



# Stayin' Alive:

## The Importance of Risk Management in a Risky Market

An Introduction to TIFF's Hedge Fund Investment Philosophy

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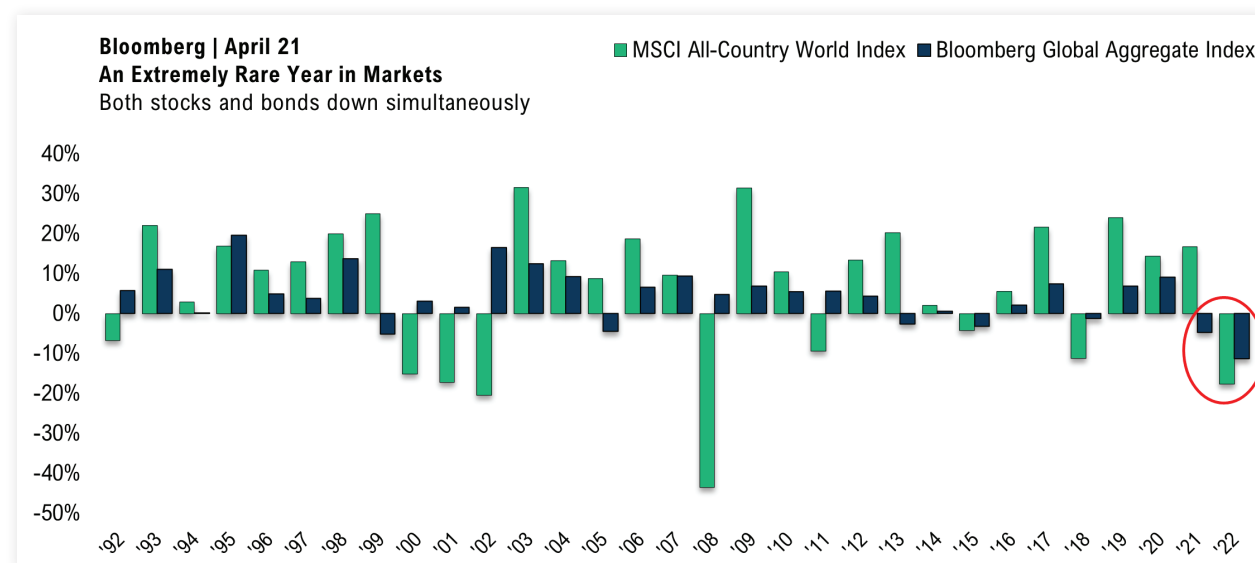
INVESTMENT MANAGEMENT



# Executive Summary

Investors have endured a challenging six months in the markets as multiple macro-economic events have driven uncertainty to near-term highs: Global central banks have started raising rates to contain inflation; supply chain issues continue globally; parts of China remain in lockdown; and there is war in Ukraine. The combination of these dynamics has caused markets to exhibit a very rare phenomenon – for the first time in 30 years *equities and bonds are both declining at the same time*.

**Exhibit 1** | The Annual Percent Change in the Prices of Stocks and Bonds<sup>1</sup>



When thinking about building a long-term portfolio, investors construct a blend of volatile (equities) and stable (fixed income) assets that meets their investment needs. Volatile assets are included to provide long-term returns. Stable assets are intended to help investors meet spending needs without locking in losses during times of market volatility. As Howard Marks said: “[T]he point is to consider risk control, loss avoidance, at least as important as return.”<sup>2</sup> But what happens when fixed income no longer serves this role?

At TIFF, we believe that fixed income alone is an insufficient anchor in periods of market turmoil. A well-constructed portfolio includes diversifying strategies – hedge

funds – with a goal of providing downside protection in periods of stress and generating attractive returns versus traditional fixed income.

Here, we provide an introductory view on how the TIFF Diversifiers team approaches risk when making hedge fund investments. Risk is not the sole performance attribute that we consider, but we believe that a key differentiating factor in successful portfolios is how investors think about capital preservation. Our philosophy on risk follows.



<sup>1</sup> Bloomberg.

<sup>2</sup> “Capturing Inefficiencies: The Rate Insights of Howard Marks,” *The Journal of Investment Consulting*, Volume 17, November 1, 2016.





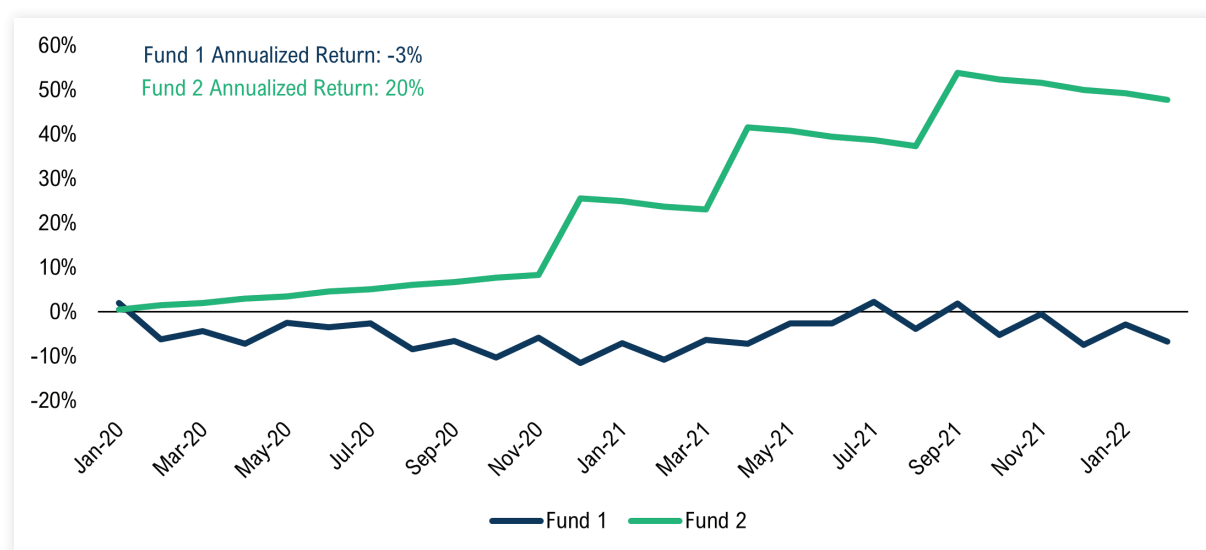
# It's Still Rock and Roll to Me: Volatility

**Volatility** is a statistical measure of the dispersion of returns for a given security or portfolio. Higher volatility can be associated with riskier assets. As a metric, volatility appeals to investors because it's easy to calculate and provides an intuitive view on how much the value of the underlying asset can be expected to move. One of the key issues with looking at aggregate volatility, however, is that it considers *all* returns and treats them equally. They are not. At TIFF, we explore volatility at a deeper level: What if investors could benefit from the *upside* volatility but avoid the *downside* volatility?

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Consider the impact on performance of two hypothetical managers with the same volatility profile. In Exhibit 2, the manager with upside volatility would have yielded an annualized return of +20%, and the peer with downside volatility sits at a disappointing -3% annualized.

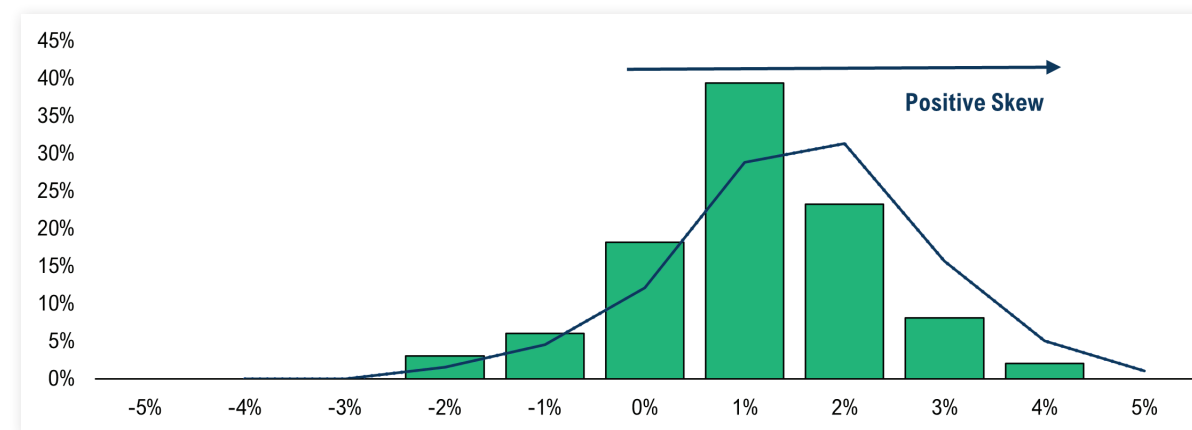
**Exhibit 2 | Return Stream of Two Hypothetical Managers With Different Up- and Downside Volatility<sup>3</sup>**



<sup>3</sup> Illustrative chart whereby two hypothetical funds have the same annual volatility, but the return streams are different.

This defies the expectation that what goes up must come down and the belief that the pleasure of upside performance should be offset by an equally painful downside. This may be true for eating a hot dog from a food truck at Central Park, but the upside and downside for hedge funds may not be normally distributed. In reality, outstanding managers exhibit competitive edge by generating asymmetric returns: more returns to the upside than the downside. We call this **positive skew**, and it is a key to long-term outperformance:

**Exhibit 3 | Demonstration of Positive Skew of Hypothetical Fund A Net Returns: Capturing More Upside Than Downside<sup>4</sup>**



TIFF also emphasizes understanding the **downside volatility** associated with each of our investments. Downside volatility measures the risk of investments by comparing returns that fall below the average annual return to some minimum investment threshold. We use it to indicate the potential for an investment to underperform.

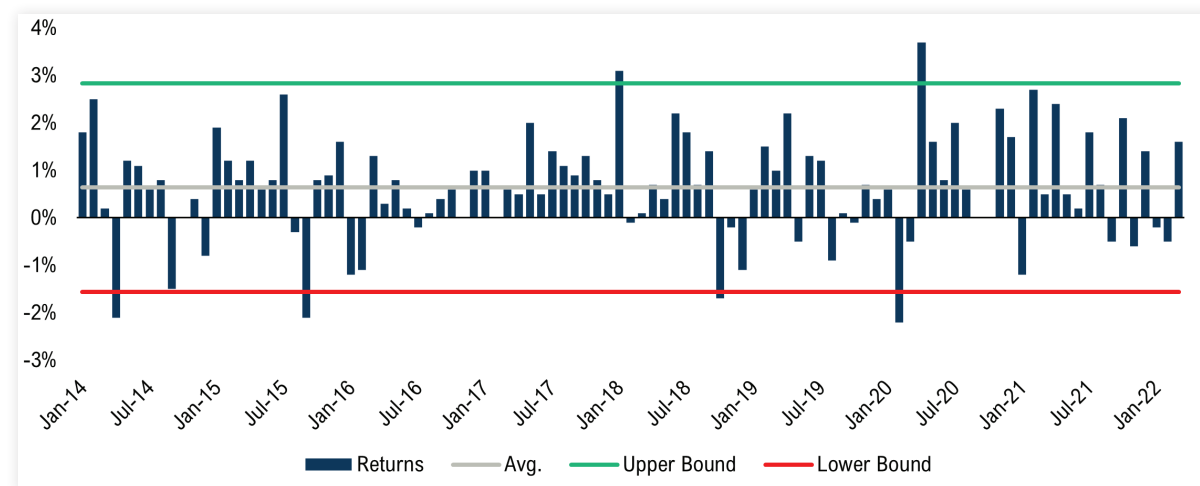
Using hypothetical Fund A as an example again, in Exhibit 4, we graph its monthly returns and draw bands around the average monthly return that is the equivalent of two standard deviations above and below average.

This helps us understand how often the manager returns exceed these upper and lower bounds – and the potential magnitude of negative moves.

<sup>4</sup> Redacted monthly net returns for an actual fund. Shown for illustrative purposes only.



**Exhibit 4** | Downside Volatility: Distribution of Monthly Returns of Hypothetical Fund A<sup>5</sup>



Another way for investors to gauge risk is to look at the **upside/downside capture ratio** for a fund. It shows:

1. whether a given fund has outperformed – either by gaining more or losing less – than a broad market benchmark; and
2. by how much

Downside capture measures how much an investment is likely to decline when the market declines, helping form our expectations for performance during market turmoil. Similarly, upside capture is used to set expectations for how well a particular investment keeps up with market rallies. For example, if the markets drop -10% and a particular fund loses -3%, then the downside capture would be 30%. If the market increases +10% and that fund gains +6% then the upside capture would be 60%. Dividing the upside capture by the downside capture (60% ÷ 30%) would give us the upside/downside capture ratio of 2:1.

Shrewd investors will point out that simply focusing on the downside alone gives an incomplete picture of the portfolio. We agree. Although this paper is focused on risk, one can't evaluate an investment using risk alone; it needs to be considered alongside the return profile. We expect to address return in a future piece where we combine volatility and **excess returns** to yield such risk-adjusted metrics as **Sharpe** and **Sortino ratios**.

<sup>5</sup> Redacted monthly net returns for an actual fund: Return bands are calculated using the formula for two standard deviations. Shown for illustrative purposes only.

It is arduous to identify managers who can produce attractive upside and limited downside over a long horizon. At TIFF, we use these metrics and fundamental analysis of a potential investment and its opportunity set to identify partners with a process designed to limit downside while generating a strong long-term track record. Our due diligence process emphasizes both *proactive* and *reactive* risk management while accounting for the possibility of left-tail (worse-than-normal) events. This differentiated approach to risk management is a core element of our due diligence process on *all* investments that make their way into the portfolio.







# Everybody Hurts: Drawdowns

**Drawdowns** are an unavoidable part of investing – even in hedge funds. If not contained, drawdowns can be back-breaking and can make recovery downright impossible. Exhibit 5 shows the magnitude of performance needed to recover from drawdowns by size.

**Exhibit 5** | Percentage Drawdown and Corresponding Recovery<sup>6</sup>

Drawdown	Performance Needed to Recover
-10%	11%
-20%	25%
-30%	43%
-40%	67%
-50%	100%
-60%	150%
-70%	233%

For example, a \$100 fund experiencing a 50% drawdown would see its NAV reduced to \$50. The fund would need to gain 100% to return the NAV to \$100. To achieve this, the fund would need to compound gains at an astounding – and unlikely – *15% annually for 5 years*.

Negative performance is often the most visible aspect of a drawdown, but there are other nefarious effects that are easily overlooked. Most hedge funds operate under a high-watermark structure that limits a fund’s ability to earn its performance fee until it has recovered from a drawdown. This can create several problems:

- A fund may start losing its best talent if it is unable to pay top analysts a performance fee bonus
- The resulting “brain drain” can aggravate the investment process and make it even harder for the fund to dig itself out of a drawdown

- Large drawdowns can create investor pressure and result in redemptions, putting additional psychological pressure on the CIO as the CIO tries to fix the problem
  - Too many sleepless nights could certainly take a toll on performance
- A CIO may resort to desperate measures to try to recover from a drawdown
  - This often manifests itself in the form of strategy drift or taking on excess risk
- Large redemptions due to loss of investor confidence could drive selling pressure of a fund’s positions
  - Selling positions to generate liquidity – before they have met a target price – can exacerbate negative performance

All these conditions could induce a hedge fund to continue to underperform and ultimately close following a large drawdown. Although there is only moderate impact to the managers of hedge funds when they blow up – they often can start a new

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fund and resume collecting fees – their investors can be left with a metaphorical crater in their portfolios: a permanent loss of capital. When we partner with hedge funds at TIFF, we

place the utmost importance on incentive alignment. This can take such forms as ensuring that the manager has a significant portion of personal wealth invested in the vehicle alongside investors’ capital.

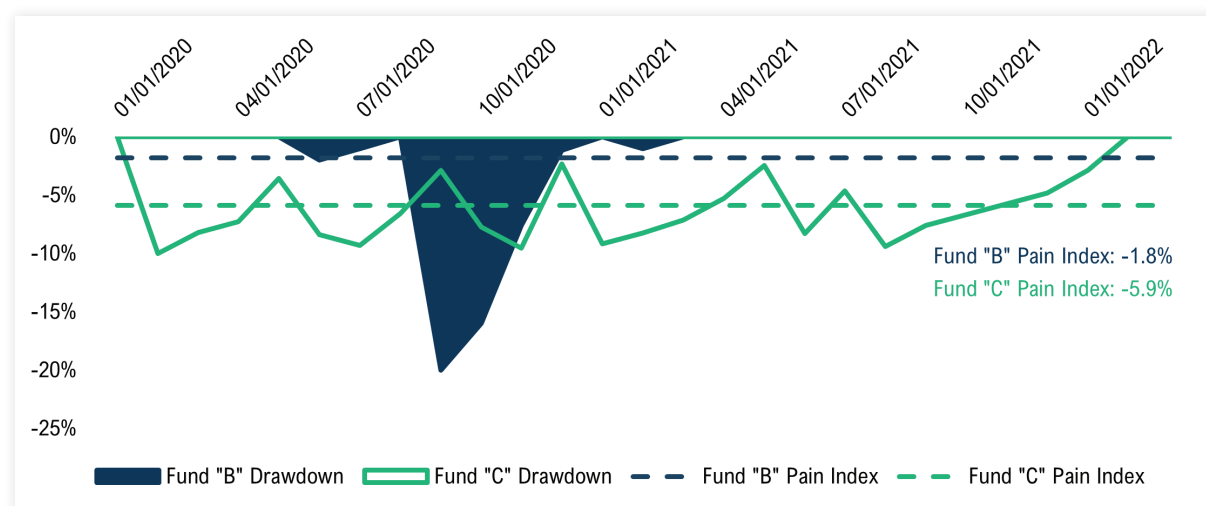
Investors often look at **maximum drawdown** as a metric for thinking about downside risk. Yet, much like a picture in a high school yearbook, this metric is simply a snapshot in time and does not necessarily provide the best understanding of a fund’s potential downside. For example, a fund that went through the Great Financial Crisis with a maximum drawdown of -10% may have better downside management than a fund that has the same maximum drawdown but has seen nothing but bull markets.

<sup>6</sup> Simple calculation whereby a \$100 hypothetical fund experiencing a 50% drawdown would see its NAV reduced to \$50. The hypothetical fund would need to gain 100% to return the NAV to \$100.



We illustrate this in Exhibit 6. If an investor simply compared the scale of drawdowns – represented as cumulative negative performance – that investor could conclude that Fund B is suboptimal because it has a larger maximum drawdown than Fund C. In reality, Fund B investors recovered from their drawdown in a matter of months, but investors in Fund C were stuck in their drawdown nearly 2 years.

**Exhibit 6** | Placing a Fund's Hypothetical Maximum Drawdown in Context of Total Time Below Its High Watermark<sup>7</sup>



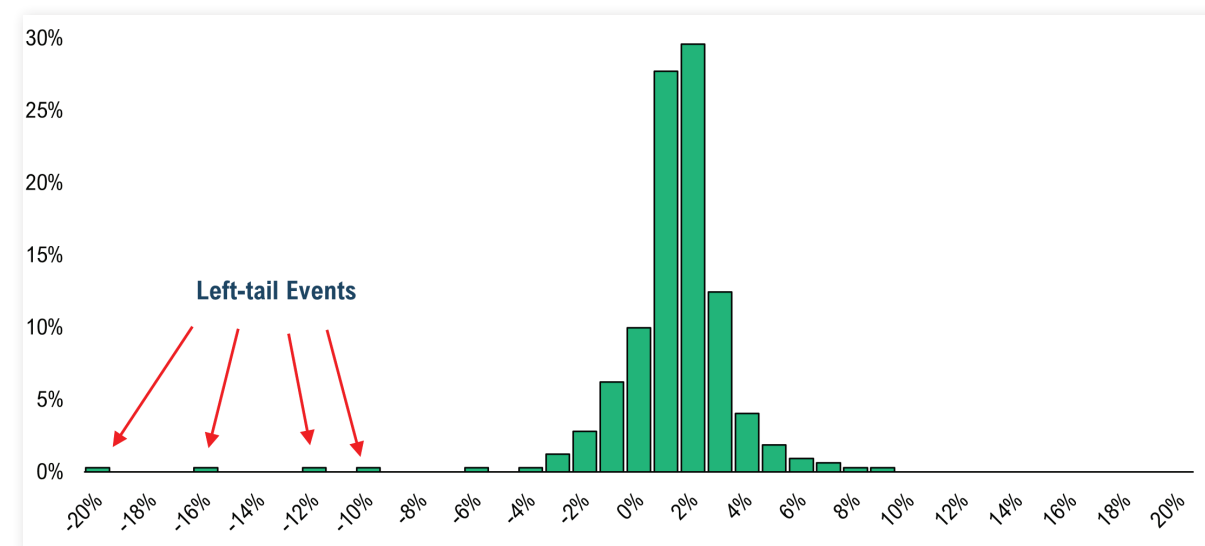
At TIFF, we combine maximum drawdown with such other metrics as the **“pain index,”** not only because it accurately expresses the pain investors suffer when going through a drawdown, but also because it provides a more holistic understanding of the range of the potential impacts of drawdowns.

To calculate the pain index, we measure the depth, frequency, and duration of drawdowns over time. Using this more comprehensive lens, Fund B, which appears above in blue, would have shown a pain index of -1.8% since inception, versus Fund C's (above in green) much larger pain index of -5.9% since inception. The pain index ignores the smoothed return stream captured in performance and is a pure measure of the downside risk within a portfolio. Again, both drawdowns (pain index) and returns need to be considered when evaluating a fund.

<sup>7</sup> Illustrative example of two hypothetical fund drawdowns whereby one has a deeper drawdown but is faster to recover while the other has multiple shallower drawdowns, but the drawdown persists for extended periods.

One of the scariest thoughts to many investors is the idea of **“left-tail risk”**: The potential to do far worse than normal. Although left-tail events tend to be rare, they can wipe out years of performance and negate any previous positive skew. Exhibit 7 shows how a left-tail event of sufficient magnitude can wipe out 10 to 15 months of positive performance. The total of positive individual monthly returns is offset by a single large decline:

**Exhibit 7** | The Potential of Left-Tail Events to Erode Positive Skew<sup>8</sup>



One way TIFF evaluates the potential of left-tail risk is through **Value-at-Risk (VaR)**. VaR measures the *minimum* amount a hedge fund manager is expected to lose when a left-tail event happens. If we assume the traditional 95% confidence interval – familiar to most as the “bell curve” – which captures the probability of left- and right-tail events, the probability of a left-tail event happening is about 2.5%, or once every 40 months. Once every 40 months is not very often, yet it is little consolation for an investor to learn how uncommon a left-tail event is after they have experienced one. In addition to understanding the *probability*, TIFF aims to understand the *magnitude* of left-tail events and balance them with the long-term return potential of each manager.

<sup>8</sup> Illustrative example of hypothetical fund whereby a small number of low-probability left-tail events erode historical positive skew.

# Come Together: Beta, Correlation, and Crowding



**Beta** is used to measure the exposure of a particular fund versus the relevant benchmark. Most investors agree that beta is easy to come by, making it far less valuable than the elusive **alpha**. We believe beta is useful when looking at investments with significant market exposure, but it is less relevant when looking at hedge funds.

The utility of beta fails as a metric for evaluating hedge funds because it is a *long-term* statistical measure – typically at least 36 months – of a fund’s exposure to the market over many months. Since beta is a cumulative measure over a given horizon, one could assume that fund exposure to the market is constant over that time period. This is rarely the case with hedge funds, however, since they are designed to adapt to different market conditions. For example, long/short equity hedge funds typically have variable net exposures – long holdings minus short holdings – that can fluctuate from -25% to +75%. Taking a snapshot of a hedge fund’s net exposure at a single point in time could mislead investors just as easily as looking at 36-month-average beta.

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Further complicating a fund’s relationship to the market, a fund’s beta can change even if the manager hasn’t made changes to the portfolio. For example, when growth stocks sold off in Q1 2022, many managers with US Technology and Healthcare investments saw their market beta rise sharply in the short term. This is understandable, because often in a market sell-off, the beta of different assets tends to move toward 1.0 as some stocks are sold indiscriminately. Short-term changes in beta are hard to predict, and this may initially lead to underperformance. As managers adjust their portfolios to accommodate the new market dynamics – or the market reverts independently – we tend to see betas normalize toward longer-term levels.

**Correlation** can mistakenly be used interchangeably with beta, and both terms do measure how two assets interact. The difference? Correlation measures how often two variables move in tandem, capturing *direction*. Beta measures how large of a

move we can expect from one variable to another, reflecting *magnitude*. TIFF aims to construct portfolios where the underlying correlations of individual positions to each other are low.

**Diversification** is about as close to a free lunch as one can get in the world of finance. Investing solely in low-risk positions to achieve a low-risk portfolio returns can come at the cost of low long-term returns – and is unnecessary. At TIFF, we aim to construct our Diversifiers portfolio with uncorrelated return streams that, when combined, lower portfolio-level volatility. This allows us to benefit from the attractive idiosyncratic return streams of our underlying managers – which often come with higher idiosyncratic volatilities – and still maintain risk targets, because the return streams don’t move together.

**Crowding** is a hidden risk that can amplify the effect of correlation and beta. Crowding is the level of overlap of individual positions across different hedge funds. It isn’t discussed often for a few reasons:

1. It can be hard to track, difficult to quantify, and remain dormant for long periods of time; and
2. The opaqueness of the hedge fund industry makes position-level data hard to come by, often delaying the ability to know the extent that funds have overlapping holdings.

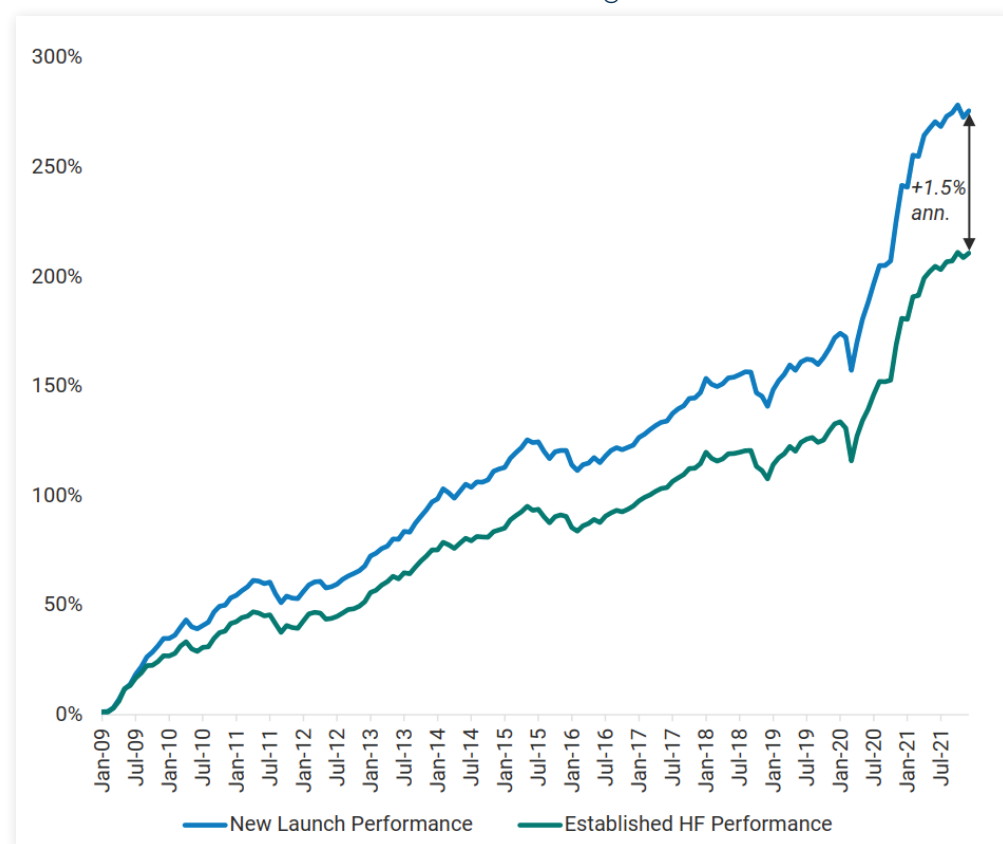
This dynamic means that hedge fund managers – particularly those who invest in such popular sectors as US Technology/Media/Telecom public equity – often don’t realize how many other peer funds are simultaneously invested in the same positions. When crowded positions decline, either for fundamental reasons or due to market weakness, there is sometimes a rush for the exit. This synchronized selling can lead to decreased liquidity which in turn exacerbates negative performance.

As investors tend to crowd into similar equity positions, so, too, do allocators tend to crowd into brand name hedge funds. At TIFF, we are unafraid to tread the path less traveled in search of hedge fund investments that are truly diversified and idiosyncratic. TIFF’s approach to hedge funds focuses on finding opportunities that are hard to source, capacity constrained, difficult to understand, or, ideally, all of the



above. According to Goldman Sachs, over the past decade, newly launched hedge funds have outperformed established hedge funds by an average of roughly 1.5% annually:

**Exhibit 8** | Comparison of the Historical Performance of Newly Launched Versus Established Hedge Funds<sup>9</sup>



Accordingly, we gravitate toward younger, hungrier funds looking to prove themselves through outstanding performance and avoid asset-gathering hedge funds agnostic to performance because they can make a comfortable living collecting a management fee.

<sup>9</sup> "Q1 Hedge Fund Industry Update: Performance, Positioning, and Hedge Fund Survivorship," Goldman Sachs Global Markets Division Prime Services, April 2022. Goldman defines "newly launched" as a fund which has been in business for less than 3 years.

## Conclusion

Constructing a hedge fund portfolio is both an art and a science. We believe that our differentiated views on the importance of capital preservation and our approaches to defining and quantifying investment risk are key factors in successful portfolios. Because at TIFF we use hedge funds as a risk-reducing companion to fixed income, in this paper, we outlined some of the approaches we use to evaluate the different types of risk associated with hedge fund managers. We also shared how those risks can be asymmetric, interactive, opaque, unpredictable – or all of the above. As we grapple with the current levels of market uncertainty, we want to reiterate our commitment to capital preservation and demonstrate some of the tools we use to mitigate vulnerability to potential market declines. We look forward to sharing in the future the many critical qualitative characteristics we also seek, as well as how we think about hedge fund total returns.





# Glossary

**Alpha:** An investment strategy's excess return above a market index after correcting for market volatility. This is a proxy measure of manager skill.

**Beta:** A measure of a fund or security's return relative to a market index. In dissecting returns, the portion of a manager's returns that can be attributed to the market.

**Crowding:** Indicates the number of participants in a particular trade. A position that is crowded is more vulnerable to sell off in times of market turmoil, reducing its value irrespective of any change in an asset's fundamentals.

**Diversification:** A risk management strategy that mixes a wide variety of investments with differentiated return drivers and exposures within a portfolio. The rationale behind this technique is that a portfolio constructed of different kinds of assets will, on average, yield higher long-term returns and lower the risk of any individual holding or security.

**Downside Capture:** A measure of an investment manager's overall performance in periods of negative market performance.

**Downside Volatility:** A statistical measure of downside risk that focuses on returns that fall below a minimum threshold or minimum acceptable return.

**Drawdowns:** The peak-to-trough decline of a security's or fund's value during a specific time horizon. It is measured as cumulative negative performance.

**Excess Returns:** Performance above the return of a market proxy.

**Left-Tail Risk:** The risk of severe negative market events. Left-tail events occur at the left side of a normal distribution curve and have a small probability of occurring.

**Maximum Drawdown:** The largest observable loss from a security's or fund's highest net asset value to its lowest, before it recovers to its prior peak.

**Pain Index:** The area above the drawdown line. Measured in percentage terms.

**Positive Skew:** The asymmetry of positive returns distributed to the right of center in a symmetrical bell curve. Indicates that a fund captures more upside than downside.

**Sharpe Ratio:** The ratio of return in excess of the risk-free rate per unit of volatility.

**Sortino Ratio:** A variation of the Sharpe ratio that differentiates harmful volatility from total overall volatility.

**Upside Capture:** A statistical measure of an investment manager's overall performance in up markets.

**Upside/Downside Capture Ratio:** The ratio of the percentage of positive market periods captured by a fund or security divided by the percentage of negative market periods captured by that same fund or security.

**Value-at-Risk (VaR):** A risk management statistic used to predict the minimum possible losses under a set time horizon. This indicated vulnerability in a left-tail event.

**Volatility:** A statistical measure of the dispersion of returns for a given security or portfolio.

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**There is no guarantee that any particular asset allocation or mix of strategies will meet your investment objectives.**

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