

L Survivorship Bias and the Walking Dead

KEY ELEMENTS

- Survivorship bias, the predisposition to evaluate a data set by focusing on the “survivors” rather than also examining the record of non-survivors, is important to understand for hedge fund peer groups, which tend to have a relatively large number of constituents that disappear.
- Using a proprietary approach, Callan is able to adjust peer group comparisons for survivorship bias to counter the effects of upwardly biased returns in the unadjusted data and potentially rectify bad perceptions of a manager’s historical performance.
- This better-informed perspective enables a more honest assessment in considering performance relative to other opportunities. Investors will also be less inclined to harshly judge their own historical performance when they compare it to a broader peer group that includes the worse-performing funds previously omitted.



“Survivorship bias is perhaps the most insidious of biases found in data sets, because it is so hard to spot.”

Jim McKee
Callan’s Alternatives Consulting Group

History is written by the survivors.

— Max Lerner, political journalist

Survivorship bias reflects an exclusive focus on survivors instead of a broader context that includes non-survivors. It arises in all kinds of arenas: athletics, business, entertainment—and investing. Remember, for every Tom Brady (or Apple, or Beyoncé) there are untold millions who did not achieve that level of accomplishment. Can we properly judge successes without failures, winners without losers, or survivors without those who died? Lacking that broader context, we may be making less-informed decisions.

When we evaluate portfolios of investments using peer groups, survivorship bias can be an illusion that distorts what we see and hinders our ability to make informed decisions. Other biases in such data sets (e.g., self-reporting bias or selection bias) can also skew an analysis, but their effects are not as predictably systematic or difficult to observe. Survivorship bias is perhaps the most insidious of biases found in data sets, because it is so hard to spot. Survivorship bias subtly hides data no longer present while only letting us consider evidence that is available today.

In the decade following the Global Financial Crisis (GFC), the degree of survivorship bias in peer groups has become more important to understand, particularly for hedge funds, since decisions to hire and fire should reflect an accurate assessment of performance. In this *Hedge Fund Monitor*, we look at where and how survivorship bias can plague our typical peer group findings and thereby undermine our decision-making processes when reviewing performance. Using methodology developed by Callan,¹ we correct for this bias within a sample of our peer groups to answer the question of how much it alters our historical narrative. We can then avoid faulty judgments.

The greatest trick the Devil ever pulled was convincing the world he didn't exist.

—Roger “Verbal” Kint (Kevin Spacey in “*The Usual Suspects*”)

Devil in the Details

When a manager goes out of business, decides to stop reporting, or otherwise disappears from a peer group, the group's future performance reflects the survivors. Rarely will a member leave a peer group because of exceptionally good performance. More often, a fund disappears when its performance suffers and the manager liquidates or merges with another fund. When the peer group moves forward in time, the past results of the missing managers no longer appear in the distribution of surviving peers. Therefore, the likely pain that investors suffered in these former members quietly fades from view, and the peer group lacks the systematic qualities that caused members to disappear. The healthier pack of survivors

¹ For a more detailed review of survivorship bias and how Callan corrects for it, see [“Picking Through the Alpha Graveyard—Correcting for Survivorship Bias in Investment Product Universes,”](#) *Journal of Investment Management*, Third Quarter 2018.

gets to retell the story, but each survivor then faces a tougher peer ranking based on those survivors. For example, a manager with an average-like return among its original peers may find itself needing to defend a bottom-quartile ranking among the survivors.

The more that peer groups rely on alpha, or value-added performance over a benchmark, the greater the likely presence of survivorship bias. Stated differently, the greater a fund's risk of material underperformance compared to its peer group, the more likely that investors decide to abandon that fund, as managers inevitably cycle between their periods of outperformance and underperformance. For example, based on Callan's 45-plus years of experience with peer groups, we can see that our Core Bond peer group has shown relatively little turnover; in contrast, those peer groups more dependent on alpha—or tracking error usually needed to achieve it—have been prone to higher turnover.

While peer groups of long-only small cap or emerging market managers suffer from survivorship bias, as one might expect, the hedge fund peer groups are the most afflicted, particularly those pursuing niche or volatile strategies. More diversified and less volatile peer groups tend to display less survivorship bias. While the death of funds-of-funds (FOFs) has been widely reported, such peer groups at Callan appear to suffer less from the effects of survivorship bias than most hedge fund peer groups. FOFs have delivered disappointing performance and experienced significant turnover, but the performance difference between survivors and their “dead” peers has been less dramatic.

History is a set of lies agreed upon.

—Napoleon Bonaparte

Missing the Bigger Picture

Why do we care about a past that is no longer present? It more effectively illustrates patterns of performance for a group of investment solutions over time and whether an investor's results are good or bad compared to peers. If not adjusted for survivorship bias, a peer group analysis can lead potentially to two forms of bad decisions, especially for hedge funds:

1. Upwardly biased returns can lead to a more optimistic outlook for an asset class and therefore an inappropriate decision to invest based on such unrealistic expectations. Survivorship bias is one of many forms of peer group membership bias that can create unreasonably high expectations for investing in an asset class, but it is the most reliable to do so.²
2. An investor may develop bad perceptions of its manager's performance, as the unadjusted peer group is increasingly defined by traits rewarded in the past but not necessarily in the future. An “underperforming” manager may simply be at the bottom of an investment cycle that befell similar peers which disappeared. Firing such a manager can become a bad decision in hindsight.

² Other forms of membership bias contribute to skewing effects on peer groups besides survivorship bias. For example, poorly performing funds may never report to databases; really good ones closed to new investors also may never report to such databases because they do not need the attention of others, especially competitors looking to emulate their performance. Even if all hedge fund returns were captured from good and bad performers, survivorship bias would still, er, survive simply because liquidated or merged funds will continue to disappear.

Recognizing discrepancies missing from the bigger picture enables fiduciaries to defend their decisions with more realistic assumptions and representative benchmarks. At a minimum, they appreciate better the struggle that defines the survivors.

Strength does not come from winning. Your struggles develop your strengths.
— Arnold Schwarzenegger

Reviving the Dead

How to correct a peer group for survivorship bias is not a simple exercise. If we take the easier approach of appending the dead member's record with the average performance of survivors, the peer group's dispersion of returns will collapse over time, creating an illusion of compressed distributions without meaningfully reflecting the risk of the under- or over-performing average survivor going forward. The effect of becoming more like the average can be as equally misleading as the original effect of survivorship bias.

The more genuine approach to remediate survivorship bias is to systematically reallocate the terminated fund's capital equally among the survivors. This better reflects an investor's subsequent experience when confronted with a liquidating investment and captures the individual traits of survivors. If we reanimate the dead by allocating these assets equally across all survivors, we capture the opportunity set available to investors at that time. The median manager calculation is now based on potential paths that all investors might experience, regardless of whether they began with a survivor or one that terminated.

The past changes a little every time we retell it.
— Hilary Mantel, English author

History as Retold by the Dead and the Survivors

Where survivorship bias exists, a survivorship-adjusted peer group will reveal much, if not all, of the investor's actual experience. To illustrate this systematic difference across the full range of outcomes, we present two sets of peer group comparisons.

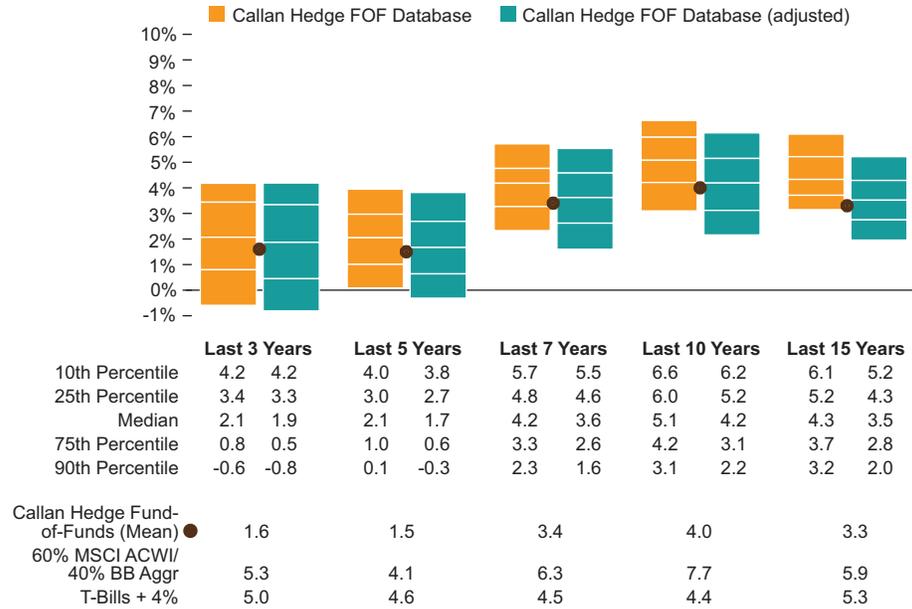
With unadjusted and survivorship-adjusted distributions beside each other over various time periods, **Exhibit 1** looks at the Callan Hedge Fund-of-Funds (FOF) Database Group.³ In addition to the data sets' distributions, the exhibit also shows the mean returns of funds in each quarter of these time periods, including those funds that subsequently disappeared.⁴ Performance of the members of that peer group is net of fees and embodies the actual investor experience in diversified hedge fund portfolios since it includes implementation costs. An accurate representation of this peer group's performance is therefore

³ The Callan Hedge Fund-of-Funds Database Group was created in 2003 based on funds meeting a defined set of criteria. For more detail on this peer group, see our [Fourth Quarter 2003 Hedge Fund Monitor](#) introducing this peer group.

⁴ Because the mean return of peer groups captures performance of all funds, including funds that later terminated, they do not suffer from survivorship bias. The mean return can suffer from other membership biases, such as self-reporting bias, but Callan believes the effects of these biases are not as material or as systematic as those from survivorship bias. These effects are beyond the scope of this analysis.

Exhibit 1

Evaluating Survivorship Bias in the Callan Hedge FOF Database Group



important, as it forms the foundation of Callan’s view of hedge funds as a diversifying alternative to the stocks and bonds that dominate the typical investor portfolio. It is also the basis for evaluating an investor’s hedge fund portfolio, whether based on FOFs or direct investments.

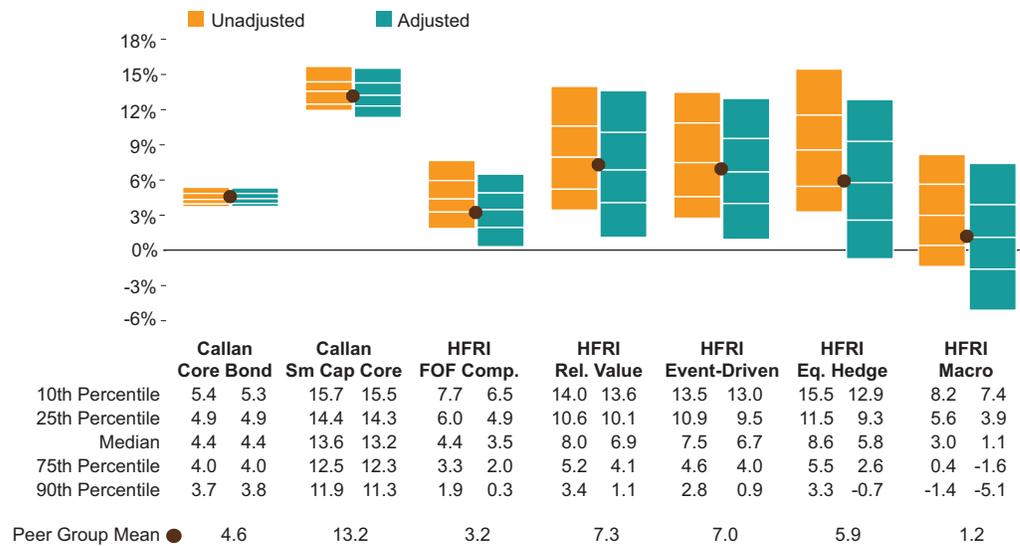
Exhibit 1 provides three notable observations.

1. As we move from the shorter to longer time periods, the median performer’s annualized return, when survivorship-adjusted, falls more and more relative to the unadjusted median. For example, in the 3-year period, the adjusted median manager’s return is 20 bps less than the unadjusted median (+1.87% versus +2.07%, respectively). As we move to the 5-year time frame, the difference widens to 38 bps. In the 10-year time period, it expands further to 89 bps. Over the 15-year time frame, which spans the GFC and more, that spread narrows modestly to 81 bps. These differences within each time period reflect a sobering 20% reduction, more or less, of the unadjusted median manager’s performance. This corrective look at a more realistic investor experience provides a better comparison to the performance of other alternatives, assuming those alternatives are not distorted with survivorship bias.
2. Another equally notable observation is that the potential downside experience of an investor in hedge funds (i.e., being invested in a bottom-performing fund) is even more skewed. As we move back in time, the bottom-decile performance (i.e., 90th percentile) falls even faster relative to the unadjusted 90th percentile when we adjust for survivorship bias. At the 90th percentile, the adjusted return is 40 bps lower (and turns from a gain to a loss) than the unadjusted return going back 5 years (-0.31% versus +0.09%, respectively), 94 bps lower going back 10 years, and 119 bps going back 15 years. This worsening downside risk of hedge fund implementations is not surprising since we are, in effect, reviving the performance of terminated funds and, as we have noted, those were likely to be the poorest-performing funds.

- Included in this chart is the associated mean return calculated by Callan for each quarter based on the members present during that quarter. When strung together in a time series, the average annualized return of these mean returns, however unrepresentative of any investor's actual experience, embodies the survivors as well as those that subsequently terminated. As one might expect, the mean return over any given time period is reasonably close to the adjusted median that "revives" the terminated fund's track record. For example, at the 10-year return, the mean return was 3.99%, much closer to the adjusted median's 4.19% return relative to the unadjusted 5.08%. In other time periods, the adjusted median similarly moves within spitting distance of the mean. But also note that the mean return in the 10-year period, for instance, ranks at the 55th percentile when survivorship bias-adjusted, but without that adjustment it ranks 79th.⁵

Exhibit 2 focuses on the 10-year time frame only, but it now examines the effect of survivorship bias across peer groups representing a variety of strategies or asset classes. The purpose of this comparison is to understand how the effect of survivorship bias differs across peer groups that display varying degrees of performance dispersion.⁶

Exhibit 2
Survivorship Bias
Across Various Peer
Groups Over 10 Years



⁵ If the historical mean already melds the history of dead funds with those of survivors, why all this effort to adjust distributions for survivorship bias? The key value of peer group distributions is to provide a sense of how much a fund varies from the true norm. When an investment's return is outside a comfortable percentile range in peer group comparisons, that fund can then be subject to a process-driven review to understand the underlying reasons for such divergence. While hiring and firing decisions should not be based on one quarter or even one year, investors need to monitor when a hedge fund has drifted too far from the norm. Given the high manager-specific risks of hedge funds, being meaningfully different from peers begs understanding.

⁶ Since dispersion serves as a proxy for tracking error in the pursuit of alpha relative to the peer group's investment objectives, such manager-specific risk represents a form of implementation risk. As we increase implementation risk, we can expect more survivorship bias in our historical peer group analysis.

Using the same framework of analysis described in the first chart above, we find that, over the same time period that begins during the GFC, survivorship bias has a minimal effect on the Callan Core Bond group. With less dispersion and lower associated turnover, the performance history of Core Bond managers, which target the Bloomberg Barclays US Aggregate Bond Index, is telling roughly the same story whether adjusted or unadjusted for survivorship bias, with only a 6 bps difference (+4.41% versus +4.35%). The spread between adjusted and unadjusted median managers widens with more volatile asset classes, such as Small Cap Equity (34 bps).

Among HFRI's hedge fund peer groups,⁷ the return spread between adjusted and unadjusted is relatively tight with the FOF Composite (92 bps),⁸ while HFRI's four primary strategy groups typically exhibit much wider spreads: Relative Value (109 bps), Event Driven (80 bps), Equity Hedge (278 bps), and Macro (188 bps). FOFs, which are normally well-diversified and also retain the performance of both terminated and surviving funds within their portfolios, have relatively long and stable performance reporting. In contrast, since the four strategy groups are comprised of individual hedge funds that have more volatile performance and can disappear quickly, the impact of such turnover on the median performance is likely to be more significant, particularly when market timing is an important variable of active management that widens performance dispersion in a peer group.

As noted in Exhibit 1, the impact of adjusting for survivorship bias at the 90th percentile is typically much worse than that at the median when the peer group's return dispersion is wide and therefore likely creating high member turnover. In the above chart, the peer group with the most dramatic impact is the Equity Hedge group, which exhibited a nearly 400 bps drop(!) at the 90th percentile where the unadjusted 3.28% annualized return over the 10-year period falls to -0.71% when adjusted for survivorship bias. In such peer groups, the worse-case scenario on the history books suddenly becomes depressing when we resurrect and extend the performance of members that exit. In contrast, adjusting for survivorship bias had virtually no effect on the worse-case scenario of the Core Bond's 90th percentile.

Seeing is not always believing.
— Martin Luther King, Jr.

Retelling History the Way We Were

This review of survivorship bias and its impact on peer group analysis helps to precondition us to question the accuracy of peer group benchmarks. Using Callan's proprietary method for correcting survivorship bias in peer group analysis, we find that this bias can materially impact performance ranking over time and across the investment solutions.

⁷ HFRI peer groups are defined by Hedge Fund Research Inc., but the return distributions are calculated by Callan.

⁸ Because we looked at survivorship bias in the first set of charts for the Callan FOF Database Group, we are giving the reader an opportunity to see its effect on a similar peer group, at least for the same 10-year frame. As noted earlier in the first chart, the spread attributed to survivorship bias in the Callan FOF Group was remarkably similar at 89 bps (vs. 92 bps for the HFRI FOF Composite).

While we found that survivorship bias is notably present in most types of manager peer groups, it is worse within peer groups with high dispersion and associated mortality rates. Relative to other types of manager peer groups, this effect is particularly impactful when we analyze the history of individual hedge funds and hedge fund portfolios, including funds-of-funds. This better perspective enables a more honest assessment when we consider past performance relative to other opportunities. We will also be less inclined to harshly judge our own historical performance when we compare it to the broader peer group that now includes the worse-performing fund previously excluded.

Going forward, we do not necessarily need to always correct for survivorship bias since it can be so predictable, even with differently constructed data sets like Callan's and HFRI's peer group. However, if we make key decisions based on peer group analysis, like whether to invest in hedge funds or fire an underperforming manager, we still need to beware of its effect and adjust our assessments accordingly. Otherwise, while the retelling of performance history may seem faithful to the underlying data as originally recorded, what we once viewed as the truth can be twisted into a lie over time. Only by reviving the dead to walk among us will we know the truth.

About the Author



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