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Evaluating For-Profit Higher Education: Evidence from the Education Longitudinal Study

A CAPSEE Working Paper

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Abstract

This study evaluates the postsecondary and labor market outcomes of students who attended for-profit colleges. The evaluation complements a similar study by Deming, Goldin, and Katz (2012) that found significant differences in outcomes between students in for-profit colleges and those in other sectors. In this study we use the Education Longitudinal Study of 2002, a nationally representative survey monitoring the transitions of young people who were 10th graders in 2002, and compare outcomes during the college years and up to age 26. In accord with Deming et al. (2012), we find adverse levels of borrowing and some evidence of wage penalties for students who attended a for-profit college. Paradoxically, however, these results are not associated with lower attainment levels, and there is little evidence that for-profit students were less satisfied with their college experience. These results hold even with detailed controls for ability, for alternative comparison groups, for selection into the for-profit sector, and for alternative designations of for-profit college enrollment. However, the combined effect of higher borrowing and lower earnings for students at for-profit colleges is substantial such that the average returns to community college dominate those at for-profit colleges.

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1. Introduction

With over two million enrollees and over 10 percent of the postsecondary student population, the for-profit higher education sector has recently come under scrutiny (U.S. Department of Education, National Center for Education Statistics [NCES], 2011; U.S. Government Accountability Office [GAO], 2010). Recent studies have found relatively low earnings and high levels of debt among students who attend these colleges, although some of these patterns are not robust to alternative specifications (Belfield, 2013; Cellini & Chaudhary, 2012; Lang & Weinstein, 2013). In a comprehensive evaluation using the Beginning Postsecondary Students Study, Deming, Golding, and Katz (2012) identified a series of penalties that are incurred when attending a for-profit institution. These include lower aid and higher (net) tuition, higher loan balances during and after college, worse labor market outcomes, and lower satisfaction with college. Puzzlingly, however, these penalties do not appear in educational outcomes: for-profit students are more likely to have obtained either a certificate or associate degree than students in other sectors (and they are less likely to have taken remedial coursework). Given its depiction of a set of negative outcomes (and one puzzling outcome), this evaluation merits retesting with alternative data.

In addition, other studies have found less robust or imprecise evidence for penalties from attending a for-profit college; it is therefore important to examine whether a consensus picture can be drawn. It is also important to note that even if the differences in a single outcome are found to be modest (or empirically sensitive), the combination of large loans and poor labor market outcomes may indicate a substantial overall penalty for attending a for-profit college. This combined effect has not yet been explored or calculated to yield a full estimate.

In this paper, we undertake an extensive evaluation of the consequences of enrolling at a for-profit institution as compared with either a public two-year or public/private four-year institution. For our analysis we use the Education Longitudinal Study of 2002 (ELS), a nationally representative survey dataset of 10th graders in 2002 and 12th graders in 2004 with additional survey waves in 2004, 2006, and 2012. We focus on the financial consequences of attending a for-profit college, with specific attention to differences in financial aid, labor market outcomes, and student loan balances. We also apply a set of sensitivity tests to identify possible explanations for differences across sectors.

Our paper is structured as follows. First, we review the evidence on for-profit colleges, noting differences in results and methodological challenges. Next, we describe our data and highlight important descriptive patterns. We then present results to map against those of Deming et al. (2012), hereafter DGK (2012); we find that, with only one exception, our results accord directly with theirs. We then investigate our findings in further detail with alternative specifications and comparison groups, as well as with a selection correction model. In our conclusion, we discuss next steps for understanding what we might now consider the emergent consensus on enrollment in for-profit postsecondary colleges.

2. Background

Differential Returns Across Sectors of Higher Education

If higher education were a truly competitive market, labor market returns net of tuition for a given program should not differ systematically between for-profit colleges and public or nonprofit colleges (Turner, 2006).[1] However, research has identified several salient market imperfections (Cellini, 2010, 2012). One imperfection is that students do not appear to be perfectly (or adequately) informed as to program quality across colleges and that this informational deficiency may be strongest for new or smaller colleges. A second imperfection derives from imperfect capital markets: some students are credit-constrained or face borrowing terms that skew their decisions toward particular college types. A third imperfection is the existence of barriers to entry into and exit from the higher education market (e.g., via accreditation systems and state regulations). This barrier may allow weaker providers to last longer in the market. Finally, market imperfections are created by differential access across colleges to public funding. Although direct subsidies might prop up weaker public colleges, these are not the only way to access to public financing. Instead, most colleges rely heavily on federal aid, and this reliance varies strongly by sector: whereas 94 percent of for-profit students receive federal aid, the rates are 57 percent at public colleges and 70 percent at private nonprofit colleges (NCES, 2011). Given these market imperfections, we might expect systematic differences in returns.

Our focus here is on assessing these difference in terms of for-profit colleges. These colleges operate with a different organizational, managerial, and ownership structure as compared with public or private nonprofit colleges (Breneman, 2008; Kinser, 2007). These differences may make them more efficient than public institutions, but differential financing (their inability to access direct public subsidies and low reliance on alumni donations) may more than offset any efficiency gains. Hence, market imperfections may differentially affect their enrollment shares and growth. Ultimately, it is an empirical question as to whether for-profit college outcomes are superior or inferior to those from other institutions. However, due to these structural differences, the net cost of attending a for-profit college is likely to involve a different economic calculus. Specifically, for-profit colleges charge higher tuition fees, which would need to be recouped both by lower opportunity costs in terms of lost earnings while enrolled (Liu & Belfield, 2014) and by higher labor market returns post graduation (Cellini & Chaudhary, 2012).

[1] Program mix and student characteristics do differ across sectors such that the market is not perfectly competitive in the sense of being a homogeneous product. For-profit colleges offer more vocational programs and disproportionately serve greater numbers of underprepared students, as well as low-income students and students of color (Chung, 2012). We control for student characteristics in our estimations.

Evidence on Labor Market Gains From Attending a For-Profit College

A number of studies have recently estimated the returns to attending a for-profit college. Overall, these studies have not found clear differences.[2] Using the Beginning Postsecondary Students Longitudinal Study (BPS), Lang and Weinstein (2012, 2013) found no difference in returns to certificates and associate degrees across students in for-profit and nonprofit colleges. Using the National Education Longitudinal Study of 1988, Chung (2009) found no wage gains for associate degrees (but did find positive returns to certificates) earned at for-profit colleges. Using the National Longitudinal Survey of Youth 1997, Cellini and Chaudhary (2012) identified comparable returns to completed awards across for-profit and public colleges but lower returns to for-profit students who did not complete. Using two statewide administrative datasets, Liu and Belfield (2014) found earnings penalties for students who transferred to a for-profit college having first enrolled at a community college.[3]

However, in the most comprehensive evaluation of for-profit colleges, DGK (2012) presented a demonstrably negative set of results. Specifically, DGK (2012) found that students who first enrolled at a for-profit college were much more likely to apply for aid and correspondingly had much higher Title IV loan and grant aid, as well as much larger Pell grants; these students also paid considerably more (over $5,000) in tuition for college. Six years after first enrollment, these students had much larger student loan balances, which they were less likely to have repaid and were more likely to have defaulted on. Nevertheless, for-profit students were less likely to have been in remediation, more likely to have persisted through the first year of college, and more likely to have ultimately received an award (certificate or associate degree). However, for-profit students were less likely to be employed, and reported lower earnings both absolutely and conditional on being in work (although these earnings differences were not precisely estimated). Finally, for-profit students reported considerably lower levels of satisfaction with their postsecondary education. Surprisingly, therefore, for-profit students appear to have worse outcomes, despite having more (or equivalent) postsecondary human capital. Given the strength of these findings, it is important to see whether they hold consistently across a different sample of college students.

As well as seeing whether these strong results can be replicated, the analysis by DGK (2012) prompts several further investigations. One is to see whether the results are driven by differences in academic ability arising from differences in performance in high school. Most literature on ability bias suggests that it is modest or is at least offset by other biases (see the discussions in Arcidiacono, 2004; Carneiro, Heckman, & Vytlacil, 2011; Rouse, 2007). But this evidence is across education levels (e.g., years of schooling), not postsecondary sectors, and it

[2] Earlier studies also found few distinctions across the for-profit and nonprofit sectors (Grubb, 1993; Lyke, Gabe, & Aleman, 1991), although enrollment rates in the for-profit sector were much lower in these studies.

[3] These studies varied in how they ascribed for-profit status (ever-enrolled, first/last college, duration of enrollment) and the identification strategy (propensity score matching, maximum likelihood, selection correction, or fixed effects estimation). We note that samples of for-profit students are often small: for NELS88 and NLSY97 the samples of for-profit students are 438 and 226 respectively. These sample sizes reduce precision and limit capabaility for subgroup analysis.

has been investigated primarily for equations where earnings are the dependent variable. Unobserved ability (as well as other unobservables such as motivation) may be more influential for intersector comparisons and for evaluating other educational outcomes. However, the BPS does not include detailed information on academic performance before college and so was not incorporated by DGK (2012). Here, we look in detail at the influence of high school performance. More generally, students' selection into the for-profit sector may be motivated by particular factors or constraints that other students do not face. Understanding why students choose to attend a for-profit college is another area for further investigation, and we exploit the longitudinal nature of our dataset to analyze these choices. Finally, we look at how college costs and earnings combine to yield an overall rate of return to college. In light of the differences between student groups across sectors in both domains, we investigate how borrowing and earnings interact to create differences in net returns.

3. Data and Method

Dataset

We use data from the Education Longitudinal Study of 2002 (ELS). The ELS is a nationally representative survey of students who were in 10th grade in 2002. These students were followed up with an additional survey wave in 2004 (for most, their final year of high school), and the sample was freshened to be representative of students enrolled in 12th grade in the spring of 2004.[4] Additional follow ups were in 2006 (when most were in college for some period), and in 2012 (by which time many had terminated their postsecondary education). The initial sample is 16,700 students, of which over 11,000 had attended a postsecondary institution for some period before 2012.

The ELS includes detailed information on high school performance prior to college enrollment. Over the college years there is information on awards obtained, as well as on college experiences and labor market activities. This information is extended through to 2012, when the respondents were aged 26.

The ELS is representative of a cohort of high school students, not a cohort of college students. The ELS sample is drawn from 750 schools across the United States. Unlike the BPS used by DGK (2012), which is representative of all students going to college, the ELS is representative of students aged 16 to 18 who are deciding on which college to attend (or whether to attend college at all). Thus, the ELS allows for comparisons of individuals who were in the

[4] We have reweighted our analyses so that the sample is representative of 12th grade students in the spring of 2003–2004.

same situation before application or enrollment.[5] The ELS earnings data is also slightly more current and includes the time period after the official end of the Great Recession (2012 versus 2009). The window for measurement is similar across the two surveys: the post–high school ELS window is from age 18 to 26, and the BPS window is from first enrollment up to six years later.

Descriptive Frequencies

Table 1 shows the descriptive frequencies from the ELS for those students who ever attended college. These frequencies identify a for-profit student as one who ever attended a for-profit institution in the six years between high school and the final wave of the study (i.e., from 2006 through 2012).[7]

The patterns across sectors are very similar to those found in DGK (2012) and in other studies. Specifically, students at for-profit institutions were more likely than others to be female and of color, and were more likely than students at four-year colleges to be disadvantaged. Perhaps as a reflection, program choices differed across sectors. In for-profit colleges, students were studying for either a certificate, an associate degree, or a bachelor's degree in similar proportions (see also NCES, 2011). By contrast, most community college students were enrolled in associate degree programs, and most four-year college students were in bachelor's degree programs. Notwithstanding these differences, one third of all students regardless of sector expected to earn a bachelor's degree.

For the ELS age cohort, for-profit students closely resembled community college students, and not students at four-year institutions. In fact, of the three groups, community college students appeared to be most disadvantaged (in terms of having GEDs rather than high school diplomas, coming from low-income families, and working while enrolled). Most clearly, as shown in the bottom panel of Table 1, the high school academic performance of students who attended for-profit schools was very different from those who attended four-year institutions, and was similar to (or slightly above) that of community college students. In terms of standardized math/reading scores in 10th grade and standardized math scores and high school GPA in 12th grade, these two groups were very similar. They were also comparable in terms of how teachers viewed their effort levels and behaviors. Overall, comparing students who attended for-profit institutions with community college students—and not those at four-year institutions—appears most valid.

[5] For example, in the BPS, the sample of for-profit students is on average five years older than the sample of students in four-year colleges.

[7] Two alternative constructs are available—whether the student's first or last college was for-profit. The for-profit sample is reduced by half if the first-college designation is applied; this is the designation used by DGK (2012). The for-profit sample is reduced by one-quarter if the last-college designation is applied. Our results are not affected when these alternative constructs are used instead of ever-enrolled (details available from the authors). To maximize our sample of students in for-profit colleges we therefore use the ever-enrolled designation.

Table 1: Student Characteristics

	For-Profit Institutions*	Community Colleges	4-Year Public and Non-Profit Colleges
Female (%)	58.6	47.5	51.6
African American (%)	22.6	13.4	10.3
Hispanic (%)	18.1	18.4	8.5
Age in 2012 (years)	26.4	26.4	26.3
Single parent (%)	6.3	5.3	1.4
Delayed enrollment after high school (%)	7.3	11.1	2.8
High school diploma (%)	87.2	86.6	97.6
GED (%)	9.9	10.7	3.0
Mother high school dropout	14.8	14.6	5.9
Family annual income in 2001 ($)	55,684	50,843	79,431
Full-time enrollment in college in 2006 (%)	34.5	24.3	77.6
Working while enrolled in 2006 (%)	32.8	38.5	8.3
Enrolled in a certificate program (%)	40.5	25.6	5.9
Enrolled in an AA program (%)	33.1	58.0	12.6
Enrolled in a BA program (%)	29.7	8.4	65.6
Expects to earn a BA (%)	34.1	36.0	34.4
High school performance:			
Math score in 2002 [standardized 0,1][a]	–0.517	–0.559	0.305
Reading score in 2002 [standardized 0,1][a]	–0.456	–0.539	0.282
Math score in 2004 [standardized 0,1][a]	–0.559	–0.649	0.303
High school GPA	2.490	2.405	3.140
Low student effort in 2004[b]	0.540	0.581	0.364
Poor behavior in 2004[b]	0.150	0.184	0.082
Sample size	*1,910*	*2,190*	*7,230*

Note. Adapted from ELS. Unweighted sample rounded to nearest 10.
*Denotes ever attended a for-profit college.
[a]Standardized over college-going sample. [b]Teacher reports.

Method for Estimating Labor Market Returns

Our estimation strategy builds incrementally on that used by DGK (2012). First, we estimate the outcome equations using an indicator of for-profit enrollment compared with all other college students and controlling for an array of individual characteristics. We apply OLS estimation and propensity score matching with the same set of control variables. For propensity score matching we report treatment on the treated impacts (and exclude observations outside the common support). These estimations are directly comparable to DGK (2012, Tables 2 and 3).

Next, we reestimate these outcome equations with detailed controls for high school performance in both 10th and 12th grade, and we apply these new controls to estimate propensity scores. We then perform this same analysis but restrict the comparison to for-profit students and those attending community college. As a more general exercise, we use the detailed high school information to investigate what characteristics were associated with selection into the for-profit sector. We estimate a multinomial logit equation to determine student selection into each sector and include these selection coefficients in our main model. We investigate the puzzling finding of higher attainment at for-profit colleges and look in detail at how the aggregation of penalties from attending a for-profit college may compound differences across sectors.

4. Results

Outcomes From Postsecondary Education

The relative outcomes of students in the for-profit sector are given in Tables 2 and 3 (see table notes for covariates). The results are based on a comparison between for-profit students and all other students. We review the OLS results here, although the results using the propensity score matching model are very similar. All associations are statistically significant ($p < .05$) unless otherwise indicated.

Table 2 shows the basic associations for financial aid for students in college in 2006. These results accord with those by DGK (2012, Table 2) in showing much worse financial positions for students from for-profit colleges. While attending college, for-profit students accumulated more loans and made larger private payments for college (in part because they were less likely to be offered scholarships). After six years, these financial burdens were significantly greater: accumulated Pell grants were larger (by $559), total amounts borrowed were much larger (by $2,520), and undergraduate loans were larger (by $1,165). Moreover, students in the for-profit sector were much less likely to have repaid any of their loans.[8]

[8] Unlike the BPS, student tuition is not available in the ELS dataset.

Table 2: Differences in College Financial Aid

	Mean Values			For-Profit Institution Impact	
	Four-year Public and Non-Profit Colleges	Community Colleges	For-Profit Institutions*	OLS	Matching
Applied for aid (%)	70.9	40.7	53.3	–0.066	–0.094
				(0.013)	(0.018)
Offered scholarship[a] (%)	47.1	20.0	27.4	–0.098	–0.128
				(0.013)	(0.018)
Fees from grant aid[b] (%)	16.5	21.3	14.1	–0.069	–0.078
				(0.010)	(0.014)
Pell grant (%)	26.9	24.6	33.4	0.008[ns]	–0.014[ns]
				(0.012)	(0.018)
Pell grant amount 2004–07	1,355	873	1,316	–257	–268
				(67)	(101)
Pell grant cumulative 2012 ($)	3,845	2,815	5,579	559	677
				(163)	(257)
Amount borrowed[c] ($)	21,259	4,981	19,520	2,520	2,547
				(670)	(848)
Undergraduate loans ($)	3,821	347	3,198	1,165	360[ns]
				(216)	(297)
Repaid any loan amount (conditional on loan) (%)	59.3	32.5	44.5	–0.050	–.051[ns]
				(0.025)	(0.034)

Note: Adapted from ELS, all waves. Sample size n = 9,300 (rounded). Column 4 is the coefficient of for-profit institution with column 1 as the dependent variable. Covariate controls are: sex, race (2), single parent, delayed college, diploma or GED, expects BA, U.S. born, parents U.S. born, native language English, household size, lives with parents, single, has children, region (3), mother/father's education, family income (squared), age (squared), and work experience in 2009–2010 (squared). Propensity score matching uses these covariates for matching. Observations outside the common support are excluded. Weighted estimations. Coefficients are statistically significant ($p < .05$), unless denoted "ns."

*Ever attended a for-profit college.

[a]Offered scholarship/grant (first year of first college). [b]All tuition/fees paid by grants/scholarships (first term of first college). [c]Includes Pell grant and Stafford loans.

Table 3 shows the association between for-profit status and a full set of outcomes. The top panel of Table 3 shows the associations between for-profit status and educational attainment. These results also accord with DGK (2012), even as they remain surprising within the context of the other evidence.

Table 3: Difference in Student Outcomes: Postsecondary Education, Economic Status, and Satisfaction

	Mean Values			For-Profit Institution Impact	
	Four-year Public and Non-Profit Colleges	Community Colleges	For-Profit Institutions	OLS	Matching
No award by 2012 (%)	39.5	68.8	42.8	–0.085	–0.097
				(0.014)	(0.018)
Certificate[a] (%)	3.5	16.0	29.9	0.114	0.179
				(0.026)	(0.033)
AA degree[b] (%)	6.2	14.9	14.4	0.108	0.104
				(0.024)	(0.032)
BA degree[c] (%)	50.7	0.3	13.0	–0.236	–0.262
				(0.020)	(0.030)
Still enrolled in 2012 (%)[d]	27.4	25.1	35.7	0.076	0.070
				(0.012)	(0.017)
Remedial courses in 2006 (%)	32.9	33.1	27.8	–0.066	–0.062
				(0.013)	(0.017)
Idle (not employed, not enrolled in 2012) (%)	7.3	14.3	14.2	0.015[ns]	0.019[ns]
				(0.008)	(0.012)
Any job in 2012 (%)	85.7	80.1	77.5	–0.025	–0.025[ns]
				(0.010)	(0.015)
Earnings in 2012 ($)	30,123	22,346	21,463	–2,331	–2,672
				(715)	(880)
Earnings in 2012, cond. on employment ($)	32,997	25,912	24,751	–2,595	–4,410
				(752)	(1158)
Unemployed (seeking work) (%)	7.1	12.3	14.9	0.029	0.024
				(0.008)	(0.012)
Unemployed 3+ months in 2012 (%)	28.2	33.7	39.0	0.053	0.052
				(0.013)	(0.018)
Earnings less than gainful employment standard[e] (%)	13.9	19.7	19.9	0.008[ns]	0.014[ns]
				(0.010)	(0.014)

Left college dissatisfied[f] (%)	6.0	4.1	8.7	0.039	0.033
				(0.007)	(0.009)
Left college because could not afford school (%)	51.6	48.5	52.5	0.025[ns]	–0.113
				(0.029)	(0.040)
Left college for financial reasons (%)	40.8	36.9	31.3	–0.106	–0.002[ns]
				(0.031)	(0.038)
College good preparation for life (work and career) (%)	64.2	55.9	69.7	0.041	0.054
				(0.014)	(0.018)
College good preparation for life (financial security) (%)	54.0	57.6	66.6	0.054	0.081
				(0.014)	(0.019)
Satisfied with current job (%)	20.8	18.2	18.5	–0.000[ns]	0.009[ns]
				(0.011)	(0.014)

Note. Column 1 is the dependent variable. Column 4 is the coefficient on for-profit institution. Covariate controls as per Table 2. Weighted estimations. Coefficients statistically significant ($p < .05$) unless denoted "ns."
[a]If in certificate program, n = 1,380. [b]If in AA program, n = 2,240. [c]If in BA program, n = 4,590. [d]Enrolled in any college. [e]Loans carrying cost < 12 percent of earnings. [f]Took a break, transferred, is no longer enrolled due to dissatisfaction with college.

Looking across the entire sample, for-profit students were more likely to have earned an award by age 26. While these awards were mostly certificates and associate degrees, this positive effect held even when the analysis was divided according to the students' initial program. For students in both certificate programs and associate degree programs, for-profit students were more likely to have earned their award. It is only for bachelor's degree programs that for-profit students lagged behind those in four-year institutions. For-profit students were more likely to still be enrolled as of 2012 (even though they were not relatively late in starting college, see Table 1). Also of note is that students in for-profit colleges were less likely to have taken remedial courses. The top panel of Table 3 implies that for-profit students were accumulating more postsecondary human capital than community college students.

In contrast, the middle panel of Table 3 shows the significant labor market penalty for attending at a for-profit college. As found by DGK (2012), these students were less likely to be employed and more likely to be unemployed (short- or longer term). However, we also identify an earnings penalty that was very large: annual earnings for those working were $2,595 lower for for-profit students, which is a penalty of approximately 10 percent (or even greater when propensity score estimates are used). DGK (2012) found equally sizeable, but less precisely estimated, wage penalties.

Finally, we consider student's evaluations of their postsecondary experiences. The preponderance of evidence on finances (adverse), human capital (positive), and work (adverse)

might suggest that for-profit students would report more negative evaluations. That result was found by DGK (2012). The final panel of Table 3, however, shows mixed results. For-profit students were more likely to have left a for-profit college because they were generally dissatisfied with their college. But for-profit students were more satisfied with the economic value of college: they were *less* likely to report leaving for financial reasons and *more* likely to report that college prepared them for work/career and financial security. These results are based on quite different questions from those used by DGK (2012). But overall they show a weaker link between satisfaction levels and economic outcomes (or a stronger link between satisfication levels and educational outcomes).

College Outcomes Adjusted for High School Performance

Differences across sector may be driven by differences in prior ability (or other pre-college attributes). The reestimation of the outcomes equations after controlling for high school performance is given in Tables 4 and 5. The first two columns of results for each table are for the full sample of students; the second two columns compare students in for-profit colleges with students in community college. Overall, these results conform with those in Tables 2 and 3.

Table 4: Differences in College Financial Aid (Controlling for High School Ability)

	For-Profit Institution Impact Controlling for High School Performance			
	All College Students		Community College Students	
	OLS	Matching	OLS	Matching
Applied for aid	–0.006[ns]	–0.030[ns]	0.130	0.125
	(0.013)	(0.021)	(0.018)	(0.027)
Offered institutional aid	–0.036	–0.033[ns]	0.076	0.099
	(0.014)	(0.021)	(0.016)	(0.022)
Fees covered by grant aid	–0.044	–0.048	–0.071	–0.046
	(0.011)	(0.017)	(0.014)	(0.021)
Pell grant	0.018[ns]	0.019[ns]	0.074	0.075
	(0.012)	(0.021)	(0.016)	(0.024)
Pell grant amount 2004–07	–152	–44[ns]	338	503
	(69)	(117)	(78)	(117)

Pell grant cumulative by 2012	592	1,125	2,244	2,510
	(171)	(302)	(206)	(288)
Amount borrowed	4,375	5,276	13,278	14,874
	(709)	(994)	(567)	(698)
Undergraduate loans	1,803	1,407	3,740	3,106
	(234)	(328)	(259)	(259)
Repaid any loan amount (conditional on loan)	–0.008[ns]	–0.012[ns]	0.190	0.170
	(0.026)	(0.039)	(0.049)	(0.070)

Note. Specifications as per Table 2, with additional controls for high school performance: math/reading test scores, GPA, and teacher ratings. High school performance covariates also applied in propensity score matching mode. For all students, n = 8,820 (for repaid any loan, n = 2,820). For community college goers, n = 2,900 (n = 580). Weighted estimation. Coefficients statistically significant ($p < .05$), unless denoted "ns."

As shown in Table 4, conditional on high school performance, the aid gaps for for-profit students were smaller but still evident: these students received fewer scholarships and were less likely to receive grant aid. However, their Pell grants were relatively larger and their overall borrowing and undergraduate loan balances were noticeably higher. When the comparison group is restricted to community college students, however, the aid gaps re-emerge and yield a ratchet effect on borrowing. Strikingly, in comparison with academically equivalent community college students, for-profit students borrowed about $13,300 more for their higher education. This borrowing most likely reflects the higher tuition at for-profit colleges, which in turn may be driven by the students' greater access to federal student loans (see Cellini & Goldin, 2012). (Perhaps as a consequence, these for-profit students were then relatively more likely to repay some of their loans.)

Results for attainment, labor market outcomes, and satisfaction levels are given in Table 5. Compared with all other students, the educational attainment gaps are even stronger after controlling for high school performance. Students in for-profit colleges were more likely to earn certificates and associate degrees and (as found above) were less likely to have taken any remedial courses. However, the negative effects on employment (both short- and longer term) are still evident, as is the earnings penalty, although the latter is not precisely estimated or robust across specifications. Finally, the results for satisfaction with college are maintained, with both positive and negative ratings depending on how satisfaction is measured.

Table 5: Differences in Student Outcomes (Controlling for High School Ability)

	For-Profit Institution Impact Controlling for High School Performance			
	All College Students		Community College Students	
	OLS	Matching	OLS	Matching
No award by 2012	–0.117	–0.120	–0.247	–0.272
	(0.014)	(0.022)	(0.018)	(0.025)
Certificate[a]	0.133	0.110	0.113	0.088
	(0.027)	(0.039)	(0.031)	(0.043)
AA degree[b]	0.137	0.130	0.222	0.194
	(0.026)	(0.037)	(0.027)	(0.037)
BA degree[c]	–0.169	–0.187	0.261	0.278
	(0.020)	(0.035)	(0.042)	(0.042)
Still enrolled in 2012	0.081	0.088	0.099	0.107
	(0.013)	(0.020)	(0.017)	(0.024)
Remedial courses in 2006	–0.094	0.059	–0.083	–0.051
	(0.014)	(0.020)	(0.017)	(0.025)
Idle (not employed, not enrolled in 2012)	0.007[ns]	0.021[ns]	–0.001[ns]	–0.013
	(0.008)	(0.014)	(0.013)	(0.018)
Any job in 2012	–0.022	–0.048	–0.022[ns]	–0.010
	(0.010)	(0.017)	(0.015)	(0.021)
Earnings in 2012	–1,039[ns]	–2,910	134[ns]	696[ns]
	(772)	(1349)	(878)	(1301)
Earnings in 2012, conditional on work	–1,225[ns]	–592[ns]	–380[ns]	–110[ns]
	(809)	(1202)	(935)	(1593)
Unemployed (seeking work)	0.028	0.040	0.025	0.009
	(0.008)	(0.013)	(0.012)	(0.018)
Unemployed 3+ months in 2012	0.048	0.039[ns]	0.062	0.029[ns]
	(0.013)	(0.020)	(0.018)	(0.025)
Earnings less than gainful employment standard	0.006[ns]	0.015	–0.011[ns]	0.001
	(0.010)	(0.017)	(0.015)	(0.022)

Left college dissatisfied	0.044	0.041	0.053	0.049
	(0.007)	(0.011)	(0.010)	(0.013)
Left college dissatisfied	–0.077	–0.097	–0.089	–0.039[ns]
	(0.033)	(0.044)	(0.037)	(0.050)
Left college dissatisfied	0.041[ns]	0.016[ns]	0.078	0.049
	(0.031)	(0.045)	(0.037)	(0.050)
College good preparation for life (work and career)	0.045	0.059	0.116	0.100
	(0.015)	(0.021)	(0.019)	(0.028)
College good preparation for life (financial security)	0.050	0.063	0.080	0.089
	(0.015)	(0.022)	(0.019)	(0.028)
Satisfied with current job	0.011[ns]	0.004[ns]	0.030	0.027[ns]
	(0.012)	(0.017)	(0.015)	(0.021)

Note. Specifications as per Table 3, with controls for high school performance. High school performance covariates also applied in propensity score matching mode. For all students, n = 8,820. For the community college student group, n = 2,900. Weighted estimations. Coefficients are statistically significant ($p < .05$), unless denoted "ns."
[a]If in certificate program, n = 940. [b]If in AA program, n = 1,340. [c]If in BA program, n = 550.

When comparing for-profit students with community college students, the educational impact is magnified. In turn, differences in labor market status are completely attenuated: there is no gap in earnings and no gap in employment rates across the two sectors. This effect may also contribute to the increased satisfaction levels of students in for-profit colleges, as shown by views that college is good preparation for one's career and financial security.

Finally, one possibility is that these results are driven by differences in program enrollment. To test this, we reestimate selected outcomes (on remediation, labor market, and satisfaction levels) for the subsample of students in certificate programs and in associate degree programs. However, as shown in Appendix Table 1, our reestimation indicates that the results are not driven by program selection—for for-profit students, remediation rates were lower across all programs, labor market effects were negative but imprecisely estimated, and satisfaction levels were mixed.

College Outcomes Adjusted for College Choice

To see how college choices affect these outcomes, we reestimate the financial aid and college outcome equations, adjusting for high school factors that might influence college choice. First we estimate a multinomial logit equation where the options are enrollment in the for-profit sector or in community college relative to students who enroll at a four-year college. The results

from this estimation are given in Appendix Table 2. Consistent with other evidence, female and Black students were more likely to enroll at a for-profit college, as were those who did not initially start at college. Emphatically, high school students who were less well prepared either in terms of test scores or high school GPA were more likely to enroll in a for-profit college. However, an equivalent (or even stronger) ability effect drove selection into community college.

Finally, schoolwide choices were influential: a student was more likely to enroll at a for-profit college if other students in their school were also enrolled at a for-profit college (and less likely to do so if more of their school contemporaries were enrolled at a four-year institution).[9] This effect may reflect school factors, the availability of colleges in the local area, or the school-level recruitment practices of colleges. These influences are likely to be exogenous to a students' own underlying preferences across college sectors.

We apply this college choice model to reestimate the results for Tables 4 and 5. Two versions of the reestimation are derived. First, we use the multinomial logit regression results in Appendix Table A2 to derive the inverse Mills Ratio for each college choice type. These inverse Mills Ratios are then included in reestimation of Tables 4 and 5 to yield a selection-corrected impact from for-profit college. Second, we estimate an instrumental variables regression for the sample of for-profit and community college students. The instrumental variables are the school-wide rates of enrollment by college sector.

The college choice–adjusted results are given in Tables A3 and A4. These results are very similar to those in Tables 4 and 5. The main findings across the sectors—very large gaps in amounts borrowed, gaps in credential receipt, small and non-robust differences in labor market outcomes, and weak evidence on satisfaction—are maintained in both the selection correction and instrumental variables specifications.

The Economic Calculus of Attending a For-Profit College

To illustrate the full consequences of college choice, we calculate the economic value of college by sector based on amounts borrowed and earnings during early adulthood. We also compare college students to high school graduates who did not attend college. These valuations assume an 18-year old student adopting a 15-year time horizon and discounting future money flows back to age 18. First, we estimate earnings gaps at age 20 and age 26 by sector, controlling for covariates as per Table 1. We then extrapolate these gaps backward to age 18 and forward to age 32 and linearly interpolate them for the ages 21–25. Second, we estimate borrowing gaps at age 26 and apply these amounts over the period of college enrollment. The economic value by college sector is the present value differences in money streams.[10]

Compared with students who enrolled in four-year colleges, the 15-year returns to enrolling at a for-profit institution were consistently lower. Although borrowing for a four-year

[9] There are on average 16 college-bound students in each school sampled in the ELS.
[10] Details of calculations are available from the authors.

college was higher, and earnings whilst in college were lower, the post-college earnings more than offset these gaps. The finding of a positive return to a four-year college is robust to alternative specifications of earnings, borrowing, and trend rates for both variables. In the most conservative estimate, the internal rate of return to investing in a four-year college over a for-profit college was 4 percent. More emphatically, the comparisons show the gains from attending a community college over a for-profit college. In fact, these gains cannot be expressed as an internal rate of return: community college students earned more (or equivalent amounts) at age 20 and age 26; and they borrowed significantly less over this period. Therefore, the internal rate of return cannot be determined. Even assuming a 10 percent interest rate, the present value of attending community college exceeds that of attending a for-profit college by $10,550 (within 15 years of initial enrollment). This amount exceeds both annual tuition/fees for one year of community college and average earnings of 18-year olds nationally.

As a final test of the economic value across college sectors, we derive internal rates of return for college versus high school graduation. We assume zero borrowing for this latter group and apply extrapolated earnings differences at age 20 and age 26. With a 15-year time horizon, the internal rate of return to community college enrollment is 2 percent. However, the rate of return to for-profit college was negative: within 15 years of first enrollment, the net present value of earnings minus any college borrowing was lower for for-profit students than for high school graduates.

5. Discussion and Conclusion

Given their distinctive approach to higher education provision, it is important to evaluate how for-profit colleges create human capital. Although recent evidence has identified some deficiencies relative to other types of colleges—although not in terms of awards granted—these deficiencies often cannot be precisely estimated or are sensitive to comparison groups. Our evidence from the ELS coheres with this depiction. General comparisons with college-going students show clear labor market disadvantages among students who attended for-profit colleges, particularly in elevated rates of unemployment but also in earnings. But these disadvantages are largely a function of students' prior academic backgrounds and they disappear when for-profit students are compared with community college students. Similarly, our evidence on attainment shows that students at for-profit colleges accumulated more awards and spent less time in remediation. Yet, labor market outcomes among for-profit students are no better than those among community colleges students. More research is needed on whether employers value for-profit degrees differently than they value other degrees. In contrast to evidence from DGK (2012), we do not find much evidence of student dissatisfaction with their for-profit postsecondary experiences. This may reflect greater award receipt by these students or their inability to make a comparative judgement over this short window (or it may be a consequence of how questions were phrased).

Significantly, there is evidence of relatively large amounts of borrowing by students at for-profit colleges. Over their college career, students at for-profit colleges will have borrowed $4,400 more than the average college student and $13,300 more than an academically equivalent student at community college. For this borrowing to be worthwhile, one should expect a strong labor market advantage from attending a for-profit college. As such an advantage is nowhere evident, the net returns to attending a for-profit college are considerably lower than those to attending an alternative college type. The returns to community college dominate the returns to for-profit college.

Given the substantial role of the for-profit sector in postsecondary education, it is important to ascertain why students choose to enroll in the sector and why amounts borrowed are so large. Students' selection processes may play an important role. Where comparisons across colleges are difficult, students may be poorly informed about how colleges might differ. For students who are locationally constrained or have family and work commitments, the set of college choices may be very limited. Students may also be influenced by the probability of being assigned to remediation and by the probability of award completion (regardless of whether this translates into earnings gains). More research on how students choose to attend for-profit colleges is certainly warranted.

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Appendix

Table A1: Differences in Selected Outcomes by Enrollment Status

	For-Profit Institution Impact	
	Enrollees in Certificate Programs	**Enrollees in Associate degree Programs**
Remedial courses in 2006	–0.081	–0.071
	(0.027)	(0.026)
Earnings in 2012	147[ns]	–780[ns]
	(1,252)	(1,349)
Earnings in 2012, conditional on employment	–938[ns]	–1,003[ns]
	(1,320)	(1,430)
Left college dissatisfied	0.019[ns]	0.055
	(0.014)	(0.016)
Left college dissatisfied	–0.115[ns]	–0.127
	(0.061)	(0.051)
Left college dissatisfied	0.160	0.012[ns]
	(0.058)	(0.054)
College good preparation for life	–0.011[ns]	0.080
	(0.028)	(0.027)
College good preparation for life (financial security)	0.014[ns]	0.031[ns]
	(0.027)	(0.028)

Note. Specifications as per Table 5, full sample OLS model. Certificate sample, n = 1,210. Associate degree program, n = 1,940. *p < .10. Weighted estimations. Coefficients are statistically significant (p < .05), unless denoted "ns."

Table A2: Selection into College Sector (Multinomial Logit)

	Relative to Four-Year College Sector	
	Enrolled at For-Profit College	**Enrolled at Community College**
Female	0.436	0.032[ns]
	(5.83)	(0.43)
Black	–0.408	–1.008
	(–3.91)	(–8.88)
Hispanic	0.089[ns]	0.032[ns]
	(0.81)	(0.29)
Delayed college	0.496	0.962
	(3.08)	(6.61)
Expects to get a BA	–0.131[ns]	–0.018[ns]
	(–1.85)	(–0.26)
Native language	0.301	0.341
	(2.88)	(3.25)
Family income in 2002	–0.002[ns]	–0.004
	(–2.08)	(–5.12)
Age	0.091[ns]	0.095[ns]
	(1.18)	(1.24)
Math score (std., 10th G)	0.007[ns]	0.013[ns]
	(0.09)	(0.174)
Reading score (std., 10th G)	–0.115[ns]	–0.181
	(–2.22)	(–3.49)
Math score (std., 12th G)	–0.339	–0.430
	(–4.34)	(–5.55)
High school GPA	–1.171	–1.471
	(–17.50)	(–21.72)
For-profit enrollment (school-wide average)	4.459	–5.201
	(11.80)	(–13.13)
Four-year enrollment (school-wide average)	–1.680	–6.336
	(–6.63)	(–26.09)
Pseudo R-squared	0.278	
Chi-squared	4318.53	
Observations	*8,990*	

Note. Model also includes regional dummy variables (3). Weighted estimations. Coefficients are statistically significant ($p < .05$), unless denoted "ns." T-statistics in parentheses.

Table A3: Differences in College Financial Aid (Selection Correction and IV Estimates)

	For-Profit Institution Impact		
	All College Students	Community College Students	
	Selection Correction	Selection Correction	IV
Applied for aid	–0.016[ns]	0.129	0.142
	(0.014)	(0.020)	(0.042)
Offered institutional aid	–0.042	0.070	0.089
	(0.014)	(0.018)	(0.037)
Fees covered by grant aid	–0.044	–0.041	–0.194
	(0.011)	(0.015)	(0.033)
Pell grant	0.019[ns]	0.091	0.025[ns]
	(0.013)	(0.018)	(0.038)
Pell grant amount 2004–07	–130[ns]	438	–40[ns]
	(72)	(86)	(182)
Pell grant cumulative by 2012	540	2,402	1,777
	(177)	(228)	(478)
Amount borrowed	4,191	13,241	13,347
	(738)	(629)	(1,317)
Undergraduate loans	1,693	3,402	4,982
	(243)	(287)	(604)
Repaid any loan amount (conditional on loan)	0.005[ns]	0.242	–0.035[ns]
	(0.027)	(0.054)	(0.115)

Note. Specifications as per Table 3. Selection correction model includes inverse Mills Ratio for each sector based on multinomial logit specification in Appendix Table A2. IV regression includes percent high school students who attend for-profit college and four-year college. For all students, n = 8,820 (for repaid any loan, n = 2,820). For community college sample, n = 2,900 (n = 580). Weighted estimations. Coefficients are statistically significant ($p < .05$), unless denoted "ns."

Table A4: Differences in Student Outcomes (Selection Correction and IV Estimates)

	For-Profit Institution Impact		
	All College Students	Community College Students	
	Selection Correction	Selection Correction	IV
No award by 2012	–0.117	–0.252	–0.232
	(0.015)	(0.020)	(0.042)
Certificate	0.140	0.106	0.131[ns]
	(0.029)	(0.034)	(0.074)
AA degree	0.134	0.228	0.187
	(0.027)	(0.029)	(0.062)
BA degree	–0.161	0.190	0.664
	(0.021)	(0.045)	(0.118)
Still enrolled in 2012	0.085	0.097	0.099**
	(0.014)	(0.019)	(0.040)
Remedial courses in 2006	–0.097	–0.103	0.024[ns]
	(0.014)	(0.019)	(0.041)
Idle (not employed, not enrolled in 2012)	0.009[ns]	0.006[ns]	–0.022[ns]
	(0.009)	(0.014)	(0.029)
Any job in 2012	–0.026	–0.030[ns]	0.010[ns]
	(0.011)	(0.016)	(0.034)
Earnings in 2012	–1,164[ns]	–458[ns]	2,332[ns]
	(804)	(974)	(2,049)
Earnings in 2012, conditional on work	–1,288[ns]	–766[ns]	972[ns]
	(841)	(1,038)	(2,156)
Unemployed (seeking work)	0.028	0.021[ns]	0.044[ns]
	(0.009)	(0.014)	(0.029)
Unemployed 3+ months in 2012	0.050	0.068	0.038[ns]
	(0.014)	(0.019)	(0.041)
Earnings less than gainful employment standard	0.009[ns]	0.010[ns]	–0.094
	(0.011)	(0.016)	(0.034)
Left college dissatisfied[d]	0.045	0.055	0.041[ns]
	(0.008)	(0.011)	(0.022)
Left college dissatisfied[e]	–0.093	–0.099[ns]	–0.042[ns]

	(0.035)	(0.042)	(0.080)
Left college dissatisfied[f]	0.040[ns]	0.115	–0.039[ns]
	(0.033)	(0.040)	(0.086)
College good preparation for life (work and career)	0.053	0.119	0.090**
	(0.016)	(0.021)	(0.045)
College good preparation for life (financial security)	0.051	0.079	0.070[ns]
	(0.016)	(0.021)	(0.045)
Satisfied with current job	0.009[ns]	0.028[ns]	0.028[ns]
	(0.013)	(0.017)	(0.035)

Note. Specifications as per Table 4. Selection correction model includes inverse Mills Ratio for each sector based on multinomial logit specification in Appendix Table A2. IV regression includes percent high school students who attend for-profit college and four-year college. For all students, n = 8,820. For community college sample, n = 2,900. Weighted estimations. Coefficients are statistically significant ($p < .05$), unless denoted "ns."