

PETER SHAPIRO

AN APPROACH TO RISK, IN LIFE AND IN MONEY MANAGEMENT



Peter Shapiro, CFA
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The furu, the local name for a small, bony cichlid fish found in Africa's Lake Victoria, had no natural predators for centuries. It evolved into hundreds of subspecies, each adapting and becoming biologically optimized to specific niches in the world's second largest freshwater lake. This idyllic existence came to an abrupt end when the Nile perch, a large predator fish, was introduced to Lake Victoria in the 1950s to give fisherman a catch better suited to commercial fishing. The Nile perch decimated the furu population, as since there had been no need for natural defenses before the perch came along, the furu had never developed any.

The story of biological species highly tuned to a specific environment and unable to deal with change is repeated countless times through history, from the dinosaurs hit by abrupt climate change through the dodos felled by the arrival of people. But the cockroach was around with the dinosaurs, watched the dodo go extinct and furu population crater, and is said to be a good bet to survive a nuclear war. Why are cockroaches so much more resilient than so many other species? How have they been able to survive while other species rise and fall?

The answer lies, at least in part, in the cockroach's defense mechanisms. It simply reacts to changes in air pressure, meaning it runs away whenever it feels a slight breeze. (If you've ever tried to squash a cockroach, you've seen this in action.) In biological terms, this is a "coarse" organism, one that is better able to survive in many environments, but won't do as well in any given environment. The furu, dinosaurs, and dodo, on the other hand, are and were much more complex, and much more "highly tuned" and optimized to their environment. They all did extremely well while conditions stayed the same. But once the environment changed in a way they hadn't predicted – and in a way for which they weren't prepared – they couldn't cope and disappeared¹.

Biology Has More In Common With Economics and Investing than You Might Think

Business models and investing strategies can be classified the same way: those that are coarse and able to withstand shocks, and those that are highly tuned to do very well in a specific set of circumstances, but poorly in others. The financial crisis of 2007-2009 provided plenty of examples of companies with business models that were either coarse or highly tuned. For instance, AIG signed massive amounts of debt-insuring derivative contracts that didn't require the insurance giant to post collateral as long as its credit rating remained above a certain level. Once AIG was downgraded, though, there was no way it could come up with the cash to post as collateral. As long as conditions continued such that no collateral needed to be posted, AIG was fine, and even doing well, posting record earnings. But the minute that changed, AIG was pushed into extinction (or would have been if the US government hadn't come up with a multibillion dollar capital infusion).

— To survive, entities must adapt to changes in the environment

— They either do very well in specific circumstances but poorly in others, or won't do as well but are able to withstand shocks

¹ See Bookstaber, Richard, "A Demon of Our Own Design," John Wiley & Sons, 2007, pp. 232-241 for more information about the furu and cockroach defense mechanisms as well as biological coarseness and highly tuned-ness in general.

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— Coarse entities are better at surviving extinction than those that are highly tuned

— While thought of as boring, coarse strategies often outperform on the downside

— Highly tuned strategies may produce consistent returns for several years, but will blow up eventually

On the other side of the coin is Berkshire Hathaway, the insurance and industrial conglomerate. Berkshire also wrote massive insurance contracts at the top of the market, obligating the company to pay many billions if various market indices were below certain levels at some future time. There were two big differences with what Berkshire did compared to AIG, though, which push Berkshire into coarse territory compared to AIG's finely tuned existence. First, Berkshire stipulated that it would have to post very little collateral in the event of interim paper losses regardless of its credit rating, and second, Berkshire's bets were kept small enough so that even if they did go bad, the whole ship would not be sunk.

This line of thinking can be easily extended to investing strategies. Coarse strategies are often those thought of as boring. For instance, buying reasonably priced mid-to-large cap quality companies with solid balance sheets and good capital allocation policies. Generally lower in beta, these stocks rarely keep up with the market in very bullish years, but the chances of losing a lot of money is fairly small, so they often outperform on the downside. Recently this type of strategy has gotten more attention through the so-called "beta anomaly," where the risk-adjusted performance of these types of stocks consistently beats the risk-adjusted performance of higher beta stocks.

On the highly tuned side, Long-Term Capital Management (LTCM), the mid-'90s hedge fund counting several Nobel prize winners among its founders, ran primarily a levered convergence strategy that produced wonderfully consistent returns for several years, only to lose all its gains as well as its capital in a spectacular blow-up brought on by a macro event that could not have been predicted by its models. A levered mean reversion strategy with bet size determined from observed historical data is a classic highly tuned model. The question for this type of investment usually isn't if it will blow up, but when.

The Asymmetry of Returns Dictates the Compounding of Returns

Berkshire Hathaway CEO and legendary investor Warren Buffett is often quoted as saying, "Rule No.1: Never lose money. Rule No. 2: Never forget rule No. 1."² But why are these the most important two (well, one) rules of investing? The answer lies in the inherent asymmetry of returns, which is the basis for how returns compound over time.

If you start with \$100 and subsequently gain 10% and then lose 10%, it may be surprising that you don't end up back with the same \$100 you had at the beginning. The reason is that your 10% loss hurt more, because it came off the larger asset base you had after your 10% gain. In sequence: \$100 → gain 10% (\$10) → \$110 → lose 10% (\$11) → \$99. You can reverse the order of the gain and loss and the end result is still the same: \$100 → \$90 → \$99, where your percentage loss is still based on a higher amount of capital than is your percentage gain. The end result is a net loss of 1%, hence the asymmetry – gains and losses of equal percentages have different impacts. As your returns swings get larger, this effect becomes more pronounced. For instance, starting with \$100 and then gaining/losing 20% leaves you with a net loss of 4%, while gaining/losing 50% leaves you with a net loss of 25%. At the extreme, gaining/losing

Figure 1: Net losses for gains/losses of equal percentages



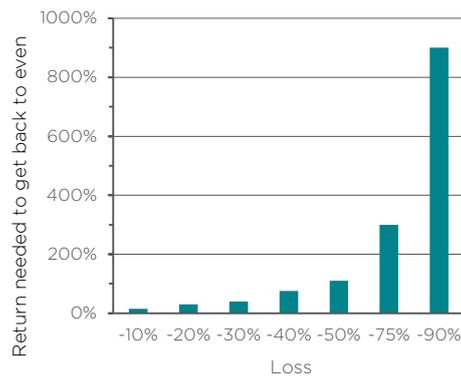
Source: Comgest

² Peterson, Richard, "Inside the Investor's Brain," John Wiley & Sons, 2007, p. 212.

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Figure 2: Gain needed to get back to even after losses



Source: Comgest

100% leaves you with a net loss of 100% – all your capital, resulting on complete ruin. It doesn't matter what any of the other payoffs are for someone who at any one point loses his or her entire bankroll.

Another way to look at this is to see what kind of return is necessary to get back to even after a loss. If you lose 10%, you need an 11% gain to get back to even. If you lose 20%, you need a 25% gain to close the gap. Losing 50% requires a doubling of your money, while losing 90% means you need a 900% return (!) to compensate.

While 100% losses are rare in equity portfolios and thus true ruin is unlikely, this exercise shows how large losses cripple the long-term returns of a portfolio.

Human Psychology Agrees With Buffett's Two Rules

Interestingly, human psychology is well aligned with the asymmetry of returns. Numerous studies have shown that gains and losses of equal magnitude (in absolute amounts, not percentage terms) evoke wildly different psychological responses, a phenomenon Daniel Kahneman and Amos Tversky explained through "prospect theory."³ In fact, a loss of x hurts around twice as much as a gain of the same amount feels good. Our brains want us to avoid big losses, perhaps because somehow we instinctively understand their impact.

Implications for Portfolio Managers

With all due respect to the Oracle of Omaha, not losing money from time to time is impossible for an investor. Instead, the rule of money management could be better stated as, "Don't lose too much money," which could also be said as "exercise proper risk management." Either way it's framed, the goal is to avoid an "extinction" event, which I've put in quotes because extinction for an investment portfolio doesn't only mean complete disappearance. It can also be seen as irreparable damage to a long-term track record.

In order to better understand how we at Comgest think about the concept of risk management, let me detour for a moment to introduce a useful way to frame an investment. Instead of thinking about an investment as being worth a certain dollar value, think about it as a distribution of potential outcomes. The value of a stock could be vastly different if the company wins a key contract than if it doesn't, or if it invests in a foolish project than if it doesn't. Or perhaps a stock's value is very tied to macroeconomic conditions, and in a good macro outcome (e.g. Chinese growth reaccelerates) the stock may be worth a lot, or in a bad macro outcome (e.g. yield curve inverts) the stock may only be worth a small fraction of that amount. When someone says, "Apple is worth \$500 per share," what he or she really means is that based on a certain set of assumptions, the present value of those future cash flows – by definition the true value of any financial asset – is \$500. Of course, when you change those assumptions and postulate another scenario, the "worth" of the stock changes. We can try to ascribe probabilities to each particular scenario, and if we put together enough scenarios and plot the values, we

— Money management is an exercise in proper risk management

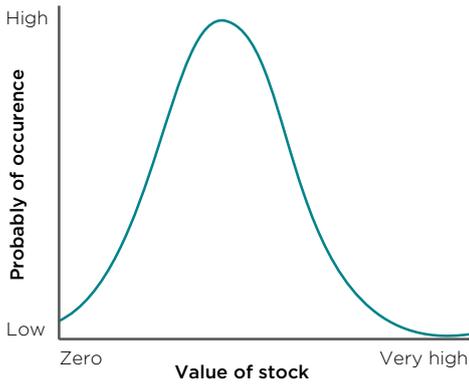
— The value of any financial asset is based on a certain set of assumptions

³ Kahneman, Daniel, and Amos Tversky, "Prospect Theory: An Analysis of Decision under Risk," *Econometrica*, XLVII (1979), pp. 263-291.

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Figure 3: Potential distribution of outcomes for a hypothetical stock



Source: Comgest analysis

might end up with something like Figure 3, which is a stylized distribution of potential outcomes for an imaginary stock.

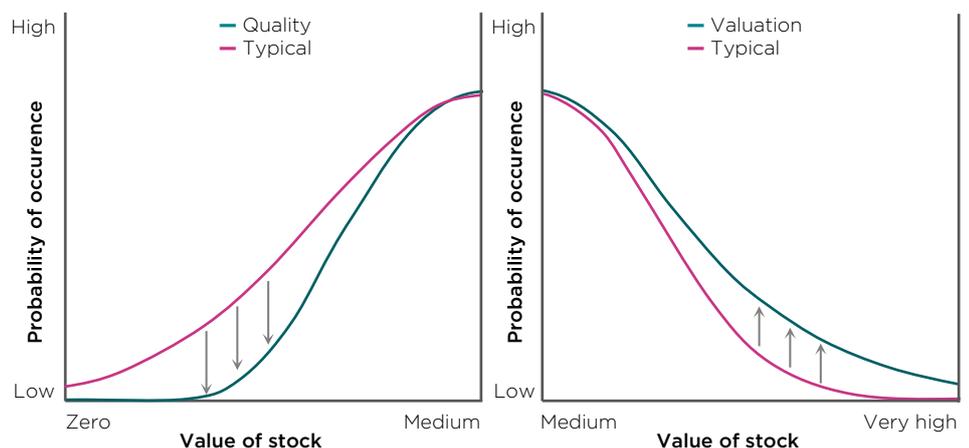
There's some low probability the stock is worthless, depending on what happens over the course of time, and there's some low probability the stock is worth a very large amount. But most of the outcomes cluster towards the middle, where the stock is worth some value that's neither a lot nor very little.

Quality and Value Tackle Different Tails

Now, as investors, what we would like is that the probability of the stock being a zero or close to it to be as low as possible, and the probability of the stock being a huge success to be as high as possible. It turns out that focusing on *quality* – whether quantitative metrics like low leverage or low volatility of profitability, or more qualitative analyses like size of moat and strength of competitive advantages – is a way to limit the left tail versus a typical stock (see the left hand panel of Figure 4 below). High quality companies are simply less likely to have really bad outcomes. The arrows in the left half of Figure 4 represent what quality does to the left tail of the distribution of potential values of a stock: push down the odds of those outcomes. Focusing on *valuation* – low P/E, high free cash flow yield, upside to a likely discounted cash flow analysis – is a way to increase the size of the right tail relative to a typical stock (see the right hand panel of Figure 4). Stocks that are really cheap can go up a lot. The arrows in the right half of Figure 4 represent the effect of valuation in increasing the probabilities in that part of the distribution. It is usually tough to get both characteristics at once, a stock that is high quality and still seems cheap; often investors need to make a choice between the two.

— Focusing on quality lessens the likelihood of bad outcomes

Figure 4: What quality and valuation do to distribution of expected returns



Source: Comgest analysis

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— To avoid extinction events and protect capital on the downside, a long term investor should be stocking portfolios with quality companies

Everything that's been said so far has been framed as a single stock, but these ideas are equally applicable to portfolios. Constructing a quality-biased portfolio will limit the left tail, while focusing on cheap valuations will increase the right tail. So, which type of strategy to choose? Warren Buffett is very clear about his preferences: "It's far better to buy a wonderful company at a fair price than a fair company at a wonderful price."⁴ In other words, quality trumps valuation. We here at Comgest believe a similar thing, but as we can't turn a phrase as well as Mr. Buffett, we frame it this way: the first half of this essay was devoted to avoiding extinction events, to understanding why it is so crucial to protect capital on the downside, and demonstrate how difficult it is to recover from large drawdowns. Quite simply, we believe the best way for a long-term investor to do this is by stocking portfolios with quality companies, especially those that are growing nicely and generating high returns with their investments.

Risk Management and Higher Math Are Not Natural Partners

— Risk is a multi-faceted concept that cannot be reduced to a set of numbers

This naturally connects to how we think about the concept of risk management. The prevailing view of risk management in today's investment world seems to be that it must be done with a lot of math and only a set of numbers, preferably from a complicated model, can describe an approach to risk. That's just not how we see it. Instead, we think understanding the companies' profitability characteristics is a far more effective way to understand the risk embedded in a portfolio. We side with James Montier, who wrote, "The obsession with the quantification of risk (beta, standard deviation, VaR) has replaced a more fundamental, intuitive, and important approach to the subject. Risk clearly isn't a number. It is a multi-faceted concept, and it is foolhardy to try to reduce it to a single figure."⁵ Even the revered father of modern security analysis, Benjamin Graham, tips his cap to a more fundamental and less market-price driven approach to risk: "Real investment risk is measured... by the danger of a loss of quality and earnings power through economic changes or deterioration in management."⁶ It's important to realize that our view of risk is at the fundamental security level, while standard industry risk models start from price volatility and covariance matrices, which are market-level inputs. In other words, we focus on what's happening in the business, not what's going on in the market, to understand risk. We think that our approach to risk management, that of decreasing the left tail of the distribution of potential outcomes by buying quality stocks is a more time-tested approach that runs a far lower risk of model specification error.

Examples: Comgest and Risk Management

It's all well and good to examine the theory and quote the gurus, but the rubber meets the road when we check to see if Comgest's performance indicates whether we've been able to successfully implement this quality approach to risk management.

4 Berkshire Hathaway 1989 letter to shareholders. www.berkshirehathaway.com/letters/1989.html

5 Montier, James, "The Seven Immutable Laws of Investing," GMO White Paper, March 2011.

6 Benjamin Graham, as cited in Grantier, Bruce, "Benjamin Graham and Risk," Brandes Institute White Paper, 2009.

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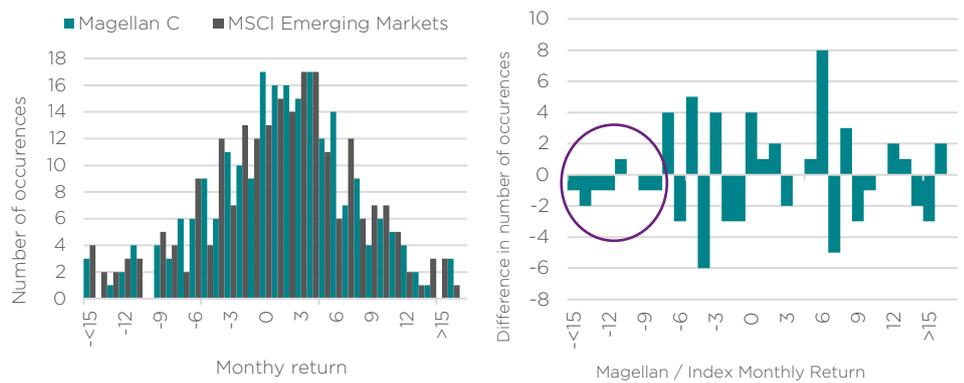
— In the notoriously volatile emerging market environment, our quality-based approach performs as expected

Let's start by looking at Comgest Magellan, our flagship emerging market fund and the biggest fund in the Comgest lineup. Emerging markets are notoriously volatile, so it will be interesting to see how our quality-based approach works in this environment – *a priori* it should do quite well. The chart on the left of Figure 5 shows the net (after fees) monthly returns of the fund and its index on the horizontal axis, with bars demonstrating the number of months since the fund's inception that a return of a given level has occurred. What we really want to understand is whether the fund is less likely to have bad outcomes than the index, so the chart on the right of Figure 5 is the difference in the number of occurrences, where a negative number means returns of that level occur more often for the index than the fund, and a positive number means returns of that level occur more often for the fund than the index.

The key thing to look at is what happens in the tails of the distribution, most importantly the left tail (circled). We can see from the chart on the bottom that Magellan has fewer bad drawdowns as well as a fewer months with very high returns, which is just what we would expect with a quality strategy – limiting the risk of catastrophic loss at the cost of some upside.

— A quality strategy limits the risk of catastrophic loss at the cost of some upside

Figure 5: Magellan distribution (left) and relative distribution (right) of monthly returns



Source: Comgest analysis, monthly net returns from 12/1994 through 06/2013

Next, let's look at our flagship European fund, Renaissance Europe. Equity returns in Europe are in general less volatile than equity returns in emerging markets, so the distribution is naturally more tightly clustered. Renaissance Europe shows the same type of behavior as Magellan, limiting the magnitude of losses – in particular very large losses (again circled) – at the cost of underperforming in rapidly rising markets.

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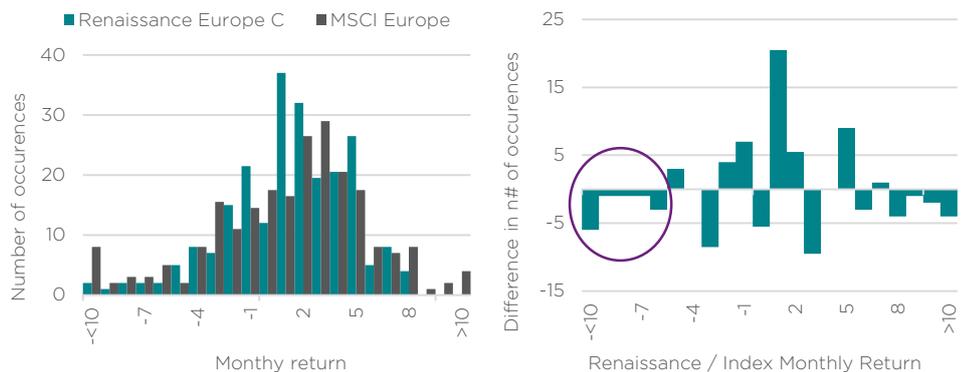
— Approaches based on quality lead to better performance for our clients over the long run

— “We worry about the downside... the upside will take care of itself”

The left and right tails of both charts are all smaller than those of the representative universe of equities. The Comgest funds, using approaches based on quality, have fewer instances than their respective indices of both very low returns and very high returns. Because of the consequences of large losses on long-term portfolio performance, we are more than happy to accept this trade-off, as we believe this will lead to better performance for our clients over the long run. Our view is similar to the apt adage that Loews Corporation, the very successful holding company run by the Tisch family, prominently displays on its website: “We worry about the downside... the upside will take care of itself.”⁷

7 www.loews.com

Figure 6: Renaissance Europe distribution (left) and relative distribution (right) of monthly returns



Source: Comgest analysis, monthly net returns from 12/1993 through 06/2013

Conclusions

In the end, our view about risk management is that it is in effect a question about a money manager’s approach to managing a portfolio, not the use of sophisticated models to measure various statistics, nor implementation of a specific set of portfolio limits. Our simple approach – and we think the evidence supports this approach – is to invest in high quality companies as the most effective way to manage portfolio risk, because investing in high quality companies helps avoid bad outcomes (or shrinks the left tail or limits downside or however else you might like to think about it). The key is insulating the portfolio, as best you can, from the possibility of catastrophic loss. Or, in biological terms, insist upon implementing a coarse strategy, like the cockroach. If that’s your approach, no matter what happens, you (and especially your clients) will live to fight another day. But if you’re finely tuned, like the furu or LTCM, no amount of mathematics can save you from the inevitable wipeout.

— Investing in quality is the most effective way to manage portfolio risk

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Peter Shapiro joined Comgest in 2013 and is an Analyst specialised in US equity, contributing to idea generation and management of the Comgest Growth America fund. Peter began his career as an Analyst at Legg Mason Capital Management in Baltimore, Maryland and went on to hold a similar position at a boutique asset manager in Paris. He graduated from Colby College with a Bachelor's Degree in Physics and holds Masters' Degrees in Acoustics from The Pennsylvania State University and Applied and Computational Mathematics from The Johns Hopkins University. He is also a CFA® charterholder.

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