

## Creating Resilient Portfolios, Part 2: Using Time to Reduce Volatility

Many investors become concerned when the market has ups and downs like those we have seen in recent months. It can be uncomfortable to watch your life savings change on a whim. However, the effects of volatility are tamed by time. This newsletter is the second of a three-part series. Part 1 demonstrated that volatility is different than risk. In this newsletter, we show time's beneficial effects on long-term volatility, and how *anticipated return* is used to measure the fitness of an investment rather than volatility. We then graph anticipated return for different investments over time and use that to choose between stocks and money market (approximated by T-Bills) investments. In the next newsletter, we'll show how to construct a resilient portfolio and estimate how it would have performed for a hypothetical retiree during the 2008 market crisis.

### Time Eats Volatility

The longer an investment is held, the lower the impact of volatility. Consider an example investment similar to the S&P 500 index, in which the average return is 7% after inflation, and the standard deviation – the volatility measurement – is 20%. Standard deviation tells us how much the return varies. Most of the time, the return will be within -13% (7%-20%) and +27% (7%+20%). I promise to be no more technical than that!



What's critical is that the two measurements change over time at different rates. Over two years, the total average return would be 14% (7%\*2). Over three years, it would be 21% (7%\*3). On the other hand, the two-year standard deviation would be 28% (20%\* $\sqrt{2}$ ), and over three years it would be 34% (20%\* $\sqrt{3}$ ). The average return has tripled, while the standard deviation hasn't even doubled. In other words, the average return is increasing much more rapidly than the volatility over an extended period.

In effect, time eats volatility. And, it never gains weight.

### Time and Anticipated Return

To understand how this changing relationship between volatility and return is important, let's discuss next the concept of *anticipated return*. We use the term "anticipated" because it is the return that is likely to be exceeded by the investment. While not guaranteed, it is a level of return that is reasonably safe to assume. Often, we shoot for an 80% to 95% probability of exceeding the anticipated return.

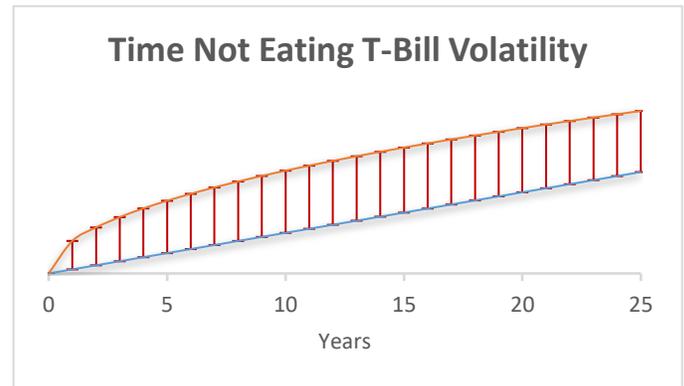
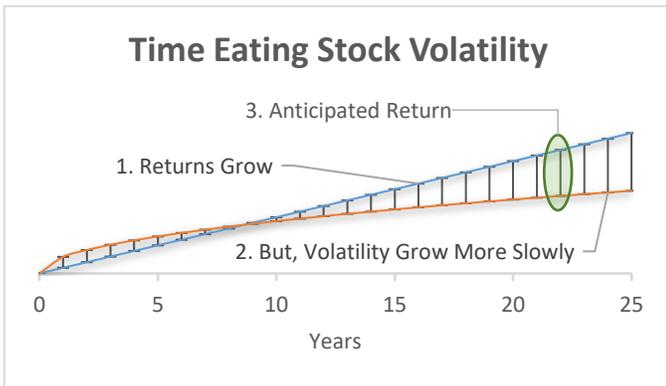
While the math is complex and varies depending on the situation, a simple approximation of anticipated return is to subtract volatility from the total average return. Using this tactic for our example above, the one-year anticipated return would be 7% minus 20%, or -13%. That's a lousy return, obviously, and indicates that stocks are probably not great for short-term investments. At ten years, however, the value is 70% minus 63%, or 7%. The average rate of return has outgrown volatility.

So, when we plan for investments to be held a certain duration, the investments can be chosen by looking at the anticipated return for that time length. This is how we use time to guide the selection of portfolio holdings.

### Growth, Volatility, and Anticipated Return Over Time

Below, the chart on the left shows how average return, in blue, and volatility, in orange, grow at different rates for an S&P 500 index. The anticipated return is shown as the space between average return and volatility. Note that during the first few years, the anticipated return is negative. Thus, stocks are not usually very good short-term investments. We intuitively understand this when we see stock indexes drop. But, by holding them, the reliability improves, and anticipated return increases. This is evident by the widening gap that the blue returns have over orange volatility as time goes on.

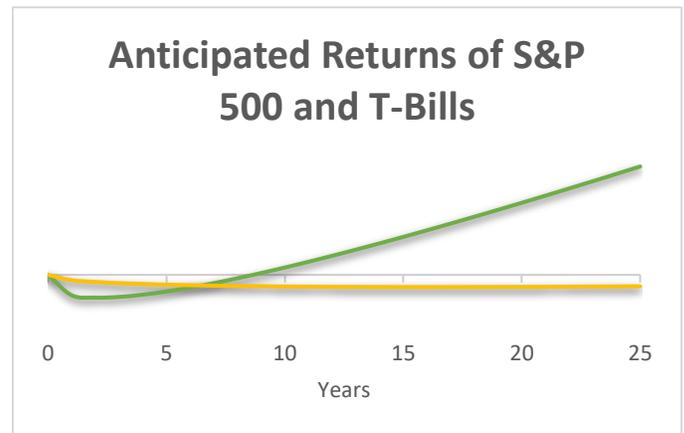
Unfortunately, time does not eat volatility nearly as well when it comes to stable investments. The returns of T-Bills (money market-like investments) after inflation are so close to zero that it takes many years for average returns to outgrow volatility. The chart



below on the right shows that that for T-Bills, the anticipated return is continuously *negative* for well beyond 25 years. The blue line stays below the orange. Therefore, using a capital preserving portfolio for the long-term is not supported by the math. Over longer periods, the potential for losses are much greater.

### Choosing the Proper Investment

So, does that mean “stable” investments are useless? Hardly. The last chart shows the anticipated returns for the S&P 500 in green and T-Bills (money market funds) in yellow. For periods below six years, T-Bills are anticipated to lose less money than the S&P 500 when taking inflation into account, as shown by the yellow line above the green. So, holding your money in T-Bills is probably better than in an S&P 500 fund for short periods of time. Losing a small amount is better than potentially losing a large amount. Beyond six years, stocks look better, as seen by the increase in the green line. Nevertheless, you shouldn’t anticipate a positive return for about nine years! **Stocks truly are the safer long-term investment, but to achieve that security we should be prepared for several years of losses.**



Of course, T-Bills (money market funds) and the S&P 500 are not the only choices. In the next article, we’ll walk through an example of a resilient retirement portfolio which incorporates time and anticipated returns. We will show how such a portfolio would have performed for a hypothetical retiree starting in 2008, the year of the Great Recession.



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