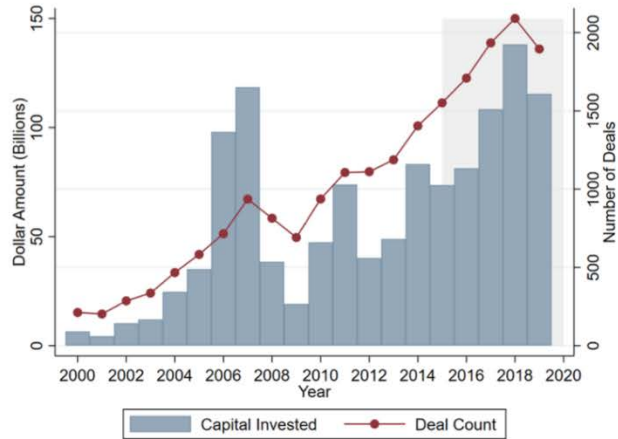


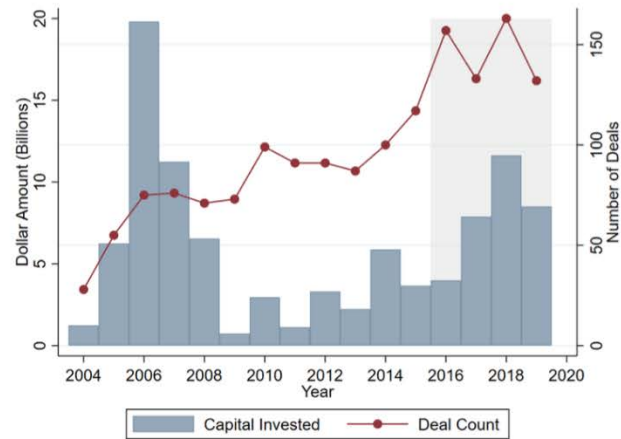
PE: Value Creation

- Traditional thinking: Private equity buyouts increases firm value
 - Reducing financial constraint
 - Improving operational efficiency
 - Adopting information technology
- PE has high-powered incentives to maximize firm values
 - Call-option type compensation
 - High leverage + short investment horizon

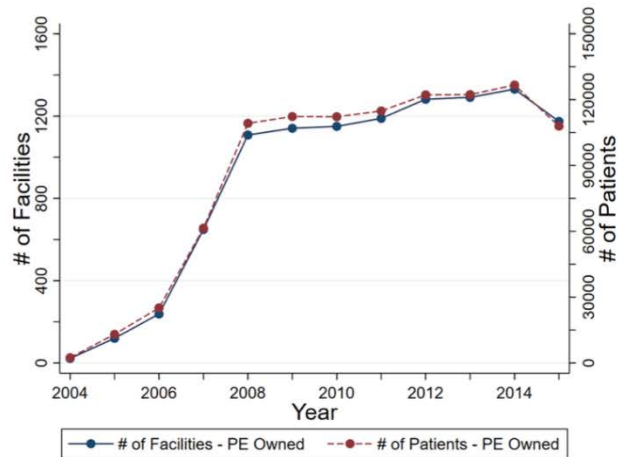
PE in Healthcare: Fast Growth



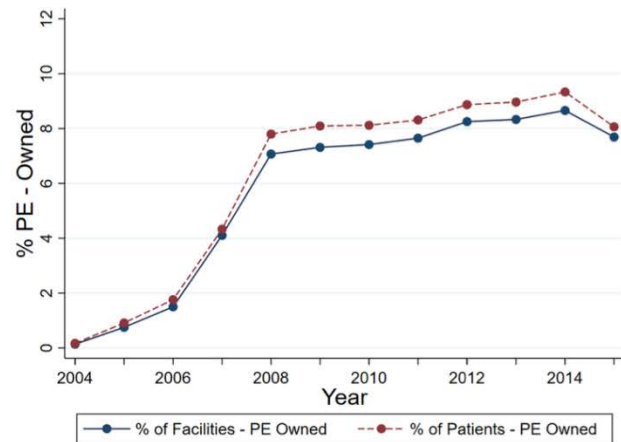
A: PE Deals in Healthcare



B: PE Deals in Eldercare



C: Number of Facilities and Patients Acquired



D: Percentage of Facilities and Patients Acquired

PE impact in Healthcare Sector

- Healthcare sector features:
 - Large government payers
 - Huge information frictions
 - Less competition
- Profit-maximizing PE-owned schools may not in the best interest of patients
- Gupta etc. (2021) tests hypotheses with patient-level data

Identification Strategy

- Run IV 2-stage regression:

- For patient i , facility j , hospital referral region r at time t

$$PE_{i,j,r,t} = \alpha_j + \alpha_{r,t} + \zeta_1 D_i + \zeta_2 D_i^2 + X'_{i,z} \xi + v_{i,j,r,t}$$

$$Y_{i,j,r,t} = \alpha_j + \alpha_{r,t} + \phi PE_{i,j,r,t} + X'_{i,z} \gamma + \varepsilon_{i,j,r,t}$$

- Empirical challenge: PE-owned facility could select patients differently
- Solution:
 - Patients prefer to choose nearby nurse homes
 - IV: D of the nearest PE-owned facility – D of nearest non-PE facility
 - Location based variation -> Choice of PE-owned facility -> outcome

Main result

Table 4: Patient-Level Analysis: IV Results

A: Main Results			
	(1) Mortality (Stay + 90 Days)	(2) Log Amount Billed Per Patient Stay	(3) Log Amount Billed Per Patient Stay + 90 Days
1(PE)	0.0168** (0.007)	0.1777*** (0.028)	0.1054*** (0.024)
Observations	7,365,934	7,365,934	7,365,934
Y-Mean	0.17	9.07	9.57
F-Stat	224	224	224
B: Placebo Analysis			
	(1) Mortality (Stay + 90 Days)	(2) Log Amount Billed Per Patient Stay	(3) Log Amount Billed Per Patient Stay + 90 Days
1(PE)	0.006 (0.004)	-0.015 (0.018)	-0.016 (0.016)
Observations	7,159,535	7,159,535	7,159,535
Y-Mean	0.18	9.01	9.51
F-Stat	441	441	441

Mechanism Inspection

- DID design to check facility-level outcome:
 - For facility j at time t

$$Y_{jt} = \alpha_j + \alpha_t + \beta PE_{jt} + P'_{jt} \gamma_1 + M'_{jt} \gamma_2 + \varepsilon_{jt}$$

- Compare :
 - PE-owned facility
 - Facility without PE ownership
- Controlling:
 - Aggregate shock in the same year
 - Facility fixed effect
 - Other available variates

Mechanism and Operational Changes

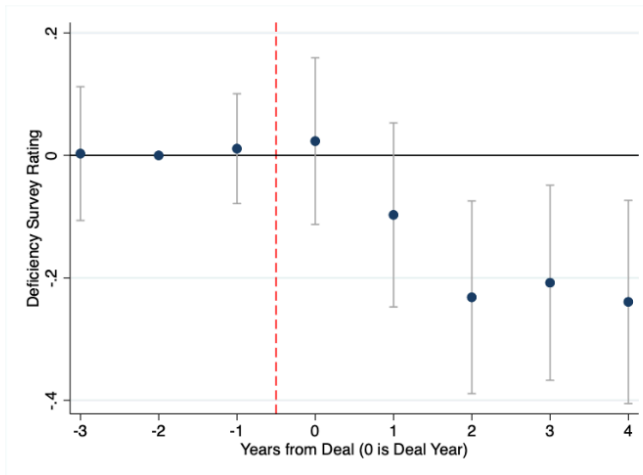
A: Five Star Rating				
	(1) Deficiency Rating	(2) Overall Rating		
1(PE) (No Control)	-0.075** (0.037)	-0.079** (0.036)		
1(PE) (With Control)	-0.077** (0.037)	-0.082** (0.036)		
Observations Y-Mean	138,051 2.9	138,051 3.2		
B: Staff Per Patient Day				
	(1) All Staff	(2) Nurse Assistant	(3) Licensed Nurse	(4) Registered Nurse
1(PE) (No Control)	-0.050*** (0.017)	-0.068*** (0.010)	-0.019*** (0.006)	0.037*** (0.005)
1(PE) (With Control)	-0.048*** (0.016)	-0.066*** (0.010)	-0.019*** (0.006)	0.037*** (0.005)
Observations Y-Mean	283,767 3.6	283,767 2.3	283,767 0.8	283,767 0.5

Where is the money going?

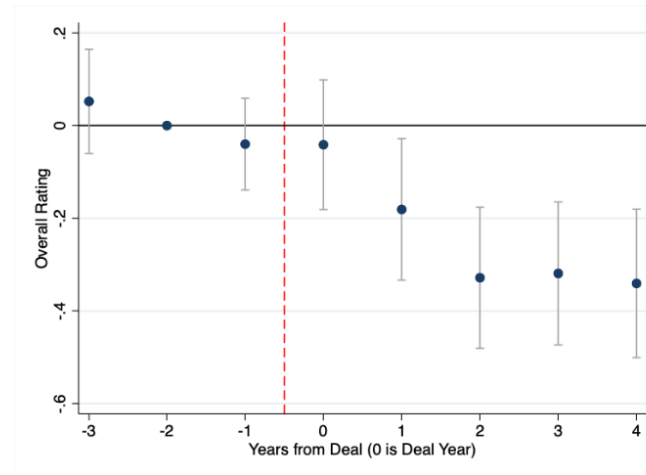
C: Log Financials

	(1) Management Fee	(2) Building Lease	(3) Interest Expense	(4) Cash on Hand
1(PE) (No Control)	0.074** (0.032)	0.564*** (0.061)	1.181*** (0.096)	-0.322*** (0.042)
1(PE) (With Control)	0.074** (0.032)	0.560*** (0.061)	1.175*** (0.096)	-0.318*** (0.042)
Observations	231,556	231,584	231,613	231,569
Y-Mean	0.2	0.4	0.3	11.2

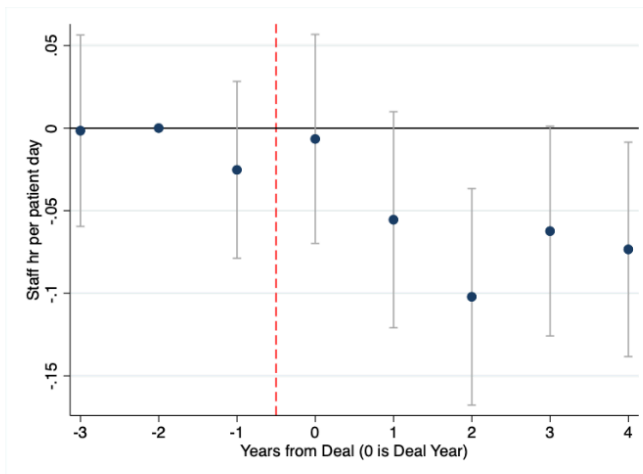
Event Study



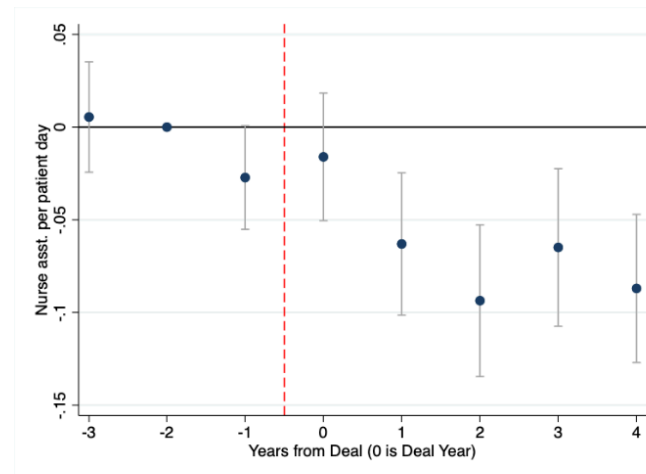
A: Deficiency Survey Rating



B: Overall Rating



C: Staff Hour per Patient Day



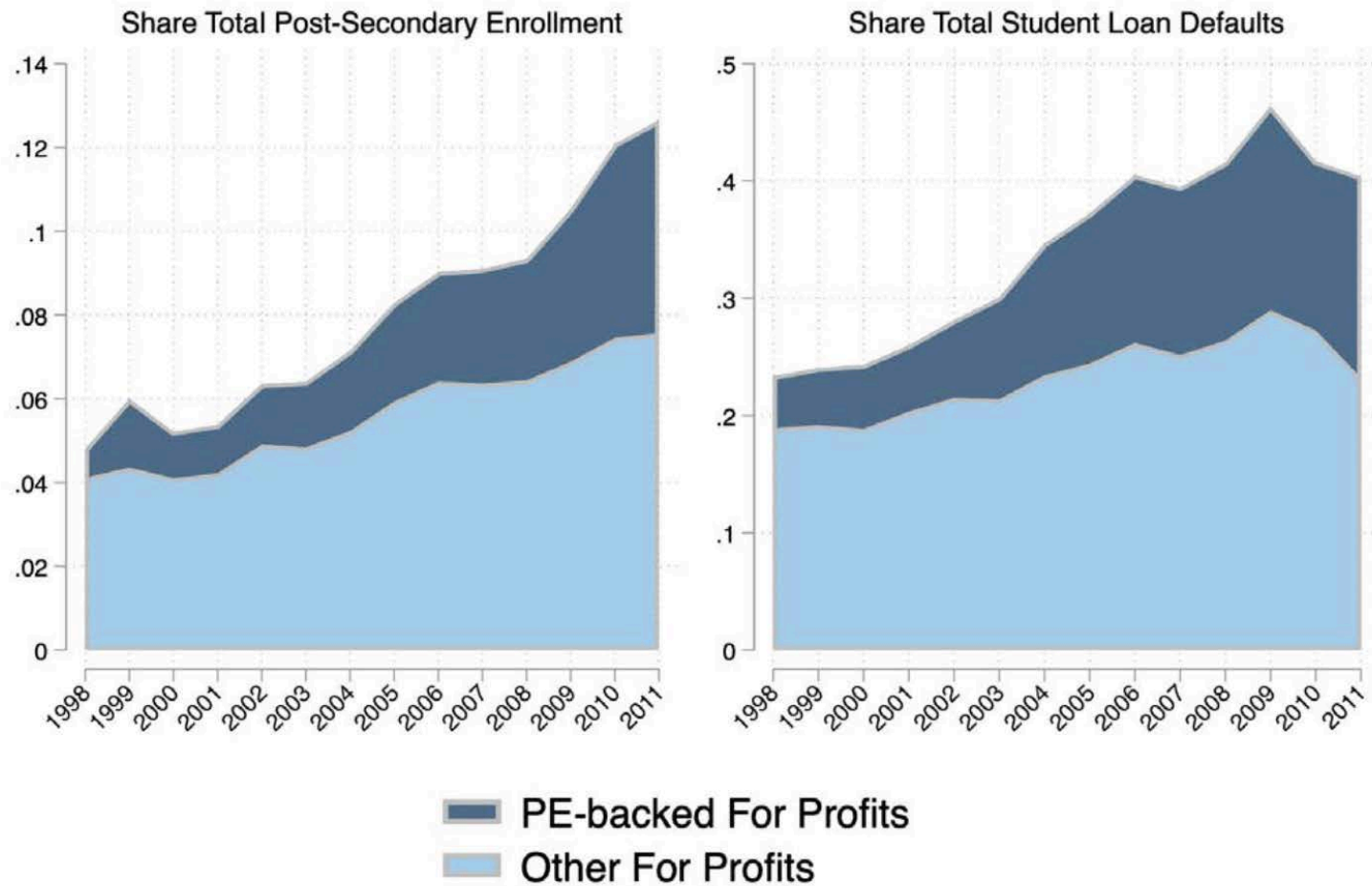
D: Nurse Asst. per Patient Day

Buyout in Higher Education Sector

- Post-secondary education features:
 - Opaque product quality
 - Intense government subsidy
- Profit-maximizing PE-owned schools may not in the best interest of students
 - Increase tuition to exploit government aid (student loan)
 - Cut spending in instruction, Invest in marketing
 - Siphon students from nearby community colleges
- Eaton etc. (2019) tests hypotheses with data

PE in Higher Education: Trend

Figure 1: For Profit Schools Share of Loan Defaults and Enrollment



Within-School Regression:

- Run following regression:
 - For school i at time t

$$Y_{it} = \alpha_i + \alpha_t + \beta_1 PE_{it} + \gamma \mathbf{X}_{it} + \varepsilon_{it}.$$

- Compare :
 - Pre-owned school
 - School never experienced PE buyout
- Controlling:
 - Aggregate shock in the same year
 - School fixed effect

Other Empirical Strategies

- Visual Event Studies:
 - Restricts to schools experienced PE buyout
 - Compare the mean effect around the buyout year

- Matching estimator:
 - For each PE-owned school find a similar one as control
 - Build a predictive model of if school is targeted by PE
 - Find control group that have similar important features

- DID around 2007 Government Student loan limit increase:
 - Hypothesis: increases tuition to force students to take out more loan

Regression: Borrowing

Dependent Variable: Average loan per borrower (2015\$)

	(1)	(2)	(3)	(4)	(5)	(6)
PE owned·Post 2007	909*** (90)	1110*** (95)	1086*** (100)	798*** (97)	1009*** (106)	967*** (112)
PE owned	1743*** (99)			930*** (97)		
Post 2007	2032*** (24)			2039*** (49)		
Controls	N	N	Y	N	N	Y
Sample	All	All	All	For-Profits	For-Profits	For-Profits
School Fixed Effects	N	Y	Y	N	Y	Y
Year Fixed Effects	N	Y	Y	N	Y	Y
N	69056	69056	64969	29402	29402	26758
R^2	.29	.68	.68	.29	.63	.63

Regression: Tuition

Panel 2: Tuition

Dependent Variable: Average tuition (2015\$)

	(1)	(2)	(3)	(4)	(5)	(6)
PE owned·Post 2007	1591*** (247)	1656*** (262)	1310*** (215)	1193*** (262)	1238*** (308)	1161*** (256)
PE owned	5427*** (246)			1929*** (268)		
Post 2007	2472*** (55)			2708*** (110)		
Controls	N	N	Y	N	N	Y
Sample	All	All	All	For-Profits	For-Profits	For-Profits
School Fixed Effects	N	Y	Y	N	Y	Y
Year Fixed Effects	N	Y	Y	N	Y	Y
N	63123	63123	59386	14156	14156	13835
R^2	.26	.83	.86	.2	.62	.75

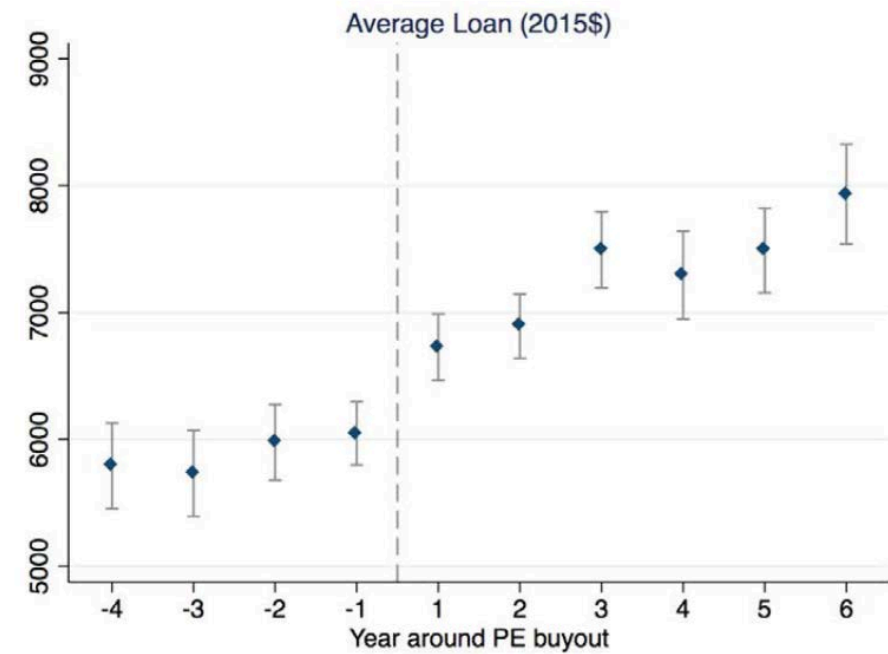
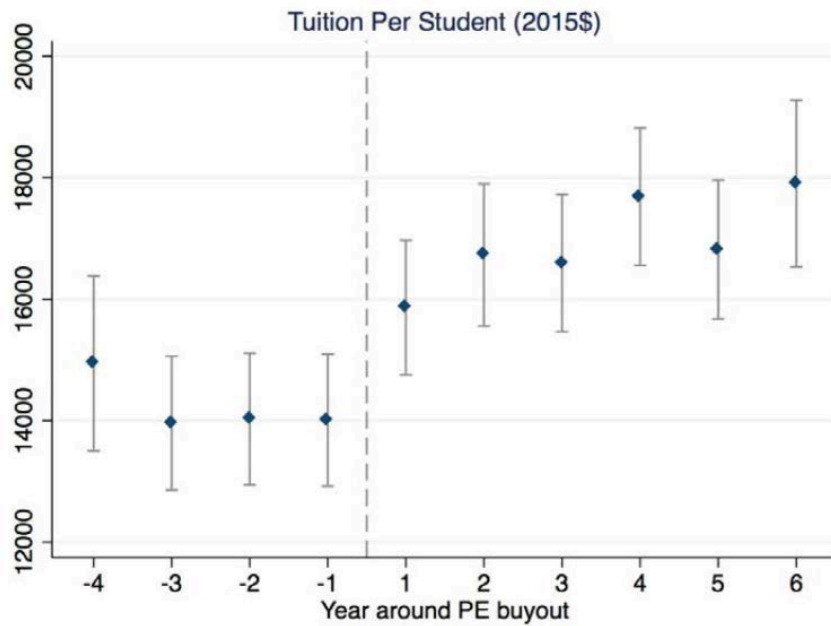
Regression: Graduate rate

Table 5: Private Equity Ownership and Student Outcomes

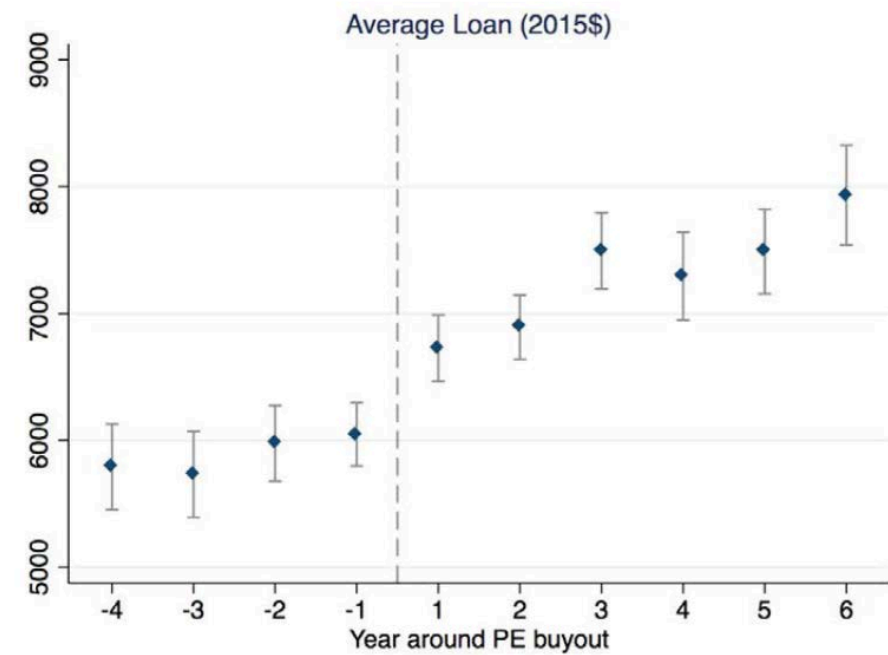
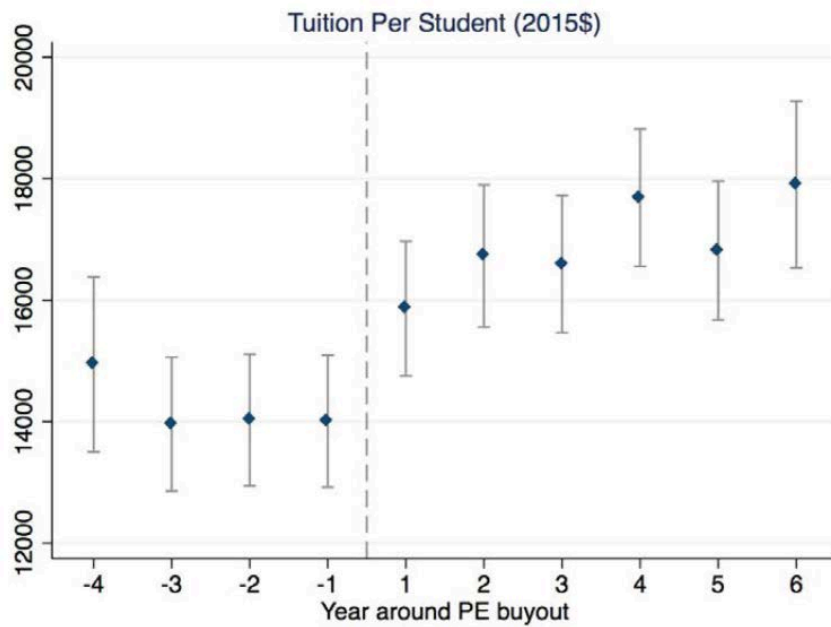
Dependent variable:	<i>Panel 1</i>					
	Graduation rate (share graduate in 150% normal time)			Repayment rate (3 year)		
	(1)	(2)	NNM [±] (3)	(4)	(5)	NNM [±] (6)
PE buyout	-.06*** (.012)	-.059*** (.012)	-.041* (.023)	-.035** (.011)	-.032** (.0091)	-.057* (.032)
Composition controls [‡]	N	Y	-	N	Y	-
School type controls [†]	Y	Y	-	Y	Y	-
School Fixed Effects	Y	Y	-	Y	Y	-
Year Fixed Effects	Y	Y	-	Y	Y	-
N	56965	56839	7883	28201	28201	4623
R ²	.8	.81	-	.96	.96	-

Dependent variable:	Log mean earnings		Log 50th pctile earnings	
	(1)	(2)	(3)	(4)
PE buyout	-.061*** (.013)	-.05** (.012)	-.057** (.017)	-.043* (.016)
Composition controls [‡]	N	Y	N	Y
School type controls [†]	Y	Y	Y	Y
School Fixed Effects	Y	Y	Y	Y
Year Fixed Effects	Y	Y	Y	Y
N	17736	17736	17736	17736
R^2	.97	.97	.97	.97

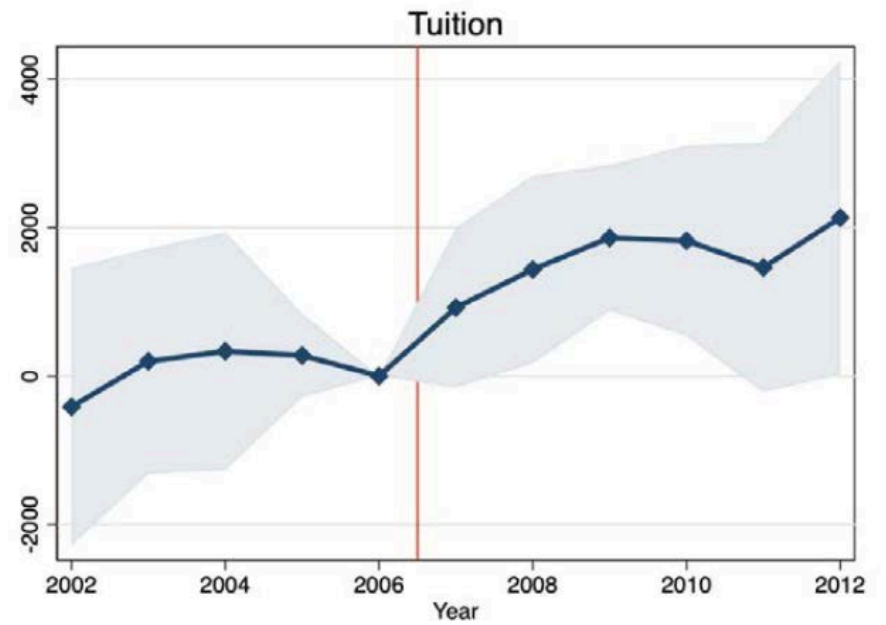
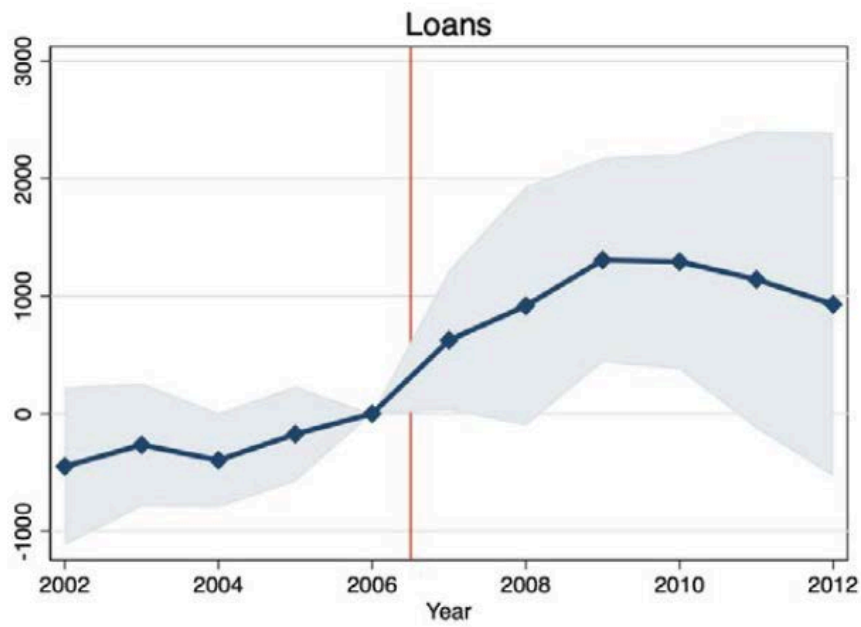
Effect around PE Buyout



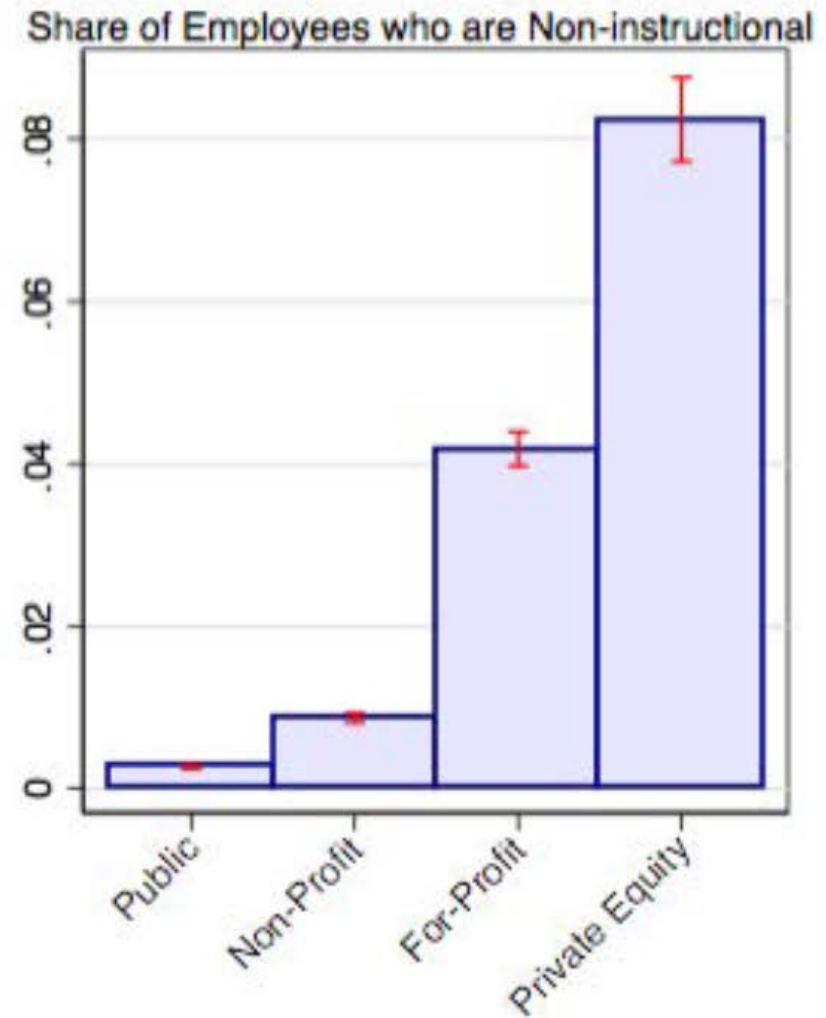
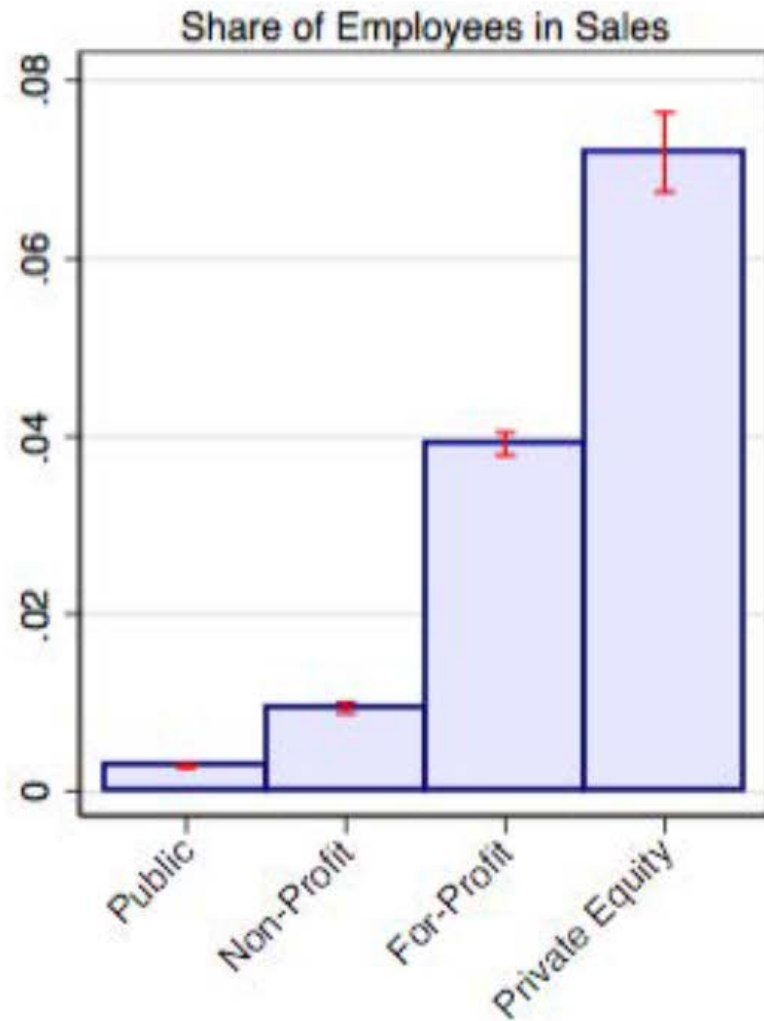
Effect around PE Buyout



2007 Loan Limit Increase



Where is the money going?



Dependent variable:	Faculty per 100 students			Instruction spending share			CEO*
	NNM [±]			NNM [±]			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
PE buyout	-.45** (.19)	-.36* (.18)	-.2 (.65)	-.028* (.016)	-.029* (.016)	-.049** (.024)	0.0517** (0.0215)
Composition controls [‡]	N	Y	-	N	Y	-	N
School type controls [†]	Y	Y	-	Y	Y	-	Y
School Fixed Effects	Y	Y	-	Y	Y	-	Y
Year Fixed Effects	Y	Y	-	Y	Y	-	Y
N	62,432	62,432	7833	97401	97401	9343	99137
R ²	0.83	0.83	-	.75	.75	-	.28
