



**KENNESAW STATE
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COLES COLLEGE OF BUSINESS
*Bagwell Center for the Study of Markets
and Economic Opportunity*

FLIP Feature

Title:

*"Want to Become a
Millionaire? The
Importance of Saving
Early in Your Career
and Investing in
High-Return Assets"*

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As individuals and employees in today's economy, we need a solid financial understanding to make good saving and investment decisions. In the past, individuals didn't have to take as much personal financial responsibility. After World War II, most companies provided their employees with pensions. As an employee, you would pay a percentage of your salary into a retirement fund managed by the company, and the company would provide you with income each year after you retired. Today, pensions are increasingly rare in the private sector. Most employers have shifted employees to 401K or 403b plans that require employees to make saving and investing decisions. Individual retirement accounts (IRAs) are another vehicle for investing that individuals have control over. Because of structural changes in the economy, each individual needs to understand how to effectively save and invest.

This article has three main goals: 1) to demonstrate the importance of saving and investing as early as possible in your career, 2) to show the impact of different rates of return on cumulative savings, and 3) to encourage you to save as much of your salary as possible as early as possible to maximize your wealth. As Albert Einstein said, "Compound interest is the eighth wonder of the world. He who understands it, earns it." Saving at a very young age allows your money a longer time to grow in value. Although this idea is a straightforward concept that most students understand, the significance of saving as early as possible is often underestimated until you look at the numbers.

The Importance of Saving and Investing Early

Tables 1A and 1B show the cumulative ending value of different yearly savings as a function of length of time. Table 1A shows the dollar value of cumulative savings, while Table 1B shows the present value of cumulative savings (assuming a 3% per year rate of inflation). Table 1B adjusts for the decline in the value of money over time, especially for long time periods. These tables assume an 8% rate of return and equal yearly contribution amounts. The columns represent the amount saved per year at the end of each year, while the rows represent the number of years that the yearly amount is saved.

Holding constant the dollar amount saved per year, time clearly has a major impact on your final cumulative net worth. If you save \$1,000 per year for 10 years, you will have approximately \$14,487 accumulated (in present value terms, \$10,779). Since you put away \$1,000 for 10 years, your savings have only grown by 44.87% over the 10-year period (in present value terms, only \$10,779). However, if you simply double the number of years you save \$1,000 to 20 years, your money will grow to \$45,762 (present value of \$25,337). Despite saving only \$10,000 more, your cumulative amount of money has almost tripled because your money has more time to grow. Longer periods of time yield even more striking results: if you save \$1,000 each year for 40 years, your final cumulative amount will be \$259,057 (\$79,416 in present value terms).

Table 1A: The Impact of Different Yearly Savings and Number of Years on Final Amount

	<u>\$1,000</u>	<u>\$2,500</u>	<u>\$5,000</u>	<u>\$7,000</u>	<u>\$10,000</u>	<u>\$15,000</u>	<u>\$20,000</u>
10	\$14,487	\$36,216	\$72,433	\$101,406	\$144,866	\$217,298	\$289,731
15	\$27,152	\$67,880	\$135,761	\$190,065	\$271,521	\$407,282	\$543,042
20	\$45,762	\$114,405	\$228,810	\$320,334	\$457,620	\$686,429	\$915,239
25	\$73,106	\$182,765	\$365,530	\$511,742	\$731,059	\$1,096,589	\$1,462,119
30	\$113,283	\$283,208	\$566,416	\$792,982	\$1,132,832	\$1,699,248	\$2,265,664
35	\$172,317	\$430,792	\$861,584	\$1,206,218	\$1,723,168	\$2,584,752	\$3,446,336
40	\$259,057	\$647,641	\$1,295,283	\$1,813,396	\$2,590,565	\$3,885,848	\$5,181,130
50	\$573,770	\$1,434,425	\$2,868,851	\$4,016,391	\$5,737,702	\$8,606,552	\$11,475,403

Table 1B: The Impact of Different Yearly Savings and Number of Years on Final Amount (In Present Value Terms Adjusted for Inflation)

	<u>\$1,000</u>	<u>\$2,500</u>	<u>\$5,000</u>	<u>\$7,000</u>	<u>\$10,000</u>	<u>\$15,000</u>	<u>\$20,000</u>
10	\$10,779	\$26,948	\$53,897	\$75,456	\$107,794	\$161,690	\$215,587
15	\$17,428	\$43,570	\$87,140	\$121,995	\$174,279	\$261,419	\$348,558
20	\$25,337	\$63,343	\$126,686	\$177,361	\$253,373	\$380,059	\$506,746
25	\$34,916	\$87,290	\$174,579	\$244,411	\$349,158	\$523,737	\$698,316
30	\$46,671	\$116,678	\$233,356	\$326,698	\$466,712	\$700,068	\$933,424
35	\$61,239	\$153,096	\$306,193	\$428,670	\$612,385	\$918,578	\$1,224,771
40	\$79,416	\$198,539	\$397,078	\$555,909	\$794,155	\$1,191,233	\$1,588,311
50	\$130,881	\$327,203	\$654,405	\$916,167	\$1,308,810	\$1,963,216	\$2,617,621

So how do we understand this table from the perspective of saving for retirement? A standard retirement age is 65. If you wait to start saving for retirement until you are 45, you only have 20 years for your money to grow. Saving \$5,000 per year for those 20 years will net you a final cumulative amount of \$228,810 at the start of retirement (\$126,686 in present value terms). However, if you start saving just 10 years earlier, at age 35, your money has 30 years to grow. As a result, your cumulative amount at the start of retirement will increase from \$228,810 to \$566,416 (\$233,356 in PV terms), which is more than double the previous amount. If you start saving even earlier, at age 25, the final amount will be almost \$1.3 million dollars (about \$400,000 in present value terms). The take-home message is very clear: time is your friend when it comes to savings. The greater the amount of time for your money to grow, the greater your nest egg at retirement.

Tables 1A and 1B also show that saving relatively small amounts of money starting at an early age is often a better strategy than saving a larger amount of money later. If your goal is to become a millionaire by age 65, you can achieve that goal by investing about \$4,000 per year for

40 years, equivalent to starting to save at age 25. If you wait another two decades to start saving, at age 45, then you must save a much greater amount of money to reach your goal. Instead of saving \$4,000 each year, you now need to save over \$20,000 each year to reach your \$1,000,000 financial goal. Saving a smaller amount of money at an earlier age is a better strategy than trying to max out your savings at a later age. Of course, using a combination of saving early and significant yearly savings can produce a stunning amount of wealth at retirement: if you save \$20,000 each year for 50 years, you will have a final amount of \$11,475,403 at retirement (\$2,617,621 in present value terms).

The Impact of Different Rates of Return

Another critical factor that determines the amount of money you have at retirement is the rate of return that you earn on your money. An advantage of saving at a young age is your ability to invest in risky asset classes that yield higher expected long-run rates of return. Time is your friend when investing in risky assets. In the short-run, risky assets may underperform safer assets, but in the long run they will overperform. By investing in the stock market over many years, you can ride out market swings and cycles and have enough time to earn the long-run average rate of return.

Table 2A and 2B show the impact of different rates of return on your cumulative ending wealth assuming \$7,000 is invested each year. Note that \$7,000 is the current yearly maximum limit for IRA contributions. Tables 3A and 3B are the same as Tables 2A and 2B but assume a yearly savings amount of \$15,000 per year. The columns represent rates of return for different asset classes: a 4% rate of return (roughly equal to the historical return on US Treasury bills, generally considered the safest investment), a 6% rate of return (roughly equal to the return on a well-diversified bond fund), an 8% rate of return (roughly equal to the return on a diversified portfolio of 50% stocks and 50% bonds), a 10% rate of return (roughly equal to the return for US stocks), and a 12% rate of return (roughly equal to the return for risky stocks, such as higher-beta stocks or small-caps). The key takeaway is how time and rate of return interact together to impact your cumulative wealth.

If you start saving at age 45 and put away \$7,000 each year, your expected savings will grow to \$208,447 if you invest in Treasury bills (the safest investment), \$257,499 if you invest in bonds, \$400,925 if you invest in US stocks, and \$504,367 if you invest in riskier stocks. The difference is striking between the different investment choices: you will have over twice as much money if you opt for the risky option compared to the safest option. Over longer periods of time, the results are more pronounced. If you start saving at age 25 and save \$7,000 for the next 40 years, your money will grow to \$665,179 in Treasury bills, \$1,083,334 in bonds, and \$3,098,148 in stock. That's almost 500% more wealth if you invest in stocks instead of Treasuries. If your goal is to become a millionaire by the time you retire, you only need 30 years of investing for stocks versus 50 years of investing for Treasuries. By investing early, you can ride out the ups and downs of risky asset classes (such as stocks) and earn higher long-run returns, which makes a big difference in your cumulative wealth!

Table 2A: The Impact of Different Rates of Return on Ending Net Wealth (\$7,000 Invested Each Year)

	<u>4%</u>	<u>6%</u>	<u>8%</u>	<u>10%</u>	<u>12%</u>
10	\$84,043	\$92,266	\$101,406	\$111,562	\$122,841
15	\$140,165	\$162,932	\$190,065	\$222,407	\$260,958
20	\$208,447	\$257,499	\$320,334	\$400,925	\$504,367
25	\$291,521	\$384,052	\$511,742	\$688,429	\$933,337
30	\$392,595	\$553,407	\$792,982	\$1,151,458	\$1,689,329
35	\$515,566	\$780,043	\$1,206,218	\$1,897,171	\$3,021,644
40	\$665,179	\$1,083,334	\$1,813,396	\$3,098,148	\$5,369,640
50	\$1,068,670	\$2,032,351	\$4,016,391	\$8,147,360	\$16,800,128

Table 2B: The Impact of Different Rates of Return on Ending Net Wealth in Present Value Terms (\$7,000 Invested Each Year)

	<u>4%</u>	<u>6%</u>	<u>8%</u>	<u>10%</u>	<u>12%</u>
10	\$62,536	\$68,654	\$75,456	\$83,013	\$91,405
15	\$89,967	\$104,580	\$121,995	\$142,755	\$167,499
20	\$115,412	\$142,571	\$177,361	\$221,982	\$279,256
25	\$139,232	\$183,425	\$244,411	\$328,798	\$445,767
30	\$161,744	\$227,996	\$326,698	\$474,386	\$695,981
35	\$183,223	\$277,214	\$428,670	\$674,223	\$1,073,842
40	\$203,915	\$332,103	\$555,909	\$949,758	\$1,646,100
50	\$243,771	\$463,594	\$916,167	\$1,858,470	\$3,832,228

Conclusion: Save as Much as Possible as Early as Possible

In summary, your ending wealth at retirement is highly dependent on when you start saving, how much you save, and the rate of return that you earn on your savings. Saving money, even relatively small amounts of money, early in your career gives your money many years to grow and ensures a much larger net worth later in life. Investing in higher risk, higher return asset classes will significantly increase your net worth over time. If you invest early, you can ride out the ups and downs of market cycles and earn the long-run rate of return.

Table 3A: The Impact of Different Rates of Return on Ending Net Wealth (\$15,000 Invested Each Year)

	<u>4%</u>	<u>6%</u>	<u>8%</u>	<u>10%</u>	<u>12%</u>
10	\$180,092	\$197,712	\$217,298	\$239,061	\$263,231
15	\$300,354	\$349,140	\$407,282	\$476,587	\$559,196
20	\$446,671	\$551,784	\$686,429	\$859,125	\$1,080,787
25	\$624,689	\$822,968	\$1,096,589	\$1,475,206	\$2,000,008
30	\$841,274	\$1,185,873	\$1,699,248	\$2,467,410	\$3,619,990
35	\$1,104,783	\$1,671,522	\$2,584,752	\$4,065,366	\$6,474,952
40	\$1,425,383	\$2,321,429	\$3,885,848	\$6,638,888	\$11,506,371
50	\$2,290,006	\$4,355,039	\$8,606,552	\$17,458,628	\$36,000,274

Table 3B: The Impact of Different Rates of Return on Ending Net Wealth in Present Value Terms (\$15,000 Invested Each Year)

	<u>4%</u>	<u>6%</u>	<u>8%</u>	<u>10%</u>	<u>12%</u>
10	\$134,005	\$147,116	\$161,690	\$177,884	\$195,869
15	\$192,786	\$224,099	\$261,419	\$305,903	\$358,926
20	\$247,311	\$305,509	\$380,059	\$475,677	\$598,405
25	\$298,355	\$393,054	\$523,737	\$704,567	\$955,215
30	\$346,594	\$488,564	\$700,068	\$1,016,540	\$1,491,388
35	\$392,622	\$594,031	\$918,578	\$1,444,763	\$2,301,091
40	\$436,961	\$711,650	\$1,191,233	\$2,035,197	\$3,527,357
50	\$522,367	\$993,415	\$1,963,216	\$3,982,437	\$8,211,917