The Effect of Student Debt on Consumption: A State-Level Analysis

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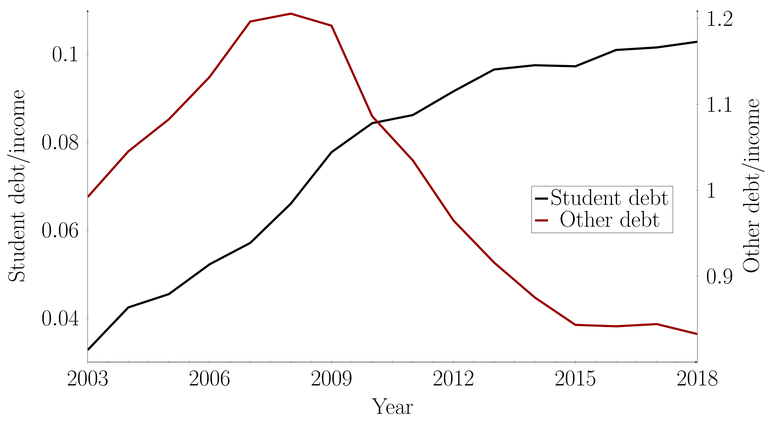
Abstract

This paper examines the link between student debt and aggregate consumption in the medium run. Using state-level data for the 2003–2017 period, we show that changes in the state-level student debt-to-income ratio are associated with lower consumption growth over the next four years. We use the exogenous increases in annual limits for subsidized federal student loans and grants to identify the causal relationship between student loans and consumption, which is confounded by educational attainment. Our results are robust to controlling for mean reversion, as well as using alternative lag structures.

Research Question

- How does student debt affect aggregate consumption, *holding educational attainment constant*?

Trends in Household Debt



Background

- Student debt is currently the second largest category of household credit after mortgage debt.
- Recent graduates are more likely to be credit constrained and have to lower consumption while paying off student loans.
- The microeconomic literature has been uncovering statistically and economically significant relationships between student debt and household decisions, such as marriage, homeownership and default.
- The link between student debt and household consumption has not been examined directly.
- Macroeconomic studies focus on total household credit or only on mortgage debt.

Empirical Methodology

Empirical model

$$[c_{it+3} - c_{it}] = \alpha_i + \beta[StudentLoans_{it-1} - StudentLoans_{it-4}] + \\ + \gamma \cdot [X_{it-1} - X_{it-4}] + \sum_{\tau=1}^{3}(\nu_\tau[c_{it-\tau} - c_{it-\tau-1}]) + \varepsilon_{it}$$

- Increased educational attainment can generate a positive association between student debt and consumption.
- Unobserved heterogeneity also plays an important role, for example through the effects of family resources on both student borrowing and subsequent labor market outcomes.
- Use exogenous increases in federal loan and grant limits to instrument for growth in student debt.

Exogenous Variation in Student Debt

- Starting with the 2007-08 academic year, the limit for subsidized Stafford loans increased from \$2,625 to \$3,500 for freshmen and from \$3,500 to \$4,500 for sophomores.
- Multiple increases in the maximum Pell grant.
- Interact these changes with state-level exposure measures of the share of students borrowing at the limit or receiving any Pell grant in 1999–2000.

Data

- Outstanding student debt and other components of household debt from the New York Fed Consumer Credit Panel / Equifax
- Per-capita consumption and income from the U. S. Bureau of Economic Analysis
- State-level educational attainment from the American Community Survey
- Shares of students who borrowed the maximum subsidized Stafford loan or received any Pell grant from 1999-2000 National Postsecondary Student Aid Study

Results

Effects on Consumption

- 1 percentage point higher change in student debt to income ratio leads to 2.97 percentage point lower consumption growth during the subsequent three years.
- Higher magnitude of the effect when we control for lags in consumption growth that factor in macroeconomic conditions and mean reversion.
- OLS results are biased up, consistent with positive indirect effect of student loans on consumption through education.

	Dependent variable: $\Delta_3 \ln C_{t+3}$				
	OLS	OLS	OLS	IV	IV
$\Delta_3(StudentDebt/Income)_{t-1}$	-0.939***	-1.384***	-1.812***	-2.972***	-4.347***
	(0.236)	(0.274)	(0.267)	(0.527)	(0.729)
$\Delta_3(OtherDebt/Income)_{t-1}$	-0.124***	-0.121***	-0.117***	-0.117***	-0.092***
	(0.015)	(0.015)	(0.018)	(0.013)	(0.018)
$\Delta_3\%CollegeGrad_{t-1}$		0.463**	0.082	0.527***	0.032
		(0.183)	(0.161)	(0.192)	(0.156)
$\Delta_3\%SomeCollege_{t-1}$		0.504***	-0.048	0.856***	0.217
		(0.115)	(0.107)	(0.144)	(0.155)
$\Delta \ln C_{t-1}$,$\Delta \ln C_{t-2}$,$\Delta \ln C_{t-3}$	No	No	Yes	No	Yes
					First-Stage Results
$\Delta_3 SubsidizedLimit_{t-2} \times Exposure$				0.040***	0.032***
				(0.006)	(0.006)
$\Delta_3 PellLimit_{t-2} \times Exposure$				-0.019***	-0.018***
				(0.005)	(0.004)
$\Delta_3 OtherDebt/Income_{t-1}$				-0.004	0.001
				(0.003)	(0.003)
$\Delta_3\%CollegeGrad_{t-1}$				-0.015	-0.044
				(0.035)	(0.029)
$\Delta_3\%SomeCollege_{t-1}$				0.108**	0.046
				(0.026)	(0.030)
F stat of excluded instruments				34.320	24.903
Hansen J statistic				0.190	0.288
P value of J statistic				0.663	0.592

Robustness

Results are robust to:

- using alternative lag structures;
- varying the set of instruments to include changes in the unsubsidized Stafford limit or exclude Pell grant changes;
- weighting by state population levels.

Discussion

- First study to directly examine effect of student debt on aggregate consumption.
- The results are consistent with binding credit constrains for college graduates with student debt.
- Macroeconomic studies of household debt should pay closer attention to student debt.
- Important to account for endogeneity of student debt.

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