What is 'survivorship bias' and why does it matter?

Adviser brief

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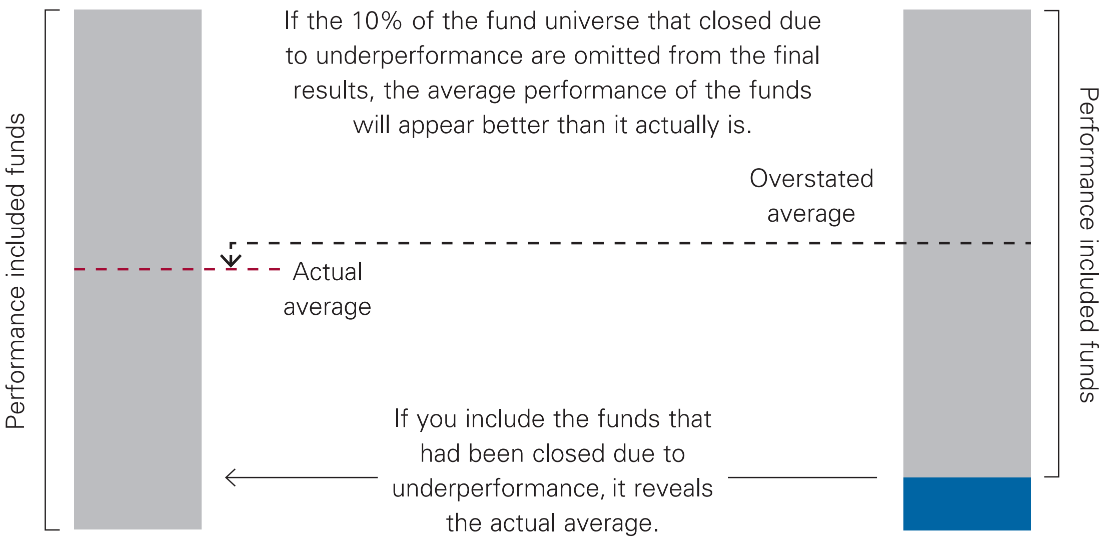
Survivorship bias describes one of the most common – and momentous – flaws in data analysis. Largely ignored by the industry in the past, it can lead to significant distortions in the presentation of performance figures which in turn can lead to erroneous investment decisions. Specifically it has been blamed for overstating active funds' performance.

How survivorship bias works

Survivorship bias occurs when an analyst calculates the performance results of a group of investments, such as funds or individual stocks, using only the survivors at the end of the period and excluding those that no longer exist.

For example, imagine you look at a universe of 100 funds to see how they perform over a period of one year. If, say, 10 of these funds close during the year due to poor performance, the universe would have shrunk to only 90 funds. Because the funds that dropped out had worse than average performance, omitting them from the final results will overstate the average performance of the remaining fund universe.

Figure 1. The distorting effect of survivorship bias



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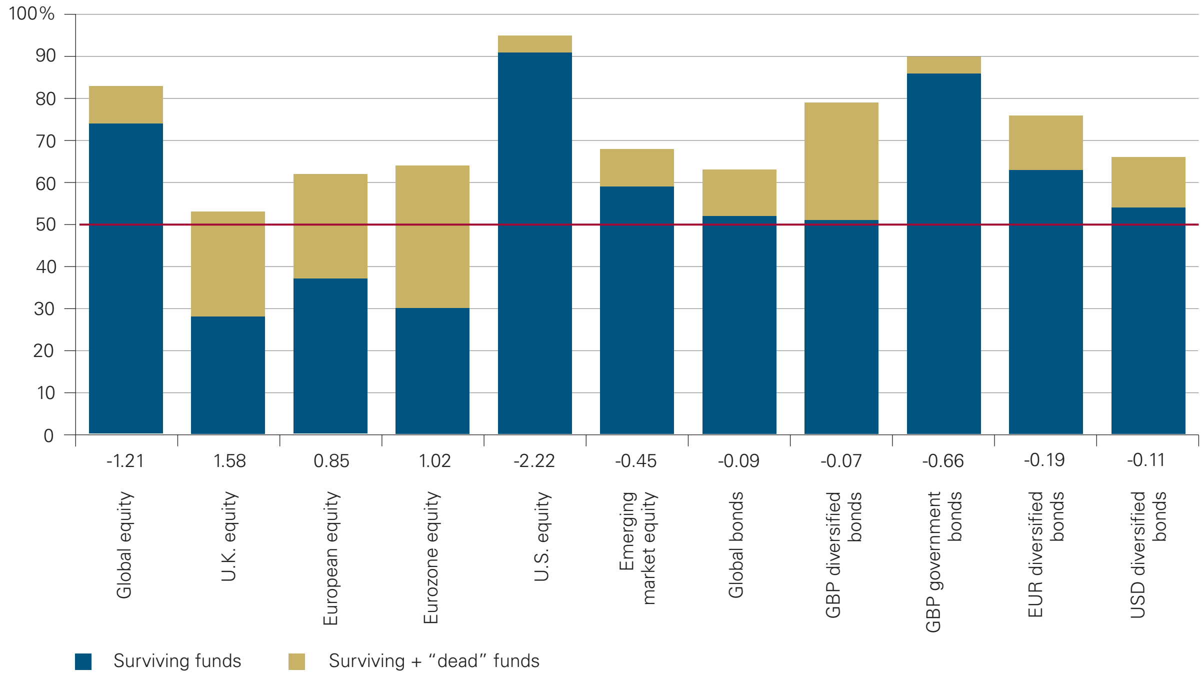
Why does it matter?

Survivorship bias matters because it can distort performance figures significantly. Survivorship bias tends to distort data in only one direction, by making the results seem better than they actually are. This is because fund closures are often a result of underperformance.

To illustrate the impact survivorship bias can have, we have analysed the performance figures of active funds in a variety of bond and equity markets over a five-year period. We attempt to account for survivorship bias in Figure 2 by identifying those funds that were alive at the start of each year period but dropped out of the database at some point along the way, on the grounds of closure due to underperformance. See Figure 3 for more discussion around the performance of those funds that no longer report returns to the database. If underperforming funds drop out of the database, this will tend to exaggerate the degree to which a given sector of active managers can outperform their chosen index. And this is exactly what the results suggest. After adjusting the performance figures for survivorship bias, the number of funds underperforming their benchmark exceeds the number of outperforming funds in all categories.

Figure 2. Including closed or merged funds impacts the performance figures



Notes: Fund universe includes funds available for sale in the UK, filtered according to the description above, from the following Morningstar categories: UK equity – flex cap, large-cap blend, large-cap growth, large-cap value, mid-cap, small-cap; Europe equity – Europe OE: flex-cap, large-cap blend, large-cap growth, large-cap value, mid-cap, small-cap; Euro zone equity – flex-cap, large-cap, mid-cap, small-cap; Global – flex-cap, large-cap blend, large-cap growth, large-cap value, mid-cap, small-cap; US equity – flex-cap, large-cap blend, large-cap growth, large-cap value, mid-cap, small-cap; Emerging markets equity – emerging markets; Europe bond – EUR diversified; US bond – USD diversified; Global bond – global un-hedged bond; UK bonds – UK diversified, UK government. Performance is for periods ending on 31 December 2014. Performance is calculated relative to prospectus benchmark. Fund performance is shown in GBP terms, net of fees, gross of withholding tax, with income reinvested, based on closing NAV prices.

Sources: Vanguard calculations, using data from Morningstar, Inc.

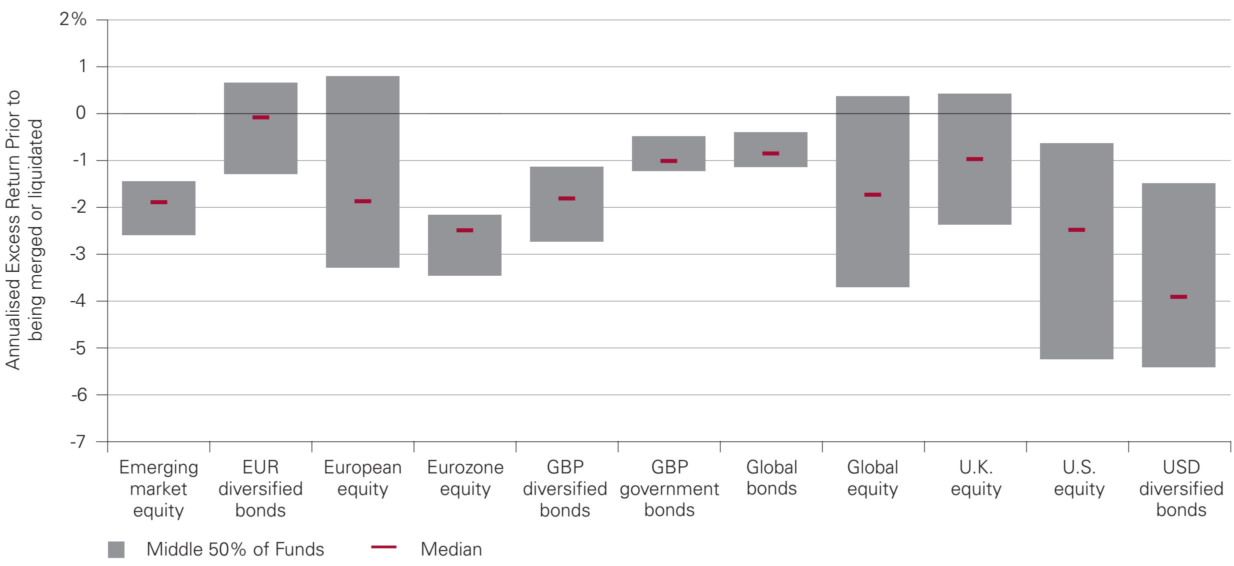
Closed funds usually underperform

When funds get closed down or merged, can you really assume it is about performance? To test this assumption, we evaluated the performance of all the funds identified by Morningstar as either being liquidated or merged into another fund. We measured the closed funds' excess returns versus a broad market benchmark from January 2000 up until the month-end prior to the fund's date of closure. While it may be true that not *all* funds that were closed or merged underperformed, *on average* they did, as the negative median return across all categories clearly indicates.

What should you do about survivorship bias?

When you look at historic performance data to determine the most appropriate asset allocation for your clients, you should make sure you appreciate the basis on which the performance has been calculated. If the numbers haven't been adjusted for survivorship bias, they will probably look better than they really are. And always remember that historic performance is not a good indicator of future results.

Figure 3. Excess return of dead funds over broad benchmark from January 1, 2000 to closing date



Sources: Vanguard calculations, based on data from Morningstar, Inc. and Thompson Reuters Datastream. Displays the cumulative annualised performance of those equity funds that were merged or liquidated within our sample, relative to a benchmark representative of that fund's Morningstar Category. We measure performance from 1 January 2000 and continue each fund's measurement period up until the month-end prior to it being merged or liquidated. Fund universe is as described in Figure 2, limited to those funds that were merged or liquidated from Jan 2000 to Dec 2014. Figure A-1 displays the middle 50% distribution of these funds' returns prior to dying. Performance is measured in GBP terms, net of fees, gross of withholding tax, with income reinvested.

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Important information

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