

Part II

Decisions in the Financial Context

Chapter 9

Mistakes at the Heart of Investment Management

A Common Risk Management Mistake

Jim is a portfolio manager (PM) with a positive track record over the past four years that he's worked for your fund. He began 2016 managing \$400 million with a 1% value at risk (VaR) limit and by the end of August was up 10% for the year (+\$40 million profit). Given his track record and recent performance you doubled his allocation to \$800 million beginning September 1. He can now build a portfolio with as much as \$8 million in VaR. Unfortunately, he's run into a rough patch and as of November 1 is down 5% from his August peak (−\$40 million from the peak; \$0 million on the year). As a result, according to your risk management rules, he must cut his risk in half, which he does. As of December 31, he's back to his high watermark (+\$40 million profit).

Table 9.1 shows what Jim's track record looks like for 2016.

There's just one small problem. That isn't Jim's track record. It's the track record of your firm's decisions as they relate to Jim's portfolio. Let's delineate all of the decisions that led to those results.

Table 9.1 Jim's performance by month and year.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2016
AUM	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$800	\$800	\$800	\$800	
Notional	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	-\$20	-\$20	\$20	\$20	\$40
%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	-2.5%	-2.5%	2.5%	2.5%	10%

The CIO made four decisions:

1. Allocate \$400 million to Jim on January 1.
2. Allocate \$400 million more to Jim on September 1.
3. Treat the allocations homogeneously (back to this in a moment).
4. Mandate that VaR be cut by 50% if a PM experiences a 5% peak-to-trough drawdown.

Risk Management made one decision:

1. Recommend that VaR limit be cut in half at 5% drawdown.

Jim made all remaining decisions.

Each of those decisions impacted the firm's track record as it relates to Jim's portfolio, however because of the way we track and monitor decisions in this industry, only Jim owns them. Since the end result is a good one, he's unlikely to kick up much of a fuss, nor is anyone else, but if we are to reduce mistakes going forward a number of changes should be made.

Let's make just one minor adjustment to this scenario. Instead of cutting Jim's VaR limit in half in November, risk management recommends that the CIO take back half of Jim's allocation and reallocate it to other portfolio managers. What would Jim's track record look like then? (See Table 9.2.)

Table 9.2 Jim's performance with updated allocation.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2016
AUM	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$800	\$800	\$400	\$400	
Notional	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	-\$20	-\$20	\$20	\$20	\$40
%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	-2.5%	-2.5%	5%	5%	15%

Jim makes his decisions as a proportion of the risk he is allocated. How much VaR he can take on as a percentage of assets under management (AUM), how much AUM he is allocated, and how his compensation is determined are all beyond his control. All he controls are the decisions he makes *given* the rules of the game as determined by the CIO and risk management. Jim's actual return on AUM for 2016 is 15%. The difference between the 15% Jim delivered and the 10% shown in the previous table should be owned by management. This isn't a theoretical loss, it is negative alpha and it should be attributed to the CIO.

After all, it is the CIO's job to maximize the returns on the portfolio of PMs they have chosen to invest in. Their ability to generate alpha can be broken down into its components. Comparison to a benchmark tells part of the story, but there are multiple factors that go into those results. Which PMs should they employ? How much should they allocate to each of them? Given the correlation among them, should they overallocate, and if so, by how much? When should they reduce, cut, or increase their position size (allocation to a PM)? In effect, the CIO is a portfolio manager of portfolio managers. The value he delivers as a decision-maker overall, and as it relates to each of these questions, should be tracked as it is for any other allocator.

Why would a CIO instruct a PM to cut their risk? There are two reasons commonly given: (1) To help the PM get their head straight again. This is invoked because the CIO believes the PM has become emotionally effected by the loss itself, leading him or her to become suboptimal decision-making. To break the emotional connection and get the PM to invest strictly based on market factors, they reduce the position sizing to something far less consequential. That's at least the idea. (2) To reduce the impact of the PM on the fund's performance. In other words, the CIO has lowered his expectation that the PM will generate positive results going forward. Naturally, if your expectations for that PM have gone down, you want to reduce their ability to affect your fund returns. Effectively, you cut back on your investment in that PM. *That* is a trading decision, and like all trading decisions, it should have P&L attributed to it. In order for it to be tracked it must be clearly recorded as a decision. That is why it is important for management to cut the PM's AUM rather than cut their VaR.

Over time, we can then see if this decision to reduce allocations at a random moment such as the 5% drawdown is optimal. (Of course it rarely is) However, it is easier to implement speed bumps than the more optimal alternatives of (1) ensuring that all PMs have proper investment/decision-making processes in place to reduce the potential for emotion to creep in and (2) developing a better process for assessing whether a portfolio manager adds value over time.

An Uncommon Solution

After eight months Jim was up \$40 million. If his payout is 13%, he was looking at taking home more than \$5 million. Then suddenly, without any say in the matter, management allocates another \$400 million to his portfolio. It creates a very real quandary for him. The rational thing to do, of course, is increase his position size proportionally going forward. Well, that's not entirely accurate. If his objective is to maximize returns on his portfolio over time, then yes, he should make a proportional adjustment to his position sizing. However, if his objective is to maximize his take home pay over time, the rational decision may be to make no adjustment.

On January 1 the firm's and Jim's incentives and objectives were aligned which led to optimal behavior. As soon as profits or losses are generated though, they begin to diverge. When objectives diverge rational actions may diverge as well. Unless management understands the dynamic, how to monitor it, and the appropriate actions to mitigate the impact, it can lead to mistakes that reduce returns. On the other hand, if management can and does take the appropriate actions the mistakes are reduced and returns improved.

To find a simple solution, we need look no further than what happens when an investor allocates more to the fund itself. Typically, it is treated as a series. In other words, the initial \$400 million investment is treated as a separate series from the additional \$400 million. As of October 31, it looks like Table 9.3.

If the year were to end here, the fund would be paid a performance fee of \$4 million (assuming 2/20). However, Jim would be paid zero. The reason is that Jim's entire capital allocation is treated homogeneously. There is no distinction between new and old capital. Therefore, when Jim's allocation is doubled, it becomes twice as easy for him to give back

Table 9.3 The initial \$400 million investment, as a separate series from the additional \$400 million.

Series A													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	2016		
AUM	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400			
Notional	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	−\$10	−\$10	\$20		
%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	−2.5%	−2.5%	5%		
Series B													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2016
AUM									\$400	\$400			
Notional									−\$10	−\$10	−\$20		
%									−2.5%	−2.5%	−5%		

everything he's made up to that point. That has real implications for Jim's decision-making, likely making him more risk averse with the additional capital. A simple solution is to treat the capital allocated by the fund to their portfolio managers in the same way as capital allocated by investors to the fund.

This is intended merely as a primer to help management understand that your actions have implications and that even subtle, seemingly insignificant adjustments can have real P&L consequences. For the alpha-generating CIO, properly implemented risk management can deliver a significant competitive advantage.

Why Risk Takers Stopped Taking Risk

In the NFL, after a touchdown is scored the coach has the option to either kick for an extra point or attempt a two-point conversion. Historically, extra points have a 97% success rate, whereas two-point conversions are successful 55% of the time (this analysis is prior to the extra point attempt being moved further away from the endzone). Since the expected return for the two-pointer is greater ($0.55 \times 2 = 1.1$) than that of the extra point attempt ($0.97 \times 1 = 0.97$), you'd think most coaches would opt for the two-point attempt. Better yet, when you consider that two-point conversions executed with a run play have a 75% success rate and therefore an expected utility of 1.5, you'd think any coach that went for an extra point would be ridiculed for making

such an irrational decision. Alas, you'd be wrong. In reality, coaches opt to kick the extra point in all but the most dire circumstances, and I can't recall a single time any of them have been criticized for making such a suboptimal selection.

Actually, it's a bit more complicated than I've suggested. Although the two-point conversion is the optimal choice if your goal is to maximize the number of points scored, that isn't necessarily what coaches desire.

You see, in football, the coach's objective is not to score the most points over time, but to win games (which means scoring the most points within a segregated time period). In fact, it is easily possible for a team to score the most points and even the most net points over the course of a season, and yet not make it into the playoffs. (See Table 9.4.) So while opting to attempt the two-point conversion is clearly the more rational option for someone looking to maximize total point accumulation, it's not necessarily the right decision given the parameters as defined by the rules of the game.

Think about that for just a moment. For those of us in the business of making rational decisions in the face of uncertainty, one of the fundamental tenets is that we seek to maximize expected returns. In other words, we play the odds. As an investment manager, if I were facing a decision with the historical probabilities already presented, the only logical decision would be to attempt a two-point conversion. After all, as investors, we don't have segregated time buckets for which we need be concerned. I mean, a 2% return on January 31 means the same to me as a 2% return on February 1. Therefore, I don't have to make suboptimal decisions. Instead, I can make choices with the sole goal of maximizing my returns over time, right?

Wrong. Well, it used to be that way, but the rules of the game have clearly changed to more closely match that of the NFL. We'll get into one of the reasons why it has happened in a moment, but for now let's explore the ramifications.

Bracketing occurs in our industry in a number of ways, all of which create segregated buckets of time, causing a shift in objectives away from maximizing expected returns, just as it does in the NFL. As a result, it's understandable that the thought process of investment managers today shares more in common with NFL coaches than it does with those who sat in these seats just 10 years ago.

Table 9.4 NFL 2014 season: points scored and games won.

Team	Points Scored	Games Won
Green Bay	486	12
Denver	482	12
Philadelphia	474	10
New England	468	12
Dallas	467	12
Indianapolis	458	11
Pittsburgh	436	11
Baltimore	409	10
New Orleans	401	7
Seattle	394	12
Miami	388	8
Atlanta	381	6
New York Giants	380	6
Houston	372	9
Cincinnati	365	10
Kansas City	353	9
San Diego	348	9
Buffalo	343	9
Carolina	339	7
Minnesota	325	7
St. Louis	324	6
Detroit	321	11
Chicago	319	5
Arizona	310	11
San Francisco	306	8
Washington	301	4
Cleveland	299	7
New York Jets	283	4
Tampa Bay	277	2
Tennessee	254	2
Oakland	253	3
Jacksonville	249	3

It's self-reinforcing too. Just as NFL coaches are applauded for choosing the suboptimal route of kicking the extra point, investment managers are rewarded for shortening their time horizons, window dressing their portfolios around month-end, quarter-end and year-end, and for focusing more on p&l volatility than returns.

If you think about it, the reason time horizons are truncated in sports is to make every moment more exciting, more uncertain: the shorter the season, the fewer the games, the fewer the opportunities to make up for a bad run, the more exciting the spectacle. What the promoters of sports seek is fans sitting on the edge of their seats exhilarated by the fact that even the worst team can beat the best team on *any given Sunday*. What they count on is the fact that the shorter the time horizon, the greater the likelihood for an outlier result, essentially that noise will overwhelm signal. Granted, over the course of a season or tournament, the best teams often rise to the top, but in sports like NCAA football, a single loss can take a team out of contention for the entire season. It's what makes college football so much more exciting than the pros, and it's also why, even though the rules of the game are nearly identical, the way the game is played is so radically different. This difference in approach also explains why the greatest college quarterback of all time, Tim Tebow, garnered so little interest from NFL scouts and why so few fantastic college coaches have been able to successfully make the transition to the pros. It becomes a fundamentally different game, with different play calling, demanding different skill sets, and generating different results, and yet the only significant difference between college and pro football is the frequency with which conclusions regarding success or failure are drawn.

There is a fundamental difference between sports and investing though, and this difference is the source of numerous problems that have developed over time, including lower returns for the industry and a rise in the impact of noise relative to signal on price action across all markets. You see, the end investors do not seek excitement for their money. They do not want noise to have a greater influence than signal on their returns. They do, however, seek to maximize expected returns, even if their behavior often appears at odds with that desire.

This isn't a phenomenon unique to football or the current state of markets. Decades of research regarding human behavior have attempted to differentiate the phenomenon I've been discussing to this point known as "narrow framing" to cognitive psychologists and "myopic loss aversion" to behavioral economists as opposed to the more recognizable term "risk aversion." One notable study conducted by Mehra and Prescott in 1985 attempted to understand the equity premium puzzle, with *premium*

referring to the outperformance of US equities over a safe investment like US Treasuries, and *puzzle* referring to how high it had been for so long (roughly 6% per year for 70 years). The real question they were asking is, if stocks have so outperformed Treasuries over such a long period of time, why are they perceived as more risky? Ultimately, the conclusion they reached is that the “risk attitude of loss-averse investors depends on the frequency with which they reset their reference point.” Richard Thaler estimated that in order to “solve” the equity premium puzzle, the most prominent evaluation period for investors would need to be 13 months. In other words, if you had a portfolio consisting solely of, say, the S&P Index and US T-Bills, and only looked at your returns every 13 months, you’d perceive them to be equally risky. If you did so, your allocations would be very different – and so too would the returns on your portfolio – from what they would be if you observed them more frequently.

Myopic loss aversion is the term used to describe this behavior because the “frequent evaluations prevent the investor from adopting a strategy that would be preferred over an appropriately long time horizon.” In other words, the longer your time horizon for investing, the less frequently you should be observing the returns in your portfolio. Simply by checking on your investments more frequently you perceive risk to be greater which leads to more risk-averse behavior. We tend to think we can control our tendency towards risk aversion but enough research has been done to prove you’d be an extreme case if that were true. A simple study by Benartzi and Thaler proved this point quite well. They asked two groups of university professors how they would invest their retirement money if they had to choose between two investment funds, one of which was based on stock returns and the other on bonds. To the first group they provided charts showing the distribution of one-year rates of return, and the other was shown the distribution of 30-year rates of return. Those in the first group elected to put the majority in bonds, whereas the other group invested 90% of their funds in stocks.

With the proliferation of hedge funds came the proliferation of firms and products designed to help you assess them which has led to standardization. Benchmarking became common practice. Seemingly innocuous and arguably random selections were made, such as using

monthly data to analyze returns *and volatility* creating a standard for which all future analysis would be conducted and funds compared. This standardization of time bucketing then led to the unintended convergence in both the assessment and, just as importantly, the perception of risk among two otherwise disparate groups: short-term and long-term investors. Now, even investors who describe themselves as having longer-term horizons are likely to suffer from myopic loss aversion, even if they don't realize it.

For the hedge fund manager who seeks to maximize expected returns, one solution is to release your returns on a frequency you believe would allow investors to more accurately assess your true inherent risk. If you offer quarterly liquidity, release your returns at the same time.

For investors, do your own analysis of returns and the volatility of returns using a period better aligned with your investment horizon. In other words, if you're truly a long-term investor, review the performance of your investments less frequently. Gather the data less frequently or have your analysts parse the monthly data into buckets more aligned with your objectives *before* you see it. Ask yourself whether it makes sense to review and analyze return data with the same frequency as hot money investors. As long as you keep watching short term performance your resulting behavior will more closely match that of a hot-money investor rather than the long-term investor you perceive yourself to be.