Rain Dog's Investment Strategy

- Rain Dog's investment strategy begins with a comprehensive, value-based classification of an investor's assets and then creates a strategic asset allocation for the securities portion of the investor's assets.

- Rain Dog uses Modern and Post-Modern Portfolio Theory to determine the strategic asset allocation for each client. Our goal is to ensure that every portfolio is on the Efficient Frontier.

- We further optimize each client's investments for tax efficiency.

- Rain Dog's investment strategy is implemented within a larger context of fully managing client finances to plan for tax reduction, education funding, retirement, major purchases, legacy goals, and other financial matters, except in cases in which the client wants only investment management.
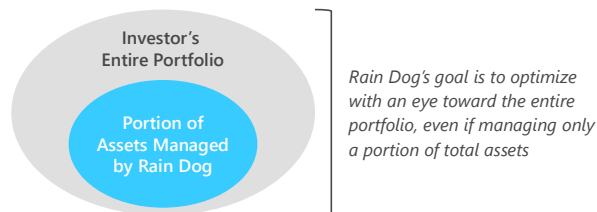
Introduction

This white paper describes Rain Dog's investment strategy in detail. We make this white paper available to interested readers for the sake of transparency. For clients and potential clients who prefer less detail or who have questions not answered by this white paper, we would be happy to discuss our strategy in person. Please contact us at hello@raindogllc.com.

The Investment Challenge: Holistic Portfolio Management

High net worth investors can have assets that are controlled by multiple advisors and administrators. The investor's financial advisor might manage IRAs and taxable investments but might not manage 401K plans, concentrated stock positions, real estate, private equity, royalty streams, and business ownership. The parts of an investor's portfolio that are not managed by the financial advisor can make up a significant portion of an investor's assets.

Rain Dog believes that all assets—including non-managed assets—should be considered holistically when designing the managed part of an investor's portfolio. We seek to understand and analytically incorporate the full scope of assets in order to best manage the part for which we are responsible.

Investor's Entire Portfolio

Portion of Assets Managed by Rain Dog

Rain Dog's goal is to optimize with an eye toward the entire portfolio, even if managing only a portion of total assets

Wealth Allocation

Rain Dog begins with a values-based, qualitative assessment of the investor's overall wealth allocation.[1] We use three broad categories of wealth:

- **Safety.** Assets, financial instruments (such as insurance), and human capital that protect the investor's basic standard of living and prevent loss.

- **Stability.** Investments that support the investor's standard of living over time and provide growth commensurate with the market.

- **Superabundance.** High risk/high reward investments that support an investor's highest investment aspirations.

Together with the investor, we evaluate the ratio of assets, human capital, and other financial instruments in each wealth category and determine an allocation that is appropriate for the investor's level of wealth and investment temperament.

Rain Dog's Wealth Allocation Framework ensures we do not try to fit round pegs into square holes. We do not approach a 40 year old tech industry star with 60% of their wealth in Amazon stock the same way we approach a 70 year old retiree with 60% of their wealth in Amazon stock.

For a retired conservative investor with modest resources, we might define an allocation like this:

Safety **60%** | Stability **40%** | Superabundance **0%**

For an affluent investor with medium risk tolerance, we might develop an allocation like this:

Safety **40%** | Stability **55%** | Superabundance **5%**

For a wealthy investor with 20 years left in their career, we might settle on a wealth allocation like this:

Safety **20%** | Stability **60%** | Superabundance **20%**

After we have put the values-based wealth allocation in place, we determine the asset classes and strategic asset allocation that will support that.

---

[1] Rain Dog's wealth allocation framework is based on work by Ashvin B. Chhabra. See "Beyond Markowitz: A Comprehensive Wealth Allocation Framework for Individual Investors," *The Journal of Wealth Management*, vol. 7, no. 4 (Spring 2005) and *The Aspirational Investor*, 2015.

Asset Classes

Asset class refers to the broad category of stocks, bonds, or other securities to which an asset belongs. At the broadest level, asset classes consist of stocks, bonds, and cash, which can also be referred to as equities, fixed income, and cash or cash equivalents.

Asset classes can be further subdivided into more detailed classes, such as large cap, mid cap, and small cap stocks; U.S. vs. international stocks; and so on. Bonds can be divided into short-term, mid-term, and long-term bonds; government vs. corporate bonds; and so on.

Different asset classes have shown different rates of return and different levels of risk over time. Risk is most often measured as standard deviation of returns, i.e., the volatility of the returns. Figure 1 shows the relationship between return and risk for the asset classes that Rain Dog uses to create custom portfolios for our clients.
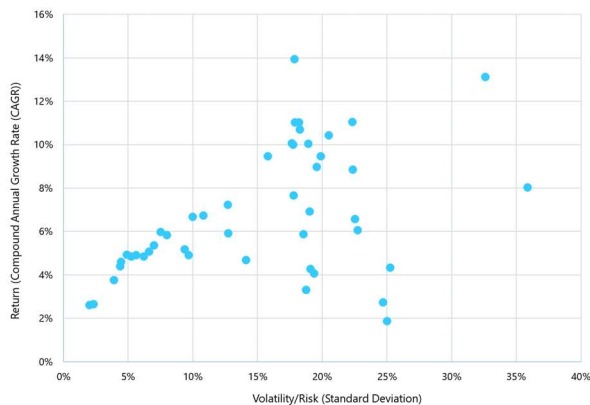

Figure 1 *Risk/return of different asset classes*

In addition to return and risk varying across asset classes, asset classes do not all rise and fall together. Figure 2 shows the correlations between Rain Dog's asset classes and the S&P 500 (which is labeled as "Large Cap Stocks" at the top of Figure 1). A correlation of 1.0 means the asset class always rises or falls when the S&P 500 rises or falls. A correlation of 0.0 means there is no relationship between when the S&P 500 rises or falls and the other asset class rises and falls.
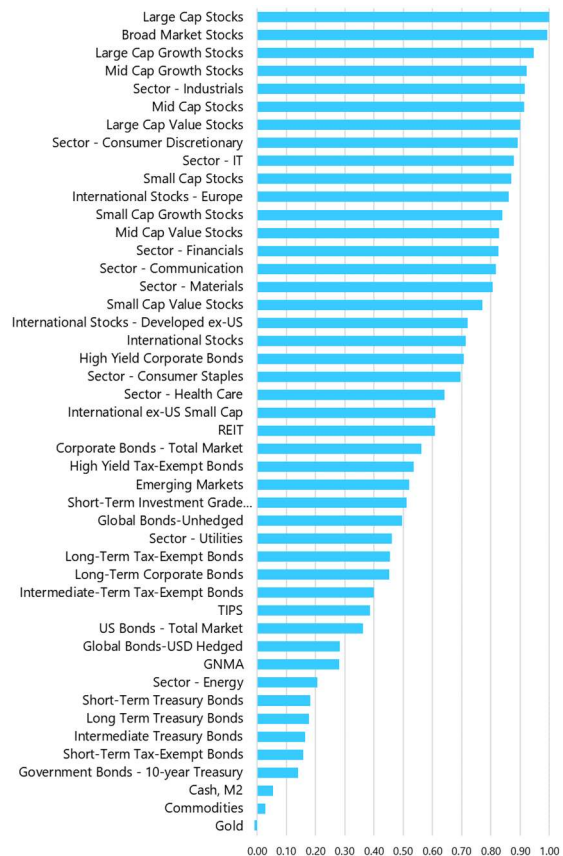

Figure 2 *Correlation between S&P500 and selected asset classes*

In very general terms, the asset classes shown in the top part of Figure 2 are stocks, which largely rise and fall with the S&P 500. The asset classes in the bottom part of Figure 2—which are less correlated with the S&P 500—are mostly bonds, which track the S&P 500 less closely or not at all.

Rain Dog's investment strategy makes use of the correlations and lack of correlations among asset classes to create optimal combinations of risk and return through a discipline known as Modern Portfolio Theory.

Modern Portfolio Theory

Modern Portfolio Theory (MPT) is a mathematical approach to achieving diversification of investments in a way that maximizes investment returns for a given level of investment risk, or conversely, minimizes risk for a given level of return. Harry Markowitz won the Nobel prize in economics in 1990 for the body of work that is now called Modern Portfolio Theory.

By combining assets from different asset classes in a mathematically specific way, MPT states that it is possible to obtain combinations of risk and return that are better than the risk/return combinations available from single asset classes. Thus, for example, portfolios comprised of a combination of stocks and bonds can provide a better combination of risk and return than portfolios comprised solely of stocks or solely of bonds.

The emphasis of MPT is on **optimizing performance of a portfolio** of investments rather than optimizing the performance of each individual investment.

A key insight from Modern Portfolio Theory is the concept of the **Efficient Frontier**. If you plotted the risk and return of all the portfolios in which investors are invested, they would make a picture resembling what is shown in Figure 3 (the specific data points in this figure are notional).
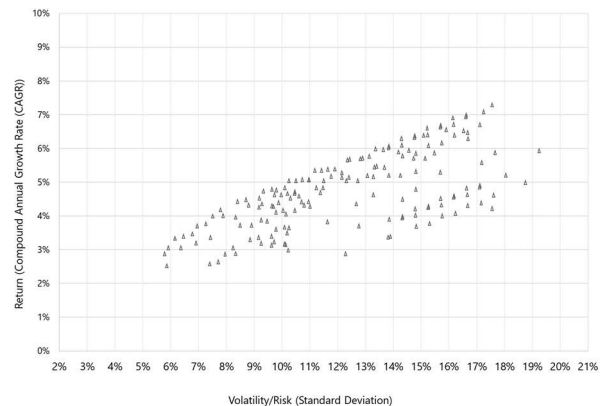

Figure 3 *Combinations of portfolio risk & return*

Any portfolio that is not on the uppermost, leftmost edge of the cluster of points is *inefficient* because a higher return can be achieved with the same risk (by moving up), or the same return can be achieved with lower risk (by moving left).

Collectively, all the uppermost-leftmost points form a curve that is known as the Efficient Frontier, which is shown in Figure 4.
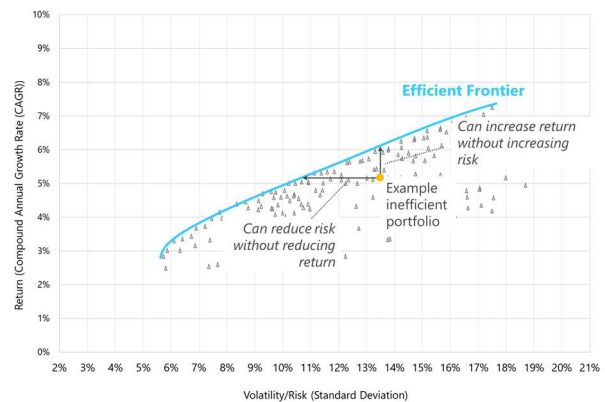

Figure 4 *The Efficient Frontier*

The orange point in Figure 4 is an example of an **inefficient portfolio**. The portfolio is inefficient because the investor could increase their returns by 1% per year with the same risk by moving up,

or the investor could decrease their volatility from 13.5% to 10.5% and still receive the same return by moving to the left.[2]

The Efficient Frontier is equally applicable to investors seeking high growth and those seeking safe income, however, different points on the Efficient Frontier are appropriate for different investors. The most appropriate point will be based on the investor's risk need, risk tolerance, risk capacity, time horizon, preferences for types of assets, and the composition of investments that the investor does not want to change, such as 401K plans and concentrated stock positions.

The core of Rain Dog's investment strategy is to identify the appropriate location on the Efficient Frontier for each individual investor and then create an asset allocation that places the investor at that point on the Efficient Frontier, including consideration of any assets that Rain Dog does not directly manage.

Asset Allocation

Asset allocation refers to how an investment portfolio is divided into different asset classes. One classic asset allocation would be 60% stocks, 40% bonds.

Table 1 lists asset allocations from a few popular financial gurus. These portfolios range from conservative to aggressive. None of them are necessarily suitable for any specific investor. They are shown here solely for the purpose of illustrating what is meant by *asset allocation*.[3]

Table 1

Ray Dalio All Weather Portfolio	Tyler Golden Butterfly Portfolio	Harry Browne Permanent Portfolio	Bill Schultheis Coffeehouse Portfolio	Bogleheads Four Funds Portfolio
30% US total stock market	20% US total stock market	25% US total stock market	10% US large cap	50% US total stock market
40% Long-term US bonds	20% US small cap value	25% Ultra short-term T-bills	10% US large cap value	30% International ex-US stocks
15% Intermediate-term US bonds	20% Short-term treasury bonds	25% Long-term treasury bonds	10% US small cap	10% Total bond market
7.5% Commodities	20% Long-term treasury bonds	25% Gold	10% US small cap value	10% TIPS
7.5% Gold	20% Gold		10% Global ex-US large cap	
			40% Total bond market	
			10% Real estate	

[2] The practical meaning of lower volatility (standard deviation) is that an investment will have fewer bad years, and the bad years will not be as bad when they occur.
[3] Example portfolios are from Lazy Portfolio ETF, lazyportfolioetf.com, retrieved September 19, 2024.

Many financial advisors, including Rain Dog, believe that most of a portfolio's risk/return behavior can be explained by its asset allocation. Stock picking is a secondary influence, which reduces performance more often than it improves it.

Strategic Asset Allocation

The word *strategic* in **Strategic Asset Allocation** refers to the fact that the asset allocation is semi-permanent and is designed to persist through market ups and downs. The asset allocation is changed only in response to significant changes in investor goals or priorities or for pre-planned strategic reasons such as providing a glide-path toward retirement.

Strategic Asset Allocation contrasts with Tactical Asset Allocation, which is a form of market timing. Why is it so important to avoid market timing? The short answer is, "Because it doesn't work."

A Morningstar review of data from 2002-2022 found that even though market signals were fairly accurate in forecasting the direction in which the market would move, the strategy of being in the market at all times still outperformed timing the market.[4]

A 2022 review of "momentum funds" (which is one particular type of market timing), found that the risk-adjusted returns of momentum funds were negative.[5]

A Vanguard analysis found that, out of more than 23,000 trading days from 1928-2021, the 30 best trading days accounted for almost half of the market's return, and many of the best trading days occurred very close to the worst trading days.[6]

Burton Malkiel, author of the investment classic *A Random Walk Down Wall Street*, said, "Don't try to time the market! … It's even worse than that you don't know how to do it, it's that when you do it, you're much more likely to be wrong rather than right."[7]

It is impossible for market timers to know which days to jump out of the market and which days to jump back in, and missing even one of the good days can be devastating.

As Peter Lynch, manager of Fidelity's Magellan fund, said, "Far more money has been lost by investors preparing for corrections, or trying to anticipate corrections, than has been lost in corrections themselves."[8]

Rain Dog's investment strategy does not use tactical asset allocation or market timing. Our strategy is based on being **in the market at all times**.

Rain Dog's Asset Classes

Table 2 lists the 47 asset classes that Rain Dog uses to construct portfolios for our clients. Rain Dog evaluates all 47 asset classes for each investor and then typically draws from 10-15 of these asset

---

[4] "Staying Invested Beats Timing the Market—Here's the Proof," Adam Fleck, Morningstar, November 8, 2023.

[5] "A look under the hood of momentum funds," Ayelen Banegas, Carlo Rosa, *Science Direct*, August 2022.

[6] "Strategic asset allocation: Why it usually wins out," Vanguard, June 30, 2022.

[7] Masters in Business Podcast, Interview With Burt Malkiel: Masters in Business (Audio), at approx.. 72:45, May 26, 2016.

[8] CBS News, December 28, 2009. www.cbsnews.com/news/the-smartest-things-ever-said-about-market-timing/. Retrieved September 20, 2024.

classes to construct a personalized portfolio. We consider literally thousands of combinations of asset classes in a mathematically rigorous way to arrive at the portfolio that in our judgment will work best for each specific client.

Table 2

US Stocks - Total Market	Sector – Utilities
US Stocks - Large Cap Blend	US Bonds - Total Market
US Stocks - Large Cap Value	Treasuries - Short Term
US Stocks - Large Cap Growth	Treasuries - Intermediate Term
US Stocks - Mid Cap Blend	Treasuries - 10 year
US Stocks - Mid Cap Value	Treasuries - Long Term
US Stocks - Mid Cap Growth	Treasuries - TIPS
US Stocks - Small Cap Blend	GNMA
US Stocks - Small Cap Value	Corporate Bonds - Total Market
US Stocks - Small Cap Growth	Corporate Bonds - High Yield
International Stocks – Total Market	Corporate Bonds - Long-Term
International Stocks – Europe	Corporate Bonds - Short-Term Investment Grade
International Stocks - Developed ex-US	Global Bonds - USD Hedged
International Stocks - ex-US Small Cap	Global Bonds - Unhedged
International Stocks - Emerging Markets	Tax Exempt Bonds - High Yield
Sector - Communication	Tax Exempt Bonds - Short-Term
Sector - Consumer Discretionary	Tax Exempt Bonds - Intermediate-Term
Sector - Consumer Staples	Tax Exempt Bonds - Long-Term
Sector - Energy	REIT
Sector - Financials	Gold
Sector - Health Care	Commodities
Sector - Industrials	Cash - Money Market and equivalent (M2)
Sector - IT	Cash - Checking account and equivalent (M1)
Sector - Materials	

Why Rain Dog Does Not Use Model Portfolios

Some advisory firms design a set of model portfolios and then assign one of the model portfolios to each client. This cookie cutter approach almost guarantees that the client's investments, considered holistically, will not be on the Efficient Frontier because of the investor's assets that are not directly managed by the firm. For example:

- The investor has significant assets in a 401K plan or other similar plan with limited investment options that cannot be made to match the model portfolio. Even if the model portfolio is on the Efficient Frontier, the combination of 401K holdings and the model portfolio will not be.

- An investor has a low cost basis in a specific holding, and it is not tax-efficient to sell that

investment for sake of matching a model portfolio. The combination of the low-cost-basis holding and the model portfolio will not be on the Efficient Frontier.

- The investor wants to maintain a concentrated stock position for a combination of financial and personal reasons, and that stock position is not part of the model portfolio. The combination of the concentrated stock position and the model portfolio will not be on the Efficient Frontier.

- The investor is not comfortable with one or more of the asset classes that, mathematically, would be the best asset classes to use for that investor, and so the investor's portfolio must be constructed without using those asset classes. The model portfolio that omits those asset classes will not be on the Efficient Frontier.

In each of these examples, Rain Dog's strategy is to consider the assets the investor is required to hold and the assets the investor does not want to hold, and then to design a personalized portfolio that moves the investor onto the Efficient Frontier, or as close to it as possible.

Why are we so adamant about moving investors onto the Efficient Frontier? Any investor who is not on the Efficient Frontier is either receiving lower investment gains than they could be or is risking more downside in bad years than they need to, or both.

Post-Modern Portfolio Theory and Minimizing Downside

Modern Portfolio theory (MPT) measures *risk* using standard deviation, which penalizes downside variability and upside variability equally.

Post-Modern Portfolio Theory (P-MPT) extends MPT with the observation that people are more concerned about variability on the downside than on the upside. Consequently, P-MPT measures risk using measures that penalize only downside variability. Measures include semi-deviation, Sortino ratio, skewness, maximum 1, 2, and 3-year losses, and so on.

Considering downside years is as important mathematically as it is psychologically. Consider the hypothetical sequence of returns shown here:

	Active Portfolio	Index Portfolio
Year 1	+45%	+35%
Year 2	-25%	-15%
Year 3	+35%	+25%
Year 4	+25%	+15%
Year 5	-15%	-5%

The *Active Portfolio* is 10% better than the *Index Portfolio* in the good years and 10% worse in bad years. It has more good years than bad years, and intuitively seems like it should outperform the *Index Portfolio*. However, here is how much $10,000 invested at the beginning of Year 1 would be worth by the end of Year 5 in each portfolio:

	Active Portfolio	Index Portfolio
Growth of $10,000	15,599	15,671
CAGR	9.3%	9.4%

Because of its better bad years, the *Index Portfolio* outperforms the *Active Portfolio* despite the *Active Portfolio* having better performance three years out of five.

Successful investing depends on minimizing downside in bad years as much as maximizing upside in good years. Consequently, Rain Dog considers P-MPT's downside statistics as we design investment portfolios for our clients.

Index Funds

Once an asset allocation has been determined, we believe that index funds (including index ETFs) provide the best way to implement an asset allocation and target the Efficient Frontier.

Index Funds Outperform Actively Managed Funds

The most recent *SPIVA US Scorecard* from S&P Global reported that 75% of actively managed US equity funds underperformed their relevant benchmarks (aka indexes) in 2023.[9] On a risk-adjusted basis, over the 10-year period ending in 2023, 95% of actively managed US equity funds underperformed their benchmarks. This basic pattern has been true for decades.[10]

Why not just pick from the small number of actively managed funds that outperformed the index? Because there is little consistency in which actively managed funds do that. A Vanguard study reviewed actively managed funds that had performed in the top 20% for a 5-year period.[11] More than 80% fell to a lower performance category for the next 5-year period.

Index Funds Provide More Consistency in Investment Style

Our investment strategy uses historical performance data to predict how specific combinations of asset classes will perform over time. We believe that the more closely a fund tracks its asset class, the better we will be able to predict how it will perform in the future. Because index funds are based on indexes, their investment philosophies will stay consistent.

That same analysis does not apply to actively managed funds. Those funds' investment philosophies can vary over time, or a fund's managers can diverge from their stated philosophy. For example, a fund that claims it is outperforming the market in large company stocks might be achieving its outperformance by investing in small company stocks.

A 2024 study by S&P Global reported that fewer than half of all US equity funds maintained the same style over the 10-year period ending in 2023.[12] This **style drift** creates problems for modeling and forecasting the performance of actively managed funds over time, but with index funds the phenomenon is negligible.

Index Funds Limit the Number of Bets Investors Are Forced to Make

When an investor invests in an index fund, an investor is betting on a segment of the US economy or other economies around the world. An investor who invests in an S&P 500 index fund is betting that, over the long run, the largest companies in

---

[9] "SPIVA® U.S. Scorecard, Year-End 2023," S&P Global, 2024.

[10] "The Arithmetic of Active Management," *Financial Analysts Journal*, William F. Sharpe, 1991.

[11] "The case for low-cost index fund investing," Vanguard Research, May 2022.

[12] "SPIVA® U.S. Scorecard, Year-End 2023," S&P Global, 2024.

the US will thrive. An investor who invests in a US small cap value fund is betting that, over the long run, small companies with high book-to-market ratios will thrive. An investor who invests in an emerging markets index fund is betting that business conditions in developing countries will improve over time, overall, and that companies in those countries will thrive.

An investor who invests in an actively managed fund makes a more specific bet. In addition to betting on a segment of the economy, the investor is also betting that the specific fund manager has insight beyond what the rest of the market has. The investor is betting that the fund manager can pick specific stocks that perform better than the market, and that the fund manager can time the purchase and sale of those specific stocks better than the market can. The investor is also betting that the fund manager will retain that edge over time.

We believe that actively managed funds expose investors to stock-picking risk and market-timing risk and that neither is beneficial. This issue will be the same regardless of whether the stocks are actively picked by a professional fund manager or by an individual financial advisor.

Rain Dog's Specific Investments

Rain Dog's investment approach varies across the **Safety | Stability | Superabundance** categories of our wealth allocation framework.

Safety Investments

Major portions of the financial instruments in the Safety category are client-controlled. This typically includes the client's primary residence, mortgage, insurance, and cash for short-term needs.

Rain Dog will manage investments in this category including CDs, short-term treasuries, short-term bonds, and TIPS. Rain Dog may recommend index funds for these securities or we may recommend individual CDs, bonds, and so on, per the needs of each individual client.

Stability Investments

Most of the assets managed by Rain Dog are usually in the Stability category, including stocks and mid- to long-term bonds. We select specific investments based first on their ability to mirror the returns of selected asset classes and second to minimize expenses. This most often leads to selecting index funds and ETFs from Vanguard, Schwab, SPDR (State Street), and iShares (Blackrock).

Superabundance Investments

As in the Safety category, clients often control major assets in the Superabundance category. Such assets are considered in Rain Dog's plans but are not directly managed by Rain Dog. Assets in this category can include business startups, family business ownership, concentrated stock positions, investment real estate, and private equity.

For investments in this category that are managed by Rain Dog, we most often use index funds in high risk/high reward asset classes or we overweight allocations in sector funds. In some cases, in consultation with our client, we may design a high risk/high reward custom portfolio from individual stocks—with the understanding that surpassing index fund performance over an extended period of time has historically been elusive.

Forecasting and Investment Planning

Rain Dog uses a forecasting approach to support investment planning for our clients, which we call the **Investment Forecast Model** (IFM).

The main purpose of the IFM is to provide a quantitatively rigorous basis for determining personally optimal decisions about savings rate, investment return, investment risk, investment glide paths, federal tax strategy, timing of retirement, and spending levels both near-term and throughout retirement.

The IFM provides for defining an investor-specific *utility function* (aka score) that is tuned to each investor's circumstances and goals and that supports optimal planning for each individual investor.

The IFM includes consideration of several elements that we believe are necessary to fully support client recommendations:

- Capital markets
- Federal taxes
- Investment strategies
- Investor behavior, and
- Investor preferences

As shown in Figure 5, each of these factors is addressed by an element of the IFM. Each of these factors is described briefly in this section and in more detail in our "Rain Dog's Investment Forecast Methodology" white paper.[13]

The Rain Dog **Capital Markets Model (CMM)** simulates the behavior of investments in different asset classes over time, including stocks, bonds,

personal real estate, cash, inflation, and many other asset classes.

Rain Dog's **Federal Tax Model (FTM)** accounts for the effect that federal taxes have on investment performance and after-tax income. It applies federal tax rules to investment decisions, and it includes the ability to account for rising or falling tax rates over time.

Figure 5 *Rain Dog's Investment Forecast Model (IFM)*

Rain Dog's **Investor Behavior Component** models the effects of investor decisions including social security start ages and savings rate before retirement. It can model investors making rational changes in behavior in response to market conditions, such as spending more when the market is up and spending less when the market is down. It can account for different withdrawal strategies.

Rain Dog's **Investor Preferences Component** includes investor's desires for spending at different

---

[13] White papers are available at raindogllc.com/investment-research.

levels. It provides for capturing nuanced investor goals with a utility function that supports computational optimization of investor goals.

Rain Dog's **Investment Strategies Component** draws from both the CMM and the FTM and includes the ability to model the consequences of portfolio conversion strategies, withdrawal strategies, buffer and cash-management strategies, Roth conversion strategies, rebalancing frequencies, personalized investment glide paths, and other investment strategies.

Finally, Rain Dog's **Goal Optimization Model** takes in input about Investor Preferences and can optimize for the individual investor's utility function computationally.

Role of Past Performance

All advisors base their recommendations on past performance to some degree. Any time an advisor recommends how much to allocate to stocks vs. bonds or states that stocks usually outperform bonds over long periods of time, that advisor is relying on past performance.

However, not all past performance is equal. Past performance varies in numerous ways:

- Length of time period covered.

- Applicability of time period covered (e.g., most recent 30 year period vs. period from 1930-1959)

- Nature of the asset (individual stock vs. actively managed mutual fund vs. passively managed index fund)

- Stability or instability of the style of the fund over the time period (e.g., fund that drifts from large cap focus to midcap focus)

- Fidelity of historical data (e.g., true historical data vs. "synthesized" historical data)

Recent, short-term performance does not guarantee future performance, and we believe that it has little predictive value.

Past performance over longer time periods does not guarantee future performance either. However, despite limitations, we believe that multi-decade performance of different asset class returns and multi-decade performance of correlations among different asset classes is the best indicator we have of future performance.

Rain Dog's Use of Past Performance

For the kind of forecasting Rain Dog uses, two aspects of past performance matter: rates of return and correlations among asset classes.

Rates of Return. Future rates of return that are higher or lower than the rates of return used to produce investment forecasts can cause problems either way. If the forecast rates of return are higher than actuals, in hindsight, the investor might have been too aggressive. If the forecast rates of return are lower than actuals, in hindsight, the investor might have been too cautious.

Rain Dog mitigates the risk associated with rates of return by using data that encompasses nine full bull/bear market cycles. We believe that provides us with forecast rates of return that are as unbiased as possible and minimizes the risk of either over-forecasting or under-forecasting.

In addition, while absolute returns certainly matter, investors' decision making is more a function of the relative rates of returns among different asset classes than of their absolute returns. For example,

suppose stocks are forecast to return 10% over a 10 year period and bonds are forecast to return 6%. An investor with a 20-year investment horizon decides to invest mostly in stocks. If, at the end of 10 years, stocks have returned 8% and bonds have returned 4%, the investor will still be glad to have invested mostly in stocks even though the returns were lower than forecast.

No one has a crystal ball that perfectly forecasts future rates of return. However, Rain Dog believes that returns of different asset classes, *relative to each other*, will be fairly consistent over extended periods.

Correlations Among Asset Classes. Use of correlations among asset classes is central to Modern Portfolio Theory, and correlations among asset classes have not been constant over time. Consequently, there is a risk that the historical correlations used to optimize a portfolio today will not remain the same over the future investment period, and the portfolio will not perform as expected.

Rain Dog mitigates this risk by using weighted historical correlations. These correlations minimize the differences between the correlations used for forecasting and the observed correlations for a set of historical time periods. We believe this approach reduces the risk of significant differences between the correlations we use and the correlations that will occur during future time periods.

Rebalancing

Rebalancing refers to bringing an asset allocation back to its targets. This is needed because portfolios tend to "drift" from their target allocations over time. For example, a portfolio initially comprised of 60% stocks, 40% bonds could drift to a ratio of 70% stocks, 30% bonds if stocks have higher returns than bonds over that period.

One of the core benefits of rebalancing is that it results in the investor selling assets that have performed well and buying assets that have performed less well. Rebalancing amounts to a disciplined approach to "Buy low, sell high."

This factor is more than negligible in investing. Multiple studies have found that investors tend to realize investment returns approximately 1% lower than the returns of the funds they invest in—meaning if the fund returned 8% per year, the investor realizes 7% per year.[14] This is a result of investors' tendency to sell when concerned by a falling market and then buy back in after the market has already risen, which amounts to an unintentional strategy of "Sell low, buy high." Rebalancing is a valuable counterbalance to that.

Tax Efficiency

Rain Dog achieves tax efficiency in several ways. Our strategies are forward-looking, anywhere from the current year to many years in the future.

---

[14] "Mind the Gap 2024," Jeffrey Ptak, Morningstar, August 15, 2024 (investors' gains were 1.1% lower than the funds they were invested in). "Putting a value on your value: Quantifying Vanguard Advisor's Alpha." Vanguard, July 2022 (investor's gains averaged 0.8% less than funds they were invested in).

Personalized Plans for Tax-Efficient Savings and Income

Both in preparing for retirement and withdrawing funds during retirement, there is an interplay between investment strategy and tax-management strategy that is most effective when personalized for each investor.

Use of Low Turnover Index Funds

For investments that are in taxable accounts, indexing is tax efficient because of low portfolio turnover.

The typical actively managed portfolio turns over (sells) 50-100% of its holdings each year. A commonly cited average turnover figure for active funds is 63% with averages ranging from 70-91% depending on the fund.[15] That means investors in actively managed funds end up paying short-term capital gains or long-term capital gains on significant portions of their investments each year.

With index funds, the portfolio changes only when the index itself changes—for example, when a new stock is added to the S&P 500 or removed. Indexes change infrequently, and the changes affect only small portions of a fund, so index funds have low turnover. Vanguard's S&P 500 index fund has a turnover ratio of 2.1%, and the equity funds that Rain Dog uses average about 10%.

Index funds are not automatically tax-deferred investments *per se*, but, because only small portions of the fund are turned over each year, only small portions of the gains are taxable. Most gains in index funds are reinvested and grow tax free.

Russell Investments summarized the tax drag of actively managed funds like this: the average tax drag on large cap funds was 1.77%, on small cap funds was 1.78%, and on fixed income funds was 1.29%.[16]

Table 3 shows an example of the difference in after-tax returns for an investor who is in the 24% income tax bracket for short-term capital gains and 18.8% tax bracket for long-term capital gains plus NIIT. For realized capital gains arising from turnover in the actively managed fund, this example assumes 60% is long-term capital gains and 40% are short term. For realized gains arising from turnover in the index fund, 100% are assumed to be long-term.

The result is a 1.0% difference in the annual rate of return after taxes. An annual after-tax difference of 1.00% might not seem like much, but it compounds and adds up over time.

---

[15] "Turnover ratios and fund quality," Investopedia, retrieved 1/24/2024; "US Mutual Fund Turnover and Returns, 1991-2020," Gene Hochachka, SSRN, December 10, 2021.

[16] "What is the tax-cost ratio and why does it matter?" Ryan Pogodzinski, November 22, 2022, *Russell Investments Blog*, retrieved 1/24/2024.

Table 3[17]

	Actively Managed Fund	Index Fund
Investment amount	1,000,000	1,000,000
Rate of return	10.0%	10.0%
Top-line gain	100,000	100,000
Portfolio Turnover	63.0%	10.0%
Percent long term gains	60.0%	100.0%
Short-term capital gains tax rate	24.0%	24.0%
Long-term capital gains tax rate	18.8%	18.8%
Capital gains tax	11,844	1,880
Net gain	88,156	98,120
After-tax rate of return	8.82%	9.81%
Difference per year in after-tax return		**1.00%**
Investment value after 10 years	2,324,814	2,549,752
Difference after 10 years		**224,938**

The buying and selling that creates the turnover in actively managed funds also creates expense. John C. Bogle, founder of Vanguard, states that a fund's costs associated with turnover are approximately 0.5% of the turnover rate.[18] In the example in Table 3, that implies an additional expense of 0.32% in the actively managed fund on top of the differences already discussed.

Tax Management and Location of Specific Assets

Rain Dog seeks to tax-optimize investors' portfolios by placing each asset in the most tax-efficient location for that investor. This is an area where personalization matters. The best location for any particular asset will depend on the investor's tax bracket and the composition of the investor's portfolio overall.

---

[17] The results in this table are based on averages. The exact details will vary depending on the specific actively managed fund and the specific index fund and the tax circumstances of the specific investor. The differences would be more significant for investors in higher tax brackets. The differences would not necessarily be less significant for investors in lower tax brackets because for a certain income range the capital gains tax rate is 0%.

[18] John C. Bogle, *The Little Book of Common Sense Investing*, Wiley, 2017.

How AI Will Affect Investing

One theory about why actively managed funds do not outperform index funds is based on the Efficient Market Hypothesis (EMH). The EMH states that information that affects the price of a stock is already known to the market and has been factored into the price. If all information is known to the market and factored into the price of each stock, there is no means by which the manager of an active fund can pick stocks that will outperform the market. Thus, according to the EMH, it is not possible for an active fund manager to outperform an index fund except by chance.

The EMH is a theory, not a fact, and many advisors disagree with it, including, presumably, the managers of actively managed funds.

The EMH has three forms: a weak form, semi-strong form, and strong form.[19] The stronger the form that is true, the lower the chance that active management can add value beyond indexing.

Rain Dog believes that one consequence of applying AI to financial markets will be to increase the likelihood that stronger forms of the EMH become true over time. As automated AI bots are increasingly applied to the market, the results of technical analysis and fundamental analysis will increasingly be factored into stock prices. As AI becomes more sophisticated, it might also be able to infer non-publicly-available information and factor that into stock prices, too.

Overall, we believe that the rise of AI will reduce the already-low chance that an active manager will be able to outperform passive index funds. That provides yet another reason to favor index funds.

Investment Practices Rain Dog Does Not Use

Some advisors use practices that Rain Dog does not use.

Churning. A non-fiduciary advisor who receives commissions on trades may make frequent changes in a portfolio ("churning") even when it is not in the client's best interests. The client pays transaction costs for transactions that are not needed. There can be additional tax consequences.

Market timing. Rain Dog's reasons for avoiding market timing were described above.

Proprietary investment instruments. Some firms put their clients into investments that make it difficult for the client to change firms. The client may have to sell the investment when they leave the firm (incurring taxes) or may have to pay a fee to withdraw from the investment early.

Commercial model portfolios. It has become popular for advisors to use commercially available model portfolios to guide their clients' investments. In addition to the fact that cookie cutter solutions may fail to put investors onto the Efficient Frontier, the model portfolios can charge

---

[19] The *weak form* of the EMH states that all past prices are factored into current prices; therefore, technical analysis cannot be used to select stocks that will perform better than the market. The *semi-strong form* of the EMH states that all publicly available information has been considered and has been factored into stock prices; therefore, fundamental analysis also cannot be used to pick stocks that will outperform the market. The *strong form* of the EMH states that all public and private information has been factored into the stock's price; therefore, it is not possible to beat the market by stock picking other than through random chance.

anywhere from 0.1% to 1.0% in addition to the advisor's fees.

Third-party fund managers. Some firms outsource their fund management to outside fund managers. Those outside managers can charge additional fees up to 2% on top of the advisor's fee.

Direct indexing. Nearly all of the benefits cited for "direct indexing" require departing from the index, which makes direct indexing at least partly an active strategy. There are claims that direct indexing reduces costs, but no single investment account can match the low cost of index funds or the sophistication of trading required to track an index cost-effectively.

Conclusions

Rain Dog's goal is to ensure that our clients have wealth allocations that are appropriate considering their financial circumstances holistically.

We employ strategic asset allocation that optimizes risk and return with a goal of ensuring each client is on the Efficient Frontier—even including assets that we do not directly manage.

We further optimize each client's investments for tax efficiency.

Please contact us if you would like to learn more about how we can create a fully customized investment strategy for you.