On the Effect of Student Loans on Access to Homeownership

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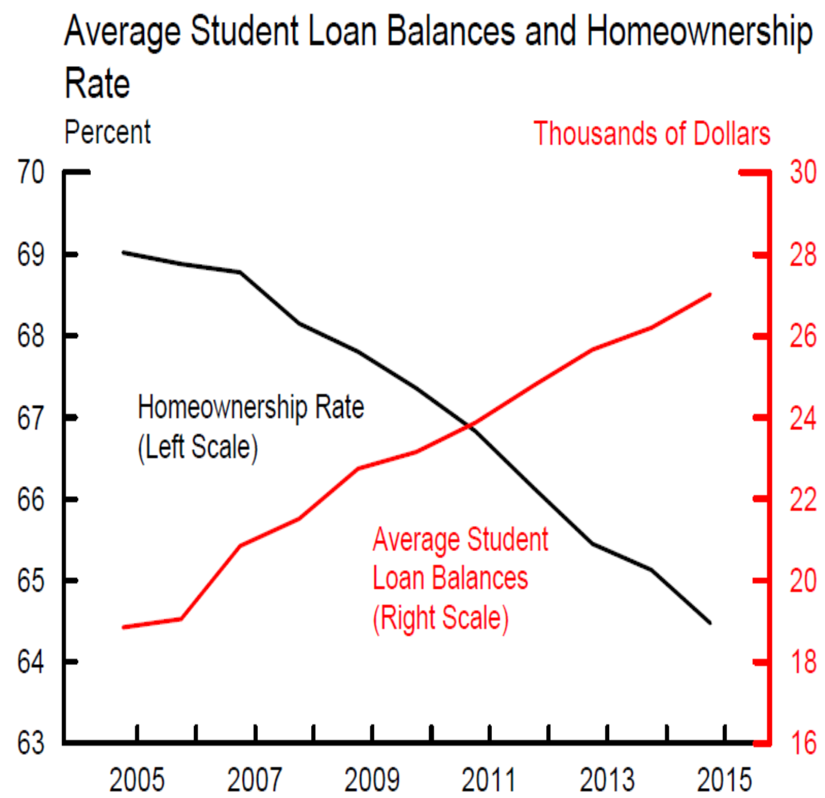
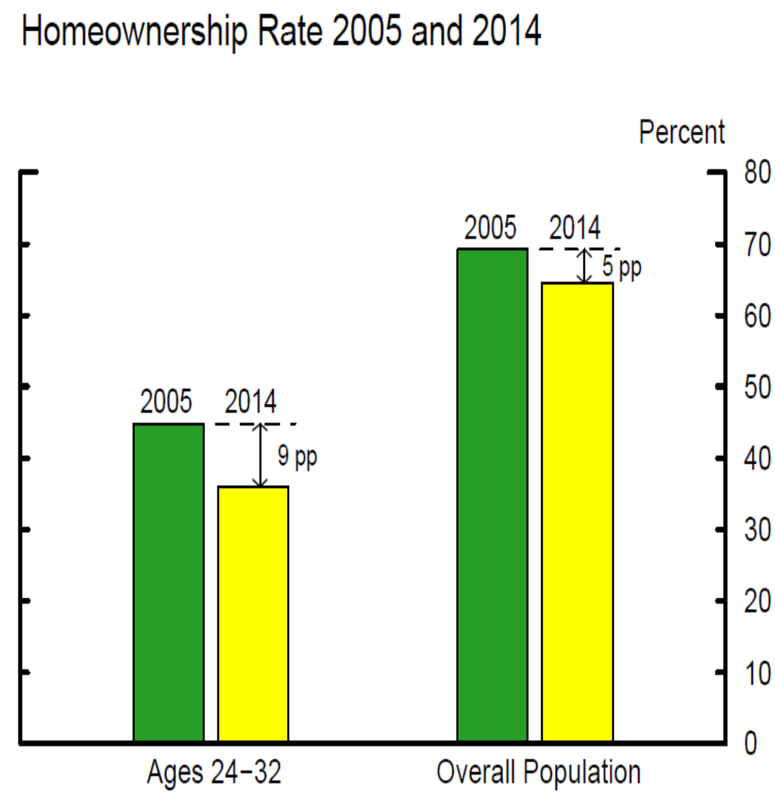
Student Loan Debt and Homeownership



Note: Student loan balances in 2015:Q2 dollars.
Source: Student loan balances: NYFED CCP/Equifax.
Homeownership rate: Current Population Survey (CPS)



Source: CPS 2005 and 2014 (authors' calculations).

Student Loans and Homeownership

- Anecdotal and survey evidence:
  - Student loan debt might adversely affect homeownership decisions/access (Rutgers, NAR, Fannie Mae)
  - Narrative focused on the effect of student loans reducing ability to qualify for mortgage through effects on debt-to-income ratios and ability to save for down payments
  - Additionally, student loan debt may reduce desire to take on more debt

Research Question

- All else equal, how does variation in student loan debt affect the probability of homeownership?
  - Hold closely related educational decisions constant
  - Though experiment: forgive 10% of student loans upon college exit
- Access to student loans likely has further effects, but this is beyond the scope of our study

Endogeneity of Student Loan Debt

- Unobservable factors that influence both borrowing and homeownership might bias results
  - Students with a high expected income might borrow more and also be more likely to own
  - Tight credit markets could restrain students from borrowing large amounts and also restrict their access to home loans
  - Many other family background characteristics are not available in datasets which also contain detailed loan and schooling information

Our Study

- Estimates the effect of student loan debt on entry into homeownership
- Unique administrative data for cohort aged 23-31 in 2004 followed over time*
  - Credit bureau records
  - Federal student loan and need-based grant recipient information
  - Records on college enrollment, graduation and major, and school characteristics
- Instrument: changes to tuition rates at home-state public universities

*Data were anonymized. No PII was provided to the FR

Preview of Results

- A 10% increase in student loan debt decreases the homeownership probability by ~1 percentage point
- Effect is consistent across a five year window post-college
- Failing to control for endogeneity of student loan debt biases the estimates

Existing Studies

- Cooper and Wang (2014)/Houle and Berger (2015)
  - Small negative effect of debt after controlling for observable characteristics
  - 10 percent increase in debt decreases homeownership rate by 0.1-0.5 percentage points among young borrowers
- Gicheva and Thompson (2014)
  - Homeownership lower among cohorts with higher rates of borrowing

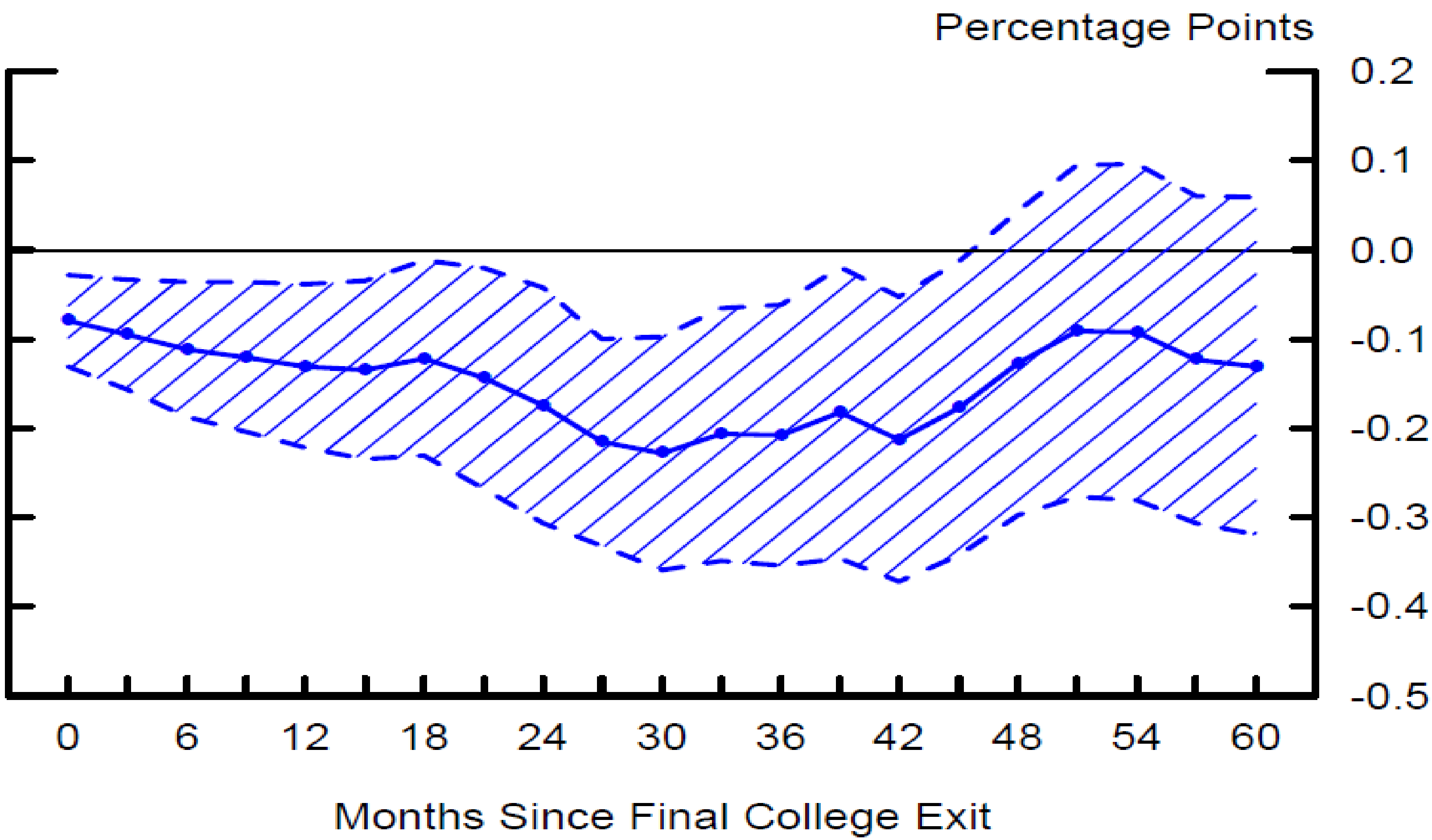
Sample Details

- Representative cohort of individuals between ages 23 and 31 in 2004
- Credit records by TransUnion available roughly bi-annually between 1997 and 2010
  - Homeownership approximated by presence of secured closed-end mortgage debt
- Educational histories by National Student Clearinghouse (NSC)
  - Detailed enrollment spells (duration, institution)
  - Graduation records (degree, major)
- Pell Grant and Federal Loan records by the DoEd

Preliminary Correlations/Control on Observables

- Regresses indicator for homeownership on individuals' student loan debt (logged)
- Controls for a rich set of individual characteristics measured at final college exit, as well as state and year fixed effects
  - Age at school exit, time spent in school, attained degrees, majors, Pell grant controls, school sectors, auto and credit card debt, credit score, and time-varying state controls (unemployment rate, average wages, and median house prices)
  - Standard errors cluster at the state level
- Effect on homeownership estimated between 0-60 months after final college exit, for individuals leaving school prior to 2006

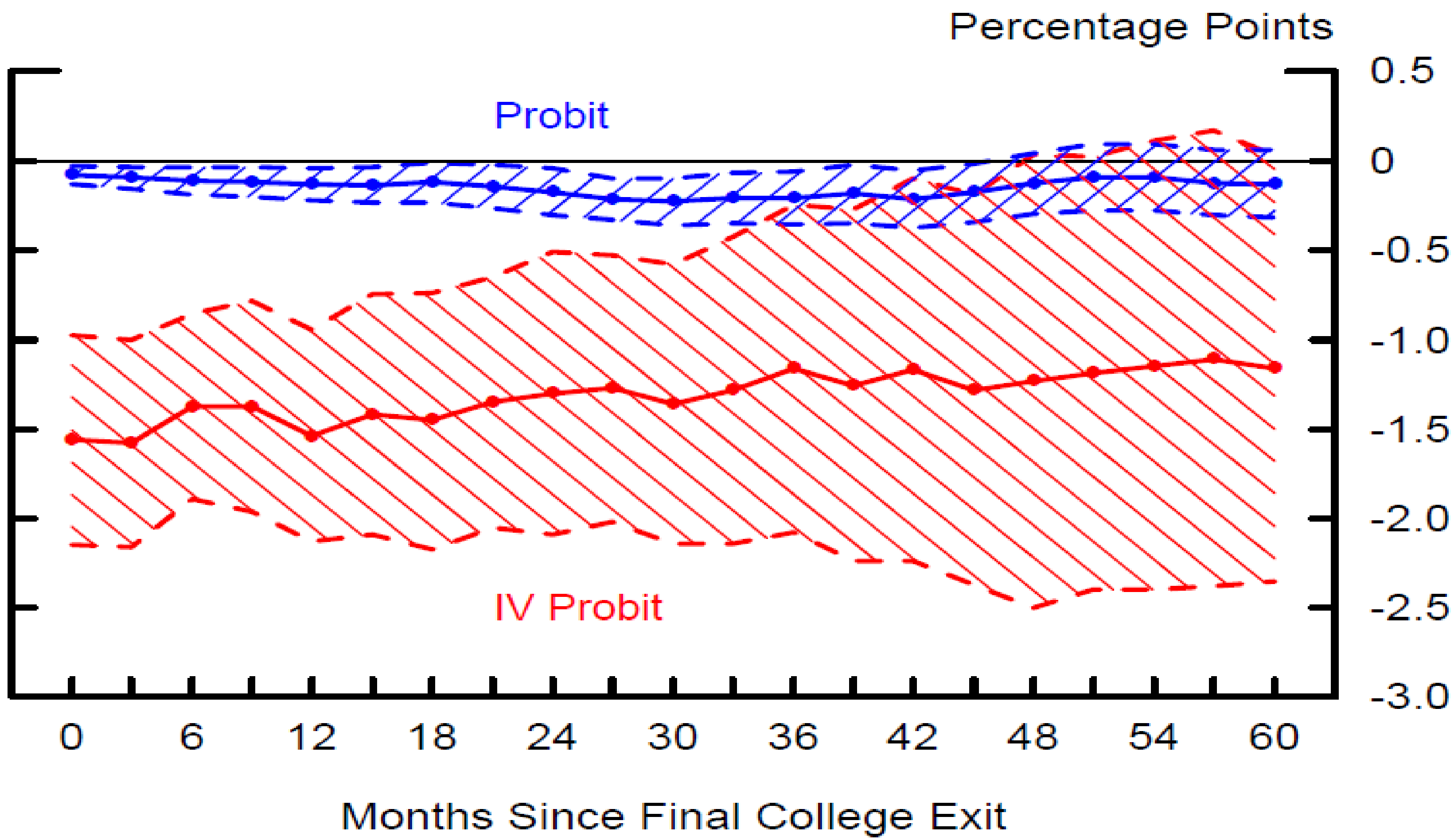
Effect of a 10% Increase in Debt on Homeownership Rate-Probit Estimates



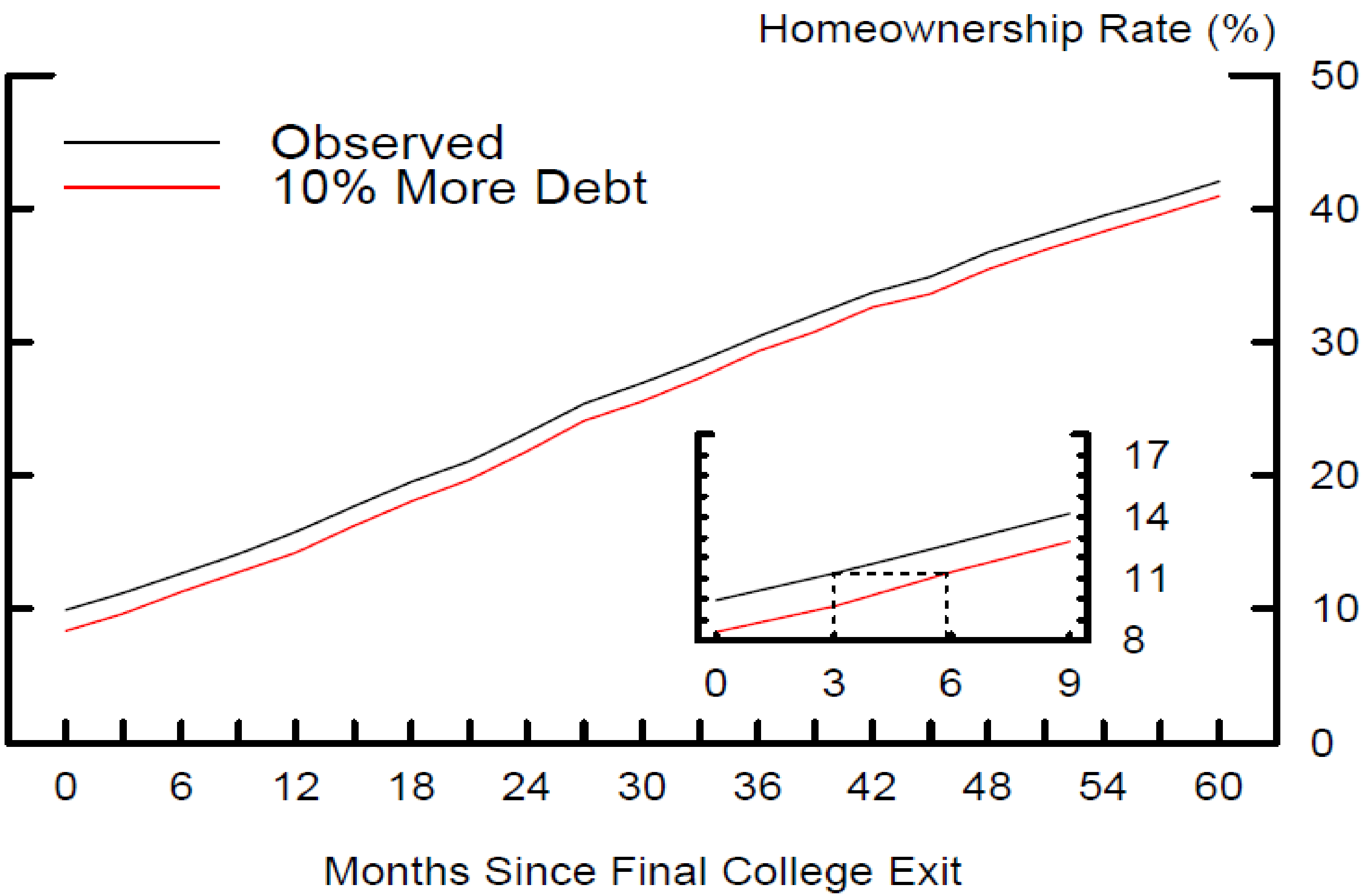
Natural Experiment to Address Omitted Variable Bias

- Increases in average tuition at public 4-year universities in home state increase borrowing
  - Large fraction attend public 4-year universities in home states
- Claim: tuition changes do not affect decisions for homeownership through any channel other than debt
  - Home state tuition changes not determined by individual choices
  - Home state: state where individual lives prior to college enrollment
- Counterfactual:
  - All else equal, if one were to obtain a certain level of education but at a somewhat higher price (and, consequently, with more debt), how would one's access to homeownership be affected?

Effect of a 10% Increase in Debt on Home-ownership Rate-Probit vs IV Probit Estimates



Effect of a 10% Increase in Debt on Home-ownership for Borrowers



Identification Concerns/Validity Tests (1)

- Changes in tuition might reflect economic conditions

Probability of Homeownership (2 years post-college)

	(4)	(5)
Logged Student Loan Debt	-0.113**	-0.115**
	(0.0444)	(0.0473)
Logged Cumulative Years In School	0.0884**	0.0906**
	(0.0382)	(0.0408)
Age At Last School Exit	0.0361***	0.0363***
	(0.00269)	(0.00270)
Observations	4,794	4,794
Degree Controls	YES	YES
College Major Controls	YES	YES
School Sector Controls	YES	YES
Pell Grant Controls	YES	YES
Credit Controls	YES	YES
State Controls	NO	YES
State/Year FE	YES	YES

- Estimates stable to local economic controls

Identification Concerns/Validity Tests (1)-cont.

- If true, instrument should be correlated with probability of homeownership for those who do not go to college

Probability of Homeownership

Age	18	21	24	27	30
Instrument: Ln(Tuition)	-0.00597	0.0529	0.0387	0.0420	0.115
	(0.0171)	(0.0361)	(0.0503)	(0.0680)	(0.108)
Observations	8,927	8,927	8,927	8,927	7,940
R-squared	0.007	0.010	0.020	0.020	0.023
State/Year FE	YES	YES	YES	YES	YES

- Instrument is not significant for this group for ages 18 to 30

Identification Concerns/Validity Tests (2)

- Changes in tuition can induce compositional shifts by changing debt taking behavior
  - Education variables more likely to be mismeasured for students with no debt
    - Cannot estimate consistent relationship between instrument and dummy for presence of debt

- Reduced-form effect of instrument on homeownership is strongly negative and significant for full sample of college attendees
  - Bias due to selection along extensive margin cannot be driving results

Reduced-form regression

Table 8: Reduced Form-All College Goers

Variable	(1)	(2)	(3)	(4)	(5)
Instrument: Tuition Measure*	-0.361***	-0.315***	-0.274***	-0.282***	-0.288***
	(0.0463)	(0.0420)	(0.0406)	(0.0439)	(0.0450)
Logged Cumulative Years In School	0.376***	0.314***	0.266***	0.274***	0.280***
	(0.0456)	(0.0419)	(0.0412)	(0.0444)	(0.0453)
Age At Last School Exit	0.0361***	0.0343***	0.0326***	0.0325***	0.0325***
	(0.00206)	(0.00229)	(0.00248)	(0.00261)	(0.00261)
Degree Controls	NO	YES	YES	YES	YES
College Major Controls	NO	YES	YES	YES	YES
School Sector Controls	NO	YES	YES	YES	YES
Pell Grant Controls	NO	YES	YES	YES	YES
Credit Controls	NO	YES	YES	YES	YES
State/Year FE	YES	YES	YES	YES	YES
State Controls	NO	NO	NO	NO	YES
Observations	11,628	11,628	11,628	10,262	10,262

Identification Concerns/Validity Tests (3)

- Changes in tuition can affect homeownership through intermediate outcome
  - Instrument can induce compositional shift by affecting college attendance

Table 7: Probability of College Attendance

Variable	Coefficient
Instrument: Tuition Measure*	-0.0839**
	(0.0407)
State/Year FE	YES
Observations	25,790
R-squared	0.035

- Some evidence that college attendance rates fall with increases in tuition

Identification Concerns/Validity Tests (3)-cont.

- Effect along the extensive margin of college is too small to explain main result, however

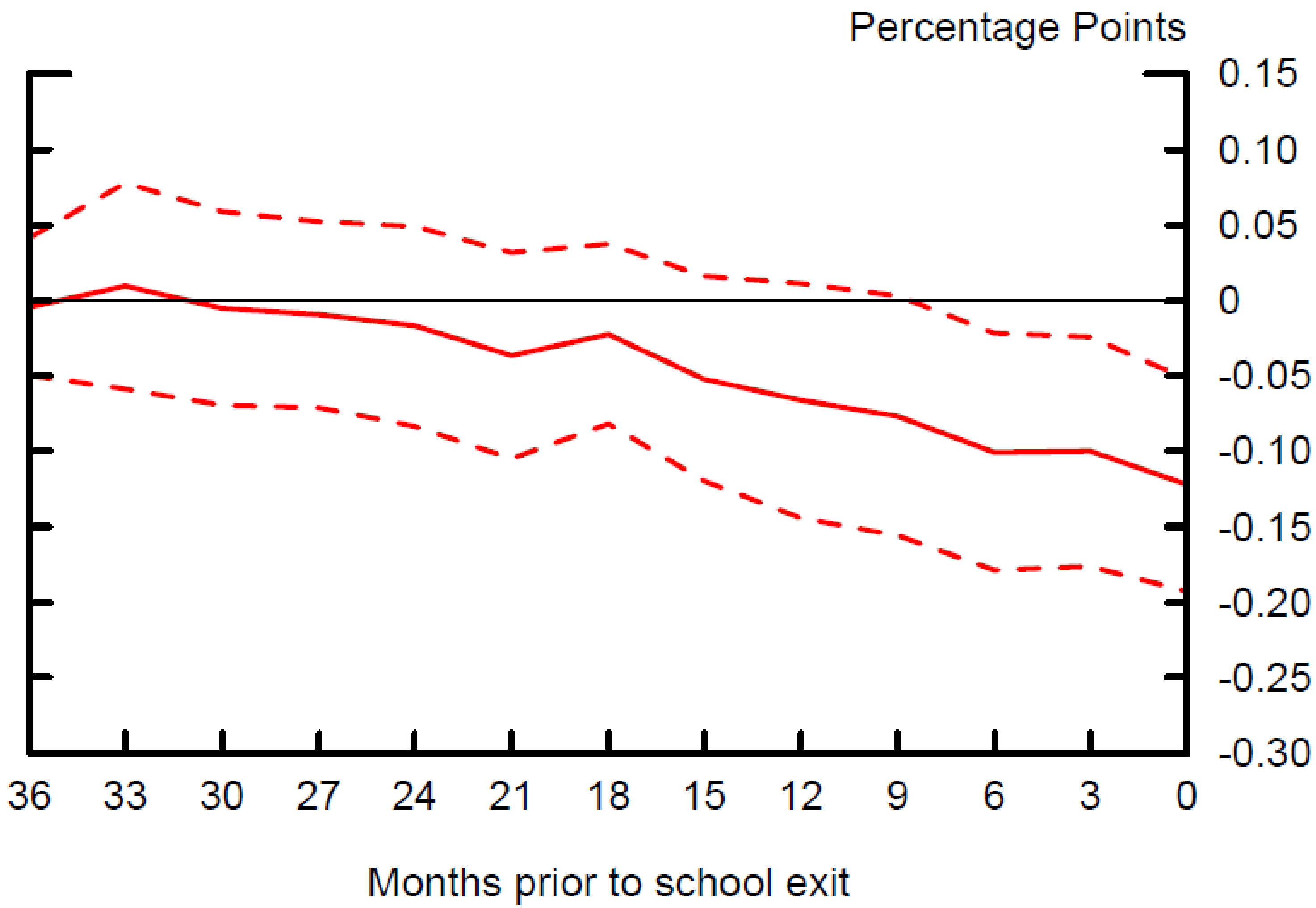
- 1% increase in tuition causes:
  - 8 fewer college goers per 10,000
  - 17 fewer homeowners per 10,000

- If marginal college goers have a lower propensity to own, sample selection biases results toward zero

Identification Concerns/Validity Tests (4)

- Full effect of student loan debt is apparent immediately upon college exit
- Does this imply endogenous selection?
- ~10% of students buy a house before college exit
- The estimated effect should be attenuated in years prior to exit

Effect of a 10% Increase in Debt on Home-ownership Rate While in School



Effect of Student Loan Debt on Size of First Mortgage Balance

- Direction of effect is ambiguous
- Decrease:
  - Individuals credit-constrained by student loan debt may substitute toward cheaper houses rather than delay purchase
- Increase:
  - Debt may delay purchase until individual is older/higher income and thus demands more housing
  - Marginal home buyers demand smaller houses; increased student loan debt selects these out of the homeowner population leaving the higher demand inframarginal buyers

Effect of Student Loan Debt on Size of First Mortgage Balance

Table 10: Log of First Observed Mortgage Balance

Variable	**(OLS)**	**(IV)**
Log Student Loan Debt	0.029**	-0.037
	(0.013)	(0.106)
Log Cumulative Days In School	0.110***	0.163
	(0.040)	(0.0419)
Age At Final College Exit	-0.020***	-0.020***
	(0.006)	(0.007)
Degree Controls	YES	YES
College Major Controls	YES	YES
School Sector Controls	YES	YES
Pell Grant Controls	YES	YES
Credit Controls	YES	YES
Home State/Year FE	YES	YES
Observations	2,410	2,410

Effect of Student Loan Debt on Credit Score

- Direction is also ambiguous
- Decrease:
  - Increased debts may directly lower credit scores
  - Higher debts increase probability of delinquency, which consequently lowers credit scores
- Increase:
  - Establishes a credit history
  - Timely payment of debts improves credit scores

Effect of Student Loan Debt on Credit Score

Table 11: Risk Categories

Variable	Subprime **(Probit)**	**(IV Probit)**	Deep Subprime **(Probit)**	**(IV Probit)**
Log Student Loan Debt	0.012***	0.066*	0.007*	0.085**
	(0.004)	(0.040)	(0.004)	(0.035)
Log Cumulative Days In School	-0.047***	-0.089***	-0.038***	-0.098***
	(0.010)	(0.030)	(0.009)	(0.027)
Age At Final School Exit	-0.007***	-0.008***	-0.005***	-0.006***
	(0.002)	(0.002)	(0.002)	(0.002)
Degree Controls		YES		
College Major Controls		YES		
School Sector Controls		YES		
Pell Grant Controls		YES		
Credit Controls		YES		
Home State/Year FE		YES		
Observations		15,135		

Note*: Standard errors in parentheses (clustered at home-state level).

Effect of Student Loan Debt on Delinquencies

Table 12: Student Loan Delinquencies

Variable	(Probit)	(IV Probit)
Log Student Loan Debt	0.011***	0.074***
	(0.003)	(0.024)
Log Cumulative Days In School	-0.007	-0.055***
	(0.006)	(0.030)
Age At Final School Exit	-0.003**	-0.005***
	(0.001)	(0.001)
Degree Controls	YES	
College Major Controls	YES	
School Sector Controls	YES	
Pell Grant Controls	YES	
Credit Controls	YES	
Home State/Year FE	YES	
Observations	15,095	

Note*: Standard errors in parentheses (clustered at home-state level).

Other Outcomes

- Credit score effects appear too small to fully explain main result

- However, direction of causality is unclear
  - Debt → Credit Score → Homeownership

  OR
  - Debt → Homeownership → Credit Score

- Similar stories could be told about size of initial mortgage

- One instrument is insufficient to disentangle direct effects on 4 inter-related outcomes

Conclusions

- Evidence of omitted variable bias on studies based solely on observable controls
- Once omitted variable bias is addressed
  - Student loan debt can have an economically meaningful effect on homeownership of borrowers
  - Effect does not seem to dissipate within 60 months after college exit
- Channels outside the scope of our analysis
  - Mortgage underwriting may have become more sensitive to debt since the financial crisis
  - Student loan debt might provide access to higher education, possibly increasing likelihood of homeownership

Thank you!