

The Impact of Education on Savings Behavior

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Abstract

Background: Savings rates have fallen in recent decades, leading to financial insecurity and higher debt. This paper examines the impact of education on savings rates to assess if financial education should be incorporated into future curriculums.

Results: Using PSID family-data, after adjusting for potential endogeneity, the effect of education on Savings Rate is not significant.

Conclusions: After correcting for endogeneity, education shows no significant effect on savings rates. Financial literacy may better explain savings behavior. Policymakers should focus on promoting financial education to improve financial decision-making and savings habits.

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1. Introduction

With wealth inequality at some of the highest levels in history and recent executive orders by President Donald Trump to dismantle the Department of Education, understanding the impact of education on financial security is a crucial step to determining the next steps for American educational reform.¹

Within the last decades, personal savings rates have declined, likely due to a variety of factors such as sluggish real wage growth, increased access to credit, culture shifts towards consumerism, etc.² While the exact cause remains unknown, the effects are clear: Americans have reduced financial security, inadequate retirement funds, and higher debt burdens.

On top of savings rates, inequality of wealth accumulation has been on the forefront of American political discussions.

According to Boshara, Ray, and Noeth those with advanced degrees have a wealth-to-income ratio nearly three times greater than those with just a high school diploma (see **Figure 2** below).

Figure 1



Source: Federal Reserve Bank of St. Louis, FRED, PSAVERT Series.

¹ Collin Binkley, “Trump Wants to Shut Down Education Department. What Would That Mean for Schools?” *AP News*, April 24, 2024,

<https://apnews.com/article/trump-education-department-shutdown-b1d25a2e1bdcd24cfde8ad8b655b9843>.

² Massimo Guidolin and Elizabeth A. La Jeunesse, “The Decline in the U.S. Personal Saving Rate: Is It Real and Is It a Puzzle?” *Federal Reserve Bank of St. Louis Review* 89, no. 6 (November/December 2007): 491–514, <https://doi.org/10.20955/r.89.491-514>.

This implies that education may play a factor in wealth accumulation beyond just increased income.

Figure 2

Education*	Percentage of Families	Median Income (2013)	Median Wealth (2013)	Wealth-to-Income Ratio**	Millionaires (family wealth)
No high school diploma	12%	\$22,320	\$37,766	1.43	1 in 110
High school diploma	50%	\$41,190	\$95,072	2.15	1 in 18
Two- or four-year degree	25%	\$76,293	\$273,488	3.45	1 in 4.6
Advanced degree	13%	\$116,265	\$689,100	5.58	1 in 2.6

Source: Boshara, Ray; Emmons, William R. and Noeth, Bryan. The Demographics of Wealth: How Age, Education and Race Separate Thrivers from Strugglers in Today's Economy (PDF). Essay No. 2: Education and Wealth, May 2015, pp. 4, 5, 9 and 13.

Our study aims to investigate the relationship between education levels and personal savings, specifically asking: Do people with higher education rates tend to save more money? By better understanding the relationship between education and personal savings rate, governments can design policies that support high quality of life, equal opportunity in the workplace, and fair educational practices. Additionally, it may provide guidance in terms of creating educational policies after Trump's recent legislature to remove the Department of Education. If high levels of education are correlated with increased savings rates, should financial education be taught from a younger age? If education is uncorrelated with savings, should financial literacy skills be introduced as a curriculum requirement in a newly reformed Department of Education?

2. Literature Review

While there is a great deal of existing literature on this subject, it provides mixed results on the findings in question, specifically regarding what elements of education affect savings rate.

Our work builds on this by analyzing years of education rather than just financial education. Additionally, we used multiple restricted models and an unrestricted econometric model so that causal effects are more clear. By analyzing education in a broader analysis, we can see if there are any other aspects of education that may affect savings rate, thereby leading to a clear answer to our research question.

The first study we examined was “Optimal Financial Knowledge and Wealth Inequality” conducted by Lusardi, Michaud, and Mitchell, and it studied the effect of financial literacy on wealth accumulation.³ While financial literacy is a different subject than years of education, it is still highly relevant to our study, as many financial literacy skills are acquired in higher education. The study found that 30-40% of wealth accumulation may be attributed to financial literacy. Additionally, the majority of United States Citizens are not financially literate. Understanding this is crucial to our study, as it posits that financial literacy is an important variable in understanding personal savings rate. It may also provide insight into governmental policy making that improves quality of life.

In another study, “Education and Saving: The Long-Term Effects of High School Financial Curriculum Mandates” by Bernheim, Garrett, and Maki, the researchers examined the spending and saving habits of people who took financial education courses in highschool.⁴ The study examined two groups of people before and after a financial literacy academic mandate, finding that those who were exposed to financial literacy courses had better financial habits later

³ Annamaria Lusardi, Pierre-Carl Michaud, and Olivia S. Mitchell, “Optimal Financial Knowledge and Wealth Inequality,” *Journal of Political Economy* 125, no. 2 (2017): 431–477.

⁴ B. Douglas Bernheim, Daniel M. Garrett, and Dean M. Maki, “Education and Saving: The Long-Term Effects of High School Financial Curriculum Mandates,” *Journal of Public Economics* 80, no. 3 (2001): 435–465.

in life than those who were not exposed. This supports prior evidence that financial literacy supports greater wealth accumulation later in life.

On the other hand, a study titled “Do the Rich Save More”, by Dynan, Skinner, and Zeldes suggested that savings rate is independent of income, arguing that savings rate is entirely driven by income level.⁵ The paper discusses how people with higher education have tendencies that lead towards higher wealth accumulation such as planning habits, higher income jobs, and a greater understanding of retirement saving. This study contradicts previous literature, claiming that the behavior associated with higher education is what drives wealth accumulation, not the actual years of education.

Our study differentiated itself by focusing not just on financial education courses, but education in general. This allowed us to expand upon Dynan, Skinner, and Zeldes’ hypothesis that financial literacy is correlated with savings rate. Expanding on this hypothesis by testing education in general allows us to see if it is just financial literacy that affects savings, or if there may be other factors from education that affect savings rate. This provides further insight into understanding what variables may potentially affect savings.

3. Data and Methodology

Our data is American Household data from PSID taken at the family level.⁶ The variables we used for investigation are age, years of education, total family income, and total family

⁵ Karen E. Dynan, Jonathan Skinner, and Stephen P. Zeldes, “Do the Rich Save More?” *Journal of Political Economy* 112, no. 2 (2004): 397–444.

⁶ Panel Study of Income Dynamics, public use dataset (Ann Arbor, MI: Survey Research Center, Institute for Social Research, University of Michigan, 2021).

expenditure. Prior to creating the model, we had to clean the data, as there were missing values and outliers within the data set. For education data, we eliminated all values that were less than 6 and greater than 16. We chose the range of 6 and 16 because we wanted to include everyone from an elementary school education to a college education as well as exclude anomaly salaries from advanced degrees. For income data, we limited our data to people below the top 1% and above the poverty line. This allows us to capture the majority of the population without including outlier data that might throw off our model. For spending, we included all values greater than or equal to 0 to filter out all data entry errors. Lastly, for age, we included everyone between the ages of 18 and 65, as these are people of working age who have not yet retired. We feel as though these parameters encapsulate the majority of Americans while accounting for outliers that may throw off our models.

After cleaning our data, we calculated the personal savings rate. To do this, we subtracted total family expenditures from total family income, and then divided that value by total family income (this is the savings rate equation). After calculating savings rate we took the average values between spouses of all of our variables to narrow down the data to the individual level. This data allowed us to create our first ordinary least squares model defined as follows:

$$Savings\ rate_i = \beta_0 + \beta_1 Education_i + \beta_2 Income_i + \beta_3 Age_i + e_i$$

In our first rendering of this model, we had promising results, finding all values significant at a 5% significance level. Our OLS output showed that all other variables held constant, savings rate increased by 1.56% for each additional year of education, savings rate increased by 0.28% for each additional year of aging, and savings rate increased by 1.5% for each additional \$10,000 of income. These variables accounted for 14.31% of the variation in

savings rate. As well as running a regression of the overall model, we also ran regressions of the model without education and income to analyze the isolated R-squared values of income and education. This analysis found that income and age were responsible for 9.41% of the variation in savings rate, while education and age were only responsible for 0.095% of the variation in savings rate.

Despite our early success, like most econometric models, two of our variables were potentially endogenous. Education is likely endogenous because unobserved traits like time preference, cognitive ability, or family background, which can affect both education and savings behavior. Income could be endogenous because the same unobserved factors (e.g., ability, motivation) that affect education and savings may also affect income. Also, savings behavior might influence work effort or occupational choice over time, introducing reverse causality. Instrumental variables would be required for meaningful econometric analysis.

For education, our first instinct was to use the average education of all the respondents and spouses' parents. While this method was promising, the correlation between parental education and savings rate was too high, making it a poor instrumental variable. After searching through thousands of potential instruments, we settled on ER78137. This is a dummy variable that represents if the respondent has gone on the Internet using a computer, laptop, or tablet somewhere other than their home in the past year. The options were 0 for yes or 5 for no. We found the covariance between this variable and education was -0.3010 and between the dummy variable and savings rate was -0.0305 which was much smaller making it a promising option for the instrument. It would be unlikely that using a computer from somewhere other than your

home would have any effect on savings rate, but highly educated people, students, or those in academia would be much more likely to use computers not in their home.

For income, the task of finding an instrumental variable was even more challenging and time consuming. While many variables were clearly correlated with income, finding one that could be argued to be exogenous to the model was incredibly daunting. We created a script to run through all the variables and create a list of all those with high correlation with income and low correlation with savings-rate. Then, the script found the first-stage F-statistic with all these variables and sorted them from highest to lowest to find any potential instruments. After looking through the results of this script, we only found one variable that could work as an IV. This was another dummy variable ER79900. This variable represents whether or not a respondent itemized their tax returns. The correlation between this variable and income is -0.1956 and the correlation between itemized tax returns and saving is -0.0991, so it has potential but it isn't the strongest IV.

Final Model

After we collected our data and corrected for endogeneity, we were left with the following econometric model. This model uses predicted values for education and income that were obtained by using the prior discussed instrument variables. The values were calculated using OLS estimation on Stata.

$$Savings\ rate_i = \beta_0 + \beta_1 \widehat{Education}_i + \beta_2 \widehat{Income}_i + \beta_3 Age_i + v_i$$

$$\widehat{Education}_i = \delta_0 + \delta_1 ComputerUse_i + \delta_2 ItemizedTax_i + \delta_3 Age_i + u_{1i}$$

$$\widehat{Income}_i = \gamma_0 + \gamma_1 ComputerUse_i + \gamma_2 ItemizedTax_i + \gamma_3 Age_i + u_{2i}$$

Using a two least squares / instrumental variable regression with two instrumental variables in a just-identified method.

Empirical Results:

After running our corrected econometric model, we found the following: savings increases by 2.66% for each additional \$10,000 of income, savings increases by 0.18% for each additional year of aging, and savings decreases by 1.99% for each additional year of education. All of these values are significant at the 5% level except for education.

While education appeared to be

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. ivregress 2sls savingsRate age (tenincome education = itemizedtax computerothome)
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Instrumental-variables 2SLS regression					Number of obs	=	5,314
					Wald chi2(3)	=	122.15
					Prob > chi2	=	0.0000
					R-squared	=	0.0672
					Root MSE	=	31.982

savingsRate	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
tenincome	2.654934	.6973267	3.81	0.000	1.288198	4.021669
education	-1.982571	1.533422	-1.29	0.196	-4.988023	1.022882
age	.1874179	.0662883	2.83	0.005	.0574953	.3173406
_cons	37.08095	19.5059	1.90	0.057	-1.149908	75.31181

Endogenous: tenincome education
Exogenous: age itemizedtax computerothome

significant in our first model, this is likely an error due to endogeneity. After correcting for endogeneity, education had a p-value of 0.196, and was therefore insignificant.

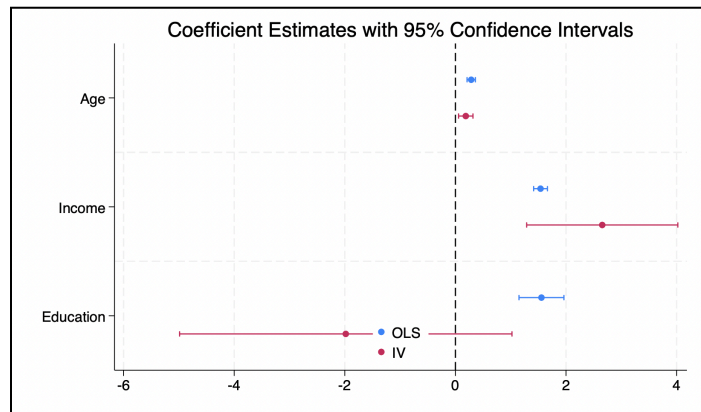
To check if our assumption of endogeneity was correct, we ran Durbin and Wu-Hausman tests for endogeneity jointly to assess whether the regressors Education and Income can be treated as exogenous. Both tests yield a p-value of 0.0177, which is statistically significant at the 5% level, leading to the rejection of the null hypothesis of exogeneity. This result provides evidence that Education and Income are endogenous and that ordinary least squares (OLS) estimation would produce biased and inconsistent estimates. Consequently, the use of

instrumental variables (IV) is both justified and necessary to obtain consistent parameter estimates in the model.

The figure to the right shows the 95% confidence intervals comparing the IV results in red to the original OLS results in blue.

Clearly the IV results are significantly different from the OLS results, again legitimizing our use of a two least squares regression.

This aligns with the research from Dynan, Skinner, and Zeldes, claiming that education and savings are independent from each other. Given the lack of statistical evidence and claims from other literature, we have concluded that education is not correlated with savings, and it is more valuable to investigate financial literacy education instead, as other literature found it to be statistically significant.



Summary and Conclusions:

This paper has created an econometric model to analyze the relationship between education and savings rate while also analyzing other variables that may be correlated as well. After thorough analysis, we have concluded that there is no correlation between education and savings rate. It appears that although education initially seems significant, this is likely due to the

endogeneity with income. After correcting for this error, education is shown to be statistically insignificant, aligning with prior literature.

It is important to note that our results may have been skewed by weak or improper instrumental variables. While the two chosen variables seemed promising, the actual result is improbable. It is unlikely that all savings rates are above 37.08% as the US average is 8.41%.⁷ This coupled with the insignificance of education seem to reflect limitations in our model. We spoke with a professional economist, who chose to remain anonymous, and they stated “a weak instrument is better than an endogenous variable... the PSID may need to tweak its questions to include survey data with stronger instruments.”⁸

Despite limitations in our model, we can still come away with meaningful knowledge that supports how to create governmental policies to improve financial habits. While education is still a vital part of the US Labor Economy and an effective metric in income prediction, it has no correlation with savings rate, and it is therefore more effective to examine other variables that may impact financial behavior. Prior literature has proven that financial literacy courses can be a good indicator of whether or not someone is likely to make strong financial decisions in the future. Because of this, it may be wise to implement policies structured around financial literacy course mandates. Furthermore, there is evidence that financial literacy knowledge may lead to better savings behavior, and more research should be conducted to analyze this in order to validate this claim.

⁷ Barry Bosworth, "Interest Rates and Saving in a Global Economy," *Brookings Institution Economic Studies*, No. 42 (2012): 15–17, <https://www.brookings.edu/articles/interest-rates-and-saving-in-a-global-economy/>.

⁸ Interview with an anonymous economist, April 30, 2025.

In conclusion, this study reveals that education, when corrected for endogeneity, does not significantly affect savings rates, aligning with prior literature suggesting that income and other factors play a more substantial role in financial behavior. While financial literacy education was not directly tested in this study, previous research indicates it may have a more significant impact on savings behavior. Given the limitations of our model, such as weak instrumental variables and potential data constraints, further research is needed to explore the precise relationship between financial literacy and savings. Policymakers should consider mandating financial literacy courses in schools, as these may foster better financial decision-making and, in turn, improve national savings rates. Ultimately, improving financial education could help mitigate the negative effects of declining savings rates and address the broader issue of financial insecurity in the United States.

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