Math of Loss – Asset Allocation

by Jim C. Otar

There are two dimension of math of loss: The first one is the duration of the loss. We covered it in my previous article. The second part is the dollar amount of the loss which is the subject of this article, which then leads us to asset allocation.

During the last century, in about 94% of the time, markets exhibited **random** or "normal" behavior, as known in the Gaussian world. In the remaining 6% of the time, markets were in a **fractal** (non-normal, extreme, non-Gaussian) mode, split evenly between up and down directions. Classic strategies such as asset allocation and diversification work perfectly well when markets are in their random mode, but not so much during their fractal mode. This is when some clients will abandon their well-thought plans and bail-out of their investments. The key to success is to adhere to plans even during fractal times, so that when normalcy returns, these strategies resume working for the benefit of the client.

Monte Carlo simulators are based on random number generation to analyze scenarios. Since we want to analyze not just the random, but *both* random *and* fractal market behavior, we avoid such models. Instead, we use actual market history which we call "aftcasting" (as opposed to "forecasting") in our analysis. Aftcasting displays the outcome of all historical asset values of all portfolios on the same chart since 1900. It gives a bird's-eye view of all outcomes for a given scenario. It also provides the success and failure statistics with exact historical accuracy because it includes the actual historical equity performance, inflation and interest rate, as well as the actual historical sequencing/correlation of these data sets.

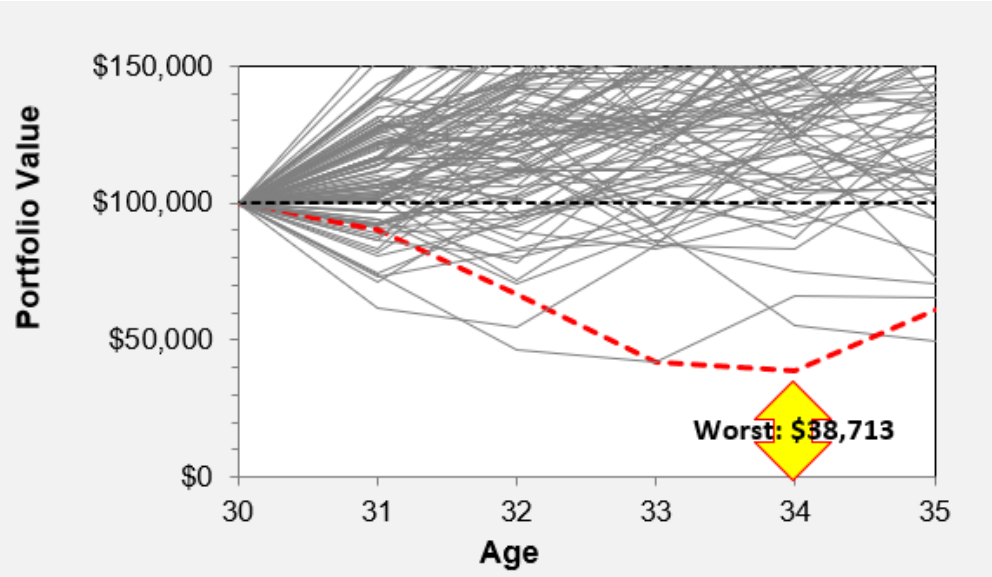
<u>The Short-Term Impact of Asset Allocation:</u>

Let's look at two accumulation examples.

Chase, 30, has a portfolio worth $100,000. He believes that stocks are for the long run. He owns 100% stocks in his portfolio, half in Canadian stocks (SP/TSX) and half in US stocks (S&P500). He plans to add $4,000 each year to his portfolio.

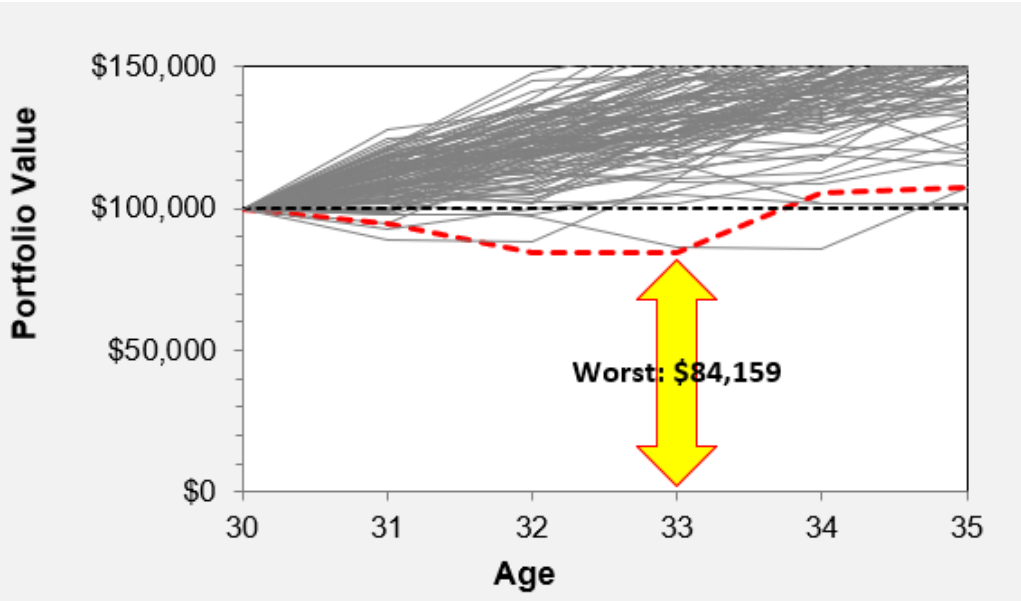
The market history shows that in the worst case, his portfolio value was $38,713 (it happens to be for the starting year 1929), as depicted in Figure 1. This is a 61% loss. And, this is after adding $16,000 to his portfolio, remembering that he adds $4,000 per year.

Figure 1: Accumulation portfolio, Chase's aftcast, 100% equities



The second scenario is for Grace, also 30 years old. Like Chase, she has $100,000 in her portfolio and plans to add $4,000 each year to her portfolio. Unlike Chase, she is aware of her risk tolerance and she likes to stay conservative. Her asset mix is 40% stocks and 60% fixed income. Figure 2 depicts her aftcast. We observe that in the worst case, her portfolio dipped to $84,159. This is a much smaller loss (16%) than Chase experienced (61%).

Figure 2: Accumulation portfolio, Grace's aftcast, 40/60 asset mix



The main risk for an accumulation portfolio is the staying power of the client during adverse market events. Everything else being equal, don't you think that Grace is more likely to stick with the original plan than Chase?

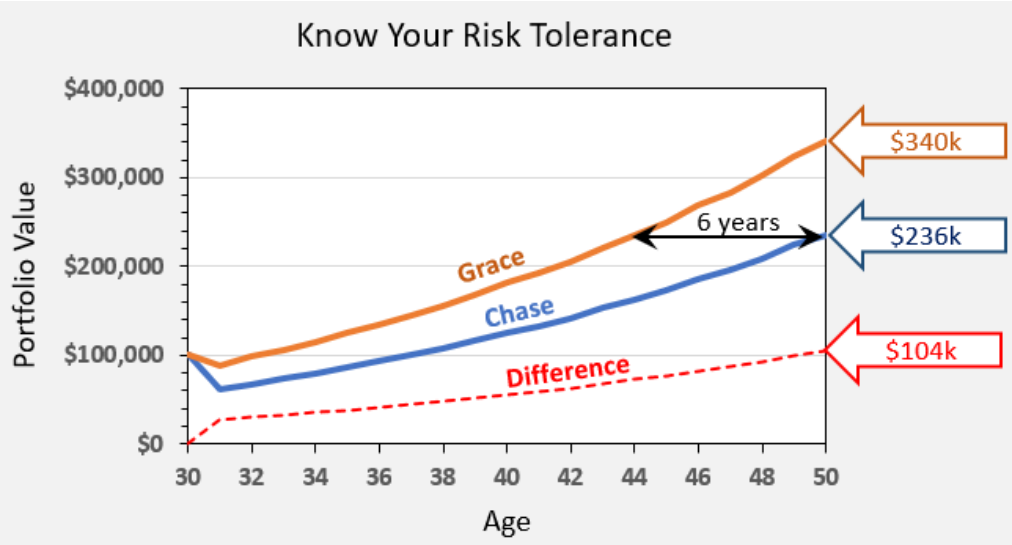
The Long-Term Impact of Asset Allocation:

Let's look at the impact of staying power, or the "behavioral risk", for a 20-year time period. For that, we use the historical median portfolio values, not the worst case.

After a year of agonizing losses, Chase changes his asset mix to 40/60. Grace is also unhappy with her short-term returns, but she tolerates the volatility.

Both median portfolios, after accounting for the initial loss, are depicted in Figure 3. Grace had the staying power. She was able to accumulate more assets than Chase, who did not know his risk tolerance and had to bail out after the first year and reset his asset mix. That one mistake cost him a lot of money, about $104,000 after 20 years of compounding, not to mention a significant loss of accumulation time of -at least- 6 years.

Figure 3: The value of knowing your own personal risk tolerance in accumulation portfolios



We can now translate these findings into practical action steps:

Know thy risk tolerance:
The most effective way of increasing investment success is to know the limits of your risk tolerance. If this is not crystal-clear, err on the side of lower risk.

Asset allocation during the early accumulation stage:
Keep portfolio conservative, 40/60 (40% equity and 60% fixed income that is). Keep this mix until the annual accumulation of dollar amount is less than 4% of the portfolio value.

Asset Allocation during the Mature Accumulation Stage:
Once the annual additions are less than 4% of the portfolio value *and* if the risk tolerance permits, you can proceed to a 60/40 mix, which can provide sufficient growth with reasonable risk.

Asset Allocation close to Retirement:
Ten years before retirement, move the asset mix back to 40/60.

Why? As seen in my previous article, one might need 10 years to recover after a nasty black swan event. Therefore, sometime between ages 60 to 65 reduce the risk.

Retirement Income Sustainability:
Once the portfolio is switched from accumulation to decumulation, the math of loss flips on its head. Even if withdrawals are perfectly sustainable, say 3% initial withdrawal rate, you might never again see the pre-loss asset value of the portfolio after a seemingly minor correction.

Retirement income for essential expenses:
If your *required* withdrawal rate for your essential expenses are over 3%, consider guaranteed income such as annuities or segregated funds with lifelong guaranteed income. Why? Because a portfolio loss as small as 15% can reduce the sustainability of income noticeably.

If your *required* withdrawal rate for your essential expenses are under 3%, then you can choose between a traditional or a segregated fund investment. This choice depends on estate planning considerations.

Retirement income for non-essential expenses where preservation of capital is important:
If withdrawals from the portfolio is for discretionary and non-essential expenses only, but preservation of capital is important, then use segregated funds with guarantee of capital.

Retirement Income Sustainability when income is for non-essential expenses and preservation of capital is not important:
If withdrawals from the portfolio is for discretionary and non-essential expenses only, and preservation of capital is not that important, then a traditional investment portfolio will work.

Keep in mind, this study is based on the market history of the last century. This inherently assumes that the current borrowing binge can continue indefinitely. During the last century, fixed income was the "safer" side of a portfolio. Going forward, it might turn into the riskier side. We shall see. Meanwhile, enjoy *this* recovery.

Jim C. Otar, is a retired financial planner and retired professional engineer. He is the founder of www.retirementoptimizer.com. His past articles about the luck factor and sequence of returns won the CFP Board Article Awards in 2001 and 2002. He is the author of Unveiling the Retirement Myth, a 525-page textbook. He can be reached at jimotar@rogers.com