

Retirement Planning: That Elusive Growth Rate

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One of the most misunderstood concepts in retirement planning is the portfolio growth rate. Many investors and planners confuse the portfolio growth rate with the sustainable withdrawal rate. These two are not the same thing. It amazes me to read advice in the financial media, something like “after retirement, assuming a conservative portfolio growing on the average of 5% a year, you can safely take out \$10,000/year from your portfolio of \$200,000”. Nothing can be further from the truth. Even though the average growth rate may be 5%, the sustainable withdrawal rate is well below that.

Let’s look at market history to figure out the realistic growth rates using my retirement calculator. This calculator shows the range of outcomes based on market history since 1900. By the way, you can download it from my website www.retirementoptimizer.com

Let’s look at three different asset mixes:

- 100% equity,
- 100% fixed income,
- a balanced portfolio consisting of 50% equity and 50% fixed income.

For each of these portfolios, we will consider three different money flow scenarios:

- “No-money-flow” Portfolio: Assume no money is added to and no money is taken out of the portfolio.
- Accumulation Portfolio: Starting with no initial capital and investing 10% of earnings each year. We assume earnings are currently \$50,000/year and indexed to inflation. This is also known as dollar-cost averaging.
- Income Portfolio: Starting with \$500,000 savings and withdrawing \$25,000 in the first year of retirement, indexed to inflation in the subsequent years. This is also known as reverse-dollar-cost averaging.

So, we have three different asset mixes and three different cash flow scenarios. For each one, I calculate the historic median annual growth rate and the historic bottom decile. The median growth rate is the value where half of the portfolios did better and half did worse. The bottom decile indicates the growth rate of the worst 10% of outcomes, i.e. 90% of portfolios did better than that.

To make things more interesting, let us assume that equities perform exactly the same as the index (DJIA). However, in addition, they generate a 2% annual dividend. As for the fixed income, assume 20% of the fixed income is in money market and 80% is in government bonds with average maturity of about 6 years. The MER of the bond portfolio is 1%. The balanced portfolio is rebalanced annually when asset mix deviates by more than 3%. All dividend, capital gains and interest distributions reinvested.

I plugged in this information and calculated the various growth rates for the “no-cash-flow” portfolio as shown in Table 1.

Table 1: “No-Cash Flow” Portfolio, Effective Annual Growth Rates:

	All Equity Portfolio	Balanced Portfolio	All Fixed Income
Median	6.4%	6.6%	4.6%
Bottom Decile	3.5%	4.5%	2.4%

Most people stop right there: They take the “no-cash-flow” growth rates and apply them to accumulation or retirement portfolios without further thought. They may even add a few extra percentage points thinking they can beat the market. Then they keep wondering why their portfolio does not perform as projected.

Next, I calculated the accumulation portfolios, as shown in Table 2. For the accumulation portfolios, the median growth rate turns out higher than the “no-cash-flow portfolio”. This is so because of the mathematics of dollar-cost-averaging. Dollar-Cost Averaging reduces your average unit cost and your median growth rate is higher.

Table 2: Accumulation Portfolio, Effective Annual Growth Rates:

	All Equity Portfolio	Balanced Portfolio	All Fixed Income
Median	7.3%	6.9%	6.0%
Bottom Decile	1.1%	1.8%	0.0%

Finally, we do the same calculations for income portfolios where money is taken out of the portfolio on a periodic basis. Any money that is taken out at a loss is a permanent loss. That is so because even if the markets may go up eventually, the money that is withdrawn does not participate in the recovery. The reverse-dollar-cost averaging reduces the effective growth rate significantly. Table 3 shows the growth rates for the income portfolio.

Table 3: Retirement Portfolio, Effective Annual Growth Rates:

	All Equity Portfolio	Balanced Portfolio	All Fixed Income
Median	4.9%	5.7%	5.2%
Bottom Decile	0.0%	3.5%	2.9%

So, which number do you use?

- For accumulation portfolios or for portfolios with “no-cash-flow”: I use the median growth rate. As one gets closer to retirement, periodic portfolio reviews help narrow down retirement decisions.
- For income portfolios: I use the bottom decile growth rate for my projections. That is because I like to have 90% probability of portfolio survival. The median, which only provides 50% probability, is not good enough for retirement planning. However, the median can be used for estate planning or to estimate life insurance needs.

We see that while the median growth rate of the balanced portfolio was 6.9% for accumulation years, we can only use about half of that, 3.5% for retirement years. This rule of thumb, i.e. using only ½ of the portfolio growth for retirement, ensures a reasonable safety in retirement planning.

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