are the effects of these different types of aid and how do they compare? Various approaches to answering these questions are discussed along with their drawbacks and benefits. Section 6 instead focuses on the behavior of colleges and universities in reaction to financial aid policy. It addresses concerns about the Bennett Hypothesis, the notion that colleges raise their prices

when aid becomes more generous. Finally, Section 7 concludes by summarizing the main points. It also discusses the growing debate about the degree to which financial aid can address the barriers to college access and success. Some argue that the short-term credit constraints addressed by financial aid cannot outweigh the long-term impact of being from a disadvantaged background. I end by outlining several major issues that need additional research and by discussing how the research could be made more policy relevant.

2. Costs of Higher Education: Is There a Need for Financial Aid?

Is Financial Aid Necessary to Afford College? The Costs of Higher Education

Although there are many barriers to college access and success, including lower levels of academic preparation, expectations, and information, a major impediment is cost. During the 2007-08 school year, the average total list tuition and fees at public four-year colleges and universities was \$6,185, with average total charges amounting to \$13,589 (College Board, 2007a). Without any financial aid, the total cost amounts to 23 percent of the annual median family income (U.S. Census Bureau, 2007).⁴ Concerns about affordability are even greater at private four-year colleges and universities, which charged an average list tuition price \$23,712, or \$32,307 including room and board. This constitutes over half the annual income of a median family. The average low-income student attends and faces the costs of a local community college, and the average full-time tuition at these institutions was \$2,361 in 2006-07 (College Board, 2007a).

The current situation is the result of skyrocketing prices during the last several decades. From 1977-78 to 2007-08, the average cost of a public, four-year institution increased from \$655 to \$6,185, a multiple of 1.8 times in real terms (College Board, 2007a). Meanwhile, the median family income in the United States has not kept pace with growing tuition costs. As the Spellings Commission concluded, “There is no issue that worries the American public more about higher education than the soaring cost of attending college” (2006, p. 19). Given the high cost of college relative to family incomes, at least some amount of financial aid is necessary for most families.

There are many other costs associated with higher education beyond the direct costs of tuition, required fees, and room and board. As noted by Zumeta and Frankle (2007), costs such as books, housing, and health care are significant. There are also opportunity costs associated with attending college, including foregone earnings. In the case of California, they calculate that community college fees represent only five percent of the total cost of attendance. Although significant, traditional aid policy for undergraduates is not designed to address many of these other types of costs. In fact, as detailed below, the current aid system appears to heavily penalize students who attempt to avoid giving up earning income while studying by working a substantial number of hours.

⁴Median household income in 2006 was \$59,894.

The Basics of the Financial Aid System

Under the basic economic demand framework, investment in higher education should be negatively related to tuition costs, and lowering costs, perhaps through financial aid, should increase the probability of enrollment. Accessing financial aid begins with the Federal Application for Financial Student Aid (FAFSA). The FAFSA is the application for federal financial aid, and it is often required to apply for state and institutional aid. The FAFSA collects information on family income and assets to determine the Expected Family Contribution (EFC), the amount that a family is estimated to be able to provide towards higher education expenses. The size of the family, the number of family members in college, and the age of the oldest parent, as well as information on the student's earnings and assets all affect this calculation. For independent students, who are defined as either being age 24 or older, married, having legal dependents, being an orphan, or having served in the Armed Services, the EFC calculation differs slightly in that parental contributions are not counted. Regardless of dependency status, however, it is assumed that the earnings of the potential student are relatively minor (i.e., the result of a summer job) and should be highly taxed to cover college expenses. Therefore, students who work significantly the year before entering college or while being a student will be penalized in the determination of the EFC.

To determine a student's financial need, the government subtracts the EFC from the total cost of attendance.⁵ One implication of this is that two identical students will have different amounts of calculated need depending on the cost of the colleges they attend. This amount of need, in combination with the student's EFC, determines whether he or she is eligible for particular government grant and loan programs. Students who have a low EFC *and* financial need are eligible for federal need-based aid, such as the Pell Grant, which is the largest need-based aid program in the country. It serves as the foundation for other aid as it is the first aid awarded to students who attend at least part-time. The majority of Pell recipients come from families with incomes in the lowest economic quartile; families with between \$30,000 and \$40,000 of income begin to be phased out of Pell eligibility (King, 2003). Students with financial need may also be eligible for other Federal grants and the Federal Work Study program, which subsidizes the wages of the students employed in on-campus jobs. According to federal data, among all students in 2003-04, 26 percent of students received grant aid from the federal government (NCES, 2006).

Students with higher EFCs usually will not qualify for Pell Grants or work study funds but are eligible for federal loan programs. The largest is the Stafford Loan Program, which

⁵The total cost of attendance is pro-rated based on the student's enrollment intensity (whether they attend full- or part-time) and includes tuition, fees, room and board, and other costs at the institution the student attends.

offers subsidized and unsubsidized loans. The distinction is that interest on subsidized loans, which are available only to needy students as determined by the FAFSA, is paid by the government while the student is in college. During their first year of undergraduate education, students may receive up to \$3,500 (recently increased to that amount on July 1, 2007); the limit increases in subsequent years and is higher for independent students. Other loan programs include the Federal Perkins Loan Program, a need-based program distributed by college campuses, and the Federal Parent Loan for Undergraduate Students (PLUS) Program, which is limited only by the total cost of attendance net other financial aid. All of the federal loan programs require repayment after the student stops attending college, regardless of whether or not he or she has completed a degree. In 2006-07, the Federal Stafford Loan Program awarded over \$59.6 billion in aid (College Board, 2007b), and by best estimate, an additional \$17.1 billion was given in private loans. In addition to grant, loan, and work-study programs, the federal government offers financial assistance through the tax system in the form of credits, deductions, and benefits for families who pay postsecondary expenses or save in preparation for college in the future.

States are also deeply involved in providing financial aid to students. First, state governments provide large subsidies to public, postsecondary institutions. These funds, amounting to \$72.1 billion in 2007 (Palmer, 2006), enable public colleges and universities to charge in-state students a reduced price. In addition, many states have financial aid programs. The largest need-based state grant programs are found in California, Illinois, Indiana, New Jersey, New York, Ohio, Pennsylvania, and Texas. Other states, such as Georgia, Florida, and Mississippi, focus their aid programs on merit-based criteria such as reaching a certain grade point average in high school or earning a particular SAT score (National Association of State Student Grant and Aid Programs, 2006). In 2003-04, 18 percent of students received state grants (NCES, 2006). Institutional aid awarded by colleges and universities is also significant. According to Horn and Peter (2003), 23 percent of full-time undergraduates in public colleges received institutional aid in 1999-2000 with the average award being \$2,700. At private colleges and universities, 58 percent of students received institutional aid in 1999-2000 with the average award being \$7,000.

Is There Enough Financial Aid? Net Prices and Unmet Need

To understand the degree to which the current system meets the financial needs of students, one must calculate the price students pay for college after financial aid. After taking into account the multiple sources of financial assistance, the price paid by students is much lower than the list prices in college catalogues. According to the College Board, in 2007-08, the average net price at a public, four-year college was \$2,600 and \$14,400 at a private, four-year

college (College Board, 2007a).⁶ While net tuition prices are significantly lower on average than list price, it is important to keep in mind that these are only mean values. Even within the same institution, net price can vary significantly among students. Differences in net price may be based on differences in financial resources, family make-up, and student characteristics such as academic ability. When investigating the practices of very selective private institutions, which tend to focus on need-based financial aid, Hill, Winston, and Boyd (2004) found that the net price students face could vary from \$7,495 for students from the lowest quintile of family income compared to \$16,249 for students from families in the upper-middle quintile and \$23,399 for students in the highest income quintile.⁷

Although the costs faced by students are much less once grant aid is considered, the remaining costs that families must meet are often substantial. Analysis by Long and Riley (2007a) documents the significant amount of unmet financial need faced by many students, particularly for students from low-income backgrounds and students of color. After accounting for the family's contribution (the EFC) and the receipt of all grants, dependent students in 2003-04 faced an average unmet need of \$7,195. For full-time, full-year students, this unmet need was even greater (\$8,323).⁸ Increasingly, students are turning to loans to make up this remaining difference. However, even after taking into account government and institutional loans, there is still significant unmet need. After taking into account loans in addition to grants, Long and Riley (2007a) found that dependent students faced \$5,911 in unmet need (\$4,503 for independent students). Among full-time, full-year students, the amount of unmet need was again higher even after taking into account loans (\$6,726 for dependent students and \$7,049 for independent students).

Given these patterns of unmet need, questions about the effectiveness of the current system of financial aid often focus on whether current amounts are adequate. In other words, much of the call for reform has focused on increasing the level of financial aid awards. Although billions of dollars are spent each year on financial aid, the above unmet need figures suggest the current amount of funding may not be enough.

As documented by unmet need calculations, students face additional costs beyond their means even after accessing all of the grants and loans available to them.⁹ This has prompted

⁶This is defined as tuition, required fees, and room and board minus the average grant aid and tax benefits received by full-time students.

⁷Based on the financial aid records from 28 highly selective private colleges and universities in the Consortium on the Financing of Higher Education (COFHE).

⁸It is important to note that the information on private and outside financial aid is self-reported and may not capture all of this aid. Credit card debt is not included in these calculations.

⁹It is also worth noting that the EFC calculation by the federal government has been criticized on a number of grounds including the assumptions it makes about parental and student earnings based on data from the previous year. Anecdotal reports suggest many families have difficulty even meeting those expectations.

many to go to the private sector for additional loans, to max out their credit cards, and to choose to work more hours in the labor market. Reviews of the research literature should keep in mind this reality and consider how inadequate funding levels may limit the effectiveness of current forms of aid. However, decisions about the best ways to expand the aid system should be principally guided by what is known about the particular designs and types of aid that are most effective. These issues will be addressed in the following sections.

3. The Role of Information and the Implications for Aid Policy

What Do Students and Families Know About Financial Aid?

In order to have an impact on behavior, students and their families must be aware of the policies designed to help them. Unfortunately, awareness appears to be a major barrier as many students lack accurate information about higher education costs and financial aid. Higgins (1984) is among the first to document a significant lack of information among prospective college students regarding financial aid programs. In the two decades since this study, researchers have continued to find a significant lack of information among prospective college students in general (e.g., U.S. General Accounting Office, 1990; Ikenberry & Hartle, 1998). Most studies find that students and their parents greatly overestimate the costs of college (Horn, Chen, & Chapman, 2003). ACSFA (2005) notes that students and families, as well as adult learners, are often intimidated by news stories about record increases in the college costs of the most selective universities and have other impressions that college is unaffordable. These stories may contribute to the fact that individuals often greatly overestimate the cost of higher education. These patterns have led many to conclude that the public appears to hold a very distorted view of what it costs to attend college.

There is also a lot of misinformation about financial aid among parents and students. A Harris Poll commissioned by the Sallie Mae Fund found that two-thirds of all parents and young adults planning to go to college did not name grants as a possible source of funds when asked about types of financial aid (Sallie Mae Fund, 2003). Moreover, many believe all financial aid has a merit component. Even those aware of need-based sources incorrectly estimate the income levels that are eligible for aid.

Awareness about aid and college costs appears to be especially limited among low-income students. The Sallie Mae Fund (2003) found that low-income families had the least amount of information about how to pay for college. Research by Kane and Avery (2004) also demonstrates that low-income high school students have very little understanding and information about actual college tuition levels, financial aid opportunities, and how to navigate the admissions process. There are also differences by race. For example, Grodsky and Jones (2004) find that parents of color are less likely to be able to estimate the cost of tuition.

These patterns have inevitably led to investigations of the formal and informal channels through which students and parents get their information about college costs and aid. Researchers have examined the role of teachers, guidance counselors, books, the internet, peers, and the news media. For instance, Lee and Ekstrom (1987) use the HSB and find that guidance counseling is not equally available to all public high school students. Minority students, students

from families of low socioeconomic status, and students in rural areas are less likely to have access to adequate guidance counseling. Although the national average is 284 students per counselor, Parsad, Alexander, Farris, Hudson, & Greene (2003) found that schools with more than 20 percent minority enrollment have student-to-counselor ratios averaging 309 to 1 or greater. Venezia, Kirst, and Antonio (2003) suggest that many students do not have a counselor to turn to for help because counselors and teachers are overworked and unprepared.

The Implications for Policy: The Tradeoffs Between Simplicity and Complexity

Misinformation or a lack of information about college could have important implications for college access. Differences in awareness across groups may also provide some answers as to why enrollment rates differ by background. Theoretically, college enrollment should be related to costs, and although most models assume perfect information among actors, this is unlikely to reflect reality as documented in the research. Also, the amount and accuracy of information about tuition could affect other types of behavior important for college access and persistence. For example, if college-going is perceived as unaffordable by students, parents, and counselors, then individuals may not choose to prepare academically for college-level work.

The low levels of awareness about aid and the misinformation of many families also has serious implications for the effectiveness of policy. Implicit in policy design are tradeoffs between making a program simple to understand and the need to limit eligibility to only a subset of students due to finite resources. On the one hand, in order to have an impact on behavior, students and their families must be aware of the policies designed to help them and understand how to access them. On the other hand, given the focus on helping a particular type of student (e.g., financially needy students), some type of means testing must be in place to ensure that only students with actual need are eligible to receive the aid. For these reasons of efficiency, many arguments have been made for elaborate application procedures for such need-based programs as the Pell Grant. However, introducing complexity into how aid is awarded can also be a source of informational barriers.

Critiques of the FAFSA and the general aid application highlight the tradeoffs between simplicity and means testing that must be balanced in policy design. At its most basic level, the FAFSA attempts to discern how financially needy students are in order to determine how to distribute limited government financial aid dollars. As described above, it collects a wealth of information about a family's situation in the hope of equitably treating families with similar situations. However, numerous papers have surmised that the lack of information about financial aid is linked to this process of getting the resources. The first major critique is that the FAFSA is long and cumbersome. To determine eligibility, students and their families must fill

out an eight-page, detailed form that contains over 100 questions. To answer three of these, students must complete three additional worksheets with nearly 40 additional questions. Even the lowest income students, who have already established their eligibility for other federal means-tested programs and are known to be eligible for federal student aid, must go through this arduous process. Students who are already in college must also fill out the application each year to receive aid for the following year. The FAFSA also serves as the basis to award most state and institutional need-based aid, and so it is a critical gatekeeper to most financial aid.

Not surprisingly, students and their families are often confused and even deterred by the form (ACSFA 2005). In a study by the American Council on Education, King (2004) found that half of the 8 million undergraduates enrolled in 1999-2000 at institutions that participate in the federal student aid program did not complete the FAFSA.¹⁰ Yet 850,000 of them — more than 20 percent — would have been eligible for a Pell Grant. Furthermore, of those who did file, more than half missed the April 1st deadline to be eligible for additional state and institutional aid programs. A second major problem with the aid application process is the timing. Students cannot submit the FAFSA until January 1st in the year of college entry. Therefore, they often must apply to college before even knowing with certainty whether they can afford it. Even after completing a FAFSA, applicants cannot project the exact amount of their potential aid package. While the formulae used when calculating need are published, few families or even financial aid administrators are familiar with the document or able to navigate through it.

Given the critiques of the FAFSA, many now suggest that perhaps the policy leans too far towards complexity without balancing the need to make the process clear and reasonable for students. Recently, a great deal of attention has been paid to the shortcomings of the current FAFSA. Concerns about the low visibility of aid programs and the complexity of the aid process have spurred calls to simplify the form and enhance the visibility of programs that are meant to educate students about the availability of financial aid. Two years ago, Congress directed the Advisory Committee on Student Financial Assistance (ACSFA) to determine whether the complexity of seeking aid explains part of the low college attendance among low-income families. ACSFA concluded in the affirmative writing:

Millions of students and adult learners who aspire to college are overwhelmed by the complexity of student aid. Uncertainty and confusion rob them of its significant benefits. Rather than promote access, student aid often creates a series of barriers — a gauntlet that the poorest students must run to get to college (ACSFA, 2005, p. i).

¹⁰About 20 percent of four-year college students and 50 percent of two-year college students with family incomes less than \$20,000 did not file a FAFSA.

A year later, the Commission on the Future of Higher Education also concluded that the government should move towards “consolidating programs, streamlining processes, and replacing the FAFSA with a much shorter and simpler application” (p. 3).

Reforming the Federal Aid Application Process

Given the growing din of critiques about the FAFSA, there has been movement to address these concerns. For example, the Department of Education created the FAFSA4caster, which gives students an early estimate of eligibility for federal student aid. While this helps to address concerns about the timing of the FAFSA, it may not address concerns about low awareness and complexity. Internet access, especially high-speed internet access, is limited among low-income students (Kolko, 2007). There is also the problem of lack of awareness of the FAFSA4caster among target families. Finally, misperceptions about cost, as noted above, may make many families feel like it is pointless to even use the FAFSA4caster as they suspect it will tell them little aid is available to them. Families are still required to supply a great deal of information to complete the FAFSA4caster.

There has also been movement towards creating a simplified FAFSA form. Many discussions have centered on creating a FAFSA EZ form, similar to the 1040EZ model. Already, if a student completes the FAFSA online, many questions will be skipped if his or her family has a sufficiently low income. In this way, students who have simple family income situations are able to avoid the more complex questions that deal with assets.

In these debates about simplification, one issue is how far is too far? If the application becomes too basic, questions arise about whether it will become more difficult to effectively target low-income students. In other words, will some more affluent students unfairly benefit while lower income students lose aid? However, analysis by Dynarski and Scott-Clayton (2006) demonstrate that the current system of awarding aid could be closely approximated by only using a few pieces of information on the family. For instance, over three-quarters of variation in Pell Grant awards could be explained using parents’ adjusted gross income, marital status, family size, and the number of family members in college. Therefore, they recommend an even more simplified form and application process.

While efforts toward simplification would certainly be an improvement, consideration must also be given to the concerns about the timing of the process, low visibility, and misinformation. Other efforts are exploring interventions that might deal with these concerns and evaluate the effectiveness of simplification efforts. Bettinger, Long, and Oreopoulos (2007) have developed a model in which tax preparers help low-income families complete their FAFSAs. After automatically incorporating information from the IRS tax form, there are few remaining questions, and so completion of the form takes little time. The goal of the research

project is to answer key questions about the importance of information and financial barriers in college access. Early results from the project suggest that better communication between the Treasury Department and Department of Education in terms of sharing information could significantly cut the number of necessary elements on the FAFSA. Such a partnership could substantially reduce the time necessary to complete a financial aid application as well as improve the accuracy of the information submitted.

Although it will take time to determine the true benefits of simplification, past research suggests that some of the most effective aid policies have included efforts to educate potential students, families, and high schools about how to access the aid. Meanwhile, less successful policies can often point to complexity and low awareness as culprits in their lack of a documented impact. The review below continues to note the importance of awareness and accurate information in determining the effectiveness of a financial aid program.

4. The Role of Grants: Does Cost Reduction Work?

The next two sections focus on the core research studies that have been done on the effectiveness of different financial aid programs. The paper begins in this section by focusing on grants and then contrasts the impact of these types of policies with those of loans and other programs in the following section. Grants, or aid that does not need to be repaid, tend to be the focus on most research on financial aid. While some programs have not demonstrated a large enrollment effect, others have spurred much greater responses. The discussion below attempts to identify the distinguishing characteristics of the most effective policies. However, the nature of grants has changed in recent years. Although the original intent of most grant programs was to increase college access for students who would not have otherwise been able to attend, during the 1990s, states began to introduce grant programs with a very different focus and design. Much can be learned about the effectiveness of grant aid from studying each of these types of programs. Additional thought is given to how this change in focus has impacted affordability for different income groups.

The Impact of Grants: Multiple Ways to Research the Question

Leslie and Brinkman (1987) provide perhaps the first comprehensive meta-analysis of research and ask whether aid is at least partly responsible for the fact that some students attend college? Furthermore, they try to determine what proportion of student would not have entered college in the absence of aid. In general, they find that without grant aid, the enrollment of low-income students would be reduced by 20 to 40 percent. The estimated effect on middle-income students is much smaller (7.4 to 19.5 percent). Leslie and Brinkman summarize that the magnitude of the effect varies by type of aid, sex, race, and level of academic achievement. According to work that used student surveys, about one-fourth to one-half of those asked indicated that they would not attend either full-time or part-time without aid.

Since that review, there have been many additions to the literature that examine the link between differences in enrollment in cross-sectional data to differences in tuition costs. For instance, Kane (1995) provides estimates utilizing several data sources (High School and Beyond, the National Longitudinal Survey of Youth 1979, and the October Current Population Survey) and exploiting both between-state differences and within-state changes in public tuition prices over time. He finds that, during the late 1970s and 1980s, states with higher public tuition levels had lower college entry rates, and within-state tuition increases led to lower enrollment rates. Low-income students and those attending two-year colleges seemed to be most affected. Differences in four-year tuition levels yield smaller estimates of the impact of tuition cost on attendance as do within-state responses to tuition-level changes over time.

While this type of study provides further evidence of the importance of tuition in college decisions, it gives only a partial view of the impact of aid. Because such studies are based on cross-sectional data that exploit fixed differences between states in tuition levels, it is difficult to distinguish the impact of tuition from any other characteristic of the state that has remained constant over time. Omitted state factors may be correlated with enrollment, subsidy level, and tuition and therefore cloud the true effect of financial aid from some other characteristic of states with aid programs.

Another concern about cross-sectional financial aid studies is the level of aggregation in many studies. While many studies use state averages to measure the costs students face, this could mask the vast heterogeneity in college price, quality, and subsidies. Tuition levels do vary significantly across states, but most of the variation exists at a finer level within a state. Tuition levels vary greatly among different levels of schools by sector and selectivity. Using a state mean as a proxy for tuition price may not truly reflect the costs students face. Moreover, the price charged may depend on the characteristics of the student (i.e., residence, ability level, family income). Long (2004a) addresses this problem by using a conditional logistic model to characterize the matches between individuals and nearly 2,700 colleges. In this way, she is able to observe the impact of the particular price each college would charge each student as well as student-college-specific variables such as distance and relative test scores. She finds state tuition subsidies, or the lower in-state price public colleges charge, are influential in students' decision of whether to attend college and which school to attend.

In recent years, the best studies have used “natural experiments” to discern the impact of financial aid. The introduction of a new program that affects some students but not others can provide a useful research opportunity with the aid-eligible students being the “treatment group” and other being the “control group.” In several cases, researchers have compared the enrollment rates of these control and treatment groups before and after a new policy is created. As summarized by Dynarski (2002) in a review of the literature using quasi-experimental methods, this type of work again underscores that subsidies increase college attendance rates, attainment, and choice. Many of the remaining studies discussed in this section use these types of techniques.

The Impact of Federal Need-Based Grants

The Pell Grant, which was introduced in 1972 as the BEOG, is the largest need-based grant program in the United States. To determine its effectiveness, Kane (1996) uses the “before and after” technique of differences-in-differences by comparing the enrollment rates of low-income students for a period before and then after 1972 using the October CPS. The other income groups that were not eligible for the Pell Grant serve as the control group. To avoid the influence of the Vietnam draft on men's decisions, a known impetus for encouraging many men

to enroll, Kane limits the data sample to women only. Kane finds that enrollment grew 2.6 percentage points *more slowly* for the lowest income quartile, the expected beneficiaries of the Pell Grant, contrary to predictions. Only public two-year college enrollment seemed to grow more quickly for low-income youth. Other work by Manski and Wise (1983) and Hansen (1983) also found no disproportionate growth in college enrollment or completion of a bachelor's degree by low-income students after the introduction of Pell.

Researchers have been surprised not to find an effect. Several explanations for the lack of an enrollment impact have been discussed. Since total enrollment rates did not increase, this could suggest some relative shifts in enrollment among different types of colleges; in other words, Pell might have only had an impact on college choice rather than attendance. On the other hand, Leslie and Brinkman (1987) present the following counterfactual: They suggest that the aid may have worked well enough to maintain the distribution of students during the 1970s and 1980s. If true, this suggests that enrollment rates would have fallen much more if Pell had not been created. There might also be problems with the analysis. Year-to-year fluctuations may obscure underlying trends, so increasing the number of years in comparison would be helpful. The models also do not control for variation in other factors that might affect demand.

However, the most convincing explanations for the lack of a response among low-income students to the Pell Grant focus on problems with the program itself. As documented above, researchers suggest that low program visibility, the complexity of the application process, and intimidating audit procedures contributed to limiting the aid program's impact. Interestingly, the impact of the Pell Grant was found to differ for older, nontraditional students. Seftor and Turner (2002) instead focus on this population and examine how changes in the means-tested federal Pell Grant program affected enrollment decisions of potential students in their twenties and thirties. The results indicate sizable effects of the introduction of the Pell Grant on college enrollment decisions for older students. The authors underscore concerns about the complexity of the Pell Grant to explain the differential impact on nontraditional students. They suggest that because older workers have more experience with processes such as tax and government support forms, they may be more adept and less daunted by complex aid application processes (Seftor & Turner, 2002). Researchers continue to recommend simplifying the program and increasing its visibility among low-income populations. Research on other programs highlights the potential benefits of making such changes to Pell.

It is important to note that the current Pell Grant program is somewhat different than it was in the early 1970s. Therefore, it is unclear whether these studies reflect on the present nature and effectiveness of the policy. Most important, in recent years, the Pell Grant has declined in value after taking inflation into account. In real terms, the maximum Pell Grant in 1976-77 was \$4,870; it was only \$4,050 by 2006-07 (College Board, 2007b). In comparison to

tuition rates, the decline of the Pell is even starker. Recent action has been taken to increase the Pell Grant maximum, but the results of this action are yet to be seen.¹¹

Instead of studying the introduction of a new federal program, Dynarski (2002) examines the impact of eliminating a federal aid policy. The Social Security Student Benefit (SSSB) Program gave 18 to 22-year-old children of dead, disabled, or retired Social Security beneficiaries monthly support while they were enrolled full-time in college. At its peak, it provided grants totaling \$3.3 billion annually to one out of ten students. In contrast to the Pell Grant, awareness among potential beneficiaries was high due to notification from the government and the extremely simple application process. In 1982, Congress decided to discontinue the program. Dynarski estimates that doing so reduced college access and attainment by noting a difference of over 25 percent between the treatment and control groups. This translates into \$1,000 (1997 dollars) of grant aid increasing education attainment by 0.20 years and the probability of attending college by 5 percentage points.

The Shifting Focus of Grant Programs: The Impact of Merit-Based Grants

While much of federal grant aid focuses on need, recent programs instead focus on other award criteria, most notably, merit. During the last fifteen years, aid priorities have shifted from increasing the basic access of low-income students to focusing on the affordability concerns of middle- and upper-class families. In 1992, federal financial need calculations began to exclude home equity, thereby allowing many more middle class families to qualify for federal need-based support (Schenet, 1993). Then, with the introduction of the Georgia HOPE (Helping Outstanding Students Educationally) Scholarship in 1993, states began to promote merit-based aid programs, which research has shown to favor upper-class students (Dynarski, 2000; Cornwell, Mustard, & Sridhar, 2006). Although more money is allocated by states to need-based programs, spending on non-need based grant aid grew 348 percent during the past decade compared to 99 percent growth in need-based grant aid (NASSGAP, 2006). Many institutions have also shifted their focus from need to merit as part of enrollment-management strategies. During the 1990s, the proportion of institutional aid going to merit aid rose sharply (McPherson & Shapiro, 1998). The structure of institutional merit aid includes a range of preferential packages that vary from scholarships and grants based on standardized test scores to programs rewarding activities most likely to be found in affluent high schools.

Several strong papers have examined the impact of the Georgia HOPE Scholarship. Introduced in 1993, the program pays for the in-state public tuition of Georgia residents with a

¹¹For the 2007-08 award year, the maximum Pell Grant award is \$4,310, and it is scheduled to increase to \$4,731 for the 2008-09 award year. Source: <http://www.studentaid.ed.gov>

B-average in high school; residents choosing to attend in-state private colleges received \$3,000 during the early years of the program. Similar to the SSSB, the HOPE Scholarship is simple in design and much effort was made to publicize the program as well as train high school guidance counselors on how to help their students access the program. Dynarski (2000), using a natural experiment orientation with the October CPS data, compares enrollment rates in Georgia to other southern states before and after the program. She finds that Georgia's program has had a surprisingly large impact on the college-attendance rate of middle- and high-income youth. The results suggest that each \$1,000 in aid (in 1998 dollars) increased the college attendance rate in Georgia by 3.7 to 4.2 percentage points. Also, there was a much larger impact on college choice. Cornwell, Mustard, and Sridhar (2006) also examine Georgia Hope but instead use the Integrated Postsecondary Education Data System (IPEDS). They estimate that the scholarship increased the overall freshmen enrollment rate by 6.9 percentage points, with the gains concentrated in four-year schools.

However, the benefits of the Georgia HOPE Scholarship were not evenly distributed. Dynarski (2000) concludes that Georgia's program widened the gap in college attendance between Black and White students and between those from low- and high-income families. The reason is likely related to Hope's relatively stringent academic requirements. Additionally, a provision channeled the most generous scholarships to higher-income students. In the early years, the Georgia HOPE Scholarship required low-income students to fill out a longer, more complicated application to make sure they would do the necessary paperwork to qualify for federal aid, such as the Pell Grant. This may have reduced its efficacy among low-income students. However, the requirement was found to increase the number of Pell Grant awards dramatically (Singell, Wadell, & Curs, 2006). The increase in the number of Pell awards suggests that many individuals who qualified for Pell awards were not filing the FAFSA until mandated by the state. Because of confounding factors, research on the Georgia HOPE Scholarship cannot identify the extent to which financial aid is underutilized, but this again points to the financial aid application process as a barrier.

While the Georgia HOPE Scholarship was the first major state merit-based aid program, many others have followed, though these other policies have differed in how they define merit, funding sources, and the impact they have had on student outcomes. Dynarski (2004a) summarizes results from the Georgia HOPE analysis and includes evidence on other similar state programs. She notes that the distributional impact of Georgia HOPE, as discussed above, seems to be atypical of other state merit-based aid programs. The other state merit-based aid programs typically increased the attendance probability of college-age youth by 5 to 7 percentage points. Also, while Georgia HOPE was found to widen racial gaps in college attendance, other state's programs have tended to have a more positive effect on the college attendance rate of Black and Hispanic students. These differences are likely due to Georgia HOPE's relatively stringent academic requirements; other state programs use lower GPA and

SAT cutoffs. Also, Georgia HOPE used to have a provision that resulted in channeling the most generous scholarships to higher-income students; this provision has since been eliminated.

Research on the Effectiveness of Other Grant Programs

Another large state grant program is the Cal Grant. Its eligibility criteria mix both need and merit as students must meet thresholds in income, assets, and high school GPA. Kane (2003) uses a regression discontinuity research approach to analyze the impact of the program. His results suggest large impacts (3 to 4 percentage points) of grant eligibility on college enrollment among financial aid applicants, with larger impacts on the choice of private four-year colleges in California. Even with a large response, the impact of the program could have been larger as recent reports indicate many eligible students are not using the aid. According to Sturrock (2002), as many as 19,000 who had qualified for a Cal Grant failed to apply.

Other research studies instead focus on institutional grant policies to document the impact of aid. Van der Klauuw (2002) also uses regression discontinuity to estimate the effects of financial aid offers on college enrollment. The paper shows how discontinuities in an eastern college's aid assignment rule can be exploited to obtain credible estimates of the aid effect without having to rely on arbitrary exclusion restrictions and functional form assumptions. The results affirm the importance of financial aid as an effective instrument in competing with other colleges for students.

Financial aid is also thought to impact college choice, the intensity of enrollment (i.e., part-time versus full-time) and persistence. As noted above, the Georgia HOPE Scholarship was found to impact college choice even more than general enrollment. Long (2004a) studies how students compare colleges in making decisions. Using extensive student and college information, she examines how individuals chose where to attend college by estimating the importance of price, distance, and quality. The results suggest that price continues to be an important factor when individuals, particularly low-income students, choose among colleges.

Grants and Student Persistence

The overwhelming bulk of research on grants has focused on student access. However, researchers, practitioners, and policymakers have long theorized that financial aid is related to persistence, and there have been a number of studies that have analyzed the relationship between financial aid and persistence. A core issue in this line of research is that the characteristics that are positively correlated with receiving aid (i.e., being from a low-income family or having high test scores) are also likely to be associated with outcomes such as persistence and graduation. Therefore, a simple comparison of aid recipients to nonrecipients will not give a sense of the causal impact of financial aid on persistence. Similar to studies on

the effectiveness of grants on enrollment, to establish the true causal impact of grants, researchers have been forced to use innovative, quasi-experimental methods approaches to establish the role of grants on college outcomes. Bettinger (2004) is one example. He studies the causal effects of Pell Grants on persistence using differences in awards caused by small differences in family size and income. While suggestive that aid positively impacts persistence, the results are not robust to various specifications.

A number of additional studies document differences in the persistence patterns of aid recipients and nonrecipients without dealing with the selection issues. For instance, St. John (1989) finds that all types of aid packages were positively associated with year-to-year persistence during the 1970s and 1980s. Cabrera, Stampen, and Hansen (1990) explore the effects on the ability to pay on persistence using a national sample of 1,375 college students attending public four-year institutions and find aid has positive effects. In other work using data on students at the University of Oregon, Singell (2004) documents that need- and merit-based aid significantly increase retention, but he acknowledges that these effects are biased by selection. He supplements this analysis with survey data on students who leave the university and concludes that dropping out depends significantly on financial aid. Finally, some research suggests the relationship between persistence and aid differs by background. Paulsen and St. John (2002) find a strong correlation between financial barriers and persistence (re-enrollment) rates for poor and working-class students. Using data from the NPSAS, the researchers find that every \$1000 increment in tuition fees reduced the probability of poor and working-class students re-enrolling in college or university the following year by 16 percent and 19 percent, respectively.

Summarizing the Evidence: Which Types of Grants Are Most Effective?

Although price and financial aid have been found to influence students' decisions about college, the puzzle about why some aid programs have been more effective than others is particularly relevant when considering policy reform. While the existence of aid programs was once thought to be enough to enable the enrollment, clearly the visibility and design of the program also matters. In several cases, researchers have failed to document large, general responses to the introduction of financial aid programs (e.g., the Pell Grant). On the other hand, research on examples of highly-publicized financial aid programs characterized as being simpler in design and application has found large enrollment responses. For example, the Social Security Student Benefit (SSSB) Program, which had a very simple application process, was shown to have a large impact on enrollment (Dynarski 2002). Likewise, the Georgia Hope Scholarship, which was introduced with extensive advertising and the training of high school

guidance counselors, also had a surprisingly large impact on college enrollment (Dynarski, 2000; Cornwell, Mustard, & Sridhar, 2006).

In summary, the research suggests aid programs are most successful when they are relatively easy to understand and apply for and efforts are made to ensure potential beneficiaries are aware of them. This has also been found in the examinations of other social programs. Currie (2004) finds that the take-up rates on social programs are increased when eligible participants are automatically enrolled and administrative barriers are reduced.

When considering the most effective aid for low-income students specifically, the research also suggests that need-based aid is best. The relatively new merit-based aid programs, such as the Georgia HOPE Scholarship, have been shown to disproportionately help upper income students. The degree to which more affluent students are favored in aid programs appears to be related to how stringent the merit aid criteria are (Dynarski, 2004a). Singell and Stone (2002) come to similar conclusions about the distribution of merit aid by studying data from a large public university over several years. Their results suggest that merit-based aid increases enrollment for all students, but that financially-able students respond disproportionately, even with academic merit held constant. Therefore, increased emphasis on merit in financial aid may exacerbate the trend toward greater income inequality, even among students of equal academic merit. In terms of institutional aid, it is likely that tuition discounting in the form of preferential packaging and merit aid have decreased college access among those least able to afford higher education (Davis, 2003). Heller and Marin (2003) question whether merit aid is the best use of funds given that upper-income students have less financial need. It is also important to note that because they are already likely to attend college, it is questionable whether using funds in this way is the most effective method of increasing participation.

While the federal government has largely refrained from defining aid eligibility in terms of merit criteria, the recent creation of the Academic Competitiveness Grants signals a distinct new direction. This is a merit-based grant program that gives Pell Grant recipients additional funds for completing rigorous high school curriculum and maintaining a 3.0 GPA in college. Careful attention should be paid to the criteria used in awarding this aid and how it is publicized for fear of it duplicating the sometimes negative effects that have been found with other merit-based aid.

5. Loans, Tax Credits, and Savings Incentives

While federal grants have declined, loans have become the most prominent form of student funding for postsecondary education during the last 15 years. This is especially true for full-time, full-year students. From 1989-90 to 2003-04, the proportion of full-time, full-year students with loans rose from 36 percent to 50 percent. Moreover, average annual loan amounts during this period grew 38 percent in constant 2003 dollars, from \$4,486 to \$6,200 (Long & Riley, 2007b).¹² While 79 percent of loan volume is awarded by federal programs (Stafford, Perkins, and PLUS), private loan volume has risen substantially. Between 2000-01 and 2006-07, the amount given in private loans grew by a multiple of 2.7 times after adjusting for inflation (College Board, 2007b).

Naturally, cumulative debt, or the amount students borrow over the course of their educations, has also grown substantially over time. Long and Riley (2007b) find that between 1992-93 and 2003-04, cumulative debt accrued by second-year undergraduates at public two-year institutions increased an average of 169 percent, from \$3,087 to \$8,296 after accounting for inflation. Fourth-year undergraduates at public colleges faced cumulative debt amounts 76 percent higher over this period, accumulating an average of \$17,507 in loans over four years by 2003-04. Fourth-year undergraduates in 2003-04 at private colleges borrowed an average, cumulative amount of \$21,946, a 57 percent increase over the 10 years. Recent trends in student financing and loan policy suggest cumulative debt amounts will continue to grow at a rapid rate.

Has access to loans impacted college decisions? Certainly the increasing use of loans by students suggests that they have grown in importance, perhaps due to unmet financial need. However, growing reliance on loans as a policy option has important implications for college access and persistence. The research on the role of loans in college decisions is scant relative to that about grants, but there are clues to how this form of aid might affect higher education outcomes.

Are Students Averse to Loans or Do They Impact College Attendance?

Due to the fact that loans need to be repaid, they may have a different impact on access than grants, aid that does not have to be repaid. One implication of this is that although all students with college expenses are eligible for a loan, not all students will choose to obtain one, and there are differences in the propensity to take out a loan by background. Financial aid administrators report anecdotally that students from traditionally disadvantaged backgrounds

¹²These loan amounts reflect all sources, excluding amounts parents borrowed under the PLUS program.

often are unwilling to incur substantial debt to attend college. This may be related to socio-economic differences, as suggested by a 2003 report by ECMC Group Foundation that investigated cultural barriers to debt incurrence.

Long and Riley (2007b) find that minority students utilize student loans at equal if not higher rates than others, although they borrow smaller amounts on average. In short, reliance on student loans is not limited to any one characteristic or profile. Sjogren (1999) instead looks at differences in borrowing between male and female undergraduates using three national data sets. While some differences both in borrowing patterns and behaviors were found, men and women were found to borrow similar amounts. There has also been some debate about whether the debt is more for convenience than need (King, 1999).

While the findings suggest socioeconomic differences may play a role in student borrowing, more research is needed to understand how students and their families consider whether to take on debt. It is completely unclear how many students are kept out of college due to an aversion to debt. Given the shift in aid policy to loans, such differences have important implications for college access and success. Baum (2003a) concludes that more adequate grant funding continues to be necessary as the prospect of substantial borrowing discourages enrollment among some students, especially those from low-income and underrepresented groups.

Little is also known about how the availability of loans affects college access. Dynarski (2003) studies whether the availability of government loans affects schooling decisions. Identifying the effect of loans is empirically challenging, because eligibility for federal loans is correlated with observed and unobserved determinants of schooling. Dynarski exploits variation in loan eligibility after the Higher Education Amendments of 1992, which removed home equity from the set of assets that are taxed by the federal financial aid formula. She concludes that loan eligibility had a positive effect on college attendance. Loan eligibility also appears to shift students toward four-year private colleges. On the other hand, Savoca (1991) examines whether the shift in the composition of aid away from grants toward loans adversely affected college enrollments in the 1970s and 1980s. Her estimates suggest that the probability of attending college falls when loans replace grants, dollar-for-dollar, in the financial aid package.

Researchers have also explored other possible ways to conduct loan programs rather than the usual repayment schedule. Several papers have considered the benefits and costs of having income-contingent loans instead. Krueger and Bowen (1993) outline the debate among policy-makers about income-contingent loans and illustrate the role economic analysis could have in informing the debate. Chapman (1994) builds on the work of Krueger and Bowen emphasizing the view that income-contingent loans offer default-protection for borrowers. This

feature could be relevant for risk-averse students and those from disadvantaged backgrounds given that default on a college loan could mean diminished access to other credit markets.

Concerns About the Long-Term Repercussions of Loans

The burden of the debt has also been a popular topic of debate. Baum (1996) cautions about the intergenerational implications of shifting the burden of college payment from parents, and Baum (2003b) presents survey evidence that half of the respondents reported feeling burdened by their debt payments. To gauge whether loan levels are worrisome, one should examine indicators of a student's ability to pay back the debt. Debt burden, calculated as the percentage of monthly income a student must dedicate to loan payments, provides the one measure of whether rising loan amounts are problematic for students. In 2004, the American Council on Education (ACE) concluded the median debt burden of 7 percent was manageable and stable for students graduating with bachelor degrees in the 1990s. However, the report also found that one-third of borrowers face debt burdens above 8 percent, a level considered unmanageable by financial aid researchers (ACE, 2004).¹³ In addition, while debt levels may have largely been manageable for most students a decade ago, the situation has probably changed for current students. Higher cumulative debts combined with recent changes in federal loan programs suggest today's college students face even higher debt burdens, and these are likely to continue increasing in the future.

A few studies have examined the determinants of loan default in the current system. Recent research suggests default rates rise as cumulative debt increases. Choy and Li (2006) found that 20 percent of 1992-93 borrowers with \$15,000 or more in Stafford loans defaulted over a ten year period, compared to 13 percent who borrowed \$10,000 to \$14,999, and 8 percent who borrowed between \$5,000 and \$9,999. Podgursky, Ehlert, Monroe, Watson, and Wittstruck (2002) use panel data and find that students who are continuously enrolled or who complete their program are far less likely to default than students who drop out during the same period. The authors also illustrate the potential use of the model in targeting default prevention resources to students most at risk of default. Looking instead at Canada, Schwartz and Finnie (2002) analyze borrowing and repayment patterns using data from the National Graduates Survey (NGS) of the class of 1990. Overall, women borrowed only slightly less than men, repaid as quickly as men (despite lower earnings), but reported having significantly more

¹³Guidelines regarding the percentage of pretax income devoted to student loans are meant to ensure borrowers are able to meet other expenses such as car payments, rent or mortgage, and additional household expenses. The 8-percent rule was derived from credit-underwriting standards that limit monthly mortgage payments to 25-29 percent of borrower's income and total monthly debt payments to 36-41 percent of income (Scherschel, 1998).

difficulty in repayment. More research in this area might contribute to the debate about whether the loan burden is excessive.

Debt burden is also especially troublesome for students who do not complete a college degree (Long & Ansel, 2007). Among students who began college in 1995 and borrowed money but later dropped out, the median debt was \$7,000 (Gladieux & Perna, 2005). Students who dropped out of four-year programs accumulated a median debt of \$10,000, while drop-outs from two-year programs accumulated a median of \$6,000 debt. These amounts of debt are particularly difficult because although these students have incurred some of the costs of college, they are unable to reap the full benefits of a degree. Gladieux and Perna found that 22 percent of borrowers who dropped out of their degree programs defaulted on at least one loan within six years of originally enrolling in college, compared to only 2 percent of college graduates. Such a stark difference in default rates underscores the importance of degree completion and suggests that persistence is important in determining if a student is able to manage his or her debt.

Another set of concerns about student loans is that they could have unintended negative consequences on student decisions. It has been suggested that debt affects students' choice of major, deterring students from public service fields such as teaching and social work. According to the State Public Interest Research Groups' Higher Education Project, 23 percent of graduates from public institutions would face unmanageable debt burdens if they entered teaching based on average starting salaries. Thirty-eight percent of graduates from private colleges and universities would encounter unmanageable debt as starting teachers (Swarthout, 2006). Long and Riley (2007b) examine the monthly loan payments a new teacher would face if graduating with an average cumulative debt. Assuming a standard ten-year repayment schedule, using a fixed interest rate of 6.8 percent and taking the average 2003-04 starting salary of \$31,704 from the American Federation of Teachers, a graduate with \$17,507 in loans could expect a monthly payment of \$201.47.¹⁴ This represents 7.6 percent of pre-tax monthly income. A graduate from a private university with an average cumulative debt of a fourth-year undergraduate of \$21,946 would face monthly payments of \$252.56 under the same conditions, which amounts to 9.6 percent of monthly pre-tax earnings.

Loans could also impact life decisions after college such as buying a house, getting married or having children. Evidence is mixed, but research by Nellie Mae over the past 15 years suggests that attitudes towards education debt are becoming more negative. Furthermore, while multivariate analysis of past surveys failed to find a relationship between homeownership and student debt (Baum & Saunders, 1998), the 2002 survey found that home ownership rates declined by 0.2 percentage points for every additional \$1,000 in student loans. In other words,

¹⁴Stafford loans first disbursed on or after July 1, 2006, have a fixed interest rate of 6.8 percent. This change does not affect variable rates on loans made before this time.

for every additional \$5,000 accumulated in student loans, a borrower's likelihood of owning a home decreased by 1 percent (Baum & O'Malley, 2006).

In considering the impact of loans, it is worth noting recent changes in loan policy that are likely to impact cumulative debt levels, debt burden, and student outcomes. As noted above, an increase in Stafford Loan limits went into effect on July 1, 2007, the first increase in over fifteen years. This suggests debt levels will continue to grow in coming years. On the other hand, the College Cost Reduction and Access Act (H.R. 2669), which became effective October 1, 2007, set a schedule to gradually cut interest rates on subsidized Stafford loans for undergraduate students. The interest rate is currently 6.8 percent but will fall to 6.0 percent for loans first disbursed July 1, 2008 to July 1, 2009; 5.6 percent for loans first disbursed July 1, 2009 to July 1, 2010; 4.5 percent for loans first disbursed July 1, 2010 to July 1, 2011; and 3.4 percent for loans first disbursed July 1, 2011 to July 1, 2012. It is not clear if this effort to reduce interest rates will have a meaningful impact on debt burden as the amount borrowed continues to increase.

The Effects of Tax Credits

In addition to grants and loans, the government has also turned to the tax system as a way to provide financial aid. With the 1997 creation of the Hope and Lifetime Learning Tax Credits, the federal government introduced a dramatically different format and way to distribute aid. These credits provide a benefit to families who pay tuition expenses and incur tax liability. Relative to the Pell Grant, the tax credits maintain a much higher level of income eligibility (Long, 2004b), and therefore, unlike other programs in which the aid does not have to be repaid, the tax credits have exceptionally broad eligibility requirements. There is also a significant delay between when a recipient enrolls in college and when the benefit is received. This limits the ability of the tax credits to help families facing immediate liquidity constraints, such as a tuition bill due at the beginning of the semester given that the tax credits do not apply until up to 15 months later.

When first introduced as a possible policy, many researchers debated their likely effects (Hoxby, 1998). Cronin (1997) considered the interaction of the tax proposals debated by Congress with the Pell Grant program and shows that many students from low-income families would not benefit from a nonrefundable tuition credit. Kane (1997) also highlights the poor targeting of the tax credits to students on the margin of attending college as the primary weakness of the credits. These concerns have been confirmed since enactment. Most beneficiaries during the last three years have had family incomes over \$50,000 (Long, 2004b). Using several data sources, Long (2004b) analyzes the distribution of the benefits and the effect on enrollment decisions and college pricing. Analysis of tax return data suggests that what was intended to be a transfer to the middle class did benefit families with incomes between \$30,000

and \$75,000 the most. Insufficient tax liability due to low-income levels and the interaction of the credits with other aid programs prevent many low-income individuals from qualifying for a benefit.

Similar to the results discussed above about grants, complexity may have also impacted the take-up rates and effectiveness of the higher education tax credits. Long (2004b) finds that many students eligible for a federal higher education tax credit did not claim the benefit. The Government Accountability Office (2005) estimates that families eligible for the tax benefits could have reduced their liability by an average of \$169; among this group, one in ten could have benefited from an additional \$500 in benefits. The GAO concluded that the likely explanation for these choices is the complexity of postsecondary tax provisions. Take-up of the tax credits appears to be increasing over time, but this again serves to underscore the importance of information in the incidence of a policy.

While increasing numbers of families appear to be using the credits, there is no evidence that they have actually impacted college enrollment behavior. Using a large sample of individuals from 1990 to 2000, Long (2004b) did not find increased postsecondary enrollment among credit-eligible students after the introduction of the higher education tax credits. Additionally, the models tested whether college students increased their investments in higher education by being more likely to choose a four-year rather than two-year institution or attend full-time rather than part-time. Again, there was no discernable effect on the behavior of students affected by the tax credits.

College Savings Policies

Along with creating the Hope and Lifetime Learning Tax Credits, the 1997 legislation was also the beginning of several steps to provide families with tax incentives to save for their children's educations. There are a number of tax benefits for families who save for college, such as 529 Plans and Coverdell Savings Accounts, and the government does not tax investment gains in these accounts if they are used to pay for tuition. Dynarski (2004b) explores the incentives created by these various tax saving instruments. She finds that the advantages of the 529 and Coverdell rise sharply with income. Those with the highest marginal tax rates benefit the most from sheltering income, gaining most in both absolute and relative terms. In addition, the tax penalties that are assessed on families whose children do not use their Coverdell accounts to pay for college hit some families harder than others. Those in the top two tax brackets benefit more from non-educational use of a Coverdell than those in the bottom bracket gain from its educational use. Dynarski (2004b) also finds that 90 percent of families with a college savings plan had at least a college degree.

Ma (2004) examines the effects of education-saving incentives on the level of private saving by households. Using wealth data from a survey of TIAA-CREF participants, she attempts to estimate whether saving in education-saving programs offsets other household savings. The results suggest that education saving incentives in general do not offset other household savings and stimulate saving for households with high propensities to use education-savings accounts. Ma finds that the median income among users of these plans was \$100,000, far higher than the median income and median wealth among all families in the United States. Therefore, while the savings programs may be helpful to families who can afford to save, as of yet they have not been shown to address the issues of lower-income families.

Summarizing the Evidence: How Do Other Forms of Aid Compare to Grants?

As noted above, there is little research that documents the effectiveness of loans. On the other hand, many papers highlight a list of concerns that are special to loans. This includes some groups being reluctant to use them and the long term repercussions of an excessive student debt burden. Therefore, the increased complexity of loans in terms of both short- and long-term outcomes should be taken into account when determining policy. The effects of the massive movement to loans in recent years are likely only starting to be felt, and it is unclear if recent efforts to reduce the interest on government loans will have much impact on student debt burden or outcomes. In contrast, grants have a proven record of effectiveness, and so movement away from this form of aid is ill-advised.

Beyond loans, other forms of financial aid, such as tax credits and college savings programs, have also been documented to be less effective than grants. The Higher Education Tax Credits have not been shown to increase college attendance. Moreover, both the Tax Credits and college savings plans have been proven to favor more affluent families. Again, grants currently seem to be a much better policy instrument in addressing the needs of low-income students.

6. Do Colleges and Universities Also React to Aid Policy?

There is no doubt tuition prices have grown substantially in recent decades. Understanding why college prices have outpaced inflation is critical as families increasingly struggle to meet the costs of higher education. One concern is that policies aimed at improving college access and affordability may actually contribute to the problem of rising tuition levels. William Bennett, former Secretary of Education, summarized the concern in a 1987 *New York Times* Op Ed. He notes that because government aid enables students to pay more, it could also induce colleges to raise their tuition prices. If true, this type of institutional response could diminish the overall impact of an aid policy by reducing the net discount a student receives. Therefore, such concerns deserve careful examination as the implications for student affordability and the effective use of tax dollars are significant. Moreover, the behaviors of colleges are important to consider when devising student aid policy and higher education tax benefits.

In discussions of whether increases in government aid have spurred similar increases in tuition prices, some juxtapose rising college prices with increasing government expenditures on financial aid. However, the fact that these two trends move in similar directions does not mean that one *caused* the other. In fact, in the absence of financial aid, one would still expect tuition prices to increase substantially during the last several decades for a number of reasons. These explanations include reductions in state appropriations to public colleges and universities, increasing amounts of institutional financial aid, and growing expenditures on student academic supports. Given the myriad of these other factors that directly contribute to rising college costs, it is difficult to determine to what degree, if at all, increases in tuition prices are related to changes in government student aid policy. To correctly answer the question of whether financial aid policy has an effect on college tuition pricing, much more in-depth analysis is required than simple comparisons of price and financial aid expenditure trends.

What Does the Research Conclude?

The potential implications for college affordability raised by this issue have led numerous researchers to try to identify whether postsecondary institutions respond to government financial aid policies in their pricing. Of the many studies that have tried to identify whether colleges react to federal financial aid, most find little to no response. While several studies do find a college price response, their overall results are mixed and often contradictory. In summary, none of the numerous studies on the subject have found a “smoking gun” in terms of college pricing behavior.

Long (2004b) examines the response of colleges to the introduction of two federal higher education tax benefits, the Hope and Lifetime Learning Tax Credits. The results suggest that four-year colleges did not raise tuition prices in response to the aid. While some estimates in this study suggest that public two-year colleges may have reacted by raising their prices, other results do not support this notion. In fact, some estimates suggest colleges reduced their prices in response to the tax credits, the opposite of what theory would predict.

In another study, Rizzo and Ehrenberg (2003) examine how tuition prices are set by public universities and find no evidence that the schools increase their tuition levels in response to increased federal or state financial aid for students. Likewise, Singell and Stone (2007) find no evidence that in-state tuition levels at public universities responded to changes in the Pell Grant from 1989 to 1996. This study did find some support for the notion that private colleges and universities raise tuition prices in response to aid. However, because these institutions have few Pell recipients (i.e., they have few students impacted by the change in aid policy), the results seem attributable to factors other than government aid policy. Limitations with the data prevent more conclusive analysis. In unpublished work, Li (1999) also focuses on the effects of the Pell Grant by tracking recipients and the tuition levels of their respective colleges. She finds increases in Pell resulted in increases in tuition.

One possible reason for these conflicting results is that it is difficult to isolate the effect of government aid on tuition pricing from other factors. It is unclear whether changes in tuition are due to changes in the Pell or other general trends in higher education. For example, during the past twenty years, colleges have increasingly participated in tuition discounting, which raises the *list* price of a college while varying the actual *net* price individual students pay. To deal with this concern about properly isolating the institutional response, researchers have tried to identify groups of colleges that are *not* affected by the particular aid policy so they can get a sense of tuition trends due to all *other* factors that impact college price. The difference in price trends between the group affected by the aid policy and the group that was not affected could reflect the proportion of tuition influenced by the financial aid policy alone. This is similar to the natural experiment techniques used to study student responses to financial aid.

In the case of federal aid, it is extremely difficult to determine a relevant comparison group. Institutions in other countries face vastly different markets and trends and therefore do not serve as a good comparison group for American colleges and universities. Meanwhile, all institutions in the United States are affected by changes in federal aid policy to some degree, and institutions that are impacted differently by changes in federal aid programs often differ significantly in other ways that make them inappropriate for comparison. For example, colleges that are especially affected by changes in the Pell Grant (e.g., community colleges) are very different than colleges that would not be affected much (e.g., highly-selective, private institutions). Price trends between these two groups differ in ways that have nothing to do with

aid policy, making them poor comparisons for each other. These issues of research design must be taken into account when interpreting the results of any study.

Net price gives a better sense of the costs students actually face, and so it is also a better indicator of the reactions of colleges to government aid policy. Changes in net price would reflect whether colleges respond by not only altering their list tuition prices but also possibly their institutional aid policies. One study with administrative data on net price found that increases in government aid were coupled with *increases* in institutional scholarships at private colleges, (McPherson & Schapiro, 1991). Therefore, contrary to the concern about colleges taking advantage of government financial aid, the researchers found colleges further supplemented the support students received. While major conclusions should not be made based on one study, the findings highlight the importance of gathering more information, especially concerning net prices, to fully understand possible reactions of colleges in terms of their institutional aid awards to students.

While there are no robust results that support the notion that colleges have responded to federal aid by raising tuition prices in large numbers, there is some evidence of institutional responses to state aid. Long (2004c) examined the responses of colleges to the Georgia HOPE Scholarship. Unlike research on federal aid programs, this study has a clear comparison group of colleges facing similar trends: institutions in other states. When introduced in 1993, the Georgia HOPE Scholarship marked the creation of a very large aid source for students (\$3,000) in which the recipients were easily discernable by colleges and universities. This study of college behavior suggests a limited response among four-year colleges to the scholarship, with public four-year colleges experiencing increases in room and board but not tuition prices.

It is important to note that this evidence does not suggest the level of college exploitation insinuated by Bennett in his “Our Greedy Colleges” editorial. Furthermore, the estimates of this paper are likely to be an *upper* bound of possible institutional responses because the Georgia HOPE Scholarship was unique in several ways. The aid award was very large when introduced and the recipients were easy for colleges to identify making this the rare occasion when it would be relatively easy for a college to respond. Most aid programs are much more complicated and less transparent and so it is less clear how institutions might take advantage. Moreover, changes in federal aid are far less generous (i.e., only several hundred dollars) and so colleges have much less incentive to respond. In the case of the Pell Grant, there has not been a large, discrete change in its maximum since its creation. It is also important to note that even in the extreme case of the Georgia HOPE Scholarship, public two-year colleges did *not* increase tuition prices (Long, 2004c).

Why Has There Not Been a Larger Response by Colleges to Aid Policy?

In summary, most studies have not found that colleges respond to federal financial aid policies by raising tuition prices. Studies that do provide some support for the notion are plagued by mixed and sometimes contradictory results or weak research designs. However, more information is needed on net tuition prices and the use of institutional student aid, which are better indicators of the actual prices paid by students.

Given the substantial amount spent on financial aid, it seems impossible that colleges would not have taken advantage of this source of funding. However, for several reasons, responding to aid policy is not as easy for colleges as one might suspect. First, as noted above, most aid programs are complex, and this makes it difficult for colleges to identify which students benefit and take advantage of their increases in aid. As noted above, the major federal aid programs, such as the Pell Grant, require a lengthy financial aid application and have stringent eligibility requirements regarding student need. Colleges have difficulty predicting which students are eligible for the aid beforehand, and identifying the students afterwards takes significant time and resources. In fact, many students do not apply for financial aid, and so colleges do not know their family incomes to determine if they are indeed eligible for the benefit.

A second reason to doubt a college reaction is that most of the colleges with the largest tuition increases in recent years do not cater to students who receive significant aid benefits. Although selective, private institutions have experienced some of the largest and most visible increases in tuition prices, these schools have few students who receive a Pell Grant or Higher Education Tax Credit as the family incomes of their students tend to be very high. Therefore, the growth in their tuition prices is unlikely to be linked to federal financial aid policy. At the opposite end of the spectrum, community colleges serve many government aid recipients, particularly low-income students who are eligible for the Pell Grant. However, these colleges have a mission of maintaining low tuition levels to maximize access. As shown above, the evidence suggests that even in the face of a large, transparent financial aid policy, community colleges did not raise their tuition levels.

If Not Due to Aid Policy, Why Are College Prices Increasing?

While responses to federal financial aid do not explain the growth in college tuition, there are many other factors that have been shown to be important determinants of college prices. First, there have been significant reductions in state appropriations to public colleges and universities. State appropriations play an important role in determining public college price levels as these funds have traditionally subsidized the costs for students at public institutions,

thus allowing them to charge in-state students a discounted price (Long, 2004a). However, during the last several decades, state appropriations have not kept pace with inflation and/or growing student enrollments. As public colleges and universities have received less support from the state, they have made up the difference by increasing tuition prices.

The increasing costs of faculty and staff are a second reason for growing tuition prices. A majority of faculty members and staff at colleges are now Baby Boomers nearing retirement age. As they aged and gained experience, they received the customary raises and are now near the peak of their lifetime earning trajectories. For this reason, the increasing cost of instruction and other expenditure categories involving staff, naturally increased. Also, with the elimination of mandatory retirement due to court action in 1994, faculty members may stay in a job longer and have become more expensive for colleges (Ehrenberg, 2000). Another source of increasing college costs is health care. The costs of providing health care benefits to faculty and staff have continually risen for colleges and universities, just as they have for other businesses and industries.

Colleges are also spending more on technology and student services. Increasingly, they invest in costly technological improvements and upgrades both in the classroom and for research. Also, in response to the demands of students, colleges are spending more on student supports such as academic and career services (Ehrenberg, 2000). At the extreme, some colleges have responded to students' demands for amenities such as state-of-the-art residences and gymnasiums. While the justification of these expenditures is much more controversial, it is important to keep in mind that most institutions are not involved in such endeavors.

A fourth major reason for increasing tuition prices has been noted above — the growing use of institutional financial aid. Colleges are increasingly awarding financial aid to students. To fund these aid awards, colleges have increased list tuition prices and are in effect redistributing funds among students.

There is a great deal of diversity in terms of the finances of colleges, and it is difficult to discern whether each increase in expenditures is justified for educational reasons or questionable as an unnecessary expense. It is also important to note that all college students are subsidized by their institutions. With the exception of some for-profit colleges, the tuition prices paid by students do not cover the costs of their educations. Because no student covers his or her total educational costs with tuition, not even those paying the full list price without any financial aid, colleges must make up the rest of the cost with donations, endowment returns, grants, and by charging for the other services they provide.

7. Conclusions: What Does the Research Tell Us?

Students have significant unmet financial need suggesting that student financial aid is critical to improving college access and success. Despite substantial increases in access to higher education during the last several decades, postsecondary attendance in the United States continues to be stratified by family income. Recent analysis also documents significant unmet financial need among students. Without sufficient financial aid, students increasingly turn to loans and credit cards. They also work significant hours, and this has been shown to impact academic performance and reduce the chances that a student will persist to college graduation. Given the critical role higher education plays in both individual economic success and the public good, increased support of college access should be a major goal of the government. Special attention should be paid to addressing the documented needs of students, simplifying the design of aid programs and the financial aid application (i.e., FAFSA), and focusing on grant programs rather than less effective and more complicated forms of aid, such as student loans and tax credits. More specifically:

- **When designing an aid program, information and simplicity are important.**

The research literature strongly suggests that the visibility and design of aid programs matters a great deal. Policies appear to have differential effects based on how well they are publicized, implemented, and the ease of application. Research on examples of highly-publicized financial aid programs characterized as being simpler in design and application has found large enrollment responses (Dynarski, 2000, 2002; Cornwell, Mustard, & Sridhar, 2006). In summary, the research suggests aid programs are most successful when they are well publicized and relatively easy to understand and apply for. This has also been found in the examination of other social welfare programs (Currie, 2004).

Unfortunately, students and their parents appear to lack significant information on financial aid and college costs (e.g., Kane & Avery, 2004; Ikenberry & Hartle 1998; Horn, Chen, & Chapman, 2003). Increasingly, this fact is being recognized, and information has been acknowledged as a substantial barrier for many students who need financial aid. The current federal application for financial aid is extremely long and cumbersome, but concerns about the low visibility of aid programs and the complexity of the aid process have in turn spurred calls to enhance the visibility of aid programs and to simplify the aid application process. The current system of awarding aid could be closely approximated by using only a few pieces of information on the family (Dynarski & Scott-Clayton, 2006), and other models are being tested (Bettinger, Long, & Oreopoulos, 2007).

- **All aid is not equal: The impact of grants versus loans or tax credits.**

While grants have been shown to be effective in influencing student decisions if designed properly, support for this type of aid has not kept pace with inflation or rising tuition costs. Research suggests loans are less effective in increasing enrollment than grants, and so one should be cautious about the movement towards student loans as the primary form of financial aid. However, when weighing the advantages of one form of aid versus another, a more appropriate question might be how grants and loans compare in terms of cost effectiveness? While grants may have a stronger impact on student decisions, loans may be less expensive for the government to provide because they must be repaid by the student. However, any cost-benefit comparison should include more than just the direct costs and initial impact on enrollment.

When considering the cost side of loans, one must first take into account the subsidy incurred by the government in the form of interest paid while in college (for subsidized loans) and the fact that the interest rate charged is below the market rate (for all Stafford Loans). Additionally, the government shoulders the costs of guaranteeing the loans and giving incentives to private banks to provide them. However, the potential costs of loans do not end there. Loans are a much more complicated form of aid, and unlike grants, may have many long term effects, such as a resulting debt burden that could influence students' decisions during and long after college enrollment, perhaps in negative ways. Unfortunately, we know little about the totality of these longer-term effects or how to monetize them. In summary, while grants mainly have only upfront costs, the full costs of loans are potentially much larger than they appear on the surface. Therefore, even in the cost-benefit analysis, grants appear favorably though much more research is needed to accurately compare the two forms of aid.

Tax credits are also not as effective in increasing college enrollment in comparison to grants. The main beneficiaries of the tax credits are unlikely to be students on the margin of attending college. Moreover, as students do not receive the tax benefit at the time tuition payments are due, the effect of the credits on college access and choice is at best limited. Perhaps for these reasons, research suggests that the federal Higher Education Tax Credits have not had an impact on college enrollment (Long, 2004b).

- **Need-based aid is more effective in increasing access for low-income students than other forms of aid.**

One of the original and most prominent goals of financial aid policy is to enable the college attendance of students who would not otherwise be able to attend. Given gaps in enrollment by income, much of policy has focused on low-income students. With the movement from need-based to merit-based and other forms of aid, however, this aim is being lost. Merit-based aid programs, such as the Georgia HOPE Scholarship, have been found to

favor more affluent students. Similar results have been found in terms of the federal Higher Education Tax Credits and college savings programs. In terms of student loans, many are concerned that low-income students are especially reluctant to take on substantial debt. Given all these facts and the recognition that the government has limited resources, more attention should be paid to targeting students whose decisions might actually be altered by an infusion of support. For low-income students, this means focusing on need-based grants.

How Much Can One Expect Financial Aid to Do?

To what degree is the problem of college access due to *short*-term credit constraints versus the *long*-term influence of coming from a disadvantaged background? There is growing debate on this issue as some question whether financial aid is an effective policy for increasing access. For example, Carneiro and Heckman (2002) conclude that the long-term influence of family income and background is more to blame than short-term credit constraints in explaining differences in attainment. Additional long-run factors that might be important include primary and secondary schooling inputs. If so, then financial aid at the last minute is unlikely to completely address concerns about inequality. On the other side of the debate, researchers point to successful financial aid programs. When critics point to programs that have not been successful, supporters of financial aid emphasize the important role of information. If few students are aware of the availability of such resources, then this could help to explain why financial aid has not always had much of an effect, and short-term resources could be important. Much more research is needed to contribute to the debate about the role of financial aid versus other factors in addressing inequality.

Obviously, there are additional barriers to college access than cost and information. Academic preparation also plays an important role. Increasingly, students finish high school with below grade-level competency (Greene & Foster, 2003), and this has affected their ability to access and succeed in higher education. There are also significant gaps in test scores by background (Jencks & Phillips, 1998), and this could be related to differences in access. While many under-prepared students do not attempt to go to college, those who do enroll encounter significant barriers. The most common institutional response to under-preparation is placement in remedial or developmental courses. In 2001, colleges required over one-third of first-year students to take remedial courses in reading, writing, or mathematics (National Center for Education Statistics, 2003; Bettinger & Long, 2006). However, academic preparation cannot fully explain gaps in college access. As noted above, even after accounting for differences in academic preparation and achievement, the gaps remain with low-income high school graduates in the top academic quartile attending college at only the same rate as high-income high school graduates in the bottom quartile of achievement (ACSFA, 2001).

Unanswered Questions: The Need for Additional Policy-Relevant Research

Another goal of this review is to identify major holes in the literature, and there are several major areas that would benefit from additional research. First, while policy design appears to be important given the differences found between highly effective policies and those that were found to produce little response from students, additional research is needed on the specific design elements necessary to make a policy successful. Related to this is the role of information and marketing. How students perceive a policy is vitally important, but more concrete recommendations are necessary on how to reach students. This is a concern particularly for low-income students, who do not have the same access to high-speed internet resources or guidance counselors in schools. As noted above, more research is also needed on the long term effects of loans and loan burden as well as the impact of financial aid on persistence.

Context also appears to be important in determining how influential policy is. One needs to take the particular family, community, and policy context of a specific student into account when forming policies or programs. Not all students face the same barriers, nor do they all need the same things to be successful in college. Therefore, more direction on matching appropriate policies to different types of students would be beneficial. As no single solution should be applied to everyone, and careful consideration should be given to applying the proper solution to the appropriate circumstance, it would be helpful to know more about how particular policies affect specific groups and to categorize results in terms of particular types of students, institutions, regions, etc.

While there has been some research on the specific barriers and reactions of low-income and minority students, more investigation is needed in this area. Racial and ethnic minorities are quickly becoming a larger part of the population, and society needs to understand how policy might affect their outcomes. Little is known about the responses of Hispanic students, in particular. Nontraditional, older students also continue to make up a growing proportion of higher education, and much more must be understood about their decisions and choices.

The role of schools, colleges, and universities should also not be underestimated, but more research is needed to understand how these institutions interact with aid policy. They could be partners in informing students about their options and in meeting financial needs. On the other hand, while research on the behavior of colleges does not document major tuition responses to federal financial aid, these institutions could also react in ways to reduce the impact of policies. Family and community support are also thought to be essential in efforts to increase college access. These factors may be especially important for initiatives designed to raise education aspirations and increase information about aid and the application process, and so

careful thought should be given on how to create partnerships across the many players and stakeholders to address the problems facing students. Otherwise, elements of these could undermine the effectiveness of a policy.

While there has been a great deal of research on financial aid, there is still a need to make these theories, frameworks, and analyses more relevant for policy. First, there is a need to translate research results for a broader audience so they can be more widely accessible. Part of this requires researchers to translate research results into practical suggestions. It would be most useful to discuss how stakeholders could create conditions for college access and success. Unfortunately, much of the research uses vague or technical terms that are too abstract to be useful in designing policy. Of course, researchers must carefully judge the applicability of results to decisions that must be made about policy and programs.

Finally, researchers should be cautious in interpreting two variables that appear related as necessarily one causing the other. If a policy is based on research that documents only a correlation between two factors, then the policy may not fulfill the original intent of improving student outcomes because it will not address the root cause. An example of this involves the debate about college loans and persistence. A robust pattern found in the literature is that students who take out college loans are more likely to graduate college. If one assumes this relationship is causal (i.e., the loans are the reason the student's chances of graduation are higher), then the policy implication would be to encourage students to assume more debt. However, there are many reasons to believe the relationship between loans and graduation is not causal at all, and such a policy of increasing loans could have dire consequences. The key issue is that students do not randomly take out debt; instead, each must decide individually whether it is worthwhile for them to do so. The students who take out loans are more likely to have the characteristics that increase their likelihood of finishing college independent of the financial aid. For example, students with more academic preparation are likely to be more confident in their chances of graduation. If that is the case, then this underlying factor that makes the student believe he or she will succeed (i.e., academic preparation), not the loan, is the likely real root cause influencing the chances of college graduation. By distinguishing between a correlation and a causal effect, it becomes clear that the true implication for policy is not to encourage debt but to improve academic preparation (in this example) if one wants to improve college graduation rates. Getting to the root of the problem is essential if research is going to help produce better policies for students.

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