

Risky College Savings, College Attendance, and Student Debt

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August 30, 2023

EEA Annual Congress 2023

Motivation

- Around half of US families with children save for children's college, and over 85% of them allocate college savings to risky assets
- The average balance of 529 college savings accounts for children of ages 16-17 in the US is around \$46,620
 - 109% of four-year in-state public college tuition or 31% of four-year private college tuition
- **A lack of evidence on how college-savings-related investment decisions affect children's future**
- The literature mostly finds a modest effect of family financial resources on college enrolment for non-low-income households, <1pp per \$100,000 (e.g. Bulman et. al, 2021 AER) - **college savings do not play an important role?**

Research Question

How does investing college savings in risky assets affect college attendance and student debt?

This Paper

- **Plausibly exogenous variation** in the portfolio allocation of menu options offered by asset managers within 529 college savings plans
- **Novel** data on 529 college savings plans merged with student-level data for the 2013-2021 period
- Additional data on the portfolio allocation of college savings outside 529 college savings accounts

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 - College savings of one child have a **positive spillover effect** on college attendance of other children from the same **low-income household**
- Magnitude is **high**, ↑ **8%(\$3,200) college savings** → ↑ **3% 4-year college attendance for non-low-income households**; the existing literature almost **does not focus on college savings** and uses other proxies for family resources

Related Literature

- Impact of family financial resources on children's college enrollment, student debt, and other outcomes in early adulthood.
 - Family income (e.g., Cameron and Heckman, 1998 JPE; Cameron and Heckman, 2001 JPE; Looney and Yannelis, 2015); housing wealth (e.g., Lovenheim, 2011, Lovenheim and Reynolds, 2013); lottery winners (Bulman et. al, 2021 AER)
 - **Modest effect** for non-low-income households
 - I consider the **portfolio allocation** of family resources **expected to be spent** on college and demonstrate that its effect is of a **high magnitude**
- Consequences of participation in educational savings plans (e.g., Elliott et al., 2014; Long and Bettinger, 2017; Martini et al., 2020)
 - I explore the effect of portfolio allocation in these plans
- **Financial advisors** (e.g., Foerster et al., 2017 JF; Linnainmaa et al., 2021 JF) and **asset managers** (e.g. Wermers, 2000 JF)
 - A new and expanding **market for 529 college savings plans**

Data

Data: Main Sample

- Individual-level data from the Survey of Income and Program Participation (SIPP) for 2013-2021
 - SIPP provides **novel** data on education savings accounts for this period
 - Additional data on college attendance, student debt, household portfolios, demographic characteristics, etc.
 - Over 79,000 children/young adults observed for up to 4 years; around 7,700 of them or their household members have 529 college savings accounts
- **Novel** data on menu options in 529 college savings plans from Morningstar for 2002-2021
 - Historical information on net assets, returns, portfolio allocation, and investment strategy
- I **merge** both datasets

Institutional Details & Portfolio Allocation Measures

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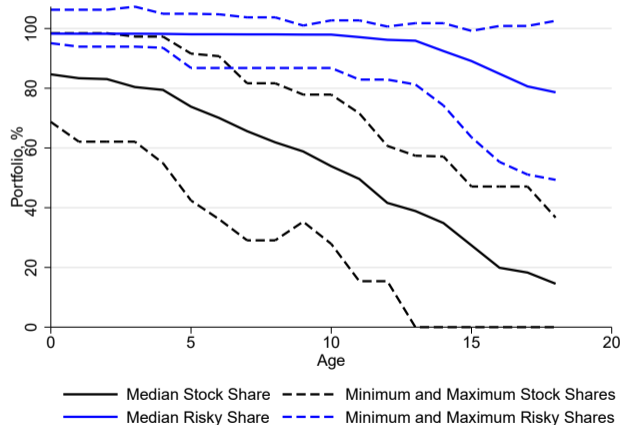
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- the majority of states provide tax benefits and/or matching grants for contributions to in-state 529 plans → **merge by state** and use states with **low in-state participation as a placebo test**

Variation in the Portfolio Allocation of 529 Target-Date Investment Options across Asset Managers in 2021



Risky Share at the Asset Manager Level

- There is no a single risky share for all ages, so I assume

$$w_{risky,age,m,t} = \overline{w_{risky,age,t}} + \Delta_{risky,m,t}$$

- Where $\Delta_{risky,m,t}$ is the average deviation of risky share for an asset manager m from the country average $\overline{w_{risky,age,t}}$

$$\Delta Risky_{TD,m,t} = \sum_{j=0}^5 b_j \sum_{age=7}^{18} \frac{w_{risky,age,m,t-j} - \overline{w_{risky,age,t-j}}}{12} \quad (1)$$

- Results are robust to using alternative specifications

Main Results

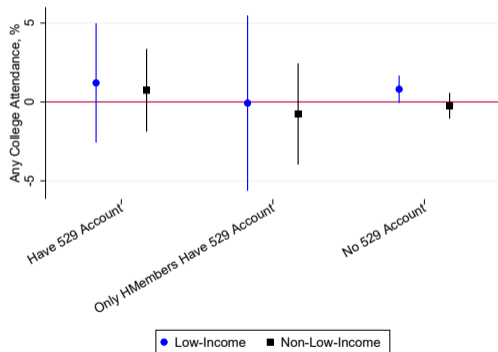
Repeated Cross-Sectional Regression: College Attendance

$$Y_{i,m,s,t} = \sum_{g=1}^3 \sum_{l \in \text{low, non-low}} \beta_{g,l} \Delta \text{Risky}_{m,t} \mathbb{1}_g \mathbb{1}_l + \gamma X_{i,s,t} + \theta \text{StateControls}_{s,t} + \alpha_m + \alpha_{s,529} + \alpha_t + \epsilon_{i,m,s,t}$$

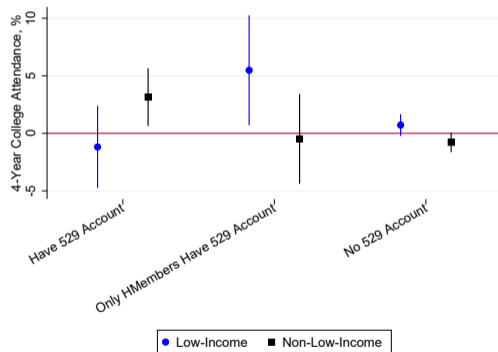
- $Y_{i,m,s,t}$ - college attendance, $\Delta \text{Risky}_{m,t}$ - the risky share deviation of asset manager m
- $\mathbb{1}_1, \mathbb{1}_2, \mathbb{1}_3$ - dummy variables for three groups: with 529 accounts, without 529 accounts but household members have 529 accounts, and households without 529 accounts
- $\mathbb{1}_{\text{low}}, \mathbb{1}_{\text{non-low}}$ - dummy variables for two income groups: low-income households (first tertile) and non-low-income households (second and third tertiles)
- $X_{i,s,t}$ - a vector of student and family characteristics, $\text{StateControls}_{s,t}$ - time-varying state characteristics, α_m - asset manager FE, $\alpha_{s,529}$ - state*529 dummy FE, α_t - year FE

The Effect of a 1% Higher Share of Risky Assets on College Attendance

Any College Attendance

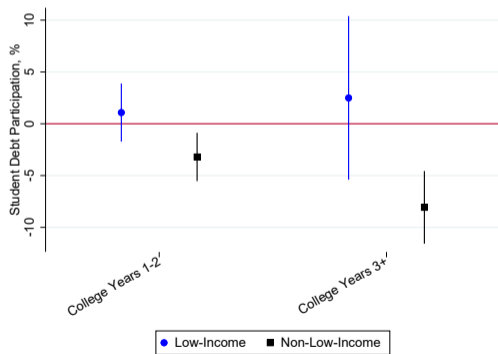


4-Year College Attendance

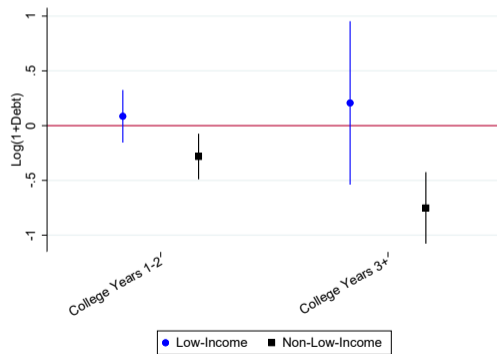


The Effect of a 1% Higher Share of Risky Assets on Student Debt for Students with 529 Accounts

Student Debt Participation



Log(1+Debt)



Additional Analysis

Mechanism and Magnitude

- A higher share of risky assets within 529 college savings plans does not significantly affect other components of household portfolios
- Larger college savings due to:
 - Higher investment returns
 - Increased household contributions to risky investments after experiencing such returns
- Larger college savings affect college enrollment decisions through:
 - Covering college expenses
 - Improving a high school completion rate by covering high school tuition after 529 plan qualified education expenses were expanded for K-12 education (after 2018)
- Magnitude: $\uparrow 8\%$ (\$3,200) college savings $\rightarrow \uparrow 3\%$ 4-year college attendance for non-low-income households

Robustness and External Validity

- Alternative specifications of the risky share measure
- Placebo tests:
 - consider states with low in-state 529 participation
 - randomly assign the risky share measure to states with different asset managers
- External validity:
 - Student-level longitudinal data from the Education Longitudinal Study of 2002 with information on the **portfolio allocation of college savings outside 529 accounts**
 - After controlling for a **large set of family and student characteristics**, investing college savings in riskier investment options (e.g., mutual funds) → ↑ **four-year college attendance**, ↓ **two-year college attendance**, and ↓ **student debt**

Conclusion

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- The portfolio allocation of college savings, as well as the design of 529 college savings plans, affects 4-year college attendance and student debt
- College savings play a more important role for the college attendance of students from non-low-income households than previously thought

Appendix

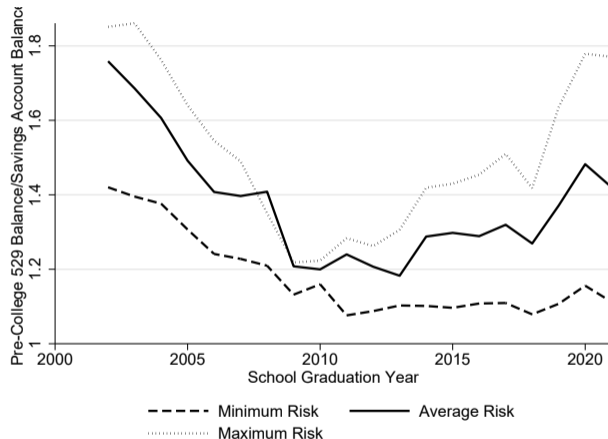
Data: Additional Sample

- Student-level longitudinal data from the Education Longitudinal Study of 2002 (ELS:2002)
 - Data on the **total** portfolio allocation of college savings for high-school students in 2002
 - Data on college enrollment and student debt for the same students after high-school

Historical Simulations

- I calculate the historical ratio of a 529 account balance to a savings account balance, which would be accumulated by households if they saved for college using these savings options.
- **Assumptions:**
 - The savings period is 14 years, because the median child's age when households open a 529 account is 5 years old
 - Households make annual contributions increasing with inflation rate
 - 529 portfolios are allocated to the S&P500 index and 10-year government bonds
 - Three 529 portfolios:
 - Minimum risk (the lowest shares of stocks and risky assets across plan providers for each age)
 - Average risk (the median shares of stocks and risky assets for each age)
 - High risk (the maximum shares of stocks and risky assets for each age)

Historical Simulations: Pre-College 529 Account Balance



The ratio is always > 1 but the effect depends on market performance over the saving period

External Validity: Empirical Model

- Student-level data from the ELS:2002

$$P(Y_{i,s}) = \sum_j \beta_j D_{j,i} + \delta Controls_{i,s} + \alpha_s + \epsilon_{i,s} \quad (2)$$

- $P(Y_{i,s})$ - the probability of a future student outcome (college attendance probability or student loan)
- $D_{j,i}$ - dummies for college savings options
- α_s - school FE
- $Controls_{i,s}$ - **student and family controls**

External Validity: Results

	2-Year Col.	4-Year Col.	2 or 4-Year Col.	Student Loan Part.	Col. Savings > 5,000	Col. Savings > 20,000
	(1)	(2)	(3)	(4)	(5)	(6)
Mutual Funds	-0.03** (0.01)	0.04*** (0.01)	0.01 (0.01)	-0.04** (0.02)	0.13*** (0.01)	0.09*** (0.02)
Individual Stocks & Real Estate for Sale	-0.00 (0.01)	0.01 (0.01)	0.01 (0.01)	-0.04* (0.02)	0.16*** (0.01)	0.14*** (0.01)
Real Estate: Remortgage/Home-Equity Loan	-0.00 (0.02)	0.00 (0.02)	-0.00 (0.01)	0.06*** (0.02)	-0.03 (0.02)	-0.08*** (0.01)
U.S. Savings Bonds	0.01 (0.01)	0.01 (0.01)	0.02 (0.01)	0.00 (0.02)	0.04*** (0.01)	-0.02* (0.01)
Another Form	0.00 (0.02)	0.01 (0.01)	0.01 (0.01)	-0.00 (0.02)	0.07*** (0.01)	0.08*** (0.01)
Student & Family Controls	Yes	Yes	Yes	Yes	Yes	Yes
School FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,830	3,830	3,830	3,392	4,153	4,153
R ²	0.241	0.392	0.264	0.213	0.317	0.339

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