

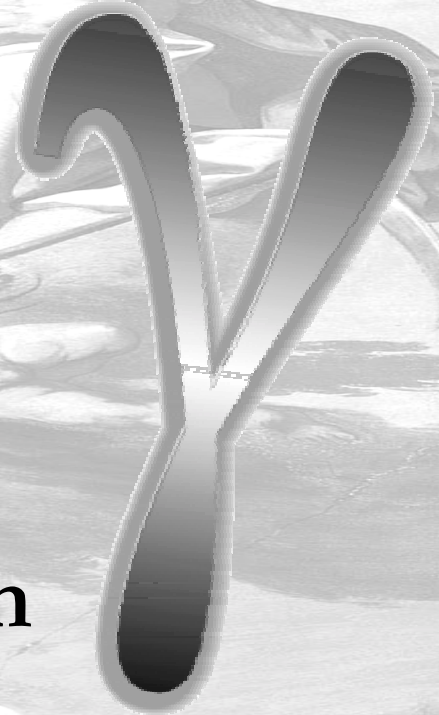
The Pensions Institute

Fund Manager Performance: Skill or Luck?

Wednesday 13 June 2001

**Armourers' Hall
81 Coleman St
London, EC2R 5BJ**

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BSI GAMMA Foundation

- Swiss-based charitable foundation that supports research in the field of asset management
- Established to celebrate 125th anniversary of BSI AG
- Current chair:
 - ◆ Professor Rene M Stulz
 - ◆ Former editor **Journal of Finance**

BSI GAMMA Foundation

- Timmermann & Blake have received awards
- 'PensionMetrics: Stochastic pension plan design and value-at-risk during the accumulation phase':
 - ◆ By Blake, Cairns & Dowd
 - ◆ Accepted by **Insurance: Mathematics & Economics**

BSI GAMMA Foundation

- Next conference on Fund Management
- Invitations to submit proposals
- www.bsi.ch/gamma
- Look for 'Library'

Performance Clustering and Incentives in the UK Pension Fund Industry

David Blake

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Allan Timmermann

Introduction

- What are the effects of fee structures on fund manager behaviour?
 - ◆ Positive relation between fund inflows and past relative performance (US mutual funds)
 - ◆ Underperforming funds take on risk in second half of assessment period (US mutual funds)

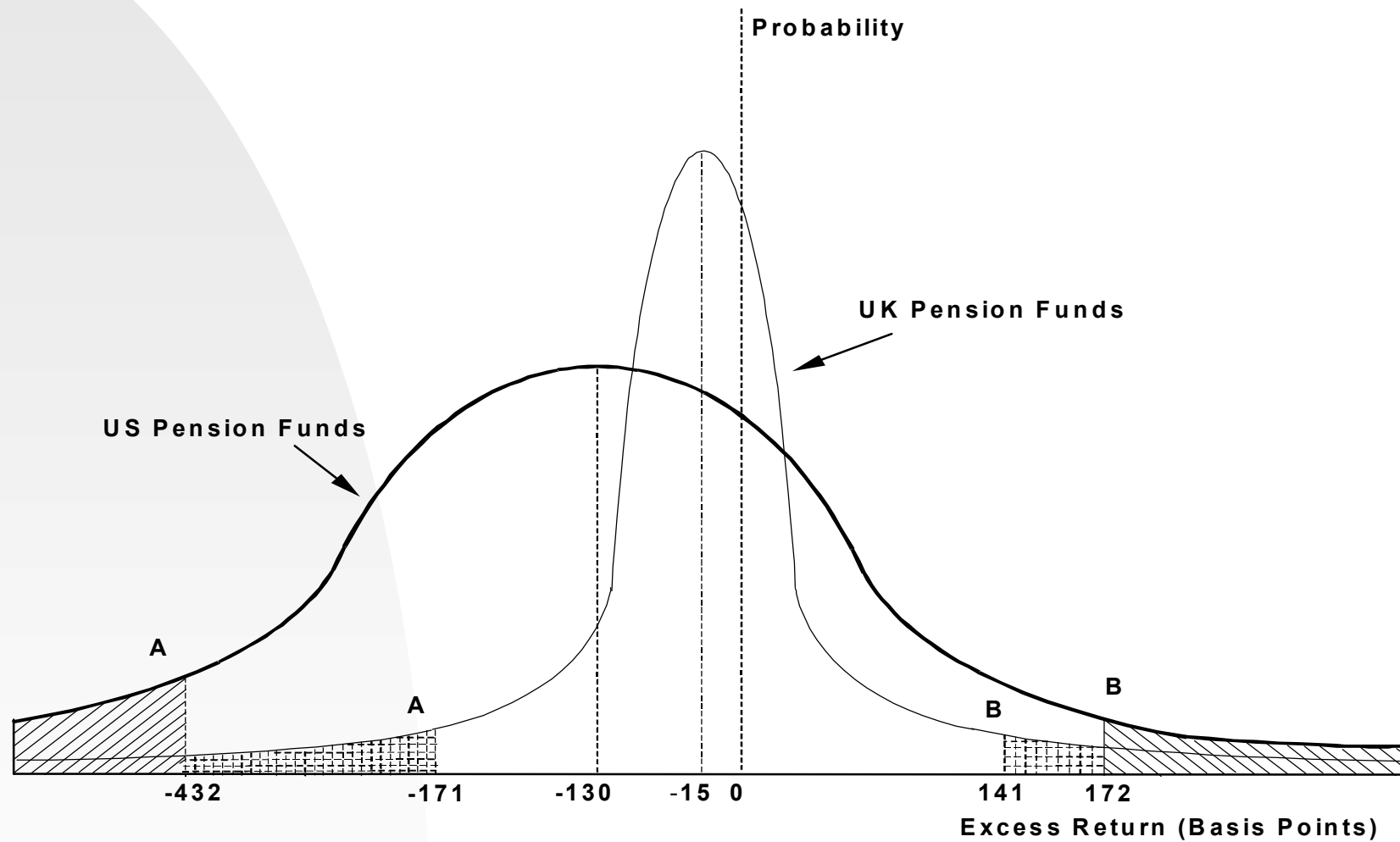
Introduction

- What is the effect of reputation on herding behaviour?
 - ◆ When reputation is important, managers may abstain from risky investments that could affect relative performance
 - ◆ Unwillingness to deviate from median agent's decision (US mutual funds)

Introduction

- We examine UK pension fund investment behaviour. Why?
- Institutional differences might lead to different outcomes than are found in US
- We find for UK pension funds:
 - ◆ Underperformance of the market average, but lower than in US
 - ◆ Lower dispersion of returns than in US

UK v US pension funds



Institutional features in the UK

- 1. Smallest set of externally imposed restrictions on investment behaviour
 - ◆ Unconstrained by liabilities over sample period
 - ◆ Little interference from trustees
 - ◆ Free to invest in almost any asset class
 - ◆ Few regulatory controls or threat of litigation against imprudent behaviour

Institutional features in the UK

- Result:
 - ◆ UK pension funds have highest equity weighting in the world
- Our data enables us to separate:
 - ◆ genuine investment skills
 - ◆ from constraints facing fund manager

Institutional features in the UK

- 2. Fund management industry highly concentrated:
 - ◆ Top 5 cover 80% (cf 14% in US)
- Result:
 - ◆ Rarely a change of fund manager
 - ◆ Average length of mandate is 7.25 years:
 - ◆ Our funds have kept their mandates for at least 9 years

Institutional features in the UK

- Reasons:
 - ◆ Expense of switching managers
 - ◆ Reputation of fund manager in terms of:
 - ◆ trust and integrity
 - ◆ consistent track record:
 - used to retain existing clients
 - attract new clients
 - NOT to raise charges
 - ◆ Implication: manager fired for lack of confidence in future performance not poor past performance

Institutional features in the UK

- 3. Long-term survival of fund managers determined by:
 - ◆ relative performance against peer group
 - ◆ NOT by absolute performance
- Implication:
 - ◆ good relative performance is key to new business
 - ◆ poor relative performance leads to loss of business
 - ◆ also switch to index funds

Institutional features in the UK

- 4. Fees related:
 - ◆ solely to value of assets under management
 - ◆ NOT to relative performance against:
 - ◆ predetermined benchmark
 - ◆ peer-group
- Implication:
 - ◆ Fee rises with value of assets, but
 - ◆ NO specific penalty for underperforming
 - ◆ NO specific reward for outperforming

Incentives & fee structures

- Unconstrained way in which funds are permitted to add value might generate:
 - ◆ very different investment strategies
 - ◆ wide dispersion in investment performance
- But weak incentive to outperform and strong incentive to avoid relative underperformance might generate:
 - ◆ similar investment strategies
 - ◆ narrow distribution in investment performance

Performance of UK pension funds

- WM data on 306 funds (same manager), '86-94
- 8 asset categories:
 - ◆ UK & international equities
 - ◆ UK & international bonds
 - ◆ UK index-linked bonds
 - ◆ Cash & UK property
- 2 benchmarks:
 - ◆ external - FT/S&P indices
 - ◆ peer-group - WM2000 indices

Performance of UK pension funds

- Potential problem:
 - ◆ survivor bias:
 - ◆ data set does not include 'dead' funds
- 5 reasons why funds excluded:
 - ◆ switch in fund manager - main cause of bias
 - ◆ merger of sponsor
 - ◆ fund withdrawn without explanation
 - ◆ switch from in-house to external management
 - ◆ 'dynamization' - rotation of funds measured

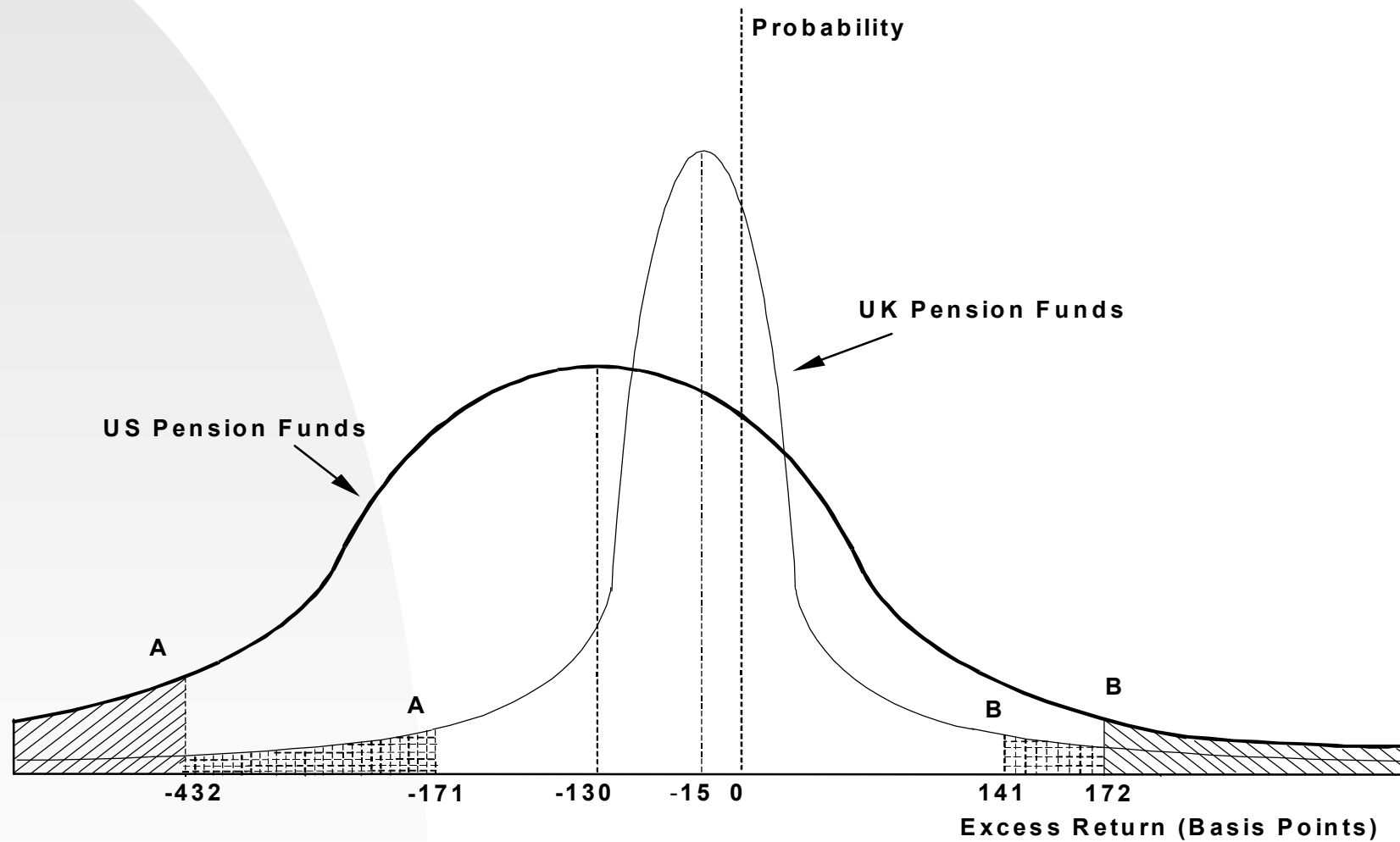
Performance of UK pension funds

- Survivor bias does not appear to be a serious problem in our sample:
 - ◆ No tendency for returns in sample to exceed returns in WM universe:
 - ◆ especially towards end of sample
 - ◆ only 8 bp pa below the universe over the sample
 - ◆ Very similar portfolio weights in sample and WM universe
 - ◆ Left tail thinner for equities and cash, but not for the other assets or the total portfolio

Performance of UK pension funds

- Remarkably little cross-sectional variation in returns for UK compared with US:
 - ◆ 311bp spread between 10-90 percentiles in UK
 - ◆ for equities
 - ◆ 603bp spread between 10-90 percentiles in US
 - ◆ for equities

UK v US pension funds



Fractiles of total returns

	UK Equities	Intl. Equities	UK Bonds	Intl. Bonds	UK Index Bonds	Cash/ Other Inv.	UK Property	Total
■								
■								
■ Min	8.59	4.42	6.59	-0.64	5.59	2.67	3.05	7.22
■ 5%	11.43	8.59	9.44	2.18	7.20	5.46	5.07	10.60
■ 10%	11.85	9.03	9.95	7.56	7.81	7.60	6.58	10.96
■ 25%	12.44	9.64	10.43	8.30	7.91	8.97	8.03	11.47
■ 50%	13.13	10.65	10.79	11.37	8.22	10.25	8.75	12.06
■ 75%	13.93	11.76	11.22	13.37	8.45	11.72	9.99	12.59
■ 90%	14.81	12.52	11.70	14.55	8.80	14.20	10.84	13.13
■ 95%	15.46	13.14	12.05	18.15	8.89	16.13	11.36	13.39
■ Max	17.39	14.68	17.23	26.34	10.07	19.73	13.53	15.03

Performance of UK pension funds

- Risk-adjustment using Jensen regressions:

Excess return on asset=

$$\text{Alpha} + \text{Beta} \times \text{Excess return on market}$$

- Shape of the cross-sectional distribution of alphas is virtually identical to raw returns

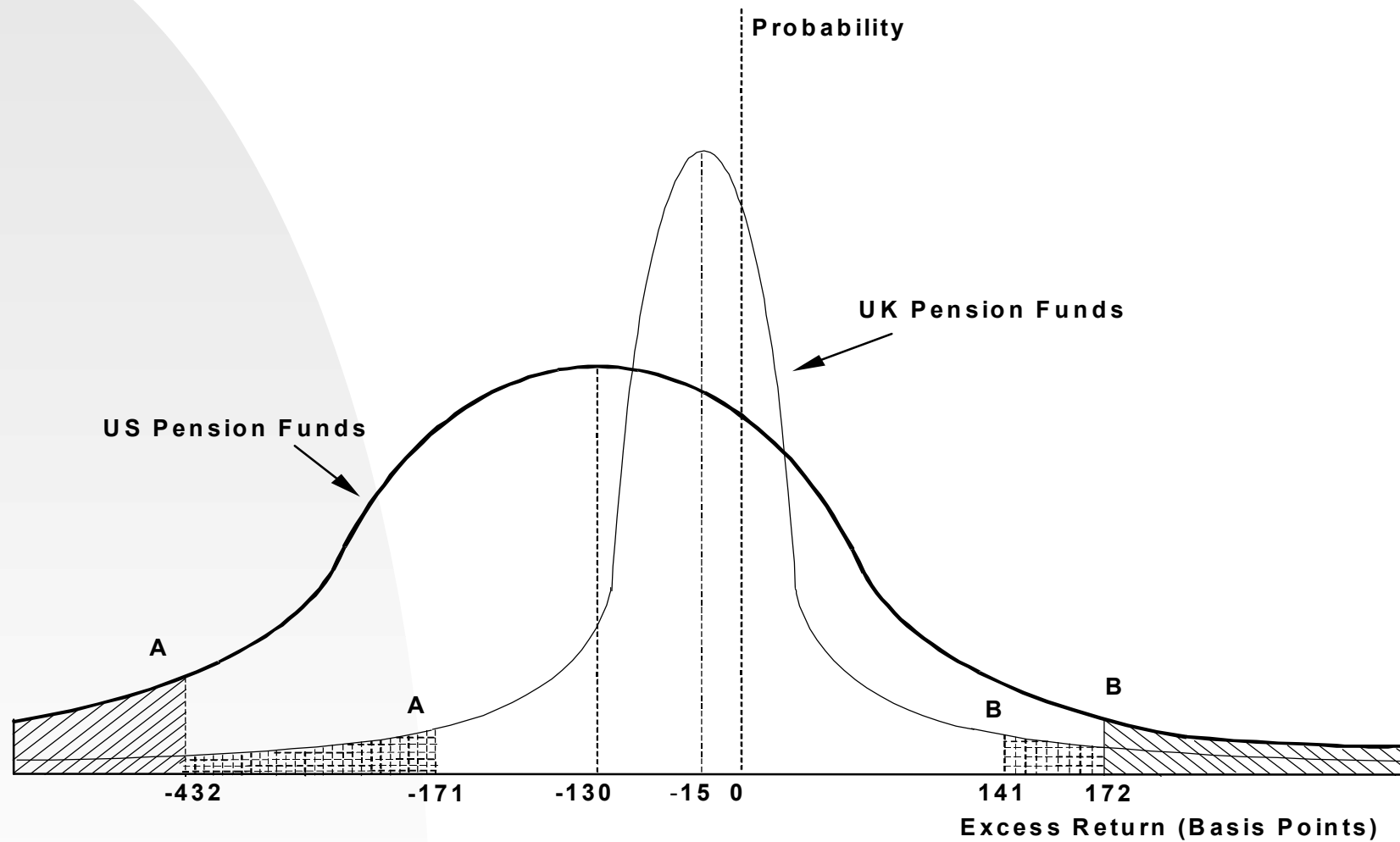
Fractiles of risk-adjusted returns

		UK Equities	Intl. Equities	UK Bonds	Intl. Bonds	UK Index Bonds	Cash/ Other Inv.	UK Property	Total
■									
■									
■	Min	-4.59	-6.19	-3.59	-10.08	-2.49	-7.60	-6.72	-4.98
■	5%	-1.90	-2.17	-0.92	-6.74	-0.95	-4.53	-3.69	-1.77
■	10%	-1.49	-1.69	-0.42	-1.89	-0.65	-2.76	-2.57	-1.36
■	25%	-0.85	-0.96	0.07	-1.11	-0.16	-0.97	-0.90	-0.79
■	50%	-0.15	-0.06	0.44	1.76	0.09	0.31	-0.21	-0.14
■	75%	0.70	1.07	0.87	4.38	0.28	2.13	0.94	0.39
■	90%	1.49	1.83	1.34	5.48	0.70	4.68	1.79	0.89
■	95%	2.14	2.36	1.72	8.36	0.75	10.02	2.31	1.22
■	Max	4.68	4.06	6.89	16.67	1.77	12.67	4.33	3.09
■									

Performance of UK pension funds

- Performance of median fund manager is very close to that of external index:
 - ◆ 15bp below for UK equity
 - ◆ 14bp below for total portfolio
- Degree of underperformance is much greater than in the US:
 - ◆ 130bp below for US equities

UK v US pension funds



UK equity performance

- 5 versions of the Jensen regression:
 - ◆ time-invariant alphas & betas (original Jensen)
 - ◆ time-varying betas (Ferson & Schadt)
 - ◆ time-varying alphas (Christopherson, Ferson & Glassman)
 - ◆ add small-cap index to account for bias in large-cap external index
 - ◆ add squared excess benchmark return to account for market timing ability (Treynor & Mazuy)

UK equity performance

- Successful fund managers should have positive alphas (stock selection skills)
- Allowing alphas and betas to vary over time recognises that:
 - ◆ fund managers should not be credited for performance
 - ◆ based on changing portfolio weights in the light of costless public information
 - ◆ that help predict changes in investment opportunities

UK equity performance

	Unconditional Alpha	Conditional Alpha (Ferson- Schadt)	Conditional Alpha (Christopherson et al)	Small Cap- Adjusted	Treynor- Mazuy	Peer-Group Adjusted
■ Minimum	-4.59	-3.85	-6.54	-4.70	-5.07	-4.19
■ 5%	-1.90	-1.95	-1.61	-1.87	-1.79	-1.35
■ 10%	-1.49	-1.58	-1.18	-1.44	-1.51	-0.92
■ 25%	-0.85	-0.91	-0.44	-0.83	-0.81	-0.33
■ 50%	-0.15	-0.17	0.29	-0.14	-0.07	0.35
■ 75%	0.70	0.58	1.03	0.68	0.74	1.16
■ 90%	1.49	1.36	2.09	1.51	1.60	2.03
■ 95%	2.14	1.90	2.55	2.15	2.06	2.69
■ Maximum	4.68	3.92	8.13	4.78	4.08	4.62

UK equity performance

- Average excess returns are tiny:
 - ◆ largest alpha is 33bp pa
 - ◆ proportion of positive alphas $< 50\%$ (most models)
- Cross-sectional distribution of returns unchanged by risk-adjustment procedure
- Implication: little evidence of:
 - ◆ abnormal performance on average
 - ◆ extreme out- or under-performance

UK equity performance

- Peer-group adjustment:

$$\text{Alpha} = \text{Fund return} - \text{WM2000 index}$$

- 66% of funds (mainly smaller ones) outperform peer-group benchmark:
 - ◆ 16% statistically significant
- Average alpha positive (0.459%) and significant

UK equity performance

- Implication:
- Long-term survival depends on good relative performance in the key asset category: UK equity
- Follows because:
 - ◆ our sample had the longest continuous client relationships within the WM universe
 - ◆ at least 9 years

Total portfolio

- Multi-benchmark alpha:
 - ◆ one factor for each available benchmark
 - ◆ again fewer than 50% of funds have positive alphas
- 64% of funds (again mainly the smaller ones) outperform peer-group benchmark:
 - ◆ 13% statistically significant
 - ◆ average underperformance 6bp
 - ◆ cf 45bp underperformance against external benchmark

Fractiles of risk-adjusted returns

		UK Equities	Intl. Equities	UK Bonds	Intl. Bonds	UK Index Bonds	Cash/ Other Inv.	UK Property	Total
■									
■									
■	Min	-4.59	-6.19	-3.59	-10.08	-2.49	-7.60	-6.72	-4.98
■	5%	-1.90	-2.17	-0.92	-6.74	-0.95	-4.53	-3.69	-1.77
■	10%	-1.49	-1.69	-0.42	-1.89	-0.65	-2.76	-2.57	-1.36
■	25%	-0.85	-0.96	0.07	-1.11	-0.16	-0.97	-0.90	-0.79
■	50%	-0.15	-0.06	0.44	1.76	0.09	0.31	-0.21	-0.14
■	75%	0.70	1.07	0.87	4.38	0.28	2.13	0.94	0.39
■	90%	1.49	1.83	1.34	5.48	0.70	4.68	1.79	0.89
■	95%	2.14	2.36	1.72	8.36	0.75	10.02	2.31	1.22
■	Max	4.68	4.06	6.89	16.67	1.77	12.67	4.33	3.09
■									

Fund size

- Large funds tend to underperform small funds:
 - ◆ diseconomies of scale due to market impact?
- Size effect greatest for UK equities:
 - ◆ significant interquartile difference:
 - ◆ 79bp - external benchmarks
 - ◆ 75bp - peer-group benchmarks
- NO systematic relationship between fund size and total portfolio excess return
- Fee differences: 50bp v 10bp - not enough!!

Alphas sorted by fund size

	UK Equities	Intl. Equities	UK Bonds	Intl. Bonds	UK Index Bonds	Cash/ Other Inv.	UK Property	Total
	Multi-Index Benchmark (Equation (3)) - Smallest-fund quartile first							
I	0.352	-3.189	0.676	-3.989	0.106	0.53	-0.999	0.315
	(0.91)	(-1.28)	(1.00)	(-1.20)	(0.31)	(0.73)	(-0.98)	(-0.47)
II	0.063	-2.492	0.575	-0.805	-0.344	1.545	-0.384	-0.360
	(0.16)	(-1.13)	(0.92)	(-0.35)	(-0.52)	(1.57)	(-0.36)	(-0.59)
III	0.213	-1.464	1.130	-1.886	0.074	0.764	-0.937	0.110
	(0.68)	(-0.76)	(1.69)	(-0.85)	(0.23)	(0.93)	(-1.15)	(0.21)
IV	-0.435	-1.041	0.249	2.247	0.137	0.247	-0.334	-0.268
	(-1.36)	(-0.60)	(0.28)	(0.91)	(0.46)	(0.29)	(-0.26)	(-0.53)

Alphas sorted by fund size

		UK Equities	Intl. Equities	UK Bonds	Intl. Bonds	UK Index Bonds	Cash/ Other Inv.	UK Property	Total
	B. Peer-Group Benchmark (Equation (2)) - Smallest-fund quartile first								
	I	0.716	-0.421	0.496	-1.631	0.306	0.733	-1.064	0.311
		(4.60)	(-0.33)	(1.20)	(-0.60)	(0.89)	(1.07)	(-1.39)	(1.23)
	II	0.456	-0.396	0.298	-1.245	-0.273	1.056	-0.396	0.157
		(2.75)	(-0.58)	(0.92)	(-0.73)	(-0.51)	(1.23)	(-0.48)	(0.88)
	III	0.503	0.103	0.737	-1.161	0.287	0.633	-0.794	0.422
		(4.36)	(0.51)	(2.68)	(-0.61)	(1.05)	(0.95)	(-1.30)	(3.69)
	IV	0.027	0.439	0.175	1.271	0.283	0.702	-0.668	0.037
		(0.19)	(1.26)	(0.28)	(0.52)	(1.20)	(1.03)	(-1.00)	(0.15)

Past performance effects

- Performance persistence:
 - ◆ sort funds according to performance over previous 12 months
 - ◆ record performance over next 12 months
- Evidence of persistence:
 - ◆ in UK equities & cash only
 - ◆ against peer-group only
 - ◆ for 1-year horizon only

Alphas sorted by previous-year return

		UK Equities	Intl. Equities	UK Bonds	Intl. Bonds	UK Index Bonds	Cash/ Other Inv.	UK Property	Total
	A. Multi-Index Benchmark (Equation (3)) - Highest-return quartile first								
	I	0.574	-1.880	0.771	-1.345	0.216	1.464	-0.953	0.007
		(1.55)	(-0.88)	(1.08)	(-0.48)	(0.68)	(1.79)	(-0.77)	(0.01)
	II	0.243	-1.908	0.585	1.761	-0.296	0.315	-0.162	-0.247
		(0.75)	(-0.93)	(0.89)	(0.94)	(-0.46)	(0.51)	(-0.16)	(-0.46)
	III	0.071	-1.843	1.017	-0.698	0.081	0.448	-0.983	-0.217
		(0.21)	(-0.77)	(1.90)	(-0.32)	(0.20)	(0.39)	(-0.96)	(-0.38)
	IV	-0.688	-2.534	0.261	-4.151	-0.008	0.849	-0.556	-0.373
		(-1.74)	(-1.08)	(0.30)	(-1.67)	(-0.03)	(0.96)	(-0.62)	(-0.59)

Alphas sorted by previous-year return

		UK Equities	Intl. Equities	UK Bonds	Intl. Bonds	UK Index Bonds	Cash/ Other Inv.	UK Property	Total
■									
■									
■	B. Peer-Group Benchmark (Equation (2)) - Highest-return quartile first								
■	I	1.145	0.264	0.818	-2.572	-0.194	2.366	-0.295	0.331
■		(5.37)	(0.55)	(2.03)	(-0.94)	(-0.32)	(2.42)	(-0.47)	(1.27)
■	II	0.604	0.068	0.335	1.325	0.275	1.117	-0.597	0.315
■		(4.75)	(0.10)	(1.12)	(0.68)	(1.44)	(2.25)	(-0.80)	(2.29)
■	III	0.275	0.086	0.367	-1.291	0.184	0.215	-1.129	0.211
■		(2.32)	(0.08)	(1.15)	(-0.80)	(1.05)	(0.23)	(-1.92)	(1.55)
■	IV	-0.313	-0.677	0.187	-0.229	0.331	-0.555	-0.903	0.069
■		(-1.72)	(-1.18)	(0.30)	(-0.12)	(0.98)	(-0.76)	(-1.12)	(0.30)
■									

Size v past performance

- Size reflects cumulative past performance
- Previous-year return reflects recent performance
- Two effects inter-related:
 - ◆ 15% of quartile containing smallest funds also in quartile of worst performing funds
 - ◆ 32% of quartile containing largest funds also in quartile of worst performing funds

Size v past performance

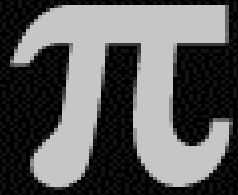
- Include as additional regressors in Jensen regressions:
 - ◆ size-adjusted quartile return
 - ◆ past-performance-adjusted quartile return
- Original 5-95% range for alpha of 400bp:
 - ◆ reduces to 319bp when size effect included
 - ◆ reduces to only 374bp when past performance effect included
- Size is anchor of performance

Conclusions

- Three regularities:
 - ◆ narrow dispersion around median fund manager
 - ◆ underperformance of median fund manager cf market
 - ◆ outperformance of median fund manager cf peer-group
- Result of:
 - ◆ weak incentives from fee structure
 - ◆ relative performance evaluation environment
 - ◆ concentration in industry

Conclusions

- Fourth regularity:
 - ◆ relative underperformance of large funds
- Explained by:
 - ◆ market impact effect
- Lack of cross-sectional variation in performance not surprising
- More surprising:
 - ◆ active fund management fees paid for closet index matching
 - ◆ why performance-related fees not more common



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