72 and 4—two numbers to help you think about retirement saving and spending

The power of global markets makes it possible for the average person to save enough money during their working career to retire and live on the income that can be generated from their saving and investing. But just because a positive outcome like adequate retirement income is possible doesn't mean it's probable.

What shifts the odds of achieving success in your favor – from possible to probable – has more to do with the actions you take than the randomness of markets. Even a person (or couple) with a modest income has the opportunity to achieve this goal, if they exercise a little financial discipline and investing prudence.

The mechanism that makes this possible is compounded interest (or compound growth). Famous physicist, Albert Einstein, is credited with claiming, "The most powerful force in the universe is compound interest."[1]

Money sent out to work as equity (stocks) or debt/loans (bonds) is able to add to itself and thereby grow its rate of growth. Given enough time, patience and discipline, this growth can be exponential.

For example, if you have a $100 investment that is earning 5% annually, at the end of one year you'd have $105. Reinvest all of it for another year at 5% and you'd have $110.25. Continue the process and your principal grows like a snowball, increasing the rate at which the original investment grows each time it goes around.

Using the rule of 72 to calculate growth

Because this process accelerates the rate at which your money increases, it requires more than 3rd grade math to describe its growth.

The basic formula for the future value of an investment is **Pe^{rt}.**

- **P** is your principal.
- **e** is Euler's number (an irrational constant usually rounded to 2.718).
- **r** is your rate of return.
- **t** is time measured in years.[2]

It's a powerful equation for predicting growth. But calculating something as simple as how long it will take your money to double can get a little complex. How are you at logarithms?

Fortunately, you can use the Rule of 72 as a handy approximation.

Here's how it works. If you want to know how long it will take for an investment to double, simply divide 72 by your rate of return.

For a 5% return, 72/5 equals 14.4 years. A 10% return, 72/10, will take 7.2 years to double. And notice that the 10% return will double the original capital again by the time the capital in the 5% return scenario has doubled just once.

The Rule of 72 is an easy way to see the power of greater return rates over time.

Sustaining your retirement Income: the 4% Rule

Saving a substantial sum over decades is both a worthy goal and a complex challenge. But with today’s increasing life expectancies, getting to retirement age might actually be just half the battle. When you've reached your retirement goal, you need to know how much you can spend each year to keep from running out of money.

This is where the 4% Rule comes in. It's pretty simple. The 4% Rule suggests targeting your total spending to be just 4% of your total investment capital each year of retirement.[3] Not only will this help preserve your principal, but if your principal investments can earn greater than 4%, your target spending amount may increase in years where returns are better, giving you some protection against inflation.

While we’d all like to have investments that consistently deliver great rates of return, we realize that putting capital at risk means embracing the implied volatility over time. So the only variable you have the greatest control over is your rate of spending. That’s why budgeting and debt management are so important in financial planning.

Obviously both the Rule of 72 and the 4% Rule are approximations that are helpful for thinking about retirement saving and spending in general. Like any “rule of thumb,” these are guidelines are intended to simplify the variables rather than be specific to your unique situation.

Reality is expected to be much more complex and less predictable. Your trusted advisor is there to help you design and deploy an investment plan to fit your specific needs and goals, and also help you see it through the spending years.

Sources:

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2. http://www.businessinsider.com/why-the-rule-of-72-works-2014-12
3. http://www.interest.com/savings/news/see-how-well-prepared-retirement-4-rule/

Important note: