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INFORMATION CONSTRAINTS AND FINANCIAL AID POLICY

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ABSTRACT

One justification for public support of higher education is that prospective students, particularly those from underprivileged groups, lack complete information about the costs and benefits of a college degree. Beyond financial considerations, students may also lack information about what they need to do academically to prepare for and successfully complete college. Yet until recently, college aid programs have typically paid little attention to students' information constraints, and the complexity of some programs can exacerbate the problem. This chapter describes the information problems facing prospective students as well as their consequences, drawing upon economic theory and empirical evidence.

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INTRODUCTION

The economic rationale for public intervention in higher education finance rests on three potential market failures (Barr 2004). First, the social returns to higher education may exceed the private returns, thus justifying broad-based public subsidies. Second, private credit markets may not enable individuals to sufficiently borrow against future income to finance optimal educational investments, thus justifying public provision of (or at least public backing of) student loans. Finally, young people – particularly those from disadvantaged backgrounds – may have incomplete information leading them to underestimate the benefits (or overestimate the cost) of higher education, thus justifying the provision of targeted grants to improve access.

This third type of market failure has arguably increased in importance in recent years, as the net price of college (listed tuition minus grants) has become increasingly individualized. For example, in the United States, trends in list prices and net prices have diverged since 2007 as more institutions adopt high-tuition, high-aid policies; only about one-third of full-time US students now pay the published list price (College Board 2011). Similarly, as other nations dramatically expand access to higher education, budgetary pressures push them towards an "Anglo-American" model of higher education with prices that vary both across institutions and across students (Barr 2004; Turner 2009). At the same time, post-college earnings are also becoming more variable: studies in the United States have found that while the returns to a college degree have increased dramatically since 1980, wage dispersion within demographic and educational categories increased simultaneously (Autor, Katz & Kearney 2008; Lemieux 2006).

The evidence discussed below suggests that while many students appear well aware of the benefits of postsecondary education—in some cases even overestimating expected earnings gains—they persistently overestimate costs and are uninformed about sources of potential aid. Beyond costs and benefits generally, students face an even larger informational challenge when it comes to comparing the costs and benefits of specific institutions—which can lead to a haphazard postsecondary choice process. Students, particularly those from disadvantaged groups, also receive mixed informational signals regarding academic expectations both prior to and after college enrollment.

Ironically, the design of financial aid policy in many cases seems to assume away these information constraints. Complex aid formulae, poor marketing, and cumbersome application procedures can make it difficult for students to ascertain their eligibility well in advance of the college-going decision; in many countries (including the United States) students typically cannot obtain concrete information about financial aid until *after* they have applied for and been accepted at a postsecondary institution. As stated by Dynarski and Scott-Clayton (2006), "potential college students cannot respond to a price subsidy if they do not know it exists" (p. 320). And if information barriers are particularly acute among the disadvantaged, the effectiveness of financial aid policy can be undermined substantially.

In recent years, however, researchers and policymakers have approached a consensus regarding the importance of accounting for informational barriers in the design of financial aid policy (though reforms have in many cases fallen short of ideals): at a minimum, such policies should not exacerbate students' confusion about costs. More ambitiously (and sometimes controversially), financial aid policy has also been leveraged to promote informed institutional choice and positive academic behaviors.

This chapter proceeds as follows: first, I review the evidence regarding the nature and extent of students' underlying information constraints; second, I discuss the role of financial aid policy in alleviating or aggravating these constraints; third, I discuss the implications for financial aid policy design. While this review draws primarily upon the US experience, evidence from other countries is included where available and applicable. I conclude with a discussion of caveats.

STUDENTS' UNDERLYING INFORMATION CONSTRAINTS

This section will examine the types of underlying informational constraints students face that might be addressed via financial aid policies. First, how well informed are students with respect to the cost and benefits of postsecondary education generally? Second, how well informed are students with respect to the variation in costs and benefits across institutions and/or programs? Third, how well informed are students regarding what actions they need to take in order to prepare for and successfully navigate college?

Information about the benefits and costs of postsecondary education

While econometricians have established the large returns to postsecondary schooling, students' human capital investment decisions are driven by subjective perceptions rather than actual returns (Manski 1993). While only a handful of studies have examined students' perceived benefits from postsecondary education, what evidence is available suggests that at least in the US, undergraduates are aware of the substantial payoff to a college degree (Smith & Powell 1990; Betts 1996; Dominitz & Manski 1996). For example, Betts (1996) surveyed 1,269 undergraduates at the University of California, San Diego and found that while students' beliefs about future wages were noisy (with median absolute errors of about 20 percent), their estimated wages were on average about 94 percent of actual wages.

A survey of undergraduates, however, cannot address the concern that students with poor information will not attend in the first place. The data on high school students' earnings expectations is even more sparse, but suggests they are no less aware of the benefits to college. Avery & Kane (2004) find that high school seniors accurately estimate or even overestimate the returns to college, though their sample includes only about 400 students from two high schools; Dominitz & Manski (1996) also find relatively accurate estimates among a convenience sample of 71 high school students.

In contrast to students' awareness of the benefits of postsecondary education, survey data consistently indicates widespread confusion about college costs. For example, a 1998 survey of the general public indicated that while 56 percent of respondents reported knowing "a lot or a good amount" about college costs, on average they overestimated tuition prices at public four-year institutions by 212 percent and the total costs of attendance by 99 percent (Ikenberry & Hartle 1998). Average tuition and total costs at public two-year institutions were overestimated by 180 and 193 percent, respectively.

Horn, Chen & Chapman (2003) confirm these findings with data from the National Household Education Survey: 1999, which surveyed a nationally representative sample of 7,910 adolescents and their parents about college costs. Results indicated that among 11^{th} and 12^{th} graders who planned to pursue postsecondary education, only 52 percent had obtained any information about

tuition fees, as had only 54 percent of their parents. Among those who either had obtained cost information or were willing to make an estimate (approximately 63 percent of students and 71 percent of parents), students and parents overestimated the tuition costs of public four-year institutions by 65 and 80 percent respectively, and overestimated the tuition costs of two-year institutions by 240 and 153 percent, respectively.

It is worth considering why it is that perceived prices are systematically too high, rather than merely noisy estimates of true prices. One hypothesis is that media reports on college costs may distort public perceptions by focusing on the highest-priced elite private institutions (Advisory Committee on Student Financial Assistance, 2005).[1] This hypothesis is supported by evidence that the public overestimates prices at private four-year institutions by "only" 30 to 40 percent (Ikenberry & Hartle 1998), while Horn, Chen & Chapman (2003) find estimates within one to 12 percent of actual averages for 11th and 12th graders (and their parents) who plan to attend such schools.

The evidence also suggests that socioeconomically disadvantaged families face greater information barriers regarding college costs and benefits. Ikenberry & Hartle (1998) found that low-income individuals and minorities were the most uninformed about the costs of college and the most likely to believe they could not afford to attend. Betts (1996) found that college students from low-income families tended to estimate lower payoffs to a college degree than did other students.[2] Horn, Chen, & Chapman (2003) found that both self-reported cost awareness and the ability to accurately estimate costs were positively and significantly related to parental education and household income. Grodsky & Jones (2007) confirm that disadvantaged families are less likely to be cost-aware and have noisier estimates of college costs, when they are willing to provide them (though they find that the *average* overestimate is fairly uniform by socioeconomic status). Finally, in a small survey of roughly 400 high school seniors, Avery & Kane (2004) found that students at high- and low-SES high schools similarly overestimated both the costs and

[1] See, for example, "Those Scary College Costs," by Tom Morganthau and Seema Nayyar, *Newsweek*, April 29, 1996, p. 52, or "Most Expensive Colleges 2011: College Costs Reach New Highs," *BusinessWeek*, October 25, 2011, http://images.businessweek.com/slideshows/20111025/most-expensive-colleges-2011/.

[2] Students were explicitly asked to estimate national averages for graduates in various fields, rather than to report their own personal wage expectations.

benefits of attending college, but that students at low-SES high schools were only half as likely to believe they "definitely" would be able to afford college (37 percent versus 76 percent).

Evidence from other countries

There is no reason why the pattern of findings from the US – that students have good information about benefits, but dramatically overestimate costs – should necessarily extrapolate to other contexts. Evidence from a recent survey of 1,055 randomly selected adult Canadians finds similar overestimates of average tuition (with mean estimates 107 percent above actual prices), but also finds that respondents also underestimate the return to a university degree by a factor of five (Usher 2005). In the developing world context, Jensen (2010) finds that eighth-grade boys in the Dominican Republic substantially underestimate the returns to secondary school. On the other hand, Nguyen (2008) finds that among parents of fourth-graders in Madagascar, perceptions of returns are noisy but centered around observed averages, and Attanasio & Kaufman (2009) find that Mexican youth either accurately estimate or overestimate returns to high school and college depending on how earnings expectations are elicited.

Information about particular institutions

Classical economic theory implies that an abundance of choice can never be a bad thing, and in the US, "[n]o nation in the world offers as much choice to potential undergraduates" (Goldin & Katz 2008: 254). Recent work in psychology, marketing and behavioral economics, however, presents compelling evidence that there can be a "dark side of choice" (Botti & Iyengar 2006) that can lead to decision mistakes, procrastination, and regret (for a review of these concepts applied to higher education, see Scott-Clayton 2011a).

Indeed, if estimating the individual returns to postsecondary education is challenging, trying to figure out which *particular* institution offers the best return can be overwhelming. Boundedly rational individuals faced with a plethora of options may be unduly influenced by seemingly minor variations in how choices are structured and framed (Tversky & Simonson 1993; Bertrand, Karlan, Mullainathan, Shafir & Zinman 2005). For example, when a major testing company made a minor change to the process of sending admissions test scores to institutions – increasing the number of free "score reports" to four from three – it resulted in a disproportionately large

increase in the number of colleges to which students applied (Pallais 2009a).[3] Even academically elite students appear to be irrationally sensitive to the way in which admission and financial aid offers are framed: one study found that such students are more responsive to aid packages that include "scholarships" rather than "grants" of an equal size (Avery & Hoxby 2004).

One adverse consequence of college choice confusion that is of particular concern to policymakers is the issue of "undermatching;" that is, that some low- and middle-income students may not attend the most selective institutions for which they academically qualify. Selectivity is often used as a proxy for college quality, and research indicates that it is associated with graduation rates, time to degree, and post-college earnings even after controlling for incoming student characteristics (Bowen, Chingos & McPherson 2009; Bound, Lovenheim & Turner 2009; Zhang & Thomas 2005).

In the US, academically talented low-income students may face similar or even lower net costs at highly selective private (and public) institutions than at less selective ones (Avery & Turner 2009).[4] Yet a recent study by Bowen, Chingos & McPherson (2009) using administrative data from North Carolina finds that nearly 60 percent of highly-qualified students in the bottom quartile of family income failed to attend the most selective institution for which they were eligible (as did 64 percent of those whose parents had no college education). Similarly, a study of Chicago Public School students by Roderick, Nagaoka, Coca & Moeller (2009) found that fewer than half of students in academically advanced high school programs attended the most selective institution they could attend – and 20 percent of these students never even applied to a four-year college.

Both qualitative and quantitative evidence suggests that this apparent undermatching is due to inadequate information and support throughout the college decision and financial aid application process (Roderick et al. 2009; Avery & Turner 2009). Students who severely overpredict net

[3] Additional score reports cost just $5.00 before and after the change, too small an amount to explain the large observed change in application behavior.

[4] For example, Hill, Winston & Boyd (2005) find that low-income students faced an average net cost (tuition, fees, and living expenses minus grants) of $7,552 at a sample of highly selective private institutions in 2001-02 (with an average list price of $33,831), a year in which the average net cost at a public four-year institution was $6,294. Because of substantial variation at these elite institutions, many low-income students paid less.

costs (or report not knowing net costs at all) are significantly less likely to apply to selective colleges and universities (Avery & Turner 2009).

Students who are not well-informed about the costs and benefits of different types of institutions also may be vulnerable to misleading advertising or even outright fraud on the part of some institutions. For example, qualitative evidence suggests that the marginal college students targeted by community colleges and for-profit colleges often make their institutional selection haphazardly and fail to investigate more than one option (Rosenbaum, Deil-Amen & Person 2006). It thus may be no coincidence that an undercover investigation of 15 for-profit colleges by the US Government Accountability Office (GAO) found that all 15 made "deceptive or questionable" statements to prospective applicants regarding program duration, costs, or graduation rates (US GAO 2010, p. 9).

Information about academic preparation and expectations

Finally, students may be poorly informed regarding what they need to do both before and during college in order to successfully complete a degree. Adelman (2006) finds that the academic intensity of a student's high school coursework "counts more than anything else in precollegiate history in providing momentum toward completing a bachelor's degree" (p. xviii). Yet high school graduation requirements are generally poorly aligned with requirements for college-level coursework (National Commission on the High School Senior Year 2001). Combine this misalignment with the limited availability of high school counselors and a reluctance of these counselors to "cool out" individuals' college aspirations, and the result is that many students may never receive concrete, realistic guidance about the specific courses and grades they need to obtain in order not just to enter, but to do well in college (Rosenbaum, Deil-Amen, & Person 2006). Moreover, low-income and minority students may have both fewer opportunities to obtain the academic preparation required for college and less "college knowledge" regarding what is expected in the first place (see review by Goldrick-Rab, 2010).

This ambiguity about expectations may continue after college entry. For example, a primary reason why students fail to graduate on time is that they fail to take enough course credits beginning in the first term of enrollment (Scott-Clayton 2011b). Yet despite concerns about

students' lengthening time-to-degree (Bound, Lovenheim & Turner 2010), students may receive mixed messages about their expected course load. For example, while a bachelor's degree typically requires 120 credits to graduate in the US, financial aid regulations define a "full-time" student as one that takes 12 credits per semester, and a five-year degree plan has become standard at many "four-year" institutions (Scott-Clayton 2011c).

THE ROLE OF INFORMATION IN FINANCIAL AID POLICY

What is the role of financial aid policy in this informational context? The primary goal of financial aid policy is to lower the cost of college at the point of entry – whether to address the presence of social externalities, credit constraints, or information failures. A first principle of financial aid policy design might then be, "do no harm." Otherwise, even in the absence of any underlying information failures, lack of information about the availability of aid can become a problem on its own that may undermine the equity and effectiveness of financial aid policy. The role of information in financial aid policy as will be discussed below, using examples of grant and loan programs from the US and UK.

Information and the effectiveness of grant aid

Over thirty years of research in the US context demonstrates that large and transparent student grant programs can increase college enrollments (Long 2008). The best quasi-experimental evidence suggests that an additional $1000 of grant aid may increase college enrollment by 4 percentage points (Deming & Dynarski 2009). Key studies showing positive effects include Dynarski's (2003) study of the Social Security Student Benefit (SSSB) program, studies of the GI Bills (Stanley 2003; Bound & Turner, 2002), Kane's (2007) study of the Washington, DC, Tuition Assistance Program, and several studies of state merit aid programs (Kane 2003; Dynarski 2004, 2008; Cornwell, Mustard, & Sridhar 2006; Scott-Clayton 2011b).

An important and puzzling anomaly to the lesson above – which has been noted in prior reviews (Dynarski & Scott-Clayton 2006; Long 2008; Deming & Dynarski 2009) – is the relatively weak evidence regarding the Pell Grant program, which is the largest grant program in the US and which has provided need-based aid to low-income students since 1965. The broadest studies of the Pell Grant program, including an early study by Hansen (1983) and a subsequent study by

Kane (1996), find no detectable effect of the introduction of Pell Grants on college enrollments for eligible (low-income) populations.

One hypothesis for the lack of overall impacts has been that the complexity of the Pell eligibility and application process obscures its benefits and prevents the program from reaching the individuals who need it most—those who are on the fence about college for financial reasons. In order to obtain a Pell Grant (or indeed any type of federal student aid, including work-study and student loans), students must complete the Free Application for Federal Student Aid (FAFSA), a process that remains daunting even after multiple attempts at simplification in recent years (Dynarski & Scott-Clayton 2006; Dynarski & Wiederspan 2012). Students must assemble information about their own income and savings, their parents' income and savings, their receipt of various other types of governmental assistance, and the amounts of various other types of income and liabilities (such as education tax credits claimed, child support paid or received, and other "money received or paid on your behalf").[5] This information is based upon the prior tax year (e.g., 2011 for students entering college during the 2012-2013 academic year), and thus cannot be finalized until the spring of students' last year of high school.

This information, or some subset thereof, is then processed under one of eight different eligibility formulae, the choice of which depends upon family income, whether a student is classified as dependent or independent, whether or not he/she has children, whether anyone in the household received benefits from another federal means-tested program, and what type of federal income tax form the family is required to use.[6] At the end of this process, out comes an "expected family contribution" or EFC, which is described as "**not** the amount of money that your family must provide…[but rather] an index that colleges use to determine how much financial aid you would receive if you were to attend their school."[7] Students must then wait for schools to contact them with details of their aid package.

[5] See the 2012-2013 version of the FAFSA On The Web Worksheet, http://www.fafsa.ed.gov/fotw1213/pdf/fafsaws13c.pdf.

[6] The choice of formula and the formulae themselves are not computed by the student for obvious reasons, nor are they made accessible to students and their families. But enterprising individuals can find copies of the 36-page formula guide online at http://www.ifap.ed.gov/efcformulaguide/attachments/082511EFCFormulaGuide1213.pdf.

[7] Emphasis in original. A sample Student Aid Report can be found at http://edicsweb.ed.gov/edics_files_web/04703/Att_2012-2013%20Student%20Aid%20Report.pdf.

The consequences of this system include not just the compliance costs of assembling information, filling out forms, and following up with inquiries. The complexity of the process and lack of transparency in the eligibility determination process means that students and their families have little idea how much aid they will receive until far along in the college decision process. The so-called "marginal student" who is the primary target of need-based financial aid may passively decide against college before ever learning about their aid eligibility. As described in Dynarski & Scott-Clayton (2006), it is difficult for students to respond to a subsidy they do not know about. The lack of information about available aid is acute: a recent national survey of 600 young Americans aged 26 to 34 found that fewer than 3 in 10 individuals without a college degree had any idea what a FAFSA is (Johnson, Rochkind & Ott 2011).

In contrast to the Pell Grant program, the programs that have demonstrated positive impacts tend to have simple, easy-to-understand eligibility rules and application procedures. This includes the SSSB program, GI Bills, and state merit aid programs. For example, in the case of the SSSB program, students were already receiving the benefits in high school, so they were aware of the value of the benefit. They then would receive a letter indicating that they would need to enroll in college full-time in order to continue receiving the benefit after they turned 18 (Dynarski 2003). In the case of US state merit aid programs, the scholarships simply cover "tuition and fees" at in-state public institutions, or provide a fixed dollar amount of grant aid, for students with a grade point average (GPA) and/or college admissions test score above a certain cutoff (Dynarski 2004). Applications for these state programs are often one page in length or less, collecting primarily demographic information.

Perhaps because of their simple design, students appear to be well-informed about state merit aid programs well in advance. For example, nearly half of Georgia middle-school students and nearly seventy percent of high school students could without prompting name that state's program, the HOPE scholarship, as a source of college aid (Brackett, Gordon & Henry 1999). About half of students and two-thirds of their parents could name the primary benefit (free tuition) and requirement (3.0 GPA) of the program.

Note that two studies that have found evidence of positive effects of Pell Grants examined populations that may be less information-constrained than other prospective students. Seftor and Turner (2002) find positive effects of Pell Grants for older "nontraditional" students and Bettinger (2004) finds weak suggestive evidence of positive effects on college persistence for those already enrolled. Both findings are consistent with a story in which information and experience with bureaucracy is important: older individuals may have learned about the Pell program over time, and continuing students may learn about the program once they enroll in school. Those who have recently graduated from high school but not yet enrolled may be the least informed and least equipped to figure out the process.

A recent experimental study by Bettinger, Long, Oreopoulos, & Sanbonmatsu (2009) provides dramatic evidence that the complexity of financial aid applications can itself become a significant barrier to college access. In the experiment, low-income families who visited a tax-preparation center were randomly assigned to one of three groups: 1) a "full treatment" group who received both personalized information about eligibility for financial aid as well as personal assistance with completing and submitting the FAFSA; 2) an "information-only" group that received personalized information about financial aid eligibility but no application assistance; and 3) a control group that received a brochure with general information about college costs, financial aid, and the value of going to college.

The full treatment, which took less than 10 minutes and cost less than $100 per participant, increased immediate college entry rates by 8 percentage points (24 percent) for high school seniors and 1.5 percentage points (16 percent) among independent participants with no prior college experience. After three years, participants in the full treatment group had accumulated significantly more time in college than the control group. Impacts on actual financial aid receipt were even larger.

Information and the effectiveness of loan aid

If complexity is a barrier to the effectiveness of grant programs, it is almost surely an even greater obstacle when it comes to student loans. In the US, federal student loan eligibility is processed under the same system as for Pell Grants, utilizing the same FAFSA application and

overlapping eligibility formulae. But unlike Pell Grants, students are not automatically offered the full federal loan for which they are eligible; individual institutions have discretion on whether and how federal loans are incorporated into aid packages. Some institutions choose not to offer any students federal loans or downplay their availability, a practice that appears more common at community colleges (Burdman 2005). Thus, students cannot know for sure what loan assistance will be offered until after they have been accepted and received financial aid award letters from each institution.

Even once offered a student loan, students may struggle to digest all of the information required simply to describe the terms of the loan, let alone to evaluate whether and how much they should optimally borrow. Students need to know not just the size of the loan, but the interest rate, whether that rate is fixed or variable, whether interest accrues while the student is enrolled, when repayments begin, how repayments are calculated, and what protections are available should the student earn less than expected after graduating or otherwise leaving college. In the US, several of these loan features can vary across students depending upon income and family size (both at the time of loan origination, and during repayment), loan size, field of study and/or career, and the year in which the loan was originated.[8] Moreover, in the US, students have multiple repayment options including a standard ten-year mortgage-style repayment plan, an extended repayment plan, a graduated repayment plan, an income-contingent repayment (ICR) plan, and a new income-based repayment (IBR) plan initiated in 2009.[9]

Combine this with uncertainty regarding how much students expect to earn after finishing their schooling, and it can be extremely difficult to estimate in advance the repayment burden and risk associated with a given loan amount. Moreover, many prospective students will have little if any experience with such complicated financial contracts; because of this inexperience young people, particularly those from low-income families, are prone to making financial mistakes (Agarwal, Driscoll, Gabaix, & Laibson 2008; Lusardi, Mitchell, & Curto 2010).

[8] Until recently, federal loans also varied depending upon whether they were provided by private lenders and guaranteed by the government, or provided directly by the government. Since 2009, all new federal student loans originate directly from the government.

[9] The IBR plan is a new option and has a similar structure to the ICR plan, but is only available to borrowers whose income-based repayment amount would be less than the standard repayment amount, and its terms are typically more generous.

Debt aversion – the reluctance to borrow even when doing so would enable an investment with high expected returns – may result in part from confusion about loan terms. Debt-averse students may simply follow a quasi-rational rule-of-thumb to avoid financial transactions that they do not understand. Qualitative evidence from the US and UK suggests that low-income, minority, and first-generation students may be particularly wary about debt (Callender & Jackson 2005; Burdman 2005).

Confusion may also help explain why only about 8 percent of borrowers opt into the ICR/IBR plans.[10] While these plans may offer significantly lower monthly payments, their calculation is more complex compared to a fixed standard repayment amount and necessitates an annual documentation of income and family size.[11] Students also must proactively opt into such plans; the default is the 10-year fixed repayment schedule. Materials provided to help students evaluate their repayment options emphasize that cumulative payments will be much larger when payment periods are extended, essentially assuming a zero discount rate (Chapman 2006). Overall, studies of the older ICR plan conclude that the low take-up is due to poor explanation and marketing, with less than a third of students aware the plan existed and an even lower proportion of financial aid advisors reporting that they understood the option well (Chapman 2006; Schrag 2001).

Unlike with grants, there are not enough studies of the effectiveness of student loans to determine how simplicity and transparency may mediate their impact. Dynarski (2005) finds suggestive evidence of positive effects of student loan expansions in the U.S. in the early 1990s on college attendance, but the estimates are not highly robust to specification checks. Findings from the non-experimental literature "can at best be described as mixed" (Heller 2008, p. 46), perhaps because studies are inconsistent in whether they compare loans to grants, other types of aid, or to no aid at all. Based on the non-experimental evidence, Heller (2008) concludes that

[10] This estimate is based upon the distribution of borrowers who consolidated their loans (not from default), which indicates the loans had entered repayment. The standard repayment plan is the default plan for borrowers who have not yet entered repayment. See *The Budget for Fiscal Year 2012*, p. 372: http://www.whitehouse.gov/sites/default/files/omb/budget/fy2012/assets/edu.pdf

[11] For example, under the IBR plan payments are calculated as 15 percent of the difference between adjusted gross income and 150 percent of the poverty line (determined by family size and state of residence), divided by 12.

college enrollments are not as sensitive to loans as to grants. But since they also cost less, it remains unclear whether loans may still be cost-effective compared to grants.

What is clear is that students do not like holding loans. An experiment by Field (2009) finds strong evidence of a pure distaste for loans among law school students. Admitted students at one school were randomly assigned to receive either (1) a public service scholarship which would convert to a loan if students did not pursue public service after graduation, or (2) a loan which would be forgiven if students decided to pursue public service after graduation. The two treatments were financially equivalent, yet framing the program as a loan which could be forgiven was much less effective in inducing students to public service than a grant which might convert to a loan.

While government-backed student loans have long been a standard component of higher education finance in the US, they are comparatively new in the UK but growing rapidly. First introduced in 1990, student loans expanded after major policy changes in 1998 and 2004 (Callender & Jackson 2005). This expansion is expected to continue as tuition fees continue to rise; for 2012-13 some institutions will be able to charge as much as £9,000, up from £3,375 for 2011-12, and students will be able to borrow the full amount of tuition if needed as well as additional amounts for maintenance.[12]

Given the issues discussed above, it is no surprise that the increasing reliance on student loans has raised concerns in the UK. Callender & Jackson (2005) find that disadvantaged students are more likely to be debt averse (as measured by survey questions about debt attitudes) than other students, and that debt aversion was predictive of students' decision not to attend university even after controlling for other factors.

The new system of student financing in the UK, while certainly more complicated than the previous tuition-free system, would appear to have several advantages over the US system in terms of simplicity and transparency. First, while tuition charges and the mix of student aid may vary across institutions and individuals, no student is required to pay tuition charges up front

[12] See "Student Finance: University and higher education" at www.direct.gov.uk.

regardless of their financial situation because loan limits are pegged to tuition fees (in the US, federal loans for dependent undergraduates are limited to $5,500 to $7,500 per year, with a cumulative cap of $31,000, regardless of actual tuition charges).[13] Second, all loan repayments are determined under a simple income-contingent formula (currently 9 percent of income above £21,000). Finally, the student loan system is integrated with the tax system so repayments are calculated and deducted automatically.

Yet the UK system far from eliminates the problem of information failures. Given the relatively new reliance on loan financing, students and their families (particularly those from low-income backgrounds) appear to be wary about how the loan system works and whether the debt will be manageable (Callender & Jackson 2005). Moreover, a study by Adnett & Tlupova (2008) found that higher education entrants were much less informed about tuition fees and available aid than they believed they were. Over a third of entrants did not know whether they would qualify for a bursary (institutional grant). Moreover, entrants from non-white ethnicities were more than twice as likely to report feeling poorly informed about student finance.

Given the increasing reliance on student loans in both the UK and US, a critical question for future research is how sensitive students are to the specifics of how loans are structured and framed. Are there ways to make loans more attractive and less risky for students, without drastically increasing costs? For example, the cost of a loan program is greatly affected by the interest rate that is charged and whether interest accrues while students are still enrolled in school, yet there is evidence from other contexts that individuals do not give such details as much weight as they should when making savings and borrowing decisions (Benartzi & Thaler 2007). Similarly, with income-contingent repayment schemes, it is unclear how students weight either the income disregard or the income assessment rate in their decisions about borrowing. If loan schemes cannot be made more comprehensible to students, any subsidies incorporated into loan programs may be ineffectual. Students may be more responsive to an aid package that includes an upfront grant and an unsubsidized loan, rather than to a package with the same present discounted value but including only subsidized loans.

[13] Note that there are no limits to the amount that private institutions in the UK may charge, and student loans are not guaranteed to cover the full amount of private tuition. However,

IMPLICATIONS FOR FINANCIAL AID POLICY DESIGN

Identifying and addressing informational barriers can, at a minimum, help ensure that the impacts of government grant and loan policies are not watered down by confusion and uncertainty. There is widespread agreement among researchers and policymakers in the US regarding the need for simplicity, transparency, and predictability in financial aid (ACSFA 2005; Dynarksi & Scott-Clayton 2006; Long 2008; Rethinking Student Aid Group 2008). These principles have also been emphasized by the Office for Fair Access in the UK when providing guidance to institutions on best practices relating to student financial assistance (OFFA 2009). In this section, I briefly summarize the key informational principles that support financial aid effectiveness. I then discuss how financial aid policy can be leveraged further to address additional underlying information constraints – for example, by incorporating incentives to promote positive student (or institutional) actions. Finally, I evaluate whether purely informational interventions might achieve the same goals.

The basics: simplicity, transparency, and predictability

The body of evidence described above suggests that the most effective grant programs are the ones that are simple, both in terms of eligibility determination and application logistics. Simplicity is easier to attain if the aid schedule is pegged to meaningful amounts (such as "tuition and fees"), and if eligibility is based on a limited number of criteria. While policymakers and financial aid professionals often worry that simplifying eligibility criteria will lead to inaccurate identification of needy students, Dynarski & Scott-Clayton (2006) show that this concern is unwarranted in the case of US Pell Grants because only a handful of financial factors drive the need calculation.

Although almost no one opposes simplification in theory, simplification in practice can be surprisingly difficult. For example, recent efforts to simplify the FAFSA in the US led to the removal of about two dozen application questions, but another dozen have been added; also, a new option to electronically import financial information directly into the FAFSA from the tax system can only be used by a small subset of applicants (Dynarski & Wiederspan 2012). Political realities also suggest that it is harder to simplify an existing program than it is to design a simple

one in the first place, because simplification necessarily creates some perceived winners and losers (Dynarski & Scott-Clayton 2007).

Transparency means that students can easily understand what they need to do to qualify and what they will get if they do. Simplicity also facilitates transparency, but the two are not necessarily equivalent. For example, the FAFSA experiment described above (Bettinger et al. 2009) dramatically simplified the aid application process for those in the full treatment group, but underlying this simplified process remained an enormously complex eligibility calculation. Even after learning their aid eligibility, students may have no idea what made them eligible (and thus what might make them eligible or ineligible in subsequent years). Similarly, an aid system that comprises many simple niche programs may lack transparency overall regarding who is eligible for what.

The concept of transparency might further be extended to include the concept of salience: what does the program *mean* to students and their families? Salience can be an important factor in program participation (Bertrand, Mullainathan & Shafir 2006). Programs that lack transparency may have little salience, such that even when information is conveyed it fails to "stick." Further, programs that trigger positive student identities of merit and achievement may have greater salience (and thus greater public support) than those triggering negative identities of poverty and need (Dynarski 2004). This is one reason why institutions in the UK have been advised to "avoid dwelling too much on 'financial hardship' when describing bursaries as some students may find this off-putting" (OFFA 2009: 6).

Finally, a critical component in the design of effective aid policy relates to early notification and predictability. Students and their families should be able to predict their college costs several years in advance, rather than making them wait until after admission to learn their eligibility. Students who are unsure of their ability to afford college may not take adequate steps to prepare academically while they are still in middle and high school. Without early notification and predictability, there are thus limits to the impact of simplifications that occur only at the margin of college application (such as the application assistance that occurred in the FAFSA experiment). One factor that has presented a barrier to early notification in the US is the reliance

on the prior year's tax information in eligibility calculations: for example, in order to apply for aid for the 2012-13 academic year, a student needs 2011 tax information that may not be finalized until April 2012. Using tax information from the prior-prior year (e.g. 2010 in this example), however, would enable aid to be calculated a full year earlier and would result in very few changes to individuals' eligibility status (Dynarski & Wiederspan 2012).

What else can be done via financial aid policy?

Leveraging financial aid policy to promote institutional accountability and informed choice

In the US, federal financial aid policy has long been used as a lever to require institutions to provide more information about costs of attendance, available aid, and application procedures to prospective students (see 20 USC Sec. 1092). The Student Right to Know Act of 1990 further required all institutions participating in federal financial aid programs (known as Title IV funding) to calculate and disclose graduation rates among full-time degree-seeking students.

But just because institutions must disclose this information does not mean that students or their families can easily find it, or that they know what to do with it. Indeed, many of these informational requirements predate the studies, described above, finding informational barriers to be a significant problem. This should temper expectations regarding the likely impact of more recent disclosure requirements (e.g., in October 2011 all Title IV-participating institutions were required to post net price calculators on their websites). In the UK, the Office for Fair Access (OFFA) has advised institutions that financial aid information should be actively promoted among potential students, in light of survey evidence that many students do not seek this information out because they do not know where to look (OFFA 2009).

Leveraging financial aid policy to promote academic achievement

Financial aid programs can be designed to address information problems on multiple levels. For example, a number of state-level programs in the US tie college scholarships to high school achievement, thus sending students early signals of what is expected of them beyond simply earning a diploma. In Tennessee, where students could receive up to $3,000 per year in aid if they met GPA and test score requirements, students' test scores rose significantly after the

introduction of the program (Pallais 2009b).[14] A few states have so-called "early commitment" programs in which financial aid is committed to prospective students early in high school or even middle school, on the condition that students also commit to follow through on specified academic and behavioral requirements such as taking a certain set of courses, earning a certain GPA, and staying out of legal trouble (Heller 2006). While there have been no experimental or quasi-experimental studies of these programs, one carefully controlled study of Indiana's Twenty-First Century Scholars Program suggests that they significantly improve both students' aspirations and actual enrollment (St. John, Musoba, Simmons, Chung, Schmit & Peng 2004).

Similarly, financial aid programs that incorporate incentives for college achievement appear to be particularly effective, though the impact may be driven by motivational mechanisms rather than by improved information per se. For example, Brock and Richburg-Hayes (2006) find strong evidence that performance-based scholarships increase GPAs and persistence in community colleges, while Angrist, Lang, and Oreopoulos (2009) find weaker evidence at a large college in Canada (both studies were randomized experiments).[15] A quasi-experimental study by Scott-Clayton (2011b) of West Virginia's PROMISE scholarship, which includes stringent requirements for annual renewal, finds that the program significantly increased graduation rates. The scholarship increased GPAs and credits completed in the first three years of college, but in the last year of the scholarship—while students are still receiving the money but no longer facing the minimum requirements—the program's effect disappears. This suggests that while merit-based aid may convey important information about expectations, they may need to provide students with concrete motivation, not just information, in order to be effective.

Can purely informational interventions achieve the same goals?

To the extent informational constraints are a barrier, it is conceivable that purely informational interventions might impact postsecondary access without requiring an overhaul of financial aid policy. The evidence on this proposition is somewhat mixed, however. The Bettinger et al. (2009) experiment described above also finds that the personal application assistance included in the full treatment was instrumental to the overall impact: they find no impact of only providing

[14] The study finds that the increases in test scores are too large to be explained simply by increases in re-testing.
[15] They find significant effects of a performance-based scholarship, but only for females who received additional services in addition to the financial incentive. There were no significant effects for the full sample.

participants with individualized information about aid eligibility. This important finding suggests that there are limits to the impact of providing information alone. Nonetheless, it does not rule out the potential for purely informational interventions to work in other contexts. For example, is possible that informational interventions may have a greater impact when targeted to students earlier in high school, when delivered by counselors (or teachers or even peers) with whom students have an existing relationship, or when accompanied by additional information about how to apply for aid or where to turn with questions (rather than only information about potential eligibility). Finally, it is worth noting that the control group in the Bettinger et al. (2009) also received some information about college costs and financial aid that they may not have had before; it is possible that this may have had an independent impact and that personalizing the information simply provided no additional impact.

A small experiment conducted by Oreopoulos & Dunn (2011) in low-income Canadian high schools finds some evidence that information alone can change educational aspirations when presented in an interactive, engaging manner. Study participants filled out a survey on educational aspirations and financial aid awareness. Half were then randomly assigned to view a multi-media web page, including a short video and a financial aid calculator. The video, which was professionally designed and targeted to a youth audience, provided information about the benefits of postsecondary education and how financial aid could help defray the costs. Students could print out the results of the financial aid calculator along with information about how to apply.

Three weeks later, both groups were surveyed again. The treatment group had significantly increased their educational expectations and were significantly more likely to believe they would qualify for a grant. The pattern of impacts was most consistent amongst the students with the lowest baseline educational expectations. The study did not examine actual postsecondary outcomes; however, for the low-expectations group the treatment did increase the proportion who requested additional information about specific institutions at the end of the second survey.

Evidence indicates that purely informational interventions may be particularly impactful in the developing world, where information barriers among the disadvantaged may be particularly

acute. For example, in a field experiment by Jensen (2010) in the Dominican Republic, eighth grade boys in randomly selected schools were given information on average earnings for middle-aged men with different levels of education. Six months later, these students had significantly increased their perceptions of the returns to schooling, and over the next four years, these students completed 0.20 more years of school than their randomly-selected counterparts in the control group. Similarly, a field experiment conducted by Nguyen (2008) in primary schools in Madagascar found that providing parents with accurate information about returns to education led to a significant increase in their children's test scores.[16]

CONCLUDING CAVEATS:
LIMITATIONS ON THE ROLE OF INFORMATION CONSTRAINTS

Two caveats to the discussion above are warranted. First, work in psychology and behavioral economics has illuminated a realm of constraints on optimal decision-making that go beyond the purely informational, including bounded rationality as well as bounded self-control (see Scott-Clayton [2011a] for a more in-depth application of behavioral economic concepts to higher education policy). Even with perfect information, individuals may struggle to make good use of it if their own preferences are unstable (Tversky & Simonson 1993) or if the complexity of the analysis required induces cognitive overload (Agarwal, Driscoll, Gabaix, & Laibson 2008). And even if individuals know what they want to do, they may delay or avoid taking action because they think it will be easier in the future (Laibson 1997), they want to avoid the regret associated with closing off alternatives (O'Donoghue & Rabin 2001), or they want to avoid "hassle factors" (Bertrand, Mullainathan, & Shafir 2004). Thus, while poor information may exacerbate many of these problems, perfect information does not necessarily eliminate them. Indeed, there is evidence that few individuals actively decided against going to college; instead, they have high aspirations but simply fall off the path to college by failing to take the specific actions required to attend (Avery & Kane 2004). This may help explain the failure of the purely informational treatment in the FAFSA experiment (Bettinger et al. 2009).

[16] As predicted by theory, the impacts were heterogeneous, with decreased test scores among students whose parents had originally overestimated the returns to schooling. Also note that because the post-test was administered just a few months following the informational intervention, it is possible that the increase in scores reflects an increase in effort rather than an increase in underlying human capital.

Second, while students' information constraints appear to present a serious obstacle to optimal educational decision-making, they are far from the only barrier to postsecondary access. Credit constraints appear to have increased in importance in the US over the past thirty years as costs have risen and aid has stagnated (see Lochner & Monge-Naranjo [2011] for a recent review of the evidence regarding credit constraints). Inadequate academic preparation is also a critical barrier (Greene & Foster 2003). More broadly, it can be difficult to identify the separate effects of informational constraints because individuals who are financially or academically constrained may rationally devote less time and effort to learning about college costs, benefits, and requirements (Grodsky & Jones 2007).

Notwithstanding these caveats, information constraints remain an important consideration for policymaking for at least two reasons. First, they can potentially be addressed at low cost, particularly if they are acknowledged early in the policy design process rather than after the fact. Second, if unaddressed, they can potentially undermine the effectiveness of even very large investments in financial aid.

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