Scientific Testing and Independent Analysis: The Foundation of Sound Fiduciary Investment Decisions

February 13, 2025

The role of a fiduciary is not to follow trends, chase market sentiment, or rely on consensus opinions, but to make independent, data-driven investment decisions that prioritize the safety and long-term prosperity of their clients. The best fiduciaries recognize that rigorous statistical analysis, historical valuation studies, and fundamental financial metrics—not popular narratives—must form the foundation of every investment decision.

Too often, financial professionals fall into the trap of groupthink, relying on prevailing market enthusiasm rather than independent research and rigorous testing. This approach has led to every financial bubble in history, from the South Sea Bubble to the Dot-Com Crash, the Housing Crisis, and today's most speculative market behaviors.

Instead of seeking validation from market consensus, fiduciaries must commit to scientific testing of their investment hypotheses, relying on historical valuation data to measure risks and expected returns objectively. One of the most powerful analytical tool for this purpose is Net Present Value (NPV)—a rational, evidence-based framework for evaluating whether an investment is fundamentally justified.

By embracing data science, probability-based analysis, and disciplined risk management, fiduciaries can elevate their research process and make more informed, responsible decisions that withstand market cycles and economic uncertainty.

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4 Essential Questions Fiduciaries Must Ask Rooted in Data Science and Historical Evidence

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1. What is this business actually worth?

The first step in any sound investment decision is to determine the intrinsic value of a business based on measurable financial data, not the collective beliefs of the market. A stock's price may reflect enthusiasm, momentum, or speculation—but none of these factors equate to fundamental worth.

Far too often, investment professionals substitute narrative-based reasoning for data-driven analysis. The price of a stock rising does not mean the business itself is becoming more valuable. Similarly, a stock price decline does not necessarily indicate a deterioration in business fundamentals.

To analyze whether a company's current valuation aligns with long-term probabilities of meeting threshold minimum returns, and to measure if projected future growth supports a higher stock price while justifying the risk, we can follow a structured quantitative approach.

Step 1: Historical Data Analysis of Similar Businesses

1. **Identify Comparable Companies**

- Select companies with similar industry characteristics, revenue growth rates, profitability margins, and valuation metrics (P/S, P/E, EV/EBITDA, etc.).
- Ensure that historical comparisons cover at least a 10 to 20-year period, allowing for examination of business cycle effects.

2. **Analyze Historical Market Valuations vs. Future Performance**
   - Examine the relationship between P/S and P/E ratios at peak growth stages and their subsequent changes as revenue and earnings growth slowed.
   - Identify valuation ranges where stocks underperformed or outperformed expectations.
3. **Assess Survivorship Bias and Selection Effects**
   - Determine the failure rate of high-growth stocks with similar initial valuations.
   - Compare successful vs. failed businesses and what differentiated them.

Step 2: Measuring and Calculating Future Revenue & Earnings Growth Impact

4. **Build Probabilistic Revenue and Earnings Models**
   - Develop a range of revenue and earnings forecasts incorporating conservative, base, and optimistic scenarios.
   - Factor in historical deceleration patterns for similar companies after high-growth periods.
5. **Project Future Valuations & Implied Stock Prices**
   - Calculate implied future stock prices based on probable P/S and P/E ratios, adjusting for normalized profit margins.
   - Compare these projections to current stock prices and determine if expected returns meet required minimum returns.
6. **Evaluate Risk-Reward Tradeoffs**
   - Use sensitivity analysis to test the impact of forecast errors (e.g., revenue slowing faster than expected, margin compression).
   - Determine whether the upside potential sufficiently offsets the downside risks of overpaying at current valuations.

Equity Risk Sciences employs proprietary, data-driven frameworks that leverage 35 years of historical data to analyze and quantify risk-adjusted returns on stocks - *with unparalleled precision*.

Occam's Razor—the principle that the simplest, most logical explanation is usually the correct one—dictates that **if a stock's valuation is only justifiable under extreme, high-growth assumptions, then it is likely overpriced**.

A stock's valuation must be **tested, not assumed**, and supported by objective financial data.

2. What is the probability of success versus failure?

Every company operates in a competitive, dynamic environment. While strong growth can be a positive indicator, understanding the statistical probability of a company achieving its projected success is as important as assessing its upside potential.

Many investors make decisions based on hypothetical scenarios rather than historical evidence. They assume that because a company has been successful in recent years, it will continue its trajectory indefinitely. This is not a prudent assumption.

How to Apply Scientific Testing to Risk Analysis:

- Examine historical success and failure rates of companies with similar financial profiles, revenue trajectories, and debt structures.
- Assess how the company has performed under different economic conditions, including recessions and market downturns.
- Reject unnecessary complexity, such as Monte Carlo simulations, which can obscure clear data with layers of hypothetical modeling. Instead, focus on compiling historical evidence to support or negate the probability of a favorable outcome.

The best fiduciaries are students of history, recognizing patterns in financial markets rather than relying on theoretical projections detached from reality.

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3. What is my risk-adjusted expected return?

The core responsibility of a fiduciary is not simply to seek returns but to balance return against risk. Many investment professionals fixate on potential gains without fully considering the probability-weighted expected return after adjusting for risk.

A stock with high return potential but significant downside volatility may not offer the best risk-adjusted opportunity.

The correct question is not *"How much can I make?"* but rather:

- ✓ What is my expected return per unit of risk?
- ✓ What is my probability of achieving various return levels?
- ✓ What would this investment look like in a bear market?

How to Apply Data Science to Expected Returns:

- Use historical financial data to assess the likelihood that projected returns will be realized.
- Conduct a trend-adjusted growth rate analysis to determine whether a company's past revenue and profit trends support its current valuation.
- Evaluate risk-adjusted return using NPV analysis, ensuring that every investment is justified by fundamental financial reality.

Investment success is not determined by finding the next big winner, but by ensuring that every investment is supported by rational, evidence-based decision-making.

4. What are three less risky alternatives?

A disciplined fiduciary always considers multiple investment options before committing capital. The best investment decisions come not from choosing the most promising stock in isolation, but from comparing it to safer, more statistically sound alternatives.

How to Apply Comparative Data Science Analysis:

- Compare valuation metrics across multiple companies in the same industry, ensuring that assumptions are not overly optimistic.
- Identify businesses with stronger balance sheets, better profitability, and lower risk-adjusted valuations.
- Consider whether current market conditions warrant increasing exposure to cash, bonds, or alternative asset classes.

By always asking “what are three safer alternatives?”, fiduciaries elevate their decision-making from speculation to rigorous, rational selection.

Groupthink: The Enemy of Innovation and Leadership

Throughout history, **groupthink has led to disastrous outcomes**. The idea that consensus opinion should dictate decision-making has been responsible for **some of the greatest errors in human history**, from **economic bubbles** to **scientific persecution**.

One of the most striking examples is the story of **Ignaz Semmelweis**, the 19th-century physician who discovered that handwashing dramatically reduced patient mortality. Despite overwhelming data, the medical community rejected his findings because they contradicted established beliefs. As a result, countless lives were lost due to a refusal to accept **scientific evidence over consensus opinion**.

The same failure of independent thought has caused **financial bubbles and collapses** throughout history. The South Sea Bubble, the 1929 Crash, the Dot-Com Collapse, and the 2008 Financial Crisis all had one thing in common: **too many investors followed prevailing sentiment rather than testing their assumptions with rigorous analysis.**

Fiduciaries **must not** substitute **collective beliefs for independent, data-driven judgment**. Their duty is not to follow the crowd but to **apply scientific principles to investment analysis, ensuring that every decision is made with objectivity and rigor**.

Conclusion: Elevating Fiduciary Decision-Making with Scientific Testing

The future of investment research belongs to those who embrace:

- ✓ **Historical valuation studies, not speculative forecasts.**
- ✓ **Probability-based analysis, not collective sentiment.**
- ✓ **Disciplined risk management, not market hype.**

The most effective fiduciaries recognize that investment analysis is not about predicting trends but about testing assumptions with data science. The right questions to ask are:

- ✔ What is this business truly worth based on fundamental analysis?
- ✔ What is the probability of success versus failure based on historical evidence?
- ✔ What is my risk-adjusted expected return using NPV analysis?
- ✔ What are three less risky alternatives that offer similar or better returns?

By prioritizing scientific testing over speculation, fiduciaries protect their clients, elevate their research process, and set the gold standard for responsible investing.