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Intended college attendance: Evidence from an experiment on college returns and costs☆

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ABSTRACT

We conduct an information experiment about college returns and costs embedded within a representative survey of US household heads. Baseline perceptions of college costs and benefits are substantially biased, with larger biases among lower-income and non-college households. Respondents are randomly exposed to objective information about average college "returns" or costs. We find a significant impact of the "returns" experiment, persisting in a follow-up survey two months later: intended college attendance expectations increase by about 0.2 of the standard deviation in the baseline likelihood, and gaps by household income or parents' education decline by 20–30%. We find no impact of the cost information treatment. Further analysis supports the information's salience, as opposed to information-based updating, as the main channel through which the returns intervention impacts intentions.

1. Introduction

College enrollment rates, defined as the percent of high school graduates who have enrolled in a two- or four-year college, have hovered between 60 and 70% in the United States over the last two decades (National Center for Education Statistics (NCES), 2013). Over the same time period, the average degree attainment rate in the US has been about 35%; that is, only about a third of young adults have gone on to complete a four-year college degree (OECD, 2013). Strikingly, these trends are not driven by a low or declining college premium; in fact, the college premium appears to have been quite large and unchanged throughout the period (Oreopoulos and Petronijevic, 2013). Another notable and rather alarming fact is the large and persistent gap in college enrollment by both income and parental education (Bailey and Dynarski, 2011).[1] Problematically, straightforward cost-benefit analysis would imply that these gaps should go in the opposite direction: college returns have been shown to be magnified for non-college households (Card, 1995), and government subsidies and private financial aid tend to make college costs lower for low-income households (Dynarski and Scott-Clayton, 2013).

In this paper, we focus on biased information about college costs and benefits as a possible explanation for these gaps in enrollment.[2] Households (especially disadvantaged households) may have incomplete and biased information leading them to underestimate the benefits and overestimate the costs of college, which could lead them to make suboptimal decisions. There are several reasons to believe that the

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[1] Our analysis of the Current Population Survey shows a 24–30 percentage point gap in immediate post-secondary enrollment by household income and by parents' educational attainment between 2013 and 2015, which is somewhat larger than those gaps' 15-year average. In 2013–2015, 68.4% of high school graduates from households with earnings over $50,000 immediately enrolled full-time in (a 2- or 4-year) college, compared to only 42.7% of high school graduates from lower-earning households. Likewise, high school graduates whose household-head parent held a bachelor's degree had a 79.4% college enrollment rate, whereas high school graduates whose parent had no more than a high school degree had a 50.5% enrollment rate.

[2] There are certainly other possible explanations for these patterns. Rising college costs may have made more American households—in particular, lower-income and less-educated households—face severe credit constraints (Lochner and Monge-Naranjo, 2012), which might then leave them unable to invest in further education in the short-term despite the long-term benefits. Changes in students' college preparation and changes in resources at colleges over time could also partly explain the aggregate patterns as well as the gaps observed by socioeconomic background (Bound et al., 2010).

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role of information frictions may have increased in recent years. First, college net tuition has become increasingly individualized, with the gap between average sticker prices and average net prices increasing even among public schools from 26% to 45% between 1994 and 2013 (Baum and Ma, 2013). Second, while the average college premium remains stable, wage dispersion has increased substantially within educational categories and demographic groups (Autor et al., 2008; Altonji et al., 2014), which – even with persistent educational segregation – would suggest that information gaps could play an increasing role in education trends over time (Scott-Clayton, 2012).[3] Furthermore, given consistently and increasingly high levels of educational and income segregation in the US (Watson, 2009; Reardon and Bischoff, 2011) and individuals' propensity to gather information from their local networks, disadvantaged households are less likely to have accurate information about college costs and benefits.

To examine the role of information gaps, we conduct two randomized information experiments, embedded within a survey, in which respondents are provided with objective information about average college returns or costs. For this purpose, we added a novel set of questions to the January 2015 Survey of Consumer Expectations (SCE), a representative monthly survey of roughly 1300 US household heads run by the Federal Reserve Bank of New York. Conducting these experiments on the SCE sample provides substantial benefits–the sample is large, nationally-representative, willing to respond to a long battery of questions, and tracked over time—though has the drawback of a relatively small proportion on the margin of actually making college attendance decisions.

At the baseline, we elicit respondents' beliefs about college costs and returns.[4] We also elicit two measures of respondents' college attendance expectations. All respondents are asked for the expected likelihood with which they would recommend college attendance for a friend's child. Respondents with children under the age of 18 are also asked for the expected likelihood of their child attending college in the future. The advantage of eliciting intended behavior about a future action is that we can investigate its relationship with respondents' current stock of knowledge, as well as measure how it changes in our information experiments. In addition, beliefs about intended behavior tend to be strong predictors of actual future educational choices, above and beyond standard determinants of schooling (Jacob and Linkow, 2011; Beaman et al., 2012), and tend to be strongly associated with actual future outcomes (Dominitz, 1998; Delavande and Rohwedder, 2011). However, whether experimentally-induced variation in expectations impacts actual choices is less understood.[5]

In the intermediate stage, respondents are randomly assigned to either a control group or to one of two information treatments. In the first, which we refer to as the "returns" experiment, respondents are provided with the actual ratio of the average earnings of college graduates to those of non-college workers.[6] In the second, the "cost" experiment, respondents are provided with the actual average net costs of both public and non-profit private universities.[7] The control group is provided with no additional information. In the final stage, we re-elicit beliefs about college returns and costs, as well as the intended likelihood of future college attendance, from all respondents. Finally, to investigate the longer-term impacts of information, we re-elicit beliefs about college returns, costs, and intended attendance from the same respondents in a follow-up survey two months later.

At the baseline, we find that nearly three-quarters of respondents underestimate average returns to a college degree. Moreover, both college-educated and higher-income respondents have significantly lower absolute errors in their perceptions of average college returns, suggesting that biased beliefs about college returns may play a role in college attendance gaps by income and education. While about 60% overestimate average college net costs, there are no notable disparities in beliefs regarding net public college cost across education or income.

The mean expected probability that one's child will attend college in our sample is 80% with a standard deviation of 25 points, indicative of substantial heterogeneity. The heterogeneity in personal college attendance expectations is partly explained by individuals' locations: individuals living in higher-income areas, counties with higher actual relative college returns, and areas located near flagship public universities – all endogenous variables – have higher attendance expectations. We find a statistically and economically significant gap of between 10 and 15 points in college attendance expectations by parents' income or education level: for example, the mean expected likelihood of one's child attending college is 86% for higher-income households but 71% for lower-income households.[8] We also find that intended college attendance is strongly associated with beliefs about that child's college returns. In turn, beliefs about a specific child's college costs and returns are based on perceptions of *average* college costs and returns in the population. Thus, if the latter perceptions are biased, then information interventions that provide objective information about college returns and costs may impact intended choices. We test for this directly using our information experiments.

We find that the college returns intervention immediately increases parents' reported likelihood of sending their child to college by an average 4.9 percentage points, and increases the likelihood of recommending college for a friend's child by an average 2.3 points. This corresponds to a 0.2 standard deviation increase in college attendance expectations.[9] Furthermore, the impact is substantially larger for disadvantaged respondents. As a result, the education and income gaps in parents' college attendance expectations close by around 30% (and the recommendation gaps close by 15%). The follow-up survey, conducted two months after the intervention, affirms the returns experiment's persistence (in the aggregate as well as at the individual level).

The college cost intervention, on the other hand, is found to have no statistically significant impact on either measure of expected college attendance, for the full sample or any of the demographic sub-groups. As a result, the college cost intervention has no significant impact on the magnitude of the demographic gaps. We speculate on possible reasons for this result later in the paper, but the question of why the cost experiment does not lead to any significant impacts (at least in the short term) needs further research.

Information interventions may have an impact on (intended) behavior if (1) the provided information was ex-ante unknown, or (2) if the targeted individuals already had the information, but the

[3] The ratio of average annual earnings by college-educated and non-college respondents to the Current Population Survey, however, has been largely stable, remaining between 1.78 and 1.83 from 2002 to 2012.

[4] We refer to income differentials by education levels as "returns" to education, but we do not mean to use this term to imply causal returns to schooling.

[5] There is a small and growing literature that shows that experimentally-induced changes in expectations impact behavior. Wiswall and Zafar (2015b), for example, show that providing college students with information on major-specific earnings causes some students to change their intended major, and that the students are more likely to graduate with the reported post-information major than the pre-information major. In an application to investment in housing, Armona et al. (2016) show that experimentally-induced revisions of home price expectations lead to revisions in the share of one's investment portfolio that is allocated to a housing fund.

[6] We use the term "non-college" to refer to individuals who do not have a four-year bachelor's degree.

[7] We refer to objective statistics based on national-level datasets (such as the Current Population Survey) as "actual" or "true", when in fact they are just estimates based on (representative) samples of the population. After all, this is the kind of objective information that individuals have access to when making related choices.

[8] We define households to be higher-income if their annual income is over $50,000 per year, and lower-income otherwise.

[9] Hoxby and Turner (2013) find that providing information on population net college costs and college application procedures to high-achieving low-income students increases students' enrollment in "peer institutions" by 0.12 standard deviations; Carrell and Sacerdote (2012) find that a combined information and fee-waiver intervention in New Hampshire public schools increases college enrollment by 0.11 standard deviations. The cost of these interventions varies drastically: $6 per student for the former and around $600 per student for the latter (Hoxby and Turner, 2013). Note, however, that these are changes in actual enrollments rather than changes in the intended likelihood of enrollment.