Introduction

While there are a variety of retirement plans, endowments, hedge funds, and investment vehicles that do not publicly report returns, public filings provide a window on the performance of the investment funds and their underlying holdings. Morningstar uses two types of public filings: (1) portfolio holdings disclosures of U.S. and foreign registered investment companies to estimate the performance of the underlying holdings; and (2) publicly filed financial statements of registered investment companies, retirement plans and certain foundations to determine their fund level -- and, in some instance, holdings level -- performance.

In contrast to the self-reported composite returns reported by hedge funds in the Morningstar database, or the audited performance numbers in fund annual reports, estimated performance reflects the actual experience of specific investors, the entities making these public filings. As a result, it is possible that differences in holding periods, cash-flow timing, fees, calculation methods, etc. could cause the reporting entities’ performance numbers for a particular investment to diverge not only from that investment’s self-reported numbers but also from other reporting entities’ estimated performance numbers for the same investment.

Sources of Information
Registered Investment Company Filings
Hedge funds and funds of hedge funds are generally structured as interval funds; interval funds redeem shares, at net asset value, on a scheduled interval. Some funds of hedge funds have chosen to register under the Investment Company Act of 1940 ("ICA") to better avoid the fiduciary responsibilities required under the Employee Retiree Income Securities Act of 1974 ("ERISA"). Interval funds that are registered investment companies are considered a subset of closed-end funds under the ICA. These interval funds are generally not listed on exchanges. Once registered, these funds must make all SEC-mandated filings, including quarterly disclosures of portfolio holdings and semi-annual Financial Statement filings.

Quarterly portfolios of registered investment companies are available in SEC forms N-Q, N-CSRS, and N-CRS. Because unlisted funds do not include closing prices within their SEC form NSAR-A/NSAR-B filings, Morningstar cross-checks these forms with the SEC forms NQ, N-CSRS, and N-CRS to identify registered fund of hedge funds. (This identification procedure follows a recent paper by Aiken, Clifford, and Ellis¹). Once the relevant registered funds of funds

Introduction (continued)

are identified, Morningstar then uses the methodology described below to calculate a quarterly Estimated Performance for each identifiable holding within that fund’s portfolio.

Financial Statement Filings
In addition to the holdings of registered investment companies, financial statements required by the SEC, the Department of Labor, and IRS also can be used as a source to estimate the overall performance of unlisted investment companies, pension funds, and sometimes the underlying holdings of the pension funds.

In addition to quarterly portfolio holdings filings, registered investment companies are required to make semi-annual filings of their financial statements. Using these semiannual financial statements, Morningstar can estimate the semiannual returns of these funds of funds.

Likewise, the annual financial statements of ERISA plans and public-sector retirement plans are publicly available information. Many endowment funds also publicly release financial statements, generally on an annual basis. Therefore, the annual returns of these plans can be calculated. For most ERISA plans this information is found along with IRS Form 5500, for public plans the statements are available in Comprehensive Annual Financial Reports, and for foundations and endowments financial statements are within IRS form 990. Morningstar could estimate the overall performance of pension funds, endowments, and foundations that publicly file these financial statements.

Financial statements of ERISA plans, endowments, foundations, and public-sector retirement plans sometimes contain enough information to observe the annual returns of the unlisted underlying holdings as well. When sufficient portfolio holdings information is available Morningstar can use this information to estimate the performance of the unlisted holdings of these funds.

Foreign Funds
There are a number of other jurisdictions in which funds of funds register with the applicable regulatory authorities. In certain jurisdictions this registration is mandatory, in others it is only required if these investment funds wish to market to retail investors. In many of these countries regular portfolio holdings disclosures are required. Where information is publicly available, Morningstar can use the portfolio holdings of funds of funds to estimate the performance of the underlying hedge fund holdings.
Methodology

The beginning market value, ending market value, and current cost basis are obtained from the filings. This methodology is identical for both the portfolio holdings of funds and plans as well as the performance of the fund or plan in its entirety. The returns are calculated using the cash flow and change in market value following the Modified Dietz Method.

\[ R_i = \frac{EMV - BMV - CF_i}{BMV + \sum_{i=1}^{n} W_i \times CF_i} \]

Where:

- \( EMV \) = Ending market value
- \( BMV \) = Beginning market value
- \( CF_i \) = The net periodic cash flow at time \( t \)
- \( W_i \) = The proportion of the total number of days of the period that cash flow \( i \) is in (or out of) the portfolio
- \( CF_i \) = Individual cash flow \( i \)

In order for performance of an underlying investment to be estimated, a balance sheet from two consecutive periods must be available for the plan or fund of funds. The reported market values of the underlying holding in each period correspond to the beginning and ending market values. Accounting regulations permit a variety of different cost-basis calculations for purchases and sales of securities. Due to the uncertainty of the timing and size of the investments in we only calculate returns for underlying holdings with no change in cost basis in the subject period.

\[ CF_i = C_i - C_{i-1} = 0 \]

Where \( C_i \) is the cost at time \( t \).

With the simplifying assumption, equation [1] is reduced to the standard geometric calculation of performance:

\[ R_i = \frac{EMV - BMV}{BMV} \]
Methodology (continued)

When multiple observations exist for the same unlisted investment, the median is reported as the Morningstar Estimated Performance. Morningstar will present each of the performance estimations related to the fund, as well as the name of the specific filing entity receiving the return of the underlying fund.