Sharper Granite Investing Process

Sharper Granite manages portfolios based on the principles of Nobel Prize winning research spanning decades. Our investment process seeks to construct efficient portfolios which help clients reach their goals.

From 1992 to 2022, the S&P 500 Index averaged a 9.7% annual return. However, the average investor in U.S. stock funds shockingly earned only 6.8%.[1] This well-studied effect is persistent over time and is mainly attributed to two culprits, the poor performance of the managers of actively-managed stock funds and the emotions of individual investors.

First, most actively-managed stock funds trail the S&P 500 Index. In 1990 Professor William Sharpe at Stanford won a Nobel Prize in part for proving that fund managers cannot consistently pick outperforming stocks due to several factors, especially transaction costs which are not present in indexes. Mountains of academic research today illustrate empirically what Sharpe showed mathematically 35 years ago.

Stock Returns 1992 - 2022 [1]

> *"Properly measured, the average actively managed dollar must underperform the average passively managed (index) dollar, net of costs."*
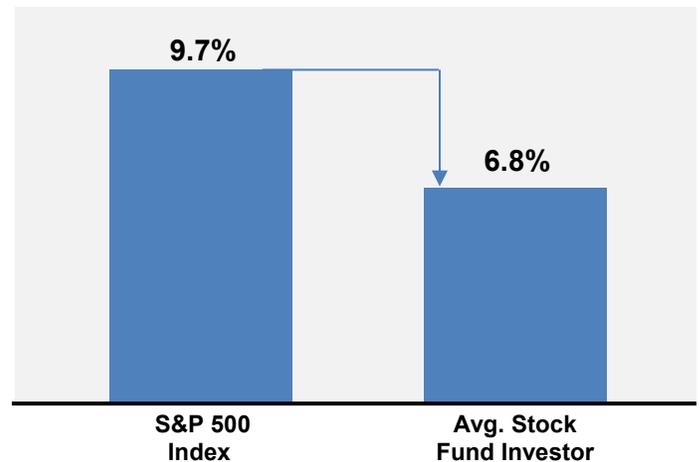>
> - Nobel Laureate William Sharpe, "The Arithmetic of Active Management" [2]

Second, investors hurt themselves by buying when stocks are high and nervously selling when stocks are low. This self-harming behavior and its drivers within the human brain are well documented by behavioral finance professors, including Daniel Khaneman (Nobel Prize 2002) and Richard Thaler (Nobel Prize 2017).[4]

In his book *Misbehaving*, Thaler shows that the pain felt from a financial loss is twice the level of joy received from a financial gain of the same magnitude.[5]

This is unhealthy for market watchers. Picture a terrific year where stocks return 15%. Even then, 46% of the days that year statistically would be "down" days.[6] Thus, investors who watch their accounts frequently tend to become frustrated and abandon their long-term strategies even in good markets. They sell at exactly the wrong time only to re-buy after stocks inevitably move higher.

Fraction of Top Performing Funds that Survived and Beat their Index 2003 - 2023 [3]
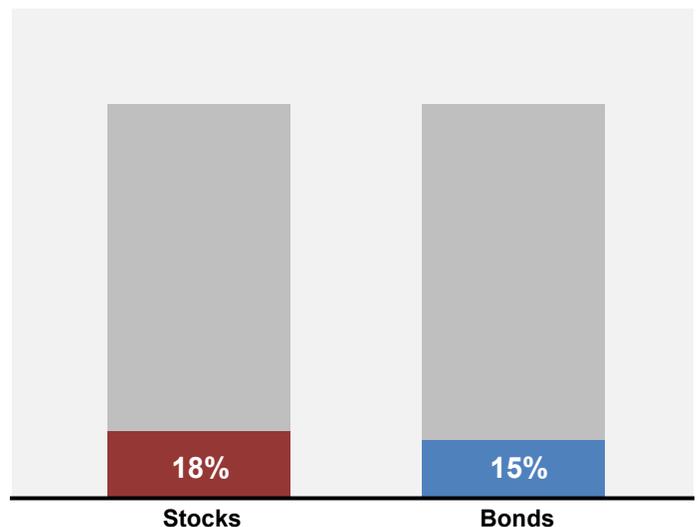
The Sharper Granite investment process was founded with these behavioral biases and investment fundamentals in mind. Ultimately, we help clients reach key life goals by constructing and managing low-cost, tax-efficient, smartly-diversified portfolios. Our process leverages the work of like-minded investment-product partners including Dimensional Fund Advisors, Vanguard, BlackRock, and WisdomTree. It also utilizes powerful software systems, such as iRebal, Advent's Black Diamond, and Oracle's Crystal Ball which allow us to harness huge data sets for sophisticated portfolio analysis and client communication. The following paper provides more insight into our portfolio management process.

1. Develop Efficient-Frontier Portfolio Targets

Higher risk is typically required to bring higher return. This is a golden rule in investing. But there is one "free lunch" to be had on the risk-return spectrum – diversification. Diversification reduces risks that have no expected return, such as company-specific risk.

For example, holding one stock with an expected return of 10% has the same predicted return of a basket of a dozen stocks, each with expected return of 10%. But the basket has much lower risk. In fact, a basket of a dozen diversified stocks will have approximately half the volatility of the single-stock portfolio.[8] When other asset classes such as bonds and real estate are added to the mix, risk-adjusted returns can be further improved.

Diversified portfolios mapped along the risk-return spectrum form a curve of higher expected return at a given risk level. Sharper Granite uses linear programming software to map out these efficient-frontier points which become our target portfolios for clients of various risk preferences.

**Efficient Frontier** [7]
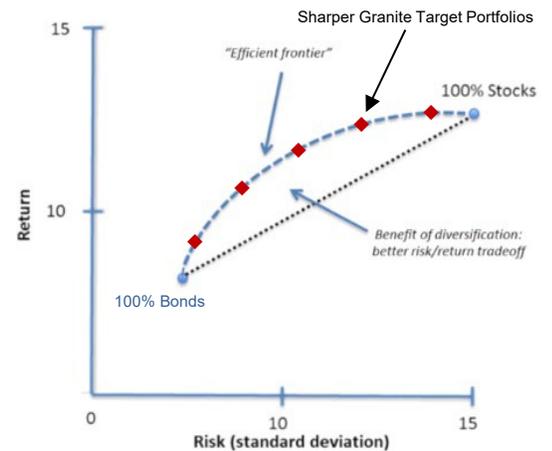
2. Refine Goals and Risk Preference

Articulating and quantifying goals and risk preference is challenging. Sharper Granite advisors strive to get to know our clients well over time and continually tailor portfolios to each client's changing time-frame, goals and risk tolerance. Key input to this process include timing of cash needs, level of comfort during market declines, and frequency with which the client watches his or her portfolio.

Providing feedback over time regarding one's changing life goals and level of comfort with portfolio volatility helps the advisor fine tune portfolios and seek the best return at a comfortable level of risk.

Risk Tolerance Determines Allocation
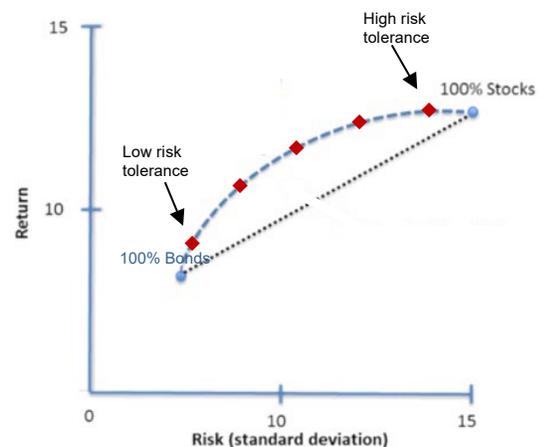
3. Tilt Portfolios Toward the Factors that Drive Returns

Research from Eugene Fama (Nobel Prize 2013), Harry Markowitz (Nobel Prize 1990), and William Sharpe (Nobel Prize 1990), identified the key stock and bond factors which are the predictors of expected returns. These factors, shown below, are pervasive around the world and persistent over time.[9] Exposure to these factors predict the vast majority of diversified portfolio returns. Sharper Granite strives to cost-effectively capture these factors in portfolios. Dimensional Fund Advisors, Vanguard, BlackRock and WisdomTree supply low-cost index funds with special tilts toward these factors which we incorporate into portfolios.

Stocks

| Company Size (Market Capitalization, small vs. large) |
| Relative Price (value vs. growth companies) |
| Profitability (high vs. low profitability companies) |

Bonds

| Term (Sensitivity to Interest Rates) |
| Credit (Credit Quality of Issuer) |
| Currency (Currency of Issuance) |

4. Determine the Best Portfolio Building Blocks

While some investment professionals are paid extra by fund companies to place clients into their funds, Sharper Granite is compensated only from clients. Thus, we are able to select investments best suited for a client's portfolio and with minimal conflict of interest. Today, several investment options exist within any given asset category, so having the freedom to select the best securities in each category is critical for portfolio construction.

Rank Competing Securities

Health Care	Cost	Spread	Taxes	Fit
VHT	0.09%	0.04%	97	96
XLV	0.14%	0.01%	97	95
FHLC	0.08%	0.06%	96	97
IYH	0.44%	0.06%	96	83
PTH	0.70%	0.12%	80	70

For example, if a target portfolio calls for a 5% allocation to U.S. health care stocks, we then have dozens health care mutual funds and exchange traded funds (ETFs) from which to choose. We rank these options using our own scoring system combined with those of outside professional entities. Because cost is the strongest predictor of future performance, cost is a primary consideration in our scoring system.[10] Other important factors include tax efficiency, trade execution and how well the fund fits the index it represents.

In this health care sector example, Vanguard's fund, ticker symbol VHT, ranks best in our scoring system, followed by State Street's fund, ticker XLV. Cost and other parameters associated with each fund change over time, so we constantly refresh, review and re-rank.

5. Develop Projection-to-Goal Models

Once a portfolio is constructed, Sharper Granite may build a customized model to project the probabilities of outcomes with respect to the goal. Key decisions such as retirement dates or college options can then easily be distilled and reviewed with clients.

While many "canned" savings calculators exist, we believe constructing customized models is far more powerful. By doing this, we can factor the timing of future cash flows and even assign probabilities to different events or timing. We can even model the interaction of different probabilities for more realistic scenarios. For example, we can factor how a possible decline in real estate may effect stocks and bonds in a given year.

Personal Projection Model

After building a client specific model, we then use Oracle's Crystal Ball simulation software to generate thousands of realistic financial lives based on a world of possible market outcomes. From this simulation, we create a probabilistic distribution of possibilities. This detailed process produces impactful, highly customized information for clients.
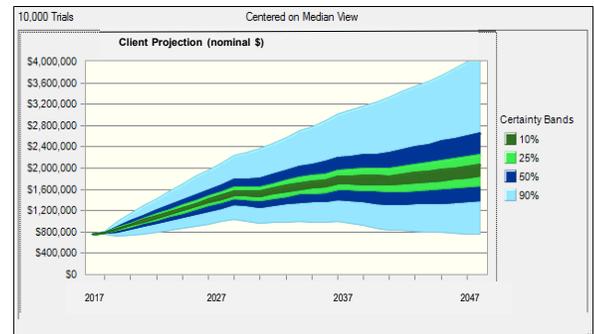
6. Rebalance

Initially, a portfolio matches its target closely. But like plants in a garden, over time some components grow faster than others, and "trimming" or rebalancing needs to occur. Many factors play into portfolio rebalancing, making it one of the most complicated features of portfolio management.

Tax efficiency plays a large role. Trimming the largest growers may lead to capital gains which could be either an undesired effect or a desired one (as often occurs in UTMA accounts). Account types and tax circumstances make each client's situation potentially different. The Sharper Granite rebalancing algorithm and iRebal software help manage the tradeoff between portfolio balance and tax efficiency.

**Rebalancing Asset Allocations**
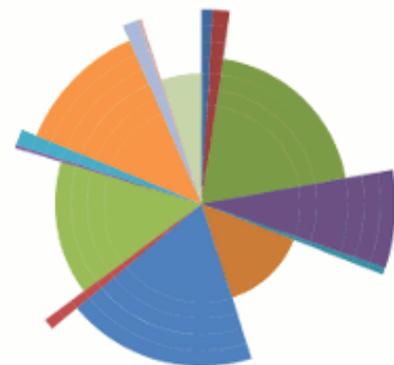
When clients visit their personal portal on BlackDiamond they can see graphically how their actual portfolio compares with their target portfolio. They can even view how their portfolio allocation has changed over time versus their target portfolio.

7. Test and Review the Process

We review portfolio performance internally and also employ external evaluators to determine how efficiently our portfolio management process is performing in terms of return and risk. In the past year Sharper Granite has opened up its model portfolios for review by outside investment firms Dimensional Fund Advisors and BlackRock (using BlackRock's sophisticated Aladdin tool). These reviews helped confirm our investment process as well as fine tune our execution.

Portfolio Reviews
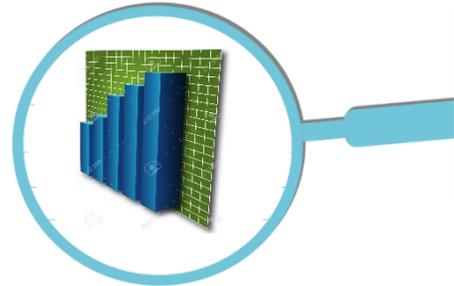
8. Communicate and Educate

Warren Buffett says, "Be fearful when others are greedy, and be greedy when others are fearful." But this is difficult for most. Human brains are wired such that they will struggle to separate emotions from investing, according to Daniel Khaneman (Nobel Prize 2002).[4]

Daily market news and commentary can challenge investment discipline. Some messages stir anxiety about the future while others tempt with the latest investment fad. A key component of our investment process is assisting clients in remaining disciplined in their investment strategies and deciphering information from various sources.

Reactive Investing in a Market Cycle

Through access to an extensive library of academic research and to esteemed thought-leaders, we provide educational information regularly to clients. We attempt to help our clients better understand market cycles and events through regular written commentary and in-person meetings and are available to answer questions when they arise. Additionally, each client has access to a state-of-the-art personal portal where they can review their portfolio standing at any time.

By harnessing powerful institutional investment tools and being mindful of proven market drivers as well as common investor behavioral pitfalls, Sharper Granite has created an efficient portfolio management process. This process was intentionally designed to help clients meet life goals by protecting and growing their financial assets. Our process has been validated by external professional institutions and academics who are well respected leaders in the field of investment management. We believe in this sound approach to investing and have a track record of delivering results to the satisfaction of our client base. For more information, contact us at info@sharpergranite.com

Notes and Acknowledgements:

1. Dalbar's Quantitative Analysis of Investor Behavior Methodology 2023. Dalbar's QAIB uses data from the Investment Company Institute (ICI), Standard & Poor's, and Barclays Index Products to compare mutual fund investor returns to an appropriate set of benchmarks. Covering the period from January 1, 1992 to December 31, 2022, the study utilizes mutual fund sales, redemptions and exchanges each month as the measure of investor behavior. Investor returns are represented by the change in total mutual fund assets after excluding sales, redemptions, and exchanges. This method of calculation captures realized and unrealized capital gains, dividends, interest, trading costs, sales charges, fees, expenses, and other costs. After calculating investor returns in dollar terms, two percentages are calculated for the period examined: total investor return rate and annualized investor return rate. Total return rate is determined by calculating the investor return dollars as a percentage of the net of the sales, redemptions and exchanges

2. William Sharp,. "The Arithmetic of Active Management. Financial Analysts Journal 47(1): 7–9", 1991

3. Dimensional Fund Advisors, "The Fund Landscape," US-domiciled open-end fund data is from Morningstar, 2023

4. *Thinking Fast and Slow*, Daniel Khaneman, 2005

5. *Misbehaving*, Richard Thaler, 2014

6. Assumes normally distributed daily returns totaling a 15% annual return with 10% standard deviation. Nasism Taleb, *Fooled by Randomness*, 2001

7. Morningstar Direct, January 1, 1976 to February 28, 2015. Sharper Granite target portfolios are targets only and illustrative; they do not imply historical results

8. *Principles of Corporate Finance*, Richard Brealey and Stewart Meyers, 1991

9. Written with input from Dimensional Fund Advisors

10. Based on studies quoted by Vanguard, Morningstar, and *The Quest for Alpha*, Larry Swedroe, 2011