

Investing: Theory vs. Practice



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Is its index weight a valid reason to own a stock?

Candid layman: Of course not. The size of a company has nothing to do with how valuable it is as an investment.

Professional investor: Yes, of course. My success is determined by how well I do relative to the index. So I start from there and take 'bets' around index weights. If I am successful, I will do better than the index and most other investors.

'Educated' layman: All right then, if you say so.

Stubborn layman: No thanks. I am paying you to pick the best stocks with all my money, not to fiddle around the index.

Piqued professional: I beg your pardon, I am doing this for you. Just listen.

Cheeky layman: Nope. Next!

Shades of index-based investing

- Explicitly passive: Index weights
- Crypto-passive: Index weights plus noise
- Benchmark-driven: Measured bets around index weights. Tracking error 'risk'.
- Benchmark-aware: Larger bets around index weights

- Benchmark-indifferent: Pick cheap stocks. If you are any good at it, they will do better than the good, the bad and the ugly included in the index. If you are no good, do not pretend you are.

The 'fundamental truth' of index investing

“Before intermediation costs are deducted, the returns earned by equity investors as a group precisely equal the returns of the stock market itself. After costs, therefore, investors earn lower-than-market returns.”

<http://johncbogle.com/wordpress/wp-content/uploads/2017/04/Morningstar-Essay-4-27-17.pdf>

In what sense is 'Bogle's truth' true?

- Tautology: Aggregate return = market return. The average investor logically underperforms after costs.
- Empirical fact: Most US mutual funds (around 20% of the aggregate) underperform the index after fees.
Jensen (1968), S&P Index Versus Active (SPIVA) reports.
Growth vs. Value, Large Caps vs. Small Caps, Factor tilts.
- EMT: Outperformance is temporary noise. Consistent outperformance is impossible.
Apparent skill vs. actual luck. Coin-flipping story.
- Skill is rare and impossible to identify ex-ante.

The cognitive dissonance roots of the EMT

Beating the market is difficult. If it weren't difficult, everybody could do it, hence nobody would.

Therefore, only a minority of 'smart' investors will succeed in achieving consistent outperformance.

Academics' cognitive dissonance:

I am smart and I know finance.

Therefore, I should be able to forecast returns and beat the market.

But I can't.

Therefore, it must be impossible.

Bogle, The Road Less Travelled. Fama, My Life in Finance.

Paul Samuelson knew better

Fluctuate (1965) <https://www.ifa.com/media/images/pdf%20files/samuelson-proof.pdf>

Vibrate (1973) <http://e-m-h.org/Samuelson1973b.pdf>

“In summary, the present study shows (a) there is no incompatibility in principle between the so-called random-walk model and the fundamentalists’ model, and (b) there is no incompatibility in principle between behaviour of stocks’ prices that behave like random walk at the same time that there exists subsets of investors who can do systematically better than the average investors.” (Vibrate, last sentence)

Challenge to Judgement (1974) <https://jpm.ijournals.com/content/1/1/17>

“What is at issue is not whether, as a matter of logic or brute fact, *there could exist a subset of the decision makers in the market capable of doing better than the averages on a repeatable, sustainable basis*. There is nothing in the mathematics of random walks or Brownian movements that (a) *proves* this to be impossible, or (b) *postulates* that it is in fact impossible.” (p. 17)

An empirical, not a logical issue

“Many academic economists fall implicitly into confusion on this point. They think that the truth of the efficient market or random walk (or, more precisely, fair-martingale) hypothesis is established by logical tautology or by the same empirical certainty as the proposition that nickels sell for less than dimes.

The nearest thing to a deductive proof of a theorem suggestive of the fair-game hypothesis is that provided in my two articles on why properly anticipated speculative prices do vibrate randomly. But of course, the weasel words “properly anticipated” provide the gasoline that drives the tautology to its conclusion.” (Challenge, p. 19)

Bogle: “Dr. Samuelson’s essay ... struck me like a bolt of lightning” (The Road Less Travelled, p. 6). NOT!

The joint hypothesis problem

“Market efficiency can only be tested in the context of an asset pricing model that specifies equilibrium expected returns. [...] As a result, market efficiency per se is not testable. [...] Almost all asset pricing models assume asset markets are efficient, so tests of these models are joint tests of the models and market efficiency. Asset pricing and market efficiency are forever joined at the hip.” (Fama, My Life in Finance, p. 5-6).

Risk adjustments to fund returns are based on definitions of risk – volatility (standard deviation), CAPM, Beta, Sharpe Ratio etc. – that *presume* market efficiency.

Outperformance is explained away as being caused by ‘higher risk’, with risk defined and measured according to some version of the EMT.

James Tobin: This is a game where you win when you lose.

Warren Buffett's 1984 revolution – Superinvestors

If (a) you had taken 225 million orangutans distributed roughly as the U.S. population is; if (b) 215 winners were left after 20 days; and if (c) you found that 40 came from a particular zoo in Omaha, you would be pretty sure you were on to something. So you would probably go out and ask the zookeeper about what he's feeding them, whether they had special exercises, what books they read, and who knows what else. That is, if you found any really extraordinary concentrations of success, you might want to see if you could identify concentrations of unusual characteristics that might be causal factors.

(The Superinvestors of Graham-and-Doddsville (1984), p. 6)

<https://www8.gsb.columbia.edu/sites/valueinvesting/files/files/Buffett1984.pdf>

Warren Buffett's 2005 involution – Buffett's bet

	A	B	C	D	E	S&P
2008	-16.5%	-22.3%	-21.3%	-29.3%	-30.1%	-37.0%
2009	11.3%	14.5%	21.4%	16.5%	16.8%	26.6%
2010	5.9%	6.8%	13.3%	4.9%	11.9%	15.1%
2011	-6.3%	-1.3%	5.9%	-6.3%	-2.8%	2.1%
2012	3.4%	9.6%	5.7%	6.2%	9.1%	16.0%
2013	10.5%	15.2%	8.8%	14.2%	14.4%	32.3%
2014	4.7%	4.0%	18.9%	0.7%	-2.1%	13.6%
2015	1.6%	2.5%	5.4%	1.4%	-5.0%	1.4%
2016	-2.9%	1.7%	-1.4%	2.5%	4.4%	11.9%
Total return	8.8%	28.4%	62.9%	2.8%	7.6%	85.4%
Yearly avg return	0.9%	2.8%	5.6%	0.3%	0.8%	7.1%

Did Buffett's bet prove Bogle's truth?

No. Far from being average before fees and below average after fees, Protégé Partners' returns were just abysmal.

Their 'abysmality' had nothing to do with fees. They would have been horrible even if they had been for free.

The promise of most hedge funds and funds of hedge funds is not to outperform the market, but to deliver positive absolute returns in all market conditions. Most of them fail to deliver consistently.

Buffett rightly questioned the rationality of investing in hedge funds rather than in long-only funds. But he did not prove Bogle's truth.

Interesting questions

- Why does Buffett regard picking good stocks possible and a worthy pursuit, but picking good funds impossible and a waste of time?
- Why does he recommend index investing not only to the general public but to all investors, including Berkshire Hathaway's shareholders and the trustees of his family estate? (2013 shareholders letter)
- Why didn't successful long-only managers – including Ted Weschler and Todd Combs! – take up Buffett's bet?

Passive investing: individual vs. collective rationality

Passive investing makes sense from an individual perspective:

- Most active managers underperform low cost index funds.
- Consistent outperformers after fees are rare and difficult to identify ex-ante.
- Past outperformance has low persistence and is weakly correlated with future performance.

But from a collective perspective active investing is the right thing to do:

- It is an investor's fiduciary responsibility to look for the best investment opportunities. Index tracking is not investing.
- Passive funds are free riders. They contribute nothing to price discovery and to the allocation of resources to their best use.
- Asset allocators question the ability of active managers to select the best stocks, but not their own ability to select the best 'asset classes'.
- Owning a stock just because it is large and part of an index is ethically absurd.

Academics and practitioners – A sea of miscommunication

“Without being there one can’t imagine what finance was like before formal asset pricing models. For example, at Chicago and elsewhere, investment courses were about security analysis: how to pick undervalued stocks.” (Fama, My Life in Finance, p. 14)

“Our Graham & Dodd investors, needless to say, do not discuss beta, the capital asset pricing model or covariance in returns among securities. These are not subjects of any interest to them. In fact, most of them would have difficulty defining those terms. The investors simply focus on two variables: price and value.” (Buffett, Superinvestors, p. 7).

- What is an expected return?
- What is risk?
- What is the relationship between the two?

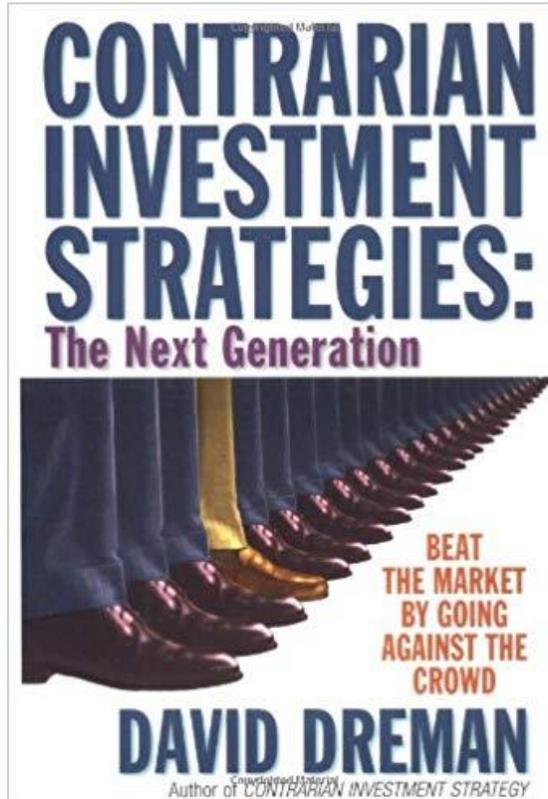
Practitioners' schizophrenia

By definition, active investors do not believe that markets are efficient. Still, most of them keep using concepts and tools that only make sense if the EMT is true.

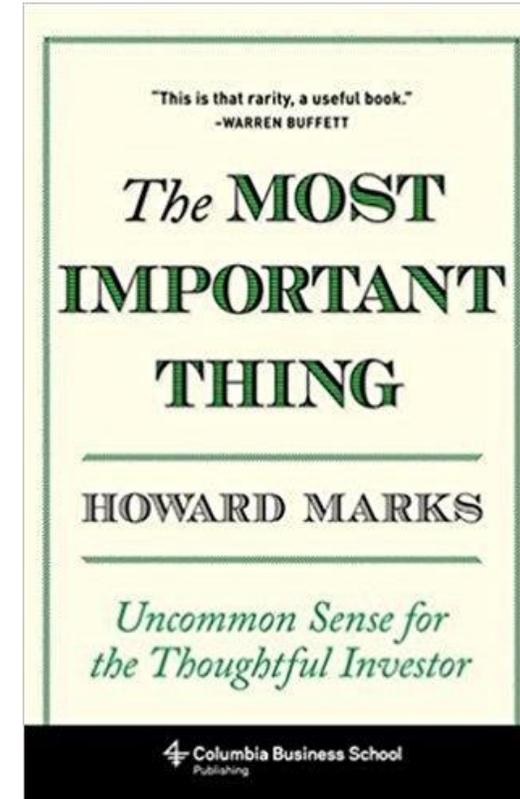
“The attraction of the CAPM is that it offers powerful and intuitively pleasing predictions about how to measure risk and the relation between expected return and risk. Unfortunately, the empirical record of the model is poor – poor enough to invalidate the way it is used in applications”. ([Fama and French, JEP 2004](#))

“If, for any reason, a person teaches that Beta and CAPM explain something and he knows that they do not explain anything, such a person is lying. To lie is not ethical. If the person “believes” that Beta and CAPM explain something, his “belief” is due to ignorance (he has not studied enough, he has not done enough calculations, he just repeats what he heard to others...). For a professor, it is not ethical to teach about a subject that he does not know enough about.” ([Pablo Fernandez, 2017](#))

Unlearning



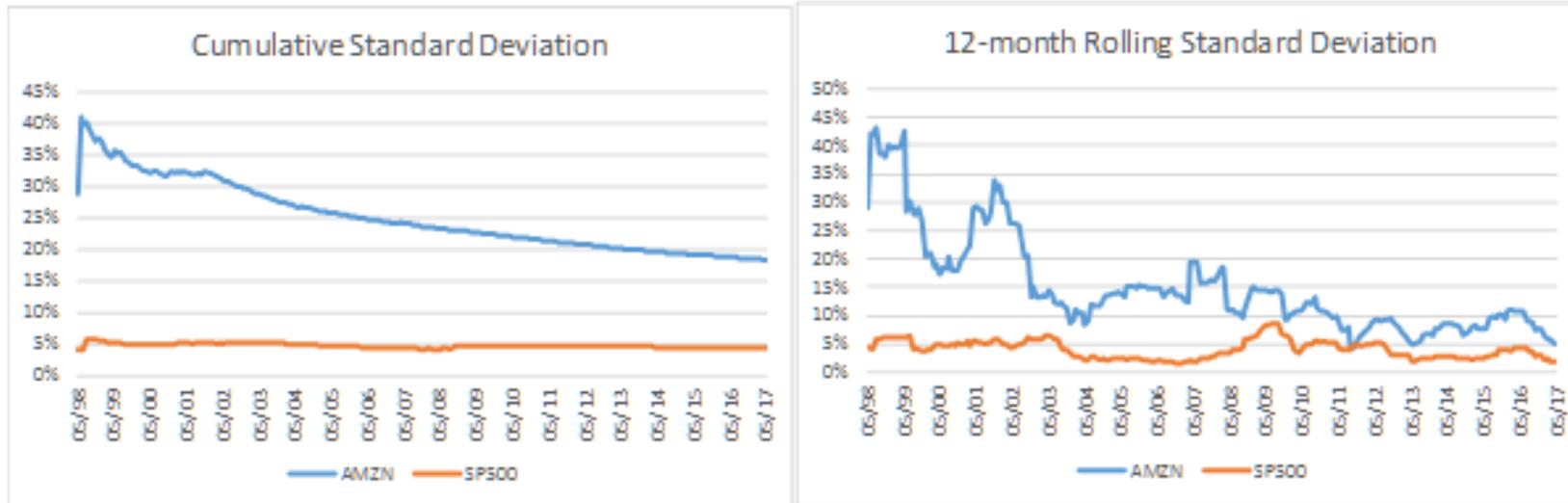
Chapter 14: What is risk?



Chapters 5-7: Understanding, recognizing and controlling Risk

Risk vs. standard deviation

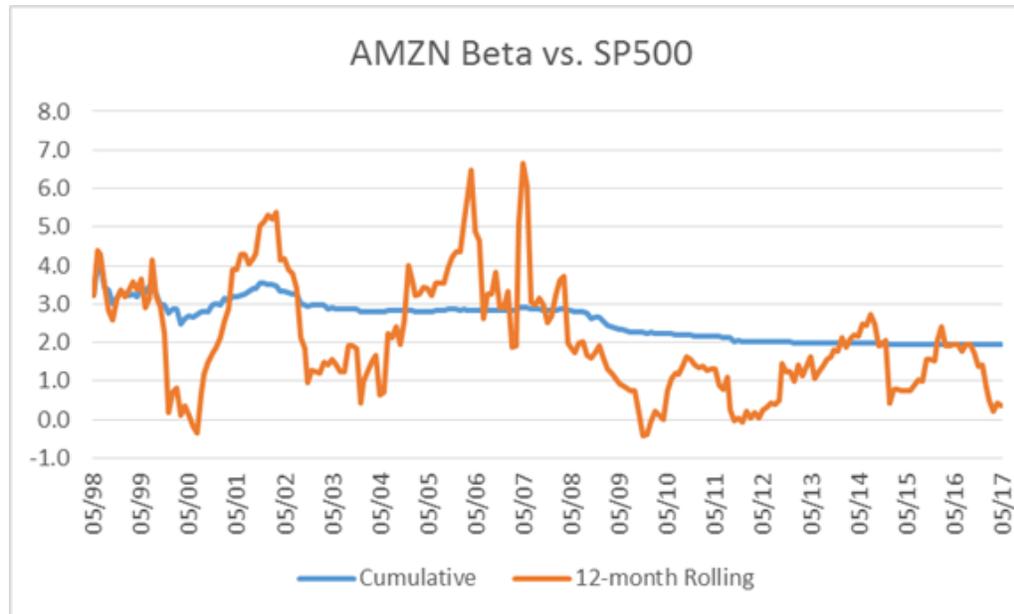
- Amazon's cumulative standard deviation is four times that of the S&P500 index. Its 12-month rolling standard deviation is three times that of the index.



- What does this tell us about the probability that, if we buy Amazon today, we will incur a big loss in the future?
- Is Amazon three to four times as 'risky' as the market?
- The standard deviation of returns is a backward-looking, time-dependent and virtually meaningless number, which, contrary to the precision it pretends to convey, has only the vaguest relation to anything resembling what it purports to measure.

Risk vs. Beta

- Amazon's cumulative beta vs. the S&P500 index has always been high, but it has halved over time from 4 to 2. Its 12-month rolling beta has been all over the place, including negative territory!



- According to the CAPM, Amazon's beta is supposed to be a constant or at least stable coefficient, measuring the stock's sensitivity to market movements. But in reality it is nothing of the kind: like the standard deviation of returns, beta is just an erratic, retrospective and ultimately insignificant number.

Risk vs. Expected return

- Volatility implies risk. But reducing risk to volatility is wrong, ill-conceived and *in itself* risky, as it inspires a key CAPM misconception: the positive relationship between risk and expected return.
- ‘Be brave, don’t worry about the rollercoaster – you’ll be fine in the end and you’ll get a premium. The more risk you are willing to bear, the higher the risk premium you will earn.’ This is a misguided line of reasoning, which keeps producing untold damage.
- Practitioners’ common sense view is correct: once risk is properly defined as the probability of a substantial and permanent loss of capital, the more risk there is the *lower* – not the higher – is the probability-weighted expected return. Actual risk earns no premium.
- This requires unlearning – often, alas, the hard way.

The intellectual dominance of the EMT

- Volatility increases investment risk only insofar as it manages to undermine our confidence.
- While volatility may well contribute to raising investment risk, it is not *the same as* investment risk. It is only when – rightly or wrongly – conviction is overwhelmed by doubt and poise surrenders to anxiety that investment risk bears its bitter fruit.
- Every investment is made in the expectation of making a return, *together with* a more or less conscious and explicit awareness that it may turn out to be a flop.
- Every investor knows this, in practice. So why do many of them ignore it in theory and keep using financial models built on the axiom that volatility equals investment risk?
- The reason is the intellectual dominance of the Efficient Market Theory.

The hyperuranian realm of the EMT

- The market price is right. Prices are always where they should be. There is always a combination of expected returns and discount rates that justifies any market price.
- Prices incorporate all available information about expected profits, returns and discount rates. Prices are never too high or too low, except with hindsight. An investor who buys a stock at 100 because he thinks it is worth 150 is fooling himself. If the market is pricing the stock at 100, then that's what it's worth.
- The price will change if and only if *new* information – unknown and unknowable beforehand and therefore not yet incorporated into the current price – prompts the market to revise its valuation.
- As this was true in the past as it is true in the present and will be true in the future, past price changes must also have been caused by no other reason than the arrival of information that was new at the time and unknown until then. Thus all price changes are unknowable and, by definition, unexpected.

Risk according to the EMT

- It follows that, since price changes are the largest components of returns – the other being dividends, which can typically be anticipated to some extent – we must conclude that past returns are largely unexpected.
- Once we define investment risk as the risk of the unexpected, i.e. anything that could happen to the stock price that is not already incorporated into its current level, then the volatility of past returns can be taken as its accurate measure.
- Identifying investment risk with volatility *presupposes* market efficiency (Joint hypothesis problem).
- To be an active investor, thus rejecting the EMT in practice, while at the same time using financial models based on the identification of investment risk with volatility, thus assuming the EMT in theory, is a glaring but largely unnoticed inconsistency.

Beyond cognitive dissonance

- What is it that practitioners know and makes them behave as active investors, and EMT academics ignore and leads them to declare active investment an impossible waste of time and to advocate passive investment?
- The answer is that practitioners know by ample experience that investors have different priors. Whereas EMT academics assume, by theoretical convenience, that investors have common priors.
- If investors have common priors, then when faced with common knowledge they cannot but reach the same conclusion. As Robert Aumann famously demonstrated, *they cannot agree to disagree*. This is why, in EMT parlance, prices reflect all available information.
- Take that assumption away and the whole EMT edifice comes tumbling down. This is what Paul Samuelson was referring to in the final paragraphs of his Fluctuate and Vibrate papers.

Full Circle

“In fact, the entire “common knowledge” assumption is “hidden” in the presumption that investors have a common prior. If investors did not have a common prior, then their expectations conditional on the public information would not necessarily be the same. In other words, the public information would properly also be subscripted as ϕ_k – not because the information differs across investors, but because its interpretation does. In this case the proof breaks down.”

Ingersoll, Theory of Financial Decision Making (1987), p. 81.

(As quoted in my D.Phil Thesis, p. 132

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