

Investment strategy for pensions actuaries  
Dr. Nick Motson – Cass Business School



## Fund Manager Fee Contracts

How does the way a manager is paid  
affect their risk taking behaviour?

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## OVERVIEW

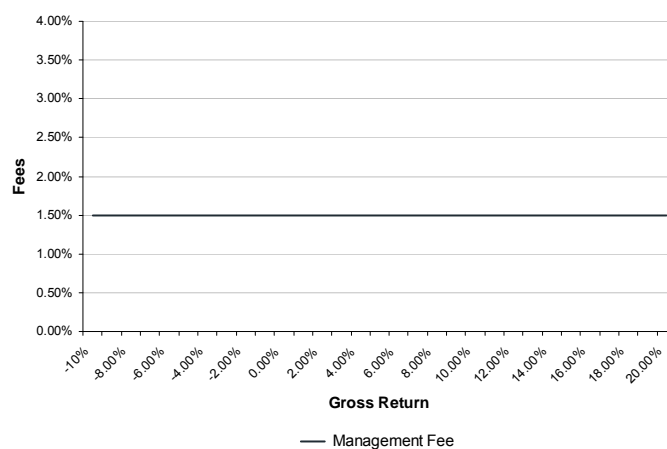
- In an ideal world, the financial interests of asset managers would be perfectly aligned with those of their investors. The key tool to achieve this is the design of the compensation contract
- The compensation contract should have 3 key objectives
  - Effort Inducement
  - Signalling
  - Risk Sharing
- The main focus of this presentation is **Risk Sharing** however the other 2 objectives will be mentioned

## AGENCY CONFLICTS

- We do not live in an ideal world and in the real world we face an ***agency conflict***
  - The investor wants to maximise risk adjusted return
  - The asset manager wants to maximise fees
- This is because in almost all cases fees are not symmetric and linear i.e. managers receive more fees if performance is high (positive) and do not pay negative fees if performance is low (negative)

## MUTUAL FUNDS FEES

- A flat percentage of assets under management
  - Fees independent of return
  - Manager has incentive to gather assets



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## **MUTUAL FUNDS GATHERING ASSETS**

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- Mutual fund investors focus primarily on published rankings of relative performance when making their investment decisions<sup>[1]</sup>.
- These allocation decisions are asymmetric in that funds with good relative performance experience net cash inflows while those with poor relative performance do not experience significant outflows<sup>[2]</sup>.
- From these facts the mutual fund industry can be viewed as a tournament in which all funds with a similar objective compete with one another during the year<sup>[3]</sup>.

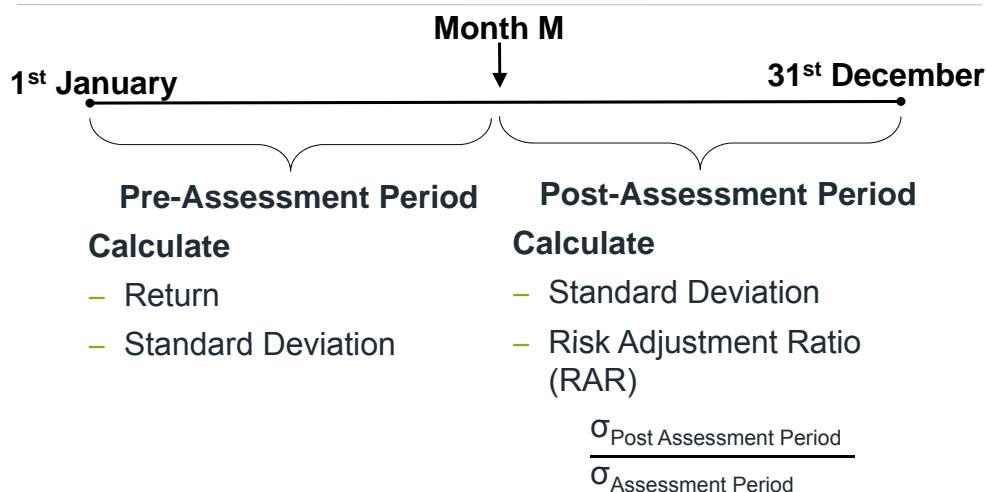
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## **MUTUAL FUNDS TOURNAMENTS AND TEMPTATIONS**

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- This tournament structure, where cash flows into the funds and, ultimately, the manager's compensation depends on relative performance, can provide incentives for managers to alter the investment characteristics of their portfolios.
- Specifically, managers of those funds most likely to be "losers" at the end of the tournament will have the incentive to increase the risk of their portfolios more than those managing funds likely to be "winners".

## MUTUAL FUNDS DESIGNING THE EXPERIMENT



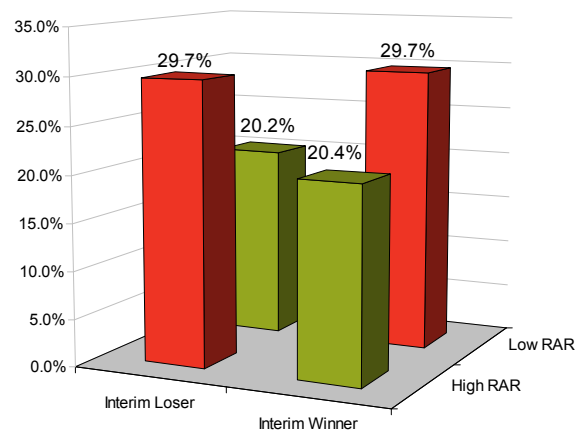
## MUTUAL FUNDS DESIGNING THE EXPERIMENT

- For each year, rank funds by return. Classify interim “winners” and “losers” by whether they are above or below median.
- For interim winner and loser funds, classify again according to whether RAR is above or below its median value.
- These classifications lead to a 2 x 2 contingency table:

	High Risk Ratio	Low Risk Ratio
Interim Loser	%	%
Interim Winner	%	%

## MUTUAL FUNDS THE RESULTS

- The null hypothesis would be 25% of funds in each category, this can be rejected!



## MUTUAL FUNDS CONCLUSIONS

- Even a flat percentage fee based on assets under management leads in agency issues:
  - Interim losers increase the volatility of their funds during the latter part of a year in order to try and improve their ranking
  - Interim winners decrease the volatility of their funds during the latter part of a year in order to try and maintain their ranking
- The main cause of this is the convex relationship between returns and flows

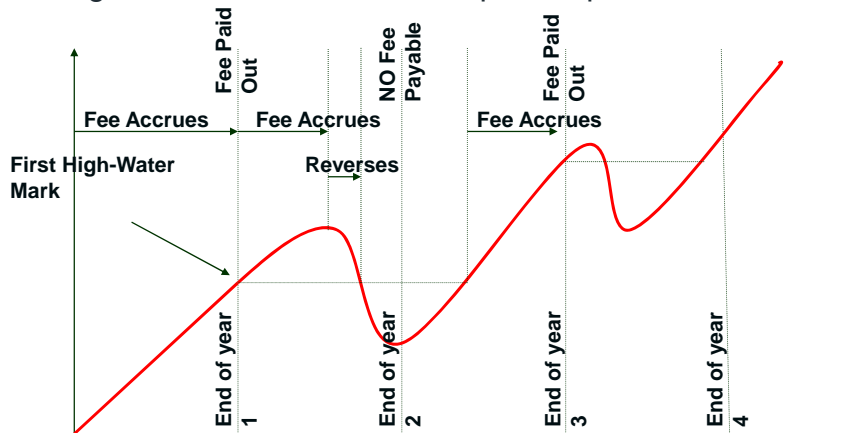
## HEDGE FUNDS FEES

- 2% management fee and a 20% incentive fee
- The manager has a call option on the performance of the fund



## HEDGE FUNDS HIGH-WATER MARK

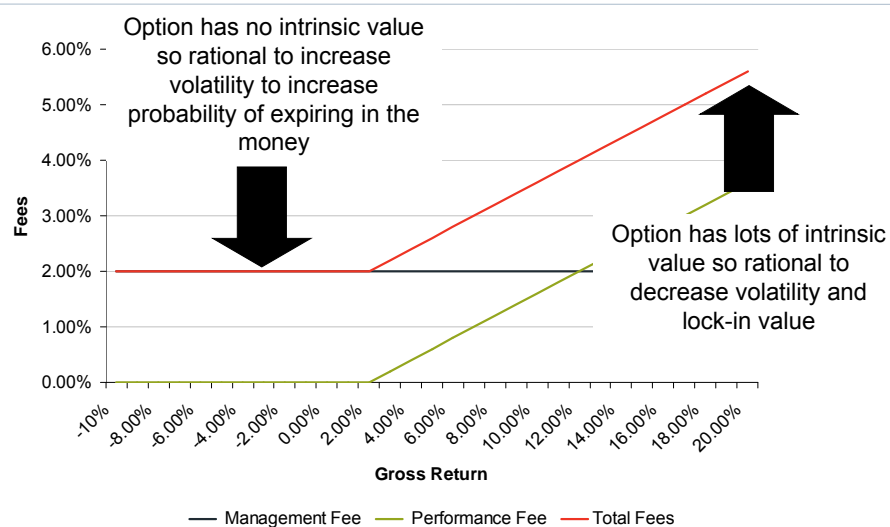
- High-Water Mark makes fees path dependent



## HEDGE FUNDS RATIONALE FOR FEES

- The rationale for this compensation structure is:
  - Reward absolute returns
  - Only pay for performance once
- The issue is:
  - As we saw with mutual funds, contracts with convex payoffs can potentially increase the incentive to take risks i.e. risk-shifting.

## HEDGE FUNDS POSSIBLE AGENCY CONFLICT



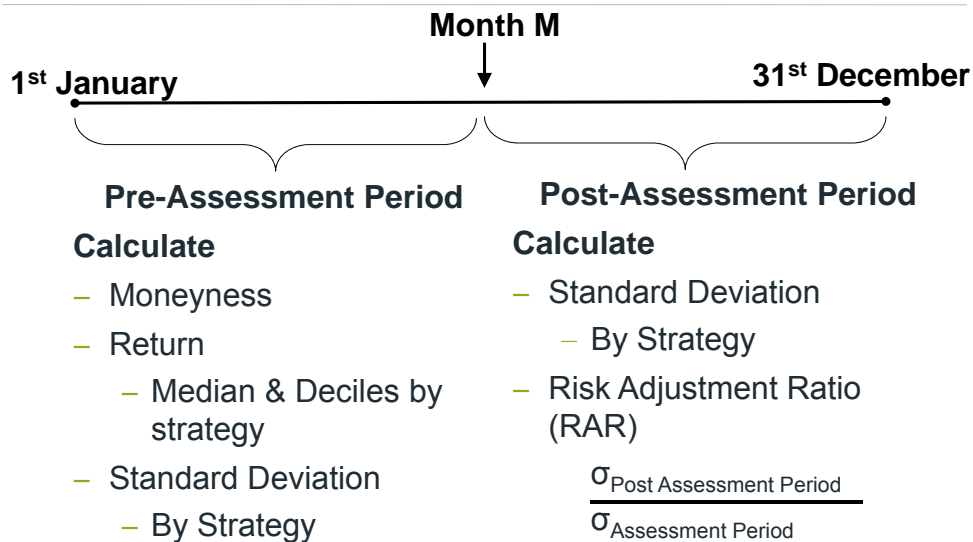
## HEDGE FUNDS POSSIBLE AGENCY CONFLICT

- Given the above and the evidence on tournaments in mutual funds it seems logical to investigate whether hedge funds behave the same or differently
  - Do hedge fund alter their risk according to their relative performance?
  - Do fund that are a long way below their high-water mark “put it all on black”<sup>[4]</sup> to try and make up the losses?

## HEDGE FUNDS DESIGNING THE EXPERIMENT

- TASS Live & Graveyard Databases (Jan 1994 - Dec 2007)
  - Funds that report monthly and have reported for at least 1 full calendar year
  - Sample of 4,990 funds of which 2,449 are currently live and 2,541 are “dead”
  - Extract Net Asset Values (NAV) and strategy details
  - Returns Converted to Gross<sup>[5]</sup>
- Measuring Option Delta
  - Use Proxy “Moneyness” (NAV/High Water Mark)
- Measuring Risk
  - Standard Deviation of Returns

## HEDGE FUNDS DESIGNING THE EXPERIMENT

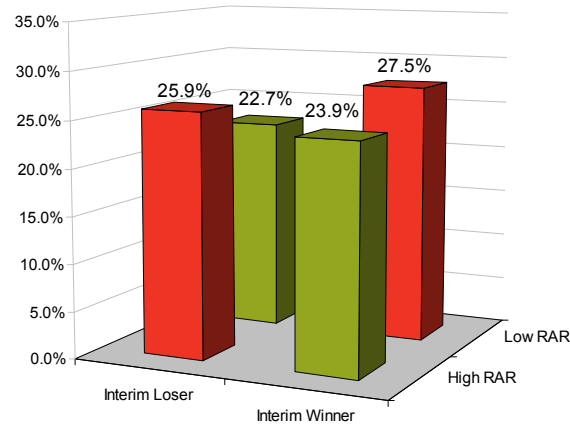


## HEDGE FUNDS DESIGNING THE EXPERIMENT

- Risk Adjustment Ratio (RAR)
  - RAR > 1 Increased Risk
  - RAR < 1 Decreased Risk
- Normalise RAR by comparing (deducting) median for funds following same strategy at time t
  - This step accounts for strategy and market effects
  - Normalised RAR > 0 Risk Increased (Decreased) More (Less) than peers
  - Normalised RAR < 0 Risk Decreased (Increased) More (Less) than peers

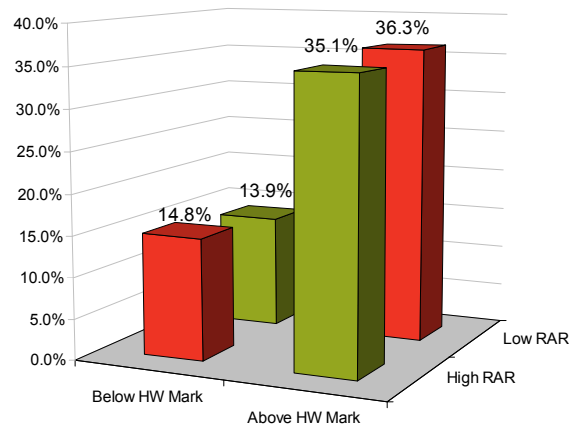
## HEDGE FUNDS THE RESULTS – RELATIVE RETURN

- The null hypothesis would of 25% of funds in each category can be rejected
- However the effect does not seem as large as for mutual funds



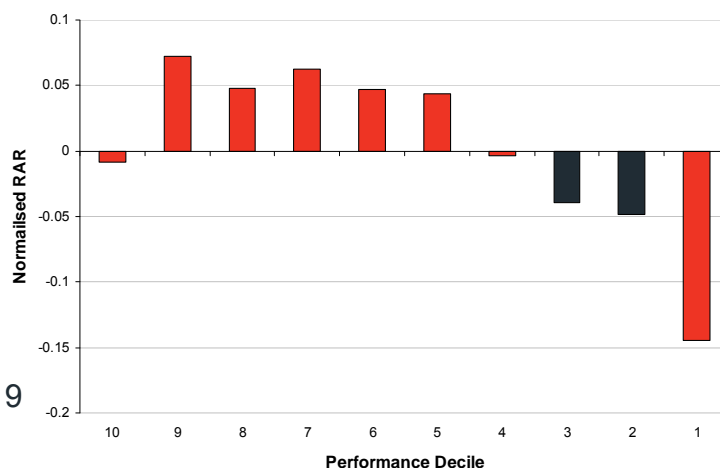
## HEDGE FUNDS THE RESULTS – ABSOLUTE RETURN

- More funds above high-water mark than below
- Can still reject null hypothesis of no effect



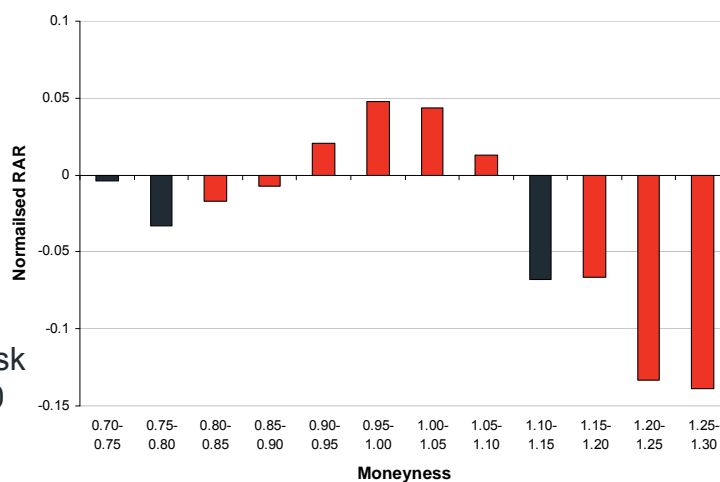
## HEDGE FUNDS EXPANDED RESULTS –RELATIVE RETURN

- Statistically significant reduction in risk for top decile
- Statistically significant increase in risk for deciles 5 to 9



## HEDGE FUNDS EXPANDED RESULTS – ABSOLUTE RETURN

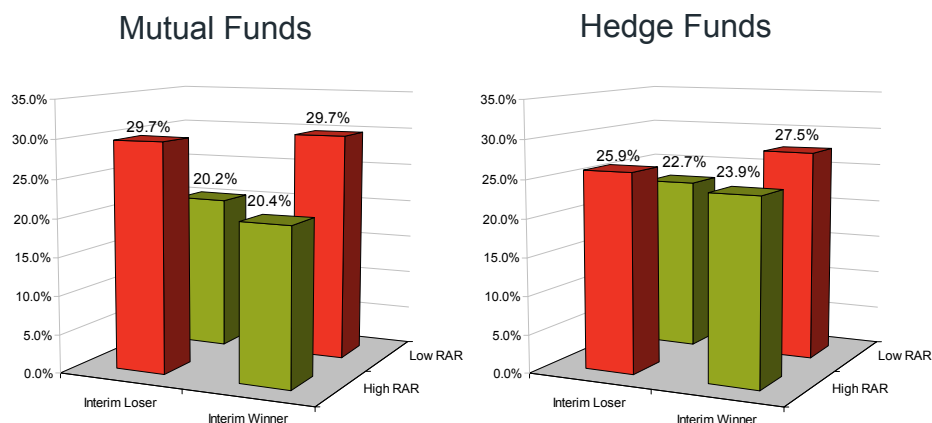
- Statistically significant reduction in risk for moneyness above 1.15
- Statistically significant increase in risk between 0.90 & 1.10



## HEDGE FUNDS CONCLUSIONS

- Evidence of managers adjusting the volatility of their funds in response to their relative performance with managers of relatively poor (strong) performing funds increasing (decreasing) the volatility of their funds
- Evidence on absolute performance (as measured by the moneyness of the incentive option) is more complex. Although managers whose performance is highly positive appear to substantially decrease risk, managers whose return is highly negative do not substantially increase risk.

## MUTUAL FUNDS vs HEDGE FUNDS WHY THE CONTRASTING RESULTS?



## **MUTUAL FUNDS vs HEDGE FUNDS WHY THE CONTRASTING RESULTS?**

- If the key issue is the non-linearity and non-symmetry of fees surely we should expect the agency conflict to be bigger in hedge funds than in mutual funds?
- However the data does not support this.....

## **COMPENSAION CONTRACTS EXPLICIT VERSUS IMPLICIT TERMS**

- Explicit Terms of Compensation Contract
  - % of assets (hedge funds & mutual funds)
  - % of upside (hedge funds only)
  - High water mark (hedge funds only)
- Implicit Terms of Compensation Contract
  - Possibility of Liquidation
  - Reputation Concerns
  - Manager Investing Own Money

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## **MUTUAL FUNDS vs HEDGE FUNDS POSSIBILITY OF LIQUIDATION**

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- The attrition rate in mutual funds has been estimated at 2.6% per year<sup>[6]</sup>
- The attrition rate in hedge funds has been estimated at a much higher rate of 8.6% per year<sup>[7]</sup>
- This higher liquidation probability in hedge funds could be one of the key factors influencing their “better” behaviour

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## **MUTUAL FUNDS vs HEDGE FUNDS CO-INVESTMENT BY THE MANAGER**

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- 46% of U.S. stock funds reported no manager ownership<sup>[8]</sup>
- The average hedge fund has managerial ownership of 7.1% of the AUM<sup>[9]</sup>
- This high level of co-investment means that the manager “has skin in the game” and thus the incentives are better aligned

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## CONCLUSIONS

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- The design of incentive almost inevitably leads to agency conflicts
- Both explicit and implicit terms of the contract need to be considered
- The easiest way to ensure that a manager will act in the best interests of the investors is to ensure that they “eat their own cooking” by co-investment in the fund

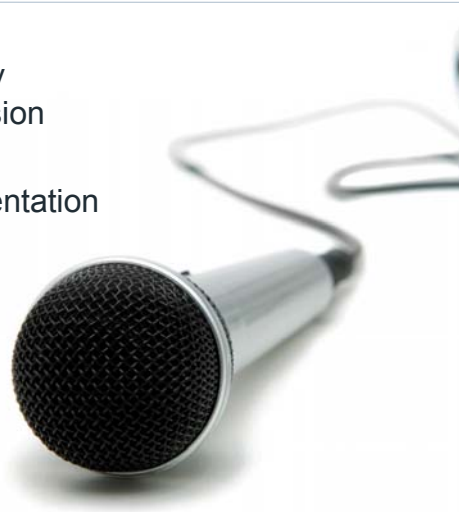
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## Questions or comments?

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Expressions of individual views by members of The Actuarial Profession and its staff are encouraged.

The views expressed in this presentation are those of the presenter.



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- [1] Goetzmann, Greenwald, and Huberman (1992) "Market response to mutual fund performance" *Working Paper Columbia University*.
- [2] Sirri, Erik R. and Peter Tufano, (1998), "Costly search and mutual fund flows", *Journal of Finance* 53, 1589-1622.
- [3] Brown, Keith C.; Harlow, W. V.; Starks, Laura T (1996), "Of Tournaments and Temptations: An Analysis of Managerial Incentives in the Mutual Fund Industry", *Journal of Finance* 51, 85-110
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- [6] Carhart, M., Carpenter, J., Lynch, A. and Musto, D, 2002, Mutual fund survivorship, *Review of Financial Studies* 15, 1439-1463.
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