Hedge & Absolute Return Funds

Past, Present & Future

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Agenda

- The Past
  - From 1949 → 1998; Jones' innovation → LTCM bailout
- The Present
  - 8,000 funds & $800 billion
  - The taming of risk
  - From High Net Worth individuals → Institutional respectability
- The Future
  - Inflows of $120 bn pa & 35% pa growth
  - Implications for
    - Hedge fund returns
    - Traditional long-only managers
    - Consultants
  - New General Theory of utility of benchmark-relative returns
  - Simplified Theory → Surplus volatility & Shortfall risk
  - Implications of new theory for all investors

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The Past – In the beginning …
Reducing exposure to directional risk

USA 1949: Alfred Winslow Jones (born in Melbourne)

- Idea: Protect investors against declines in market
- Buy some stocks & sell some others
  - In **falling market**, make profit on stocks sold short
  - Provides offset against losses on long (bought) positions
  - In **rising market**, make profit on stocks bought
  - But offset by losses on stocks sold short
  - Result: **Hedge** out *some* of market risk – *not all!*
  - Make **profit from skill** at picking "good" stocks to buy & "bad" stocks to sell
- Regulated funds not allowed to sell short
- So offered product privately via general partnership
- No fixed management fee, BUT …
- Fee of 20% of realised gains

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The Past
Reducing management style risk

Jones

- Extremely secretive – hint of things to come?
- Beat market for years
- But doubted his own stock picking skills
- 1952: Converted to limited partnership
- 1954: Hired Dick Radcliffe to manage part of fund
- Later hired other managers & gave lot of autonomy
- First **multi-manager fund?**
- 1966: Newspaper article revealed he out-performed best mutual funds over 5 & 10 years
- Lots of interest in hedge funds: Surprise, surprise!

The Past
Change in wind direction

1960s

- Strong bull market → Losing too much on short sales
- Leveraging long-only positions → better performance
- Most new hedge funds did **not** short sell
- "Hedge funds" now an "oxymoron" – no longer hedged!
- 1969: SEC survey found
  - 215 investment partnerships
  - 140 of which were probably hedge funds

1970s

- Bear market – Value Line Composite Index **down 70%**
- Only few hedge funds survived

The Past
Doldrums → Fund of hedge funds

1980s

- 1984: Tremont found only 68 active funds. Most:
  - Limited partnerships
  - High net worth individual investors
  - High minimum investment
- 1982: Jones (then 82) amended partnership agreement to **fund of hedge funds** using external managers
- 1986: *Institutional Investor* magazine revealed
  - Robertson's **Tiger Fund** averaged **46% pa** over **6 yrs**
  - S&P 500 did 18.7% pa over same period
  - Tiger Fund used aggressive directional bets on whole market – no hedging
- Many hedge funds did same thing in currencies, fixed interest, etc. → **Global macro funds**

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The Past – Déjà-vu?
The Big & Smart have problems

1990s

- 1990: Approx 600 hedge funds world-wide managing c. $20 Bn
- 1992: George Soros' Quantum Fund makes $1 billion on £stg, when UK leaves EMF
- 1994: Askin loses $US 420 M
- 1997: Hedge funds blamed for Asian Crisis
- 1997: Niederhoffer bankrupts funds by selling Puts on S&P 500 before Oct 97 "plunge"
- 1998: Russia defaults on government bonds
  - III Global Investors lose $US 350 M
  - McGinnis loses $200 M, BUT not to be outdone …
  - Soros loses **$US 2 billion**
- US Federal Reserve arranges **$US 3.6 Bn bailout** of LTCM
- Disasters later proven to be unrepresentative of most of industry

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The Present
Better FoHFs managers tame risk

- Large array of listed & OTC risk management derivatives available for managing risk exposures
- Widespread use of sophisticated pricing models, optimisers, risk models, etc.
- Many quality **fund of hedge funds** managers:
  - Hire former HF fund managers to select & manage the managers
  - Reduce risk by extensive diversification - geographic, asset class, sector, style, strategy, etc.
  - Use specialised risk models to form portfolios of funds
  - Quality & extent of due diligence increased markedly

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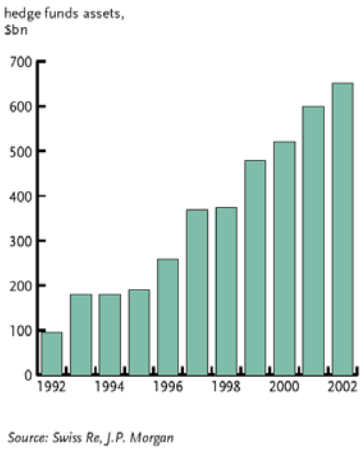
The past & present
Global hedge fund assets



Source: Swiss Re, J.P. Morgan

21% pa growth over 10 yrs

RBA, Dec 2003:
8,000 hedge funds
$US 800 bn

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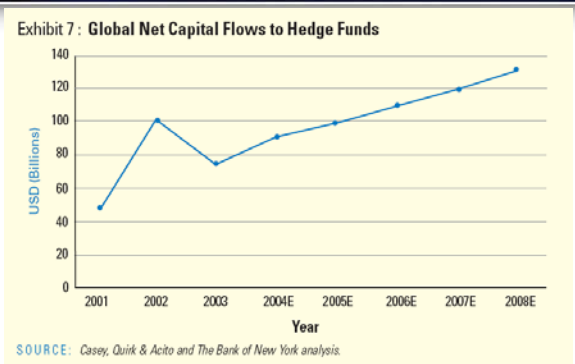
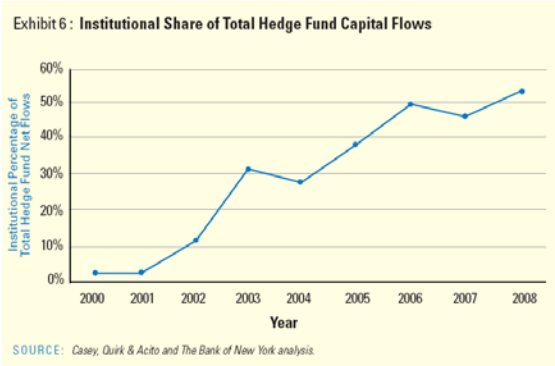
The present & future
Net inflows to global hedge funds



Can hedge fund industry accept extra $100 bn pa?
How many start-ups could be funded with $100 M each?
Is there enough investment grade talent out there?

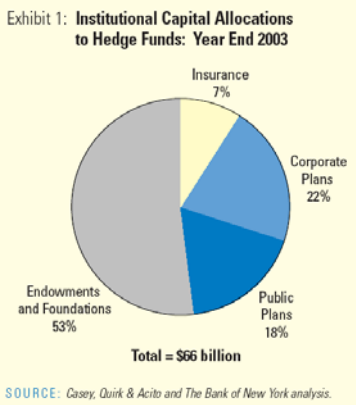
The present & future
HNW Individuals → Institutional (US)



Institutional use overtaking high net worth individuals

Respectability arrives!

The present
US Institutional use by segment



- **Endowments & foundations** over 50% of market. Why?
  - **Very smart** investors
  - **Not** scrutinised over **short term**
  - **Focus on** what is right for **long term**
- 40% with $US 100^{+}M have 12% av. allocation to HFs
- Some have allocations of 50%
- Av. target allocation 15-20%
- **DB funds** have 5 x E&F funds, but only 40% of HF insto to market
- Av allocations only 3%, BUT
- ***Fastest growing*** segment

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The present
US Institutional use – Why? & How?

- Institutional *ex ante* return expectations decreasing
  - In 2000, av. insto expected 12% pa return
  - By 2003, av. expectation reduced to 8% pa
- Why is use of hedge funds still increasing *rapidly*?
  - Higher returns no longer primary reason for investing
  - **High level of Diversification** provided by hedge funds
  - **Lower volatility** of returns from **funds of hedge funds**
    - Well diversified FoHFs: equity returns with bond volatility
- From where are HF allocations being funded?
  - NOT taking from money from "Alternative Assets"
  - Taking from **bond & equity allocations**
  - Hedge funds so different, best treated as separate asset class in portfolio construction

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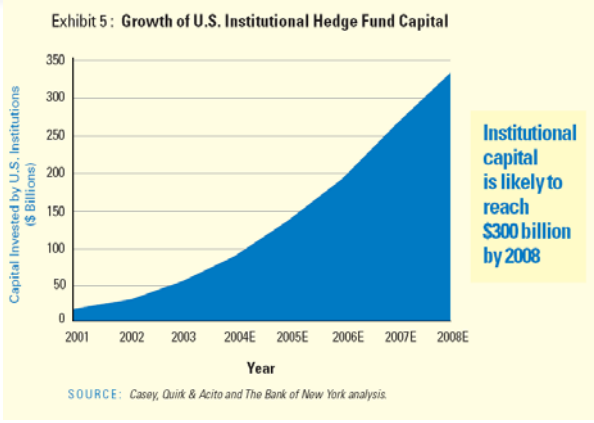
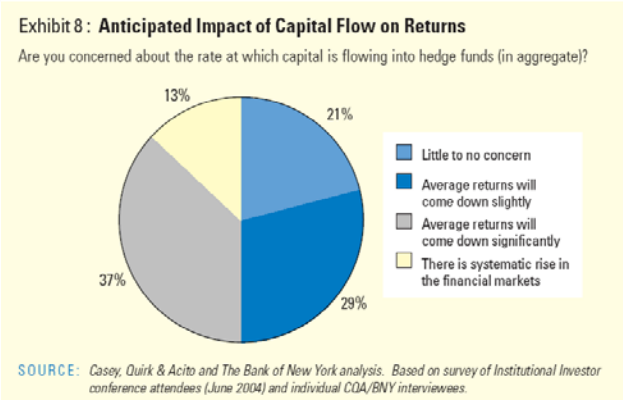
The future
US Institutional use of hedge funds



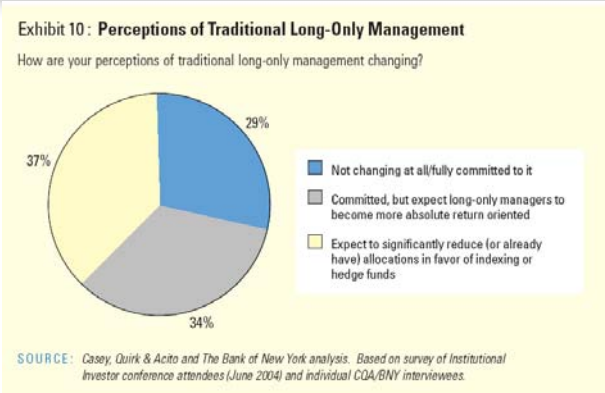
Institutional use forecast to grow at **35% pa**

The future
Impact of future inflows on returns



No significant concern, but returns expected to be reduced.
But returns no longer the primary attraction

The future
Implications for traditional managers



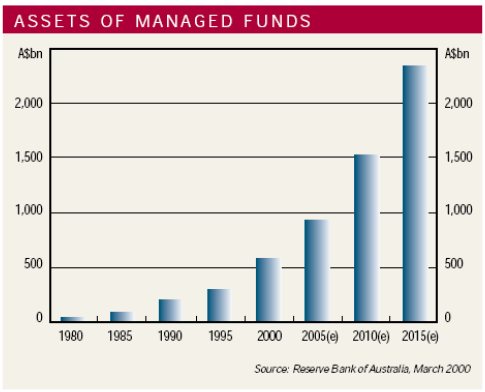
70% expect traditional long-only managers to become more absolute return oriented, or to take money away from them

The future
Implications for consultants

- Half of US institutional investment done via funds of hedge funds
- Newer entrants, e.g. corporate DB funds
  - Use funds of hedge funds (FoHFs) first
  - Gain experience → investing directly into single HFs
  - BUT do NOT abandon their FoHFs
  - Rely on their FoHF(s) for advice on direct investments
  - **FoHF**s becoming ***de facto* consultants** to institutions
  - **Traditional** institutional **consultants rarely influential**
  - Why? Depth of resources & expertise greater in FoHFs than in traditional consultants

(Casey, et al. & Bank of New York survey 2004)

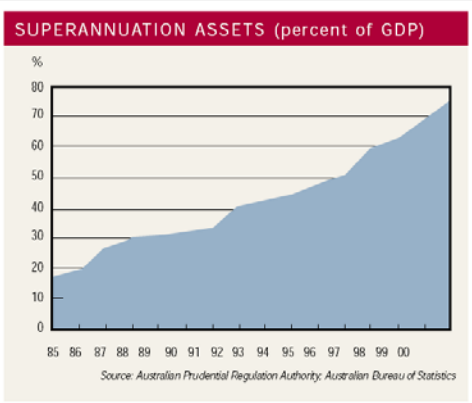
The future
Australian investment market



RBA forecasts significant growth, 10% pa, for next 15 yrs

Why?

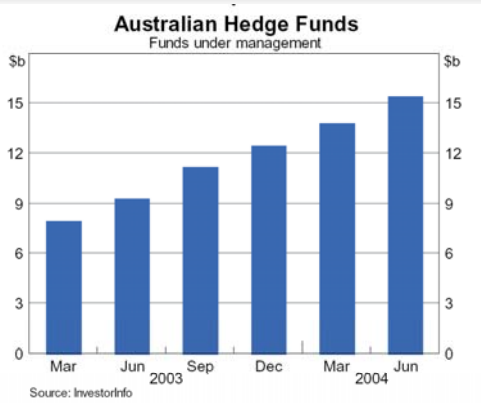
The future
Australian retirement incomes policy



70% of managed funds invested via superannuation

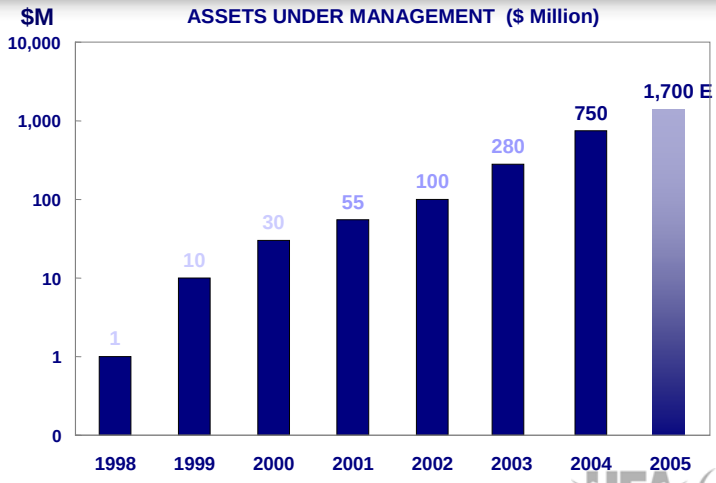
Super increased from 15% to **75% of GDP**

The present
Australian hedge fund use



65% growth in 12 months to June 2004 → $15 bn

The present
Australian hedge fund growth – e.g. HFA



Over 100% annual growth rate for 7 years

The future
New portfolio theory

A 21st century theory

Utility of upside & downside benchmark-relative returns

Absolute vs relative return
Why is benchmark important?

- I am an investment manager; it's October 1987
- Share market falls 25%
- **My portfolio falls 15%**
- But I am showered with billions of dollars of new money. Why?
- I outperformed *All Ordinaries Index* benchmark by 10%
- **Value added = +10%**. I am a hero!
- **But ultimate beneficiary lost 15%** of their money
- And retired the next day! …

How does it happen?

- Measure managers against
  - Market benchmark, e.g. S&P/ASX 200 for Australian equities
  - Peer group, e.g. median manager
- For "risk control", mandate may set max tracking error
- If not, manager's business risk stops it betting "too far" from benchmark weights
- **Manager forced to follow market** (**up** or **down**)
- Who bears the market risk?
- **We do!** We are **the ultimate beneficiaries**

What's wrong?

- Current theory uses "variance" as risk measure
- But **variance** (or **standard deviation**):
  - Measures **uncertainty**, NOT **risk**
  - Penalises over-performance just as much as under-performance
  - Treats **+$100,000** of your money same as **–$100,000**
- Unexpected **over-performance** is **NOT risky**
- Unexpected **under-performance** is **risky**

Possible risk benchmarks

Benchmarks arise naturally from:

- Not meeting liabilities (Bmk is projected liability stream)
- Negative returns (Bmk is zero)
- Negative real returns (Bmk is CPI)
- Defined benefit fund - Returns below growth in AWOTE plus safety margin
- Under-perform broad market index, e.g. S&P/ASX200
- Returns below readily available alternative investments, (CMT, building society, internet accounts, *etc.*)
- Returns less than median manager
- Less than risk free rate

A 21st century theory

- Investment **return**, ***R(t)***
- Acknowledge investor's **benchmark**, ***B(t)***
- Benchmark can be dynamic, even stochastic, e.g. CPI

- Calculate **benchmark-relative return**, ***r(t)***

$$r(t) = R(t) - B(t)$$

- Separate **Upside** , ***u(t)*** from **Downside**, ***d(t)***

$$r(t) = u(t) + d(t)$$

Separating upside from downside

- **Upside**, ***u(t)***, contains **returns above benchmark** & zeros when below

$$u(t) = \begin{cases} r(t), & r(t) \geq 0 \\ 0, & r(t) < 0 \end{cases}$$

- **Downside**, ***d(t)*** contains **returns below benchmark** & zeros when above

$$d(t) = \begin{cases} 0, & r(t) > 0 \\ r(t), & r(t) \leq 0 \end{cases}$$

A General Theory of upside & downside utility

- **Expected utility** of benchmark-relative return

$$\mathrm{E}\{U(r)\} = \mathrm{E}\{r\}$$
$$+ U(0^-) + U'(0^-) d_{RMS}{}^2/2! + U''(0^-) d_{RMC}{}^3/3! + U^{iv}(0^-) d_{RMQ}{}^4/4!$$
$$+ U'(0) u_{RMS}{}^2/2! + U''(0) u_{RMC}{}^3/3! + U^{iv}(0) u_{RMQ}{}^4/4!$$
$$+ \text{Higher Order Terms}$$

Expected utility of benchmark-relative return
= Expected benchmark-relative return
+ Penalties on downside risk measures
+ Penalties on upside utility leakage measures
+ HOTs

What is "RMS"?

- **Standard Deviation** is a 2nd moment
- **RMS** (Root Mean Square) is another type of 2nd moment
- Consider benchmark-relative return, $r = R - B$

$$\text{Standard Deviation of } r = \sigma_r = \sqrt{\frac{1}{n-1}\sum_{i=1}^{n}\left(r-\bar{r}\right)^2}$$

← 2nd Moment about **mean**

$$\text{Root Mean Square } r = r_{RMS} = \sqrt{\frac{1}{n-1}\sum_{i=1}^{n} r^2}$$

← 2nd Moment about **zero**

- r_{RMS} is 2nd moment measured about zero, not mean
- Standard deviation = "RMS Deviation-from-mean"

A Simplified Theory

In many cases, General Theory can be simplified:

Sensitivity (*low*) to (Surplus Volatility)²

Average Return

$$\text{Max}\ \mathrm{E}\{U(r)\} = \mathrm{E}\{r\} - \lambda_d d_{RMS}^2 - \lambda_u u_{RMS}^2$$

Average Utility

Aversion (*high*) to Shortfall Risk

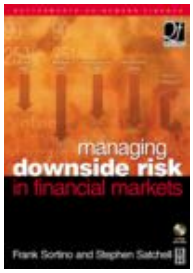
(Shortfall Risk)²

"**Uncertainty**" → "**Shortfall Risk**" & "**Surplus Volatility**"

Returns & Risk are ***relative to*** **investor's own benchmark**

Should we use new theory?

- Agrees with intuition – yours, mine & your client's
- Contains Harry Markowitz's Nobel Prize winning theory as a special case!
- Proves mathematically that **Shortfall Risk**, **relative to investor's benchmark**, is **correct measure of risk**
- Theory has been published
  - "*Managing Downside Risk in Financial Markets: Theory, practice & implementation*"
  - Eds: Sortino & Satchell
  - Butterworth-Heinemann, Oxford
  - ISBN 0 7506 4863 5
- See also Balzer, L.A. & L.W. Hartmann, "A general theory of investment risk", 2005 Biennial Convention, Institute of Actuaries of Australia, Cairns, 8-1th May, 2005



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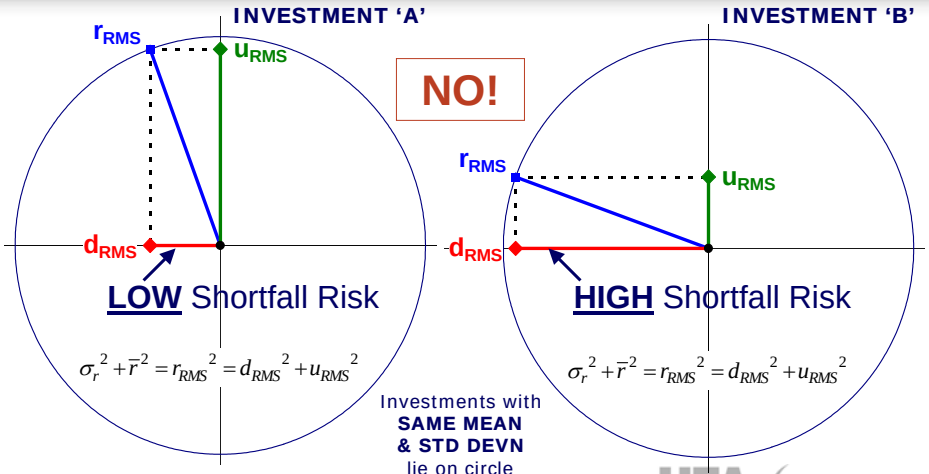
Same mean & standard deviation! Same risk of falling short of b'mark?



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Efficient use of risk budget

New Information Ratio based on Shortfall Risk

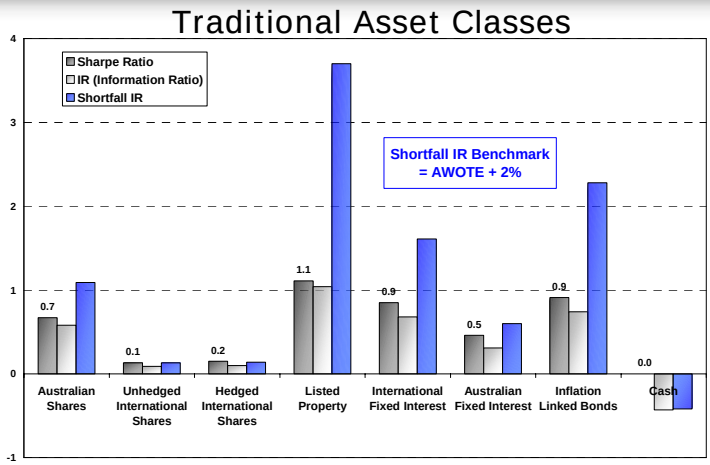
$$\text{Shortfall IR} = \frac{\text{Average value added above benchmark}}{\text{Shortfall Risk}}$$

$$= \frac{\bar{R} - \bar{B}}{Shortfall\ Risk} = \frac{\bar{r}}{d_{RMS}}$$

Superior to Sharpe Ratio, Downside IR & Sortino Ratio

Efficient use of risk budget?

Defined benefit fund – AWOTE+2% B'mark



Why different? Relevant b'mark & shortfall risk

Traditional balanced fund vs Diversified absolute return fund

Efficient use of: **Risk Budget?**

REWARD/RISK & VOLATILITY RATIOS	Sharpe Ratio	Information Ratio	Shortfall Information Ratio	Shortfall Volatility Fraction	Surplus Volatility Fraction
Benchmark >>>	Average Cash Rate	Average Asset Return	***Dynamic* AWOTE+2 %**	***Dynamic* AWOTE+2 %**	***Dynamic* AWOTE+2 %**
***Balanced Fund Index* (Morningstar)**	0.4	0.2	**0.3**	63%	37%
MBA Diversified Fund	0.7	0.7	**0.7**	39%	62%
***Hedge Fund Index* (HFRI)**	*0.5*	*0.4*	**0.9**	16%	85%
Lighthouse Diversified Fund	*0.9*	*0.7*	**3.9**	2%	98%

Good absolute return fund → highly efficient use of risk budget

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The future
More use of absolute return funds

New theory

- Acknowledges investor's benchmark(s)
- Uses returns relative to investor's own benchmark
- Separates upside from downside
- Surplus – Returns in excess of investor's benchmark
- Shortfall - Returns below investor's benchmark
- Use RMS, RMC & RMQ measures of
  - Surplus volatility
  - Shortfall Risk

Using investor's own benchmark & right risk measure(s)
→ **Higher allocations to absolute return funds**

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Your Take Home Package

- Most hedge funds are not hedged, BUT
- Modern Funds of Hedge Funds are now
  - highly risk controlled
  - low volatility
  - very good diversifiers of traditional asset classes
- Use of hedge & absolute return funds is forecast to increase VERY significantly
- New 21st century portfolio theory supports increased use of absolute return funds

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