ONLINE APPENDIX MATERIALS

for

"The Consequences of Performance Standards in Need Based Aid: Evidence From Community Colleges"

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Contents:

Appendix A: Theoretical Framework

Basic Model of Performance Standards

Bénabou and Tirole (2000) present a simple principal–agent model in which agents choose between shirking, a low-effort/low-benefit task, and a high-effort/high-benefit task. Lindo, Sanders, and Oreopoulos (2010) use an even simpler version of this model in their analysis of academic probation, focusing on the agent's decision. Because of our interest in optimal aid policy, we use Bénabou and Tirole's original model and examine its predictions after incorporating financial aid.

In the original model, individuals choose one of these: shirking (equivalent to dropout, in our context), which yields no costs or benefits; a low-effort/low-benefit task with a private benefit of V_L and a private effort cost of c_L; or a high-effort/high-benefit task with private benefit of V_H and a private effort cost of c_H. The principal bears no costs but receives a benefit of either W_L or W_H . In other words, the ranking of costs and benefits is:

$$0 < V_L < V_H, \quad 0 < W_L < W_H, \quad and \quad 0 < c_L < c_H \tag{1}$$

Ability is conceptualized as a pre-determined probability of success at either task, θ, which for now we assume the agent knows but the principal does not. To ensure that the problem does not degenerate and that at least some individuals choose each option, the following assumption is made (intuitively, this assumes that marginal cost of the high-effort task relative to the low-effort task is less than the marginal benefit, but the ratio of marginal costs to marginal benefits is higher for the high-effort task than for the low-effort one): $\frac{c_L}{V_L} < \frac{c_H - c_L}{V_H - V_L} < 1$.

The agent chooses the course of action that maximizes her individual outcome:

$$\max\{0, \theta V_L - c_L, \theta V_H - c_H\} \tag{2}$$

So the individual will choose:

$$\begin{aligned} &\textit{To shirk (drop out):} && if\ 0 \le \theta < \frac{c_L}{V_L} \equiv \theta_L \\ &\textit{Low effort task:} && if\ \theta_L \equiv \frac{c_L}{V_L} \le \theta < \frac{c_H - c_L}{V_H - V_L} \equiv \theta_H \\ &\textit{High effort task:} && if\ \frac{c_H - c_L}{V_H - V_L} \equiv \theta_H \le \theta \end{aligned} \tag{3}$$

If the principal removes the low-effort/low-benefit option, individuals who would otherwise have chosen that option now are forced to choose between dropping out or increasing their effort. Now, individuals will shirk only if:

$$\theta < \frac{c_H}{V_H} \equiv \theta^* \tag{4}$$

The key insight of this model, which Lindo et al. (2010) emphasize, is the heterogeneous impact that results when performance standards are applied. Higher ability individuals are motivated to work harder, while lower ability individuals are discouraged and drop out. See Figure A1 for a graphical illustration.

For our analysis, we are also interested in the principal's perspective. Imposing a standard is only worthwhile for the principal if the increase in value coming from those induced to work harder exceeds the loss of value attributable to those induced to dropout. This depends not only on the parameters discussed above but also on the distribution of ability *f(θ)* in the population (i.e., how many individuals are in the affected ranges):

$$S(\theta_L, \theta_H) = \left(\int_{\theta^*}^{\theta_H} \theta f(\theta) d\theta\right)(W_H - W_L) - \left(\int_{\theta_L}^{\theta^*} \theta f(\theta) d\theta\right)(W_L) > 0 \tag{5}$$

Introducing financial aid, with and without standards. The Pell Grant and other scholarship programs provide another means by which policymakers can encourage greater investment in education. If the planner provides an upfront scholarship, *P*, based on enrollment but not outcomes (i.e., available to those who choose either the high- or low-effort tasks in the model), it is straightforward to show that this will result in a new $\theta_L^P < \theta_L$, but $\theta_H^P = \theta_H$ (see Figure A2). In

other words, the scholarship induces more individuals into the low-effort/low-benefit, but no more individuals into the high-effort/high-benefit option. As such, enrollment subsidies alone cannot guarantee the socially optimal outcome, even though they may still be preferable to providing no aid at all. In essence, the new benefits attributable from those induced to enroll with low effort must more than cover the costs of providing the scholarship to all those who enroll, including potentially many individuals whose enrollment and effort are unaffected by the scholarship: $\left(\int_{\theta_L^P}^{\theta_L} \theta f(\theta) d\theta\right)(W_L) - \left(\int_{\theta_L^P}^{\bar{\theta}} f(\theta) d\theta\right)(P) > 0$. If we consider the low-effort task to be enrolling but dropping out and the high-effort task to be persisting to completion, it is worth noting that a grant program could be worthwhile even if it increases dropout rates. Manski (1989) emphasizes that "dropout statistics per se carry no normative message…among [some] students, society prefers a *higher* dropout rate than that generated privately" (p. 310, italics in original).

If the social planner can forbid low-effort enrollment in the context of financial aid, the threshold value for choosing the high-effort option declines to:

$$\frac{c_H - P}{V_H} \equiv \theta^{*P} < \theta^* \tag{6}$$

Relative to providing a given *P without* performance standards, this policy is worthwhile if:

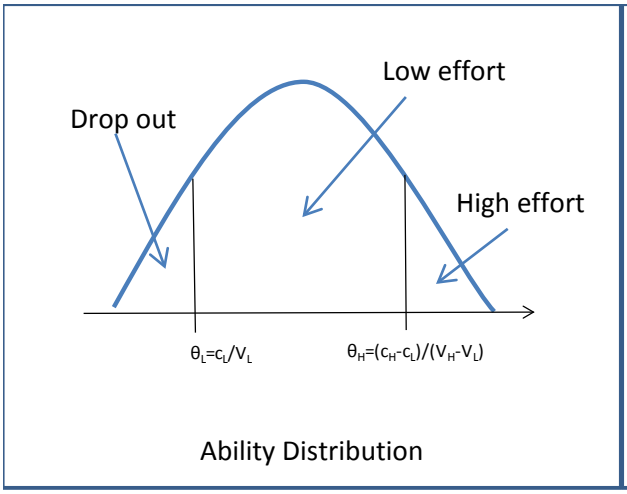
$$\left(\int_{\theta^{*P}}^{\theta_H} \theta f(\theta) d\theta\right)(W_H - W_L) - \left(\int_{\theta_L^P}^{\theta^{*P}} (\theta W_L - P) f(\theta) d\theta\right) > 0 \tag{7}$$

See Figure A2 for a graphical illustration. If W_L, the social value of the forbidden low-effort option, is lower than the value of the scholarship *P*, then aid-with-standards is unambiguously better than aid-without-standards. Assuming that there is some level of low effort that generates social value less than *P*, then performance standards are always desirable; the only question is where to set the dividing line between the acceptable W_H and the unacceptable W_L. Intuitively,

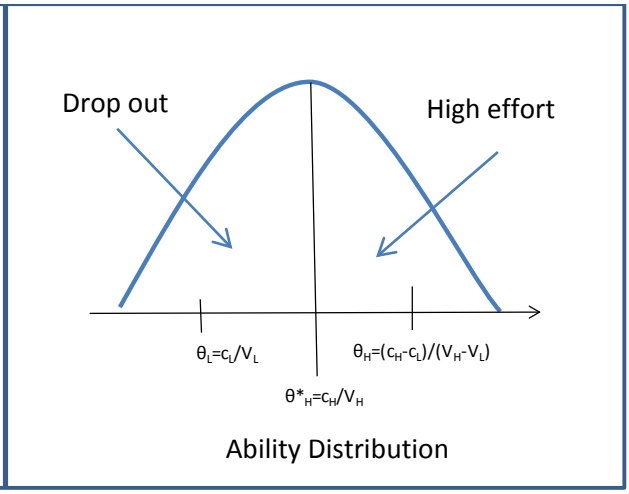
the optimal dividing line will depend upon the relative benefits of high-effort versus low-effort enrollment, the relative benefits of low-effort enrollment versus no enrollment, the shape of the ability distribution, and the magnitude of the scholarship. Note that it is not obvious that larger scholarships should necessarily warrant higher standards, because they enter into equation (7) not only directly but also indirectly: both the positively and negatively affected ranges shift lower in the ability distribution.

Appendix Figure A1. Cutoff Values in the Distribution of Ability for Choosing Shirking, Low-Effort, or High-Effort Task

Panel A. Low-Effort Task Permitted (no standards)



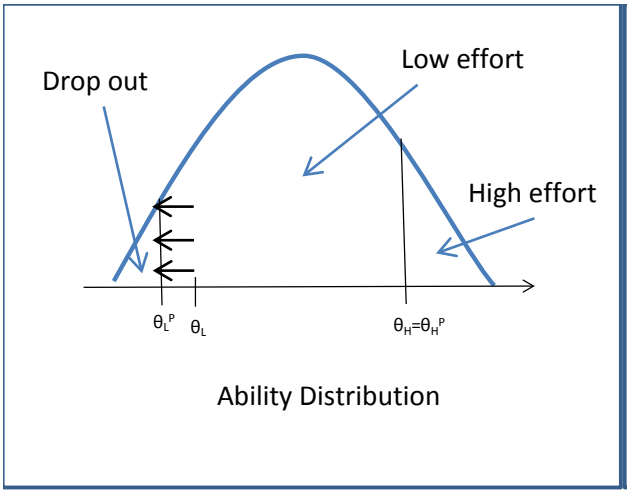
Panel B. Low-Effort Task Forbidden (standards)



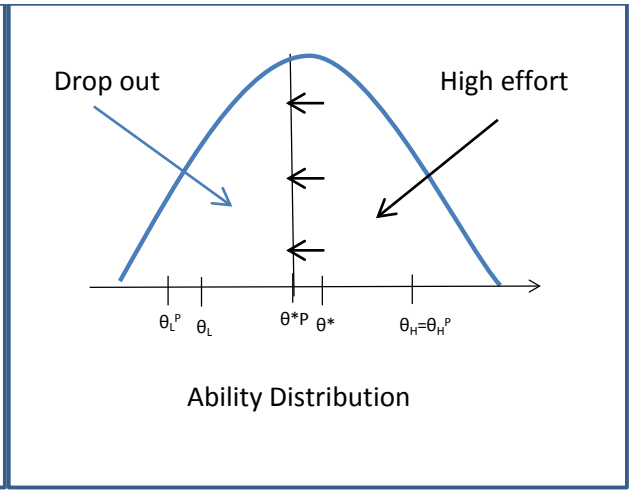
Notes: In panel A, those with ability<ϑ_L drop out, those with ability> ϑ_H enroll with high effort, and those in between enroll with low effort. When the low-effort task is prohibited (panel B), individuals re-optimize and some of those who otherwise would enroll with low effort now drop-out, while others now choose to enroll with high effort.

Appendix Figure A2. Cutoff Values With Financial Aid *P*

Panel A. Low-Effort Task Permitted (no standards)



Panel B. Low-Effort Task Forbidden (standards)



Notes: With financial aid but no standard, the threshold ability that determines whether someone drops out or enrolls with low effort shifts lower in the ability distribution (panel A), so more students enroll, but no additional students shift to high effort. With financial aid but the low-effort task prohibited, the threshold ability separating drop out from high effort shifts down, so more students exert high effort (panel B).

Appendix B: Additional Robustness Checks

Appendix Table B1. Covariate Balance Checks, Key Specifications

Outcome	RD (+/- 0.5) Coef. (S.E)	RD-DID (+/- 0.5) Coef. (S.E)	DID (+ 0.5/- 1.0) Coef. (S.E)
Age	0.15 (0.22)	0.28 (0.27)	0.00 (0.08)
Female	0.06 (0.03) **	0.02 (0.03)	0.01 (0.01)
White	0.02 (0.02)	0.04 (0.04)	0.00 (0.01)
Black	0.00 (0.02)	-0.01 (0.03)	0.01 (0.01)
Hispanic	-0.02 (0.01)	-0.01 (0.02)	-0.01 (0.01)
Missing race	0.00 (0.01)	-0.01 (0.01)	-0.01 (0.00)
Took reading test	0.01 (0.02)	0.02 (0.03)	-0.01 (0.01)
Took writing test	0.01 (0.02)	0.01 (0.03)	-0.01 (0.01)
Took math test	0.00 (0.02)	-0.01 (0.03)	-0.01 (0.01)
Reading score	1.47 (0.69) **	1.24 (0.83)	0.50 (0.28) *
Writing score	4.15 (1.37) ***	2.86 (1.78)	0.82 (0.51)
Math score	1.60 (0.90) *	2.84 (1.07) ***	0.43 (0.43)
Predicted to need remediation	-0.05 (0.02) **	-0.04 (0.03)	0.00 (0.01)
Ever dual enrolled	-0.02 (0.02)	-0.04 (0.03)	-0.02 (0.01) **
Intent: Occ AA/AS	0.00 (0.02)	-0.01 (0.03)	0.00 (0.01)
Intent: Occ certif.	0.00 (0.02)	0.00 (0.02)	-0.02 (0.01) ***
Major: Industrial, Manufact., and Constr.	0.01 (0.01)	0.01 (0.01)	0.00 (0.00)
Major: Natural Science	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Major: Business	0.02 (0.02)	0.01 (0.02)	0.01 (0.01)
Major: Social and Behavioral Science	-0.01 (0.01)	-0.03 (0.01) **	0.01 (0.00) *
Major: Communication Studies	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Major: Literature, Linguistics, & Fne Arts	0.00 (0.01)	0.00 (0.01)	0.00 (0.00)
Major: Math and Computer Science	-0.01 (0.01)	0.00 (0.01)	0.00 (0.00)
Major: Educ and Social Services/Policy	-0.01 (0.01)	-0.02 (0.01) *	0.00 (0.00)
Major: Engineering and Related Fields	-0.01 (0.01)	0.00 (0.02)	0.00 (0.00)
Major: Service-Oriented	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Major: Health	0.00 (0.01)	0.02 (0.02)	-0.01 (0.01) *
Major: Other	0.01 (0.01)	0.01 (0.01)	0.00 (0.00)
Credits attempted, Yr 1	0.31 (0.39)	0.71 (0.57)	-0.20 (0.15)
Any earnings, Yr 1	0.01 (0.02)	0.04 (0.03)	0.00 (0.01)
Earnings, Yr 1	$10 ($74)	$78 ($92)	$26 ($36)
Sample size	13,453	25,525	34,752

Source: Authors' calculations using restricted SCCS administrative data, 2004-2010 first-time fall entrants who initially enrolled full time. Coefficients are from separate regressions following our main RD, RD-DID, and DID specifications (see text for full details) in which each covariate is treated as an outcome. We take a conservative approach and do not control for other covariates in these regressions.

Appendix Table B2. RD Estimates with Alternative Bandwidths

				MSE Optimal BW	
	Baseline RD (+/-0.5)	Narrow BW (+/-0.25)	Wide BW (+/-1.0)	Opt.	RD using Opt BW
Outcome	Coef. (S.E)	Coef. (S.E)	Coef. (S.E)	BW	Coef. (S.E)
Year 2:					
Enrolled, Fall Year 2	-0.01 (0.02)	-0.04 (0.05)	0.00 (0.01)	0.46	0.00 (0.03)
Term GPA, Fall Year 2	0.06 (0.04)	0.08 (0.10)	0.04 (0.03)	0.50	0.08 (0.05)
Credits Attempted, Fall Y2	-0.26 (0.26)	-0.42 (0.65)	-0.06 (0.18)	0.50	-0.26 (0.26)
Credits Earned, Fall Y2	-0.04 (0.24)	-0.23 (0.63)	0.03 (0.17)	0.46	0.06 (0.30)
Avg Quarterly Earnings, Y2	$28 (83)	-$98 (163)	-$57 (46)	0.47	-$38 (96)
End of Year 3:					
Still Enrolled, End of Y3	-0.07 (0.02) ***	-0.05 (0.05)	-0.05 (0.01) ***	0.80	-0.05 (0.01) ***
Cumulative GPA, End of Y3	0.01 (0.02)	0.03 (0.04)	0.03 (0.01) ***	0.41	0.02 (0.02)
Credits Attempted, Y2-Y3	-1.86 (0.93) **	-2.61 (2.14)	-1.62 (0.53) ***	0.46	-0.77 (1.15)
Credits Earned, Y2-Y3	-1.00 (0.82)	-1.18 (1.85)	-0.77 (0.48)	0.48	-0.27 (0.99)
Avg Quarterly Earnings, Y2-Y3	$32 (88)	-$281 (169) *	-$50 (51)	0.62	-$14 (79)
End of Year 6:					
Still enrolled, End of Y6	0.01 (0.01)	0.04 (0.03)	-0.01 (0.01)	0.32	0.02 (0.02)
Cumulative GPA, End of Y6	0.00 (0.02)	0.04 (0.04)	0.04 (0.01) ***	0.41	0.03 (0.03)
Total Credits Attempted, Y2-Y6	-1.55 (1.30)	-1.96 (3.01)	-1.87 (0.74) **	0.59	-1.74 (1.23)
Total Credits Earned, Y2-Y6	-0.96 (1.09)	-0.42 (2.45)	-1.13 (0.65) *	0.49	-0.28 (1.37)
Earned Certificate, by Y6	-0.01 (0.02)	-0.01 (0.03)	-0.02 (0.01) *	0.52	-0.01 (0.02)
Earned AA/AS, by Y6	-0.05 (0.02) ***	-0.05 (0.04)	-0.01 (0.01)	0.58	-0.03 (0.02) **
Transferred: Pub/NFP 4-Yr, by Y6	-0.02 (0.02)	-0.03 (0.04)	0.01 (0.01)	0.61	0.00 (0.02)
Transferred: For-Profit, by Y6	0.00 (0.01)	-0.02 (0.03)	0.00 (0.01)	0.46	0.00 (0.01)
Avg Quarterly Earnings, Y2-Y6	$68 (99)	-$208 (175)	$52 (65)	0.75	-$20 (69)
Sample size	13,453	5,083	24,606		Varied

Source: Authors' calculations using restricted SCCS administrative data, 2004-2010 first-time fall entrants who initially enrolled full time.

Notes: See notes for Table 3. The final two columns (within MSE Optimal Bandwidth header) present the optimal bandwidth obtained using Calonico et al.'s (2014) approach and the estimates obtained using the optimal bandwidth for that outcome.

Appendix Table B3. Bounding estimates of Fall Year 2 Term GPA impacts

		Impact estimates		
	Control mean (for aided students just above 2.0)	RD	RD-DID	DID
Bounding calculations:				
Fall Year 2 Enrollment	0.71	-0.01	-0.03	-0.06
Fall Year 2 Term GPA conditional on enrollment	1.98	0.08	0.07	0.08
Term GPA impact estimates under extreme assumptions:				
Assume excess "missing" obs would have 0.0 GPA		0.06	-0.02	-0.09
Assume excess "missing" obs would have 4.0 GPA		0.11	0.16	0.25
Assume excess "missing" obs would have 1.5 GPA		0.08	0.05	0.03
Preferred approach: impute *all missing* obs to last known cumulative GPA (from Tables 3 & 4)		0.06	0.05	0.03

Source: Authors' calculations using restricted SCCS administrative data, 2004-2010 first-time fall entrants who initially enrolled full time.

Notes: To estimate term GPA impacts under alternative assumptions, we start by estimating Fall Year 2 term GPA impacts conditional on Fall Year 2 enrollment. This conditional estimate is biased if the treatment group has differential enrollment due to the treatment. Essentially, there are some excess observations "missing" from the treatment group average that would be present except for the treatment, and this may create compositional bias. To bound the extent of the bias we use the estimated causal impact on Fall Year 2 enrollment to estimate how many excess observations are "missing" from the treatment group relative to the control group. For example, in the RD-DID model, if the enrollment impact is -0.031 off a base of 0.706 enrollment in the control group, then 4% of the treatment group are "missing" from the conditional average GPA calculation (.031/.706=4.3%). We can then adjust the treatment group mean by taking the observed conditional treatment group GPA and mixing in 4% of some other value. For example, we can see how the treatment mean changes if we mix in 4% with 0.0 GPAs or 4.0 GPAs. (Note: to account for the role of covariates, we use the control mean and then add the relevant impact estimate to obtain the treatment group GPA rather than simply comparing raw treatment and control means.) We then compare these new hypothetical treatment group mean GPAs to the control average term GPA and recompute the impacts. Note that the compositional bias converges to zero as the impact on Fall Year 2 enrollment goes to zero, so the bounds are wider when this enrollment impact is bigger. Also note that assuming a mean GPA of 0 or 4.0 for the "missing" observations is very extreme. Our preferred approach simply imputes the last known cumulative GPA for those who no longer enroll, which averages about 1.94 for those near the cutoff who do not enroll in Fall Year 2.

Appendix Table B4. DID Estimated Effects of Failing GPA Performance Standard At End of Year 1, No Covariates

	Baseline Diff-in-Diff	Diff-in-Diff Allowing for Heterogeneity by GPA		
Outcome	1.0<GPA<2.5 Coef. (S.E)	Main Effect of <2.0 Coef. (S.E)	Additional Effect for those Further Below (1.5-1.85 GPA) Coef. (S.E)	Additional Effect for those Furthest Below (1.0-1.5 GPA) Coef. (S.E)
Year 2:				
Enrolled, Fall Year 2	-0.06 (0.01) ***	-0.03 (0.02)	-0.01 (0.03)	-0.04 (0.02) *
Term GPA, Fall Year 2	0.03 (0.02)	0.11 (0.05) **	-0.08 (0.05)	-0.09 (0.05) *
Credits Attempted, Fall Y2	-0.66 (0.14) ***	-0.74 (0.34) **	0.19 (0.35)	-0.01 (0.35)
Credits Earned, Fall Y2	-0.06 (0.11)	-0.13 (0.30)	0.17 (0.28)	0.00 (0.30)
Avg Quarterly Earnings, Y2	-$17 ($45)	-$174 ($112)	$246 ($116) **	$109 ($114)
End of Year 3:				
Still Enrolled, End of Y3	-0.04 (0.01) ***	-0.03 (0.03)	-0.01 (0.03)	0.00 (0.03)
Cumulative GPA, End of Y3	0.00 (0.01)	0.05 (0.02) **	-0.04 (0.02) *	-0.06 (0.02) ***
Credits Attempted, Y2-Y3	-2.30 (0.42) ***	-2.45 (1.08) **	0.04 (1.15)	0.29 (1.15)
Credits Earned, Y2-Y3	-0.58 (0.35)	-0.48 (0.98)	-0.18 (0.99)	-0.06 (1.01)
Avg Quarterly Earnings, Y2-Y3	-$79 ($46) *	-$215 ($110) *	$260 ($110) **	$55 ($113)
End of Year 6:				
Still enrolled, End of Y6	-0.01 (0.01) **	-0.01 (0.02)	-0.01 (0.02)	0.00 (0.02)
Cumulative GPA, end of Y6	-0.01 (0.01)	0.04 (0.02) *	-0.03 (0.02)	-0.06 (0.02) ***
Total Credits Attempted, Y2-Y6	-3.41 (0.59) ***	-3.05 (1.44) **	-0.31 (1.53)	-0.46 (1.47)
Total Credits Earned, Y2-Y6	-1.43 (0.47) ***	-0.99 (1.19)	-0.36 (1.21)	-0.59 (1.19)
Earned Certificate, by Y6	-0.02 (0.01) ***	-0.02 (0.02)	0.01 (0.02)	0.01 (0.02)
Earned AA/AS, by Y6	0.00 (0.01)	-0.03 (0.02)	0.03 (0.02)	0.04 (0.02) *
Transferred: Pub/NFP 4-Yr, by Y6	0.01 (0.01)	0.00 (0.02)	0.01 (0.02)	0.01 (0.02)
Transferred: For-Profit, by Y6	0.00 (0.00)	-0.01 (0.01)	0.01 (0.01)	0.02 (0.01)
Avg Quarterly Earnings, Y2-Y6	-$109 ($58) *	-$168 ($145)	$139 ($140)	$1 ($141)
Sample size	34,752	34,752		

Source: Authors' calculations using restricted SCCS administrative data, 2004-2010 first-time fall entrants who initially enrolled full time.

Notes: The analyses correspond to those in Table 4, but with no control covariates in all models presented here. See Table 4 for additional notes.

Appendix Table B5. Effects of Failing Credit-Completion Percentage (CCP) Standard at End of Year 1

Outcome	RD (+/- 0.2 CCP) Coef. (S.E)		RD-DID (+/- 0.2 CCP) Coef. (S.E)	DID (+/- 0.3 CCP) Coef. (S.E)	
Year 2:					
Enrolled, Fall Year 2	-0.01 (0.02)		-0.02 (0.02)	-0.07 (0.01)	***
Term GPA, Fall Year 2	0.09 (0.03)	***	0.04 (0.04)	0.06 (0.02)	***
Credits Attempted, Fall Y2	-0.08 (0.19)		-0.23 (0.28)	-0.81 (0.16)	***
Credits Earned, Fall Y2	0.20 (0.13)		0.03 (0.21)	-0.21 (0.11)	*
Quarterly Earnings, Y2, Average	-$6 ($57)		-$69 ($83)	-$49 ($40)	
End of Year 3:					
Still Enrolled, End of Y3	-0.01 (0.01)		-0.01 (0.02)	-0.04 (0.01)	***
Cumulative GPA, End of Y3	0.05 (0.02)	***	0.01 (0.03)	0.04 (0.01)	***
Credits Attempted, Y2-Y3	-0.34 (0.55)		-1.43 (0.93)	-2.90 (0.47)	***
Credits Earned, Y2-Y3	0.40 (0.42)		-0.49 (0.77)	-0.85 (0.36)	**
Avg Quarterly Earnings, Y2-Y3	$28 ($55)		-$9 ($101)	-$81 ($46)	*
End of Year 6:					
Still enrolled, End of Y6	0.02 (0.01)	*	0.01 (0.01)	-0.01 (0.01)	
Cumulative GPA, End of Y6	0.03 (0.02)	*	-0.01 (0.03)	0.03 (0.01)	**
Total Credits Attempted, Y2-Y6	-0.08 (0.84)		-1.35 (1.41)	-4.18 (0.68)	***
Total Credits Earned, Y2-Y6	0.69 (0.69)		-0.40 (1.18)	-1.66 (0.51)	***
Earned Certificate, by Y6	0.00 (0.01)		0.00 (0.01)	-0.01 (0.01)	
Earned AA/AS, by Y6	0.01 (0.01)		0.00 (0.02)	0.01 (0.01)	
Transferred: Pub/NFP 4-Yr, by Y6	0.00 (0.01)		-0.01 (0.02)	0.01 (0.01)	
Transferred: For-Profit, by Y6	0.01 (0.01)		-0.01 (0.01)	0.01 (0.00)	
Avg Quarterly Earnings, Y2-Y6	$56 ($57)		-$36 ($110)	-$105 ($54)	*
Sample size	21,066		39,366	31,893	

Source: Authors' calculations using restricted SCCS administrative data, 2004-2010 first-time fall entrants who initially enrolled full time.

Notes: Robust standard errors clustered by institution-year in parentheses. All specifications use local linear regression with the credit completion percentage (CCP) cutoff set at 0.67. Control variables include all variables listed in Table 2: age, gender, race dummies, placement test scores if available, placement test flags, flag for predicted remedial need, flag for ever dual enrolled, degree intent at entry, major at entry, first-year credits attempted, first-year employment status, and first-year earnings.

Appendix C: Subgroup Findings (DID only)

Appendix Table C1. DID subgroup effects by gender

	Men		Women	
Outcome	Coef. (S.E)		Coef. (S.E)	
Year 2:				
Enrolled, Fall Year 2	-0.06 (0.02)	***	-0.06 (0.02)	***
Term GPA, Fall Year 2	0.07 (0.02)	***	0.00 (0.03)	
Credits Attempted, Fall Y2	-0.79 (0.19)	***	-0.59 (0.19)	***
Credits Earned, Fall Y2	-0.10 (0.15)		-0.03 (0.14)	
Quarterly Earnings, Y2, Average	-13.11 (60.67)		-62.37 (51.73)	
End of Year 3:				
Still Enrolled, End of Y3	-0.03 (0.01)	*	-0.04 (0.01)	***
Cumulative GPA, End of Y3	0.01 (0.01)		-0.01 (0.01)	
Credits Attempted, Y2-Y3	-2.20 (0.58)	***	-2.18 (0.48)	***
Credits Earned, Y2-Y3	-0.48 (0.48)		-0.51 (0.40)	
Avg Quarterly Earnings, Y2-Y3	-105.82 (56.79)	*	-93.47 (49.08)	*
End of Year 6:				
Still enrolled, End of Y6	-0.01 (0.01)		-0.01 (0.01)	
Cumulative GPA, end of Y6	0.00 (0.01)		-0.02 (0.01)	
Total Credits Attempted, Y2-Y6	-3.16 (0.80)	***	-3.08 (0.72)	***
Total Credits Earned, Y2-Y6	-1.13 (0.64)	*	-1.25 (0.57)	**
Earned Certificate, by Y6	-0.02 (0.01)	**	-0.01 (0.01)	
Earned AA/AS, by Y6	0.00 (0.01)		0.01 (0.01)	
Transferred: Pub/NFP 4-Yr, by Y6	0.01 (0.01)		0.00 (0.01)	
Transferred: For-Profit, by Y6	-0.01 (0.01)		0.02 (0.01)	**
Avg Quarterly Earnings, Y2-Y6	-126.39 (74.43)	*	-104.27 (53.10)	*
Sample size	17,553		17,199	

Source: Authors' calculations using restricted SCCS administrative data, 2004-2010 first-time fall entrants who initially enrolled full time.

Notes: See Table 4.

Appendix Table C2. DID subgroup effects by entry cohort

Outcome	2004-2007 Coef. (S.E)		2009-2010 Coef. (S.E)	
Year 2:				
Enrolled, Fall Year 2	-0.06 (0.02)	***	-0.06 (0.02)	***
Term GPA, Fall Year 2	0.00 (0.03)		0.06 (0.03)	*
Credits Attempted, Fall Y2	-0.69 (0.20)	***	-0.67 (0.20)	***
Credits Earned, Fall Y2	-0.09 (0.15)		-0.18 (0.19)	
Quarterly Earnings, Y2, Average	-31.78 (66.09)		-36.72 (50.11)	
End of Year 3:				
Still Enrolled, End of Y3	-0.04 (0.01)	**	-0.03 (0.01)	**
Cumulative GPA, End of Y3	0.00 (0.01)		0.00 (0.02)	
Credits Attempted, Y2-Y3	-2.08 (0.64)	***	-2.55 (0.62)	***
Credits Earned, Y2-Y3	-0.43 (0.47)		-1.14 (0.61)	*
Avg Quarterly Earnings, Y2-Y3	-63.25 (66.86)		-109.25 (55.53)	*
End of Year 6:				
Still enrolled, End of Y6	-0.02 (0.01)	**	-0.01 (0.01)	
Cumulative GPA, end of Y6	-0.01 (0.02)		-0.01 (0.02)	
Total Credits Attempted, Y2-Y6	-3.44 (0.94)	***	-2.77 (0.84)	***
Total Credits Earned, Y2-Y6	-1.46 (0.73)	**	-1.42 (0.73)	*
Earned Certificate, by Y6	-0.01 (0.01)		-0.01 (0.01)	
Earned AA/AS, by Y6	0.01 (0.01)		-0.01 (0.01)	
Transferred: Pub/NFP 4-Yr, by Y6	0.01 (0.01)		-0.01 (0.02)	
Transferred: For-Profit, by Y6	0.00 (0.01)		0.01 (0.01)	
Avg Quarterly Earnings, Y2-Y6	-81.93 (75.82)		-212.58 (88.29)	**
Sample size	17,783		11,487	

Source: Authors' calculations using restricted SCCS administrative data, 2004-2010 first-time fall entrants who initially enrolled full time.

Notes: See Table 4.

Appendix Table C3. DID subgroup effects by type of aid received

Outcome	Pell recipients Coef. (S.E)		Loans only Coef. (S.E)		Other grants but no Pell Coef. (S.E)	
Year 2:						
Enrolled, Fall Year 2	-0.07 (0.01)	***	0.00 (0.02)		-0.04 (0.02)	**
Term GPA, Fall Year 2	0.04 (0.02)	*	0.01 (0.05)		0.02 (0.03)	
Credits Attempted, Fall Y2	-0.71 (0.14)	***	-0.15 (0.27)		-0.63 (0.22)	***
Credits Earned, Fall Y2	0.04 (0.12)		-0.18 (0.22)		-0.29 (0.19)	
Quarterly Earnings, Y2, Average	-45.20 (45.43)		51.94 (70.44)		-24.63 (71.25)	
End of Year 3:						
Still Enrolled, End of Y3	-0.04 (0.01)	***	0.01 (0.02)		-0.06 (0.02)	***
Cumulative GPA, End of Y3	0.00 (0.01)		0.00 (0.02)		-0.01 (0.01)	
Credits Attempted, Y2-Y3	-2.34 (0.43)	***	-1.19 (0.97)		-2.26 (0.70)	***
Credits Earned, Y2-Y3	-0.24 (0.35)		-1.18 (0.79)		-1.32 (0.60)	**
Avg Quarterly Earnings, Y2-Y3	-93.40 (44.71)	**	48.70 (81.18)		-138.08 (74.49)	*
End of Year 6:						
Still enrolled, End of Y6	-0.01 (0.01)	*	-0.01 (0.02)		-0.02 (0.01)	
Cumulative GPA, end of Y6	-0.01 (0.01)		-0.01 (0.02)		-0.01 (0.02)	
Total Credits Attempted, Y2-Y6	-3.31 (0.64)	***	-2.11 (1.35)		-3.97 (0.94)	***
Total Credits Earned, Y2-Y6	-0.97 (0.49)	**	-1.97 (1.13)	*	-2.58 (0.78)	***
Earned Certificate, by Y6	-0.01 (0.01)	**	0.00 (0.01)		-0.03 (0.01)	***
Earned AA/AS, by Y6	0.01 (0.01)	**	-0.03 (0.02)		-0.03 (0.01)	**
Transferred: Pub/NFP 4-Yr, by Y6	0.01 (0.01)		-0.02 (0.02)		0.00 (0.02)	
Transferred: For-Profit, by Y6	0.00 (0.01)		0.01 (0.01)		0.00 (0.01)	
Avg Quarterly Earnings, Y2-Y6	-95.70 (48.98)	*	-11.25 (113.27)		-195.71 (87.97)	**
Sample size	29,714		18,126		19,778	

Source: Authors' calculations using restricted SCCS administrative data, 2004-2010 first-time fall entrants who initially enrolled full time.

Notes: See Table 4.