COLUMBIA BUSINESS SCHOOL

Do Funds-of-Funds Deserve Their Fees-on-Fees?

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Motivation: Are FoFs Bad Deals?

- A fund-of-funds (FoF) is a hedge fund that primarily invests in other hedge funds (HFs)
- Growth of FoFs is remarkably fast
  - FoFs now receive over 35% of cash inflows into HFs+FoFs
  - Various benefits
    - Invest in funds closed to new investment
    - Lower minimum investment
    - Diversification benefits
    - Professional portfolio management
- But…

Motivation: Are FoFs Bad Deals?

- At first glance, investors pay a hefty price for investing in FoFs:
  - Double fee structure
    - Average management fee of 1.5%
    - Average incentive fee of 10%
    - Must also pay all underlying hedge fund fees (average 1.5% management fee and 20% incentive fee)
  - FoFs tend to underperform HFs after fees
    - Ackermann, McEnally and Ravenscraft (1999), Amin and Kat (2002), Brown, Goetzmann and Liang (2004), Capocci and Hubner (2004), Fung and Hsieh (2004)

Motivation: Are FoFs Bad Deals?

- Average Monthly Excess Returns (%):

	Mean	Median
HFs	0.58	0.54
FoFs	0.27	0.32
Difference	0.31	0.22

➢ Do Funds-of-Funds Deserve Their Fees-on-Fees?

Outline

- Why observed HFs are NOT the correct benchmark for FoFs
- What is the correct benchmark?
- How can we determine if FoFs add value?
- Conclusion

FoFs and HFs Cannot be Directly Compared!

- Consider an individual investor wanting to invest in HFs:

Direct HF Investment =>

HFs available to the individual investor

Large asymmetric information problems
Need to locate, evaluate and monitor HFs

Indirect HF Investment =>

FoF searches for suitable HFs

True FoF Benchmark

FoFs and HFs Cannot be Directly Compared!

- Assume that FoF managers have skill on average
- "**Skilled**" investors with large amounts of capital and expertise directly invest in HFs
- But, "**unskilled**" investors with little capital or no expertise would choose to use FoFs
- Thus, the HFs that we observe in data are funded either directly by skilled investors or indirectly through FoFs

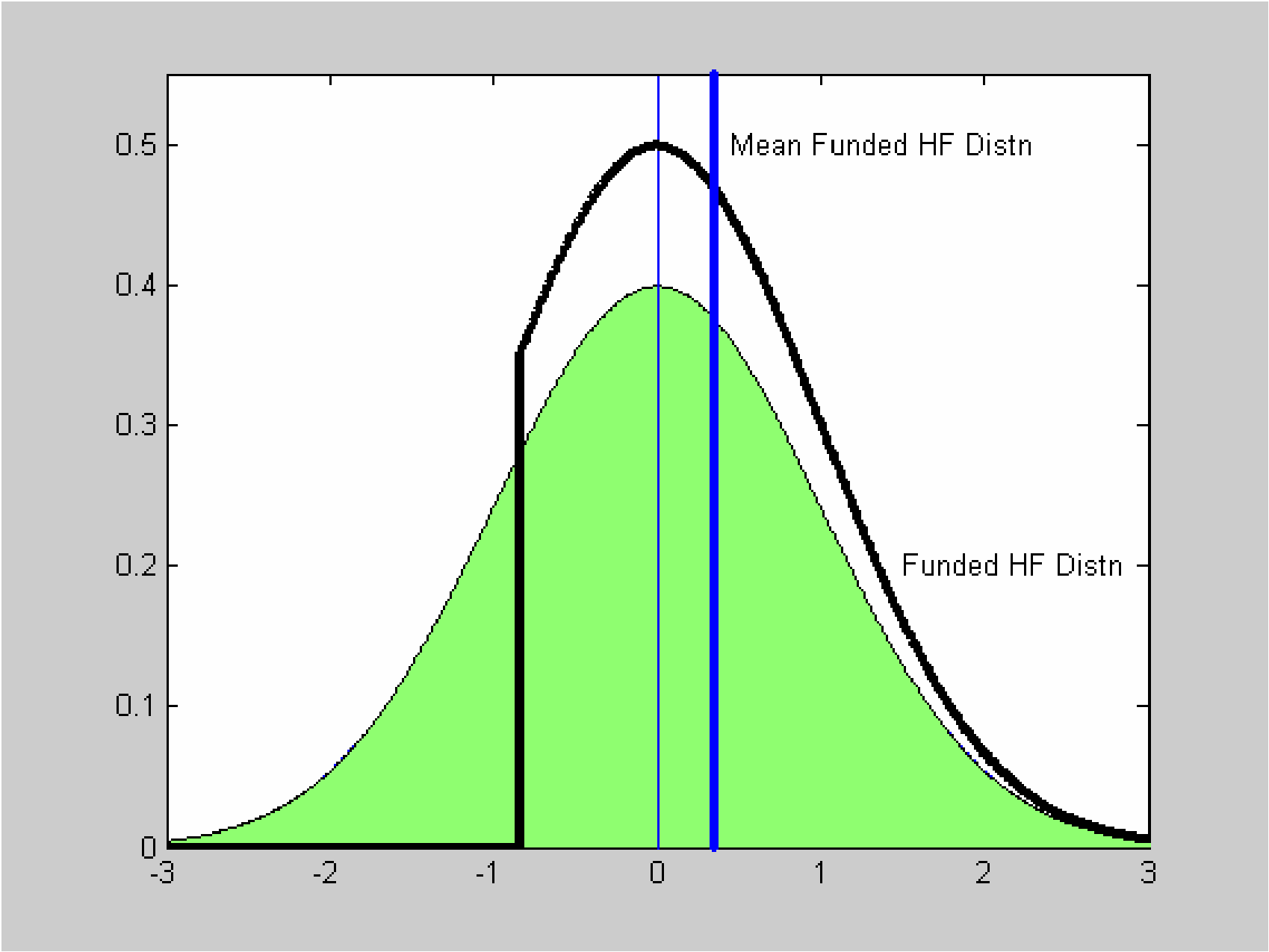
FoFs and HFs Cannot be Directly Compared!

- Imagine a world without FoFs. All unskilled investors are forced to directly invest in HFs.
- Now, many unskilled investors would invest in bad HFs. These bad HFs would not have received funding in a world where FoFs exist.
- In data, HFs receive funding either from skilled investors or indirectly from skilled FoFs. The HFs in data are biased upwards compared to the full HF universe.

FoFs and HFs Cannot be Directly Compared!

- Extreme Example

  Assume that the true HF universe is normal, but that the worst 20% of HFs are not funded. In data, we observe a truncated distribution of HFs that is biased upwards.


Mean Funded HF Distn
Funded HF Distn
0.5
0.4
0.3
0.2
0.1
0
-3
-2
-1
0
1
2
3

FoFs and HFs Cannot be Directly Compared!

- This benchmark "funding" bias of HFs is very different from reporting biases.
- HF databases have mediocrity biases:
  - The most successful funds do not report (Ackermann, McEnally and Ravenscraft, 1999)
  - The worst hedge funds stop reporting (Malkiel and Saha, 2004)
- But these biases all involve whether ***funded*** HFs report or do not report to databases
- Our benchmark bias involves the unobserved ***unfunded*** set of HFs which constitute the true FoF benchmark

Do FoFs Deserve Their Fees-on-Fees?

- Answer depends on who is asking the question
  - The more skilled an investor is, the less likely she finds FoFs valuable
  - The less risk-averse an investor is, the less value a FoF provides
  - Answer also depends on investment opportunity set of the investor

How to Construct the FoF Benchmark

- Consider an investor who has chosen to invest in a FoF.
- At the margin, she must be, on average, indifferent between investing in a FoF or investing in a HF that she could find on her own
- ➢ Revealed preference, through an asset allocation problem, can be used to characterize the true FoF benchmark

The Portfolio Allocation Problem

- Mean-Variance Utility

$$U = \mathrm{E}(r_p) - \frac{\gamma}{2}\,\mathrm{var}(r_p)$$

- What is the true, unobservable hedge fund distribution available to unskilled investors?

is the same question as:

- What makes an investor indifferent between a direct HF investment on her own and a FoF investment?

Benchmark Assets (AC6)

- U.S. Equities
  - Ibbotson S&P500 Large Cap index, Russell 2500 Mid-to-Small index, MSCI Large Cap Value and Growth index
- U.S. Bonds
  - Long-term government bonds, Intermediate-term government bonds, Long-term corporate bonds
- Commodities
  - Goldman Sachs Commodity index
- Foreign Equities
  - MSCI country returns for U.K., Japan, Germany and France, and Emerging Market index
- Foreign Bonds
  - U.K., German and Japanese 1-month Eurobond returns in U.S. dollars

Benchmark Assets Inputs

- Median excess return
- Median standard deviation
- Median Dimson-adjusted correlations
  - Account for non-synchronous trading/reporting effects
  - Three lag adjustments

➢ These represent a typical HF or FoF

Effect of Lags on HF Correlations

		Hedge Fund Correlations			
	Asset Class	No Lags	1 Lag	2 Lags	3 Lags
U.S.	Large Cap	0.207	0.316	0.407	0.423
Equities	Small Cap	0.264	0.356	0.401	0.406
	Growth	0.191	0.293	0.354	0.350
	Value	0.162	0.244	0.296	0.329
U.S.	Long-Term Gov	-0.008	-0.052	-0.079	-0.087
Bonds	Inter-Term Gov	-0.048	-0.106	-0.134	-0.112
	Long-Term Corp	0.037	-0.006	-0.016	-0.026

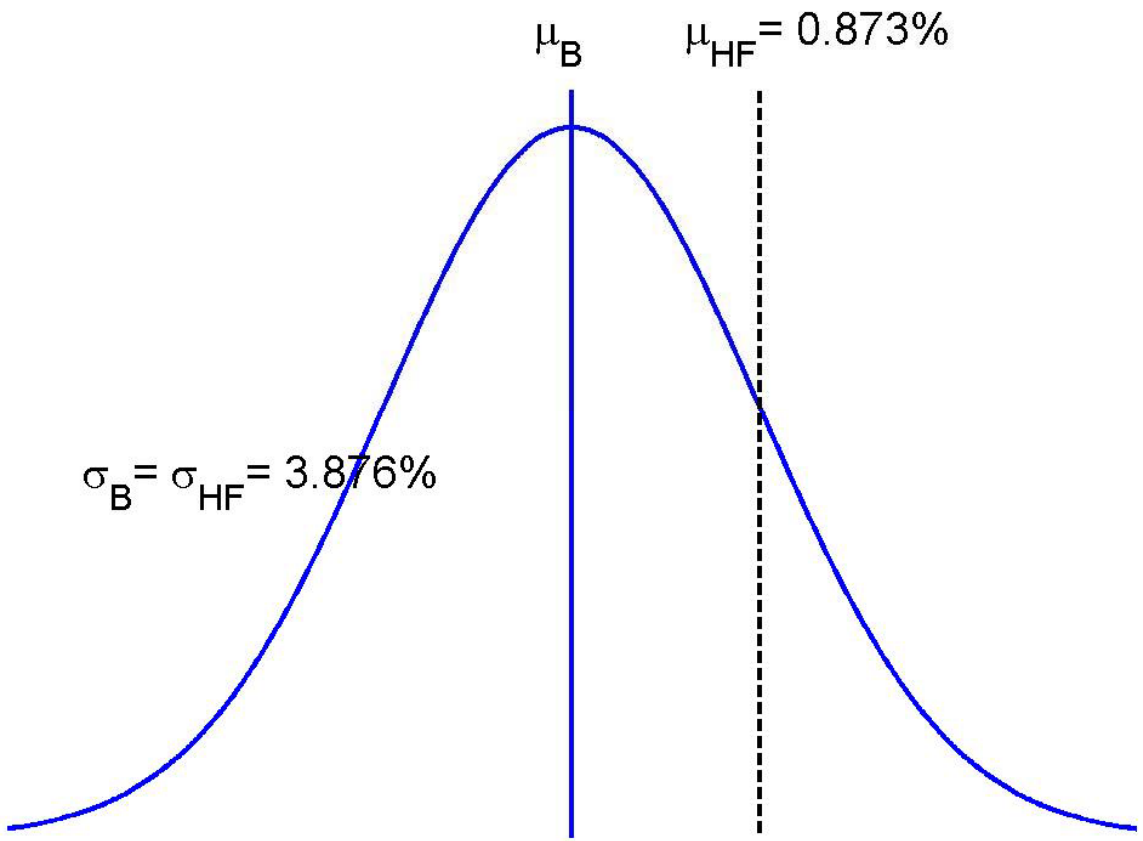
Characterizing the True FoF Benchmark

- The true FoF benchmark is the underlying distribution of both funded and unfunded HFs faced by unskilled investors
- The ex-ante utility gain of adding a HF drawn from the true distribution must be the same as adding a FoF
- We characterize the benchmark distribution in terms of
  - Mean
  - Volatility
  - Left-hand tails [in the paper]

Characterizing the True FoF Benchmark

- Denote moments of the FoF benchmark distribution with "B's"
- We know that the true FoF benchmark must be WORSE than the observed HF distribution
- We assume:
  - $\mu_B < \mu_{HF}$
  - $\sigma_B > \sigma_{HF}$

Characterizing the Benchmark Mean μ_B



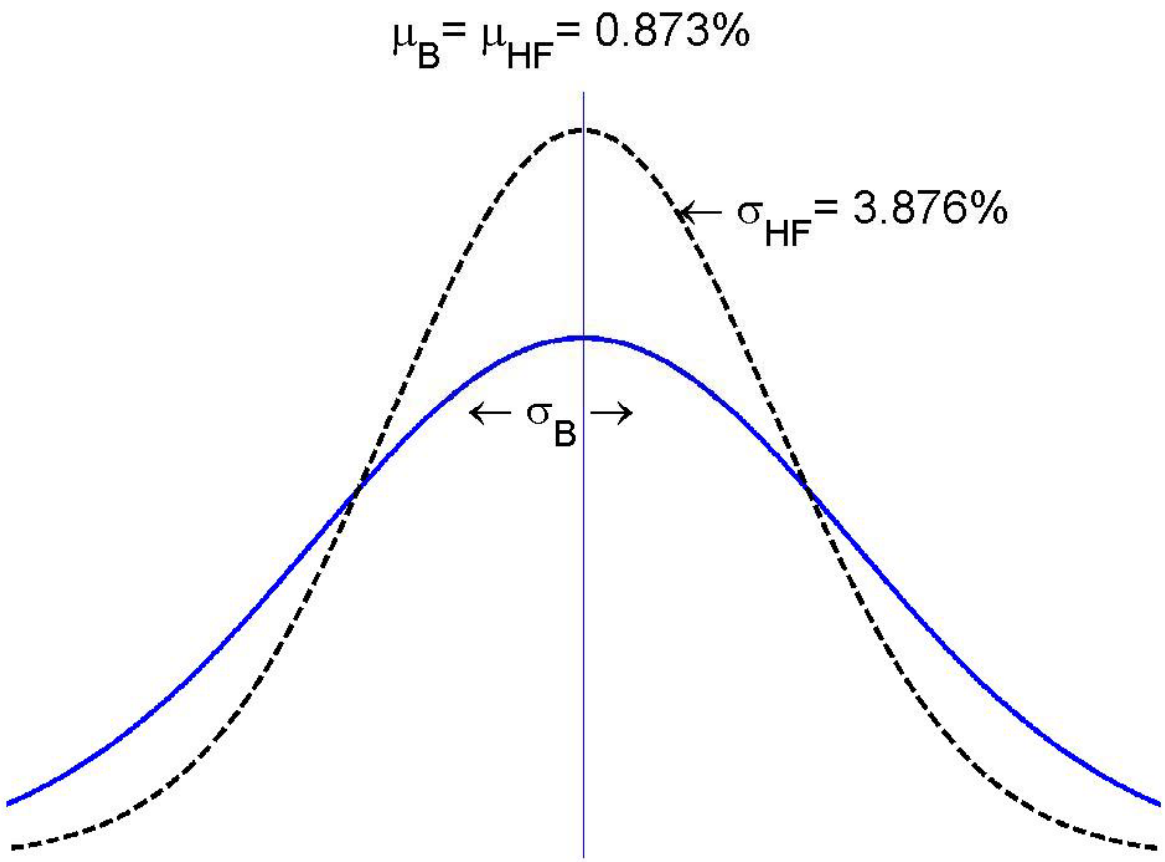
Characterizing the Benchmark Mean μ_B

- In data, μ_{HF} = 0.873%, σ_{HF} = 3.876%

	No Short Sales			Short down to -20%		
	$\gamma = 4$	$\gamma = 8$	$\gamma = 12$	$\gamma = 4$	$\gamma = 8$	$\gamma = 12$
Case 1: Assume σ_B = 3.876%						
AC6 + FoF	-	0.710	0.789	0.731	0.837	*0.899*
Case 2: Assume σ_B = 1.1 x 3.876%						
AC6 + FoF	-	0.731	0.825	0.752	*0.876*	*0.947*

FoFs add value if an investor thinks she would obtain at most 0.710%, on average, or 0.162% (1.96% pa) less than observed HF returns

Characterizing the Benchmark Volatility σ_B



Characterizing the Benchmark Volatility σ_B

- In data, $\mu_{HF} = R_f + 0.54\%$, $\sigma_{HF} = 3.876\%$

	No Short Sale			Short down to -20%		
	$\gamma = 4$	$\gamma = 8$	$\gamma = 12$	$\gamma = 4$	$\gamma = 8$	$\gamma = 12$
Case 1: Assume $\mu_B = R_f + 0.54\%$						
AC6 + FoF	-	6.839	4.782	6.504	4.233	*3.665*
Case 2: Assume $\mu_B = R_f + 0.9 \times 0.54\%$						
AC6 + FoF	-	5.868	4.204	5.511	*3.691*	*3.228*

Investors prefer a FoF if their own HF investments are, on average, 0.357% more volatile than observed HF returns

Comparing HF portfolios with FoFs

- Institutional investors often invest in a portfolio of HFs. Should they do this on their own, or should they use a FoF?
- Create artificial FoFs: portfolios of 10 randomly selected HFs
- Compare adding a FoF with adding an artificial FoF

➢ Even for institutional investors who can diversify HF investments by themselves, FoFs can add value!

Comparing HF portfolios with FoFs

- Characterize the mean benchmark return, μ_B, from an institutional investors' perspective
- In data, μ_{AFoF} = 0.853%, σ_{AFoF} = 2.53%

	No Short Sale			Short down to -20%		
AC6 + FoF	$\gamma = 4$	$\gamma = 8$	$\gamma = 12$	$\gamma = 4$	$\gamma = 8$	$\gamma = 12$
σ_B = 2.53%	-	0.745	0.769	0.733	0.744	0.763
$\sigma_B = 1.1 \times 2.53\%$	-	0.769	0.803	0.754	0.774	0.798

Institutions will use FoFs if they believe their own chosen HFs would do, on average, at least 0.108% (2.40% pa) worse than observed HF average returns.

Conclusion

- FoF returns should not be directly benchmarked to HF returns
- We characterize the true benchmark distribution of FoF returns using revealed preference (asset allocation certainty equivalents)