Asking for a Friend

Brady Hurlich

Bill,

 I enjoyed talking with you over dinner last night, but I couldn’t stop thinking about your plans for retirement. As your closest friend, I must advise against your financial retirement plan. Although I disapprove of your retirement plan, I must commend you in investing now while we both are at a young age of 22. Because you are investing now, you will be taking advantage of the time-value of money, which states that money today will be worth more later in life. By starting early, your account will have a longer time to accumulate interest and grow.

I will go over a couple of retirement plan scenarios. I will be using the future value of annuities model, which incorporates you making monthly investments into an account while that account also earns compound interest at the same time. This model is not 100% accurate. The final balances will be off because you would lose some money due to taxes.

The first scenario is similar to what you are doing now. If you make monthly investments of $280 until you are 40 years old in an account that pays 7% annual interest compounded monthly, you will need to work after you turn 65 because this plan will not sustain you later in life, even with the 25 years of simple compound interest your account would gain. Using the future value of annuities model, I have made an estimate of what your account balance should amount to when you are 65: $690,491. You will have invested $60,480, which gives you a profit of $630,011. Although you will have made a large profit, your ending balance of $690,491, will not be sufficient enough to last you the rest of your life. You should have at least a million dollars in your account when you retire, so I recommend that you make greater investments into your retirement account.

The second scenario is making a larger investment by investing $560 monthly from age 40 to 65, into an account that pays 7% annual interest compounded monthly. This will amount to $453,640 when you are 65 years old. You will have invested $168,000, giving you a profit of $285,640. Even though you would have invested more money, the final balance was lower than your projected balance because the investments did not have a lot of time to accumulate interest, resulting in a smaller balance. There is a phrase, ‘time is money’, and that is partially true. The longer money sits in an account, the longer it has to accumulate interest and grow in value. Most of an account balance should come from interest and in order to do that, you must start saving early. In comparison to your plan, this retirement option would have you investing more money into an account and it would produce a smaller end balance with a significantly smaller profit margin.

A third scenario consists of making monthly investments of $280 into an account that pays 7% annual interest compounded monthly from age 22 to 40. Once you turn 40, the amount of money you already invested will continue to earn regular compound interest while you also start making new monthly investments of $560 until you are 65. When you turn 65, this account would have an astonishing balance of $1,144,131 that originated from $228,280 of investment payments. This would give you a profit of $915,651. The reason why this account is so successful is because many investments were made early on in this account which allowed the account to accumulate a lot of interest. This option consists of both scenario one and two. Another reason for this account’s large balance is the additional larger investments made later in the account’s lifetime. More money amounts to more interest and the longer the money sits in the account, the larger the final balance.

The fourth and last scenario I will cover involves you starting at 22, to make monthly investments of $280 into an account that pays 7% annual interest compounded monthly. You would continue to make these investments until you are 40. After this time, that money will continue to earn regular compound interest until you are 65 years old. In addition, you would make monthly investments of $600 into that same account from ages 40 to 50. Once you turn 50, you will stop making investments and let your account accumulate regular compound interest. You would theoretically withdraw $24,000 at ages 50, 55, and 60. After that last withdraw, your account would continue to earn compound interest until you are 65. The final balance of this account would approximately be $835,724 after a total of $132,480 invested from age 22 to 50. This gives you a profit of $703,244. Although that is a large profit, your final balance would not be able to sustain you for the rest of your life, so I would not recommend this option for retirement.

|  |  |  |  |
| --- | --- | --- | --- |
| Scenarios | Money Invested | Final Balance | Profit |
| Scenario 1 | $60,480 | $690,491 | $630,011 |
| Scenario 2 | $168,000 | $453,640 | $285,640 |
| Scenario 3 | $228,480 | $1,144,131 | $915,651 |
| Scenario 4 | $132,480 | $835,724 | $703,244 |

If you wait to invest into your account until you turn 40, you would have to make larger monthly payments if you wanted to match the final ending balances of the scenarios above.

|  |  |  |  |
| --- | --- | --- | --- |
| Scenarios | Final Balance | Monthly Investments from Age 40 to 65 | Money Invested |
| Scenario 1 | $690,491 | $852 | $255,600 |
| Scenario 3 | $1,144,131 | $1,412 | $423600 |
| Scenario 4 | $835,724 | $1,031 | $309300 |

As you can see, the time-value of money has a huge effect on your account. It is important to start investing early. If you were going to go with option 3 and have an ending balance of $1,144,131, you would need to invest $423,600 if you chose to start investing when you tuned 40 up until age 65. If you decided to start earlier now at age 22, you would only need to invest $228,480 to accumulate to the same end balance of $1,144,131. If you start investing when you turn 40, you would need to spend $195,120 more to reach the same end balance as someone who started investing at age 22. I am pretty sure you wouldn’t want to waste $195,120.

With all of these scenarios considered, the third scenario that consists of you making monthly payments of $280 from ages 22 to 40 and making additional monthly payments of $560 from ages 40 to 65. This scenario would grant you enough money for you to live out the rest of your life comfortably. That plan is successful because it takes advantage of the time-value of money and making larger investments when you are 40, when you are financially stable enough to do so. Please take my advice on this, your retirement is important, and you should invest more into your account. You don’t want to continue working when you are in your 70s. You have several choices, choose the one that will allow you to live comfortably in retirement. I can’t wait until we get together again. Take care.

Your best friend,

Brady Hurlich

Appendix

Future model of annuities model: $P=PMT x \frac{(1+\frac{r}{n})^{nt}-1}{\frac{r}{n}}$

 This formula is used to find the future amount of an account that has monthly (n = 12) investments (PMT = $280, $560, or $600) for a total of (18 or 25) years. The account also accumulates compound interest simultaneously with the monthly investments (PMT). Compound interest is made at monthly (n = 12) periods for a total of (18 or 25) years at a fixed interest rate (r = 0.07).

* P is the future value of the investment
* PMT is the amount of the investment made
* r is the interest rate
* n is the number of times interest is compounded in one year
* t is the amount of time periods the account has

Compound interest model: $A=P(1+\frac{r}{n})^{nt}$

 This is used to calculate the amount of interest a principle balance accumulates at an interest rate (r = 0.07) compounded monthly (n = 12) for (t = 18 or 25) years.

* A is the final balance
* P is the principal balance
* r is the interest rate
* n is the number of times interest is compounded in one year
* t is amount of time periods the account has