



## Nexus Notes

Friends,

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How's your math?

A certain radio show host claims that he is a math nerd. He routinely espouses paying off all debt except for a mortgage before turning to long term investing, even if the investing would be in a 401k with a company match. According to his math, you will come out the same at the end by paying off debt first before investing as you would have had you taken longer to pay off debt and contributed to your retirement at the same time.

Is he correct? As is often the case, the answer is: It depends. Certainly, he probably is right in scenarios with high interest credit card debt. Credit card rates routinely are at 18% and higher. There probably is no market-based investment vehicle that could earn anywhere close to that return on a consistent basis. But, what about longer term debt like student loans?

Actual math. The investment analysis company Morningstar performed a study in 2016 that looked at the relationship between student loans and retirement savings using HelloWallet user data and the Federal Reserve Board's Survey on Consumer Finances\*. The HelloWallet data indicated that, after controlling for age and income, an additional dollar in student loan debt was associated with a decrease of \$0.17 in retirement savings. The Survey of Consumer Finances, using a similar analysis, revealed a decrease of \$0.35.

To pay off early or not? Morningstar then built a model that projected net wealth at retirement under a number of varying assumptions, including salary, age, loan balance, and market returns. The model did find that there were a few scenarios in which paying off student loans ahead of schedule instead of investing in a workplace-sponsored retirement plan resulted in a higher net wealth at retirement. One specific scenario is for the worker who is very close to retirement whose student loan would be paid off around the time they retire and they participate in an employer retirement plan with no matching contribution. Following are the results for a couple of scenarios where the interest rate is higher than the expected investment return and vice versa.

Scenario 1: 25-year-old earning \$50,000 at an increasing 2% yearly, \$20,000 debt at 7% interest, expected investment return of 5%, employer match of 3%. He pays the regularly scheduled payment of \$232/month. At loan end, net wealth is \$91,836 and \$1,488,559 at 65. If he almost doubled his loan payments to \$425 and reduced contributions to the retirement plan by the same amount, the net wealth at loan end is \$21,778 and \$1,422,846 at 65.

Scenario 2: Same- 25-year old, however, now his \$20,000 loan is at 5% interest, expected investment return is 7%, same employer match. Regularly scheduled payment is \$212. At loan end, net wealth is \$104,279 and \$2,309,234 at 65. Increasing loan payments to \$437 provides a net wealth of \$18,875 at loan end and \$2,160,262 at 65.

Of course, these are scenarios that have fixed assumptions about wage growth and investment returns. Actual results may vary. If you have a newly minted college grad with student loans or if you're currently trying to payoff college loans early, let's get together and do some actual math.

\*Source: Morningstar Advisor Magazine, April/May issue 2016.

*These examples are hypothetical and for illustrative purposes only. The rates of return do not represent any actual investment and cannot be guaranteed. Any investment involves potential loss of principal.*

**René**  
**210-621-7652**

[Rene.ruiz@nexusfinancialsolutions.com](mailto:Rene.ruiz@nexusfinancialsolutions.com)  
[www.nexusfinancialsolutions.com](http://www.nexusfinancialsolutions.com)

**8303 Laurelhurst**  
**San Antonio TX 78209**

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