

## **Lecture 6: Performance of asset managers**

In this lecture we shall focus on active management in detail, looking first at the theories relevant for its motivation and evaluation, before going on to examine performance. We first review the methods whereby performance may be evaluated, before assessing the empirical literature on actual performance. Unsurprisingly in the light of the EMH, the literature suggests that active management does not add value.

# The theory of active management

Why is active management so popular?

Active management in market equilibrium

- Implications of the efficient market hypothesis
- returns to active management (Grossman and Stiglitz 1980)
  - o logical case – if active unprofitable no one would do it
  - o empirical case – some managers positive excess returns – can't reject hypothesis of profitability – and anomalies
- can investment be entirely passive? – need for forecasts even if passive approach, of expected return and volatility of market portfolio
- Potential profits from active management (few basis points on large sum)

## **Objectives of active management**

- If risk neutrality - return maximization only
- Risk aversion and the risky/safe balance – separability of the “product decision” and “investment decision”
- Sharpe’s measure and the optimal risky portfolio – maximizing slope of capital allocation line

Two aspects of active management, market timing and security selection:

## **Market timing and its valuation**

- Benefits of market timing – Merton’s experiment with optimal switching between equities and cash
- Valuing market timing as an option
- Imperfect forecasting –measure links to proportion of times correct forecast

# The Treynor Black model for security selection

Basic idea - limited number of securities can be analysed. Find some mispriced with positive alpha. Trade off benefit of this against risk of an undiversified portfolio. Use market index as baseline.

Information needed:

- Forecast expected returns and variance of market portfolio ( $r_m, \sigma^2_m$ )
- Estimate required rate of return on the analysed securities, using market parameters, beta and residual risk

$$r_i = r_f + \beta_i(r_m - r_f) + e_i$$

- Calculate alphas – excess over required rate, abnormal return due to mispricing (also  $\beta_k$  and  $\sigma^2_{ek}$ )

$$r_k = r_f + \beta_k(r_m - r_f) + e_k + \alpha_k$$

Steps in calculation

Calculate optimal weight of securities in active portfolio (max ratio of alpha to residual risk)

$$w_k = \frac{\alpha_k / \sigma_{ek}^2}{\sum \alpha_i / \sigma_{ei}^2}$$

Estimate alpha, beta and residual risk of active portfolio A, giving

$$\sigma_A = [\beta_A^2 \sigma_M^2 + \sigma^2(e_A)]^{0.5}, \text{ and}$$

$$E(r_A) = r_f + \beta_A(E(r_m) - r_f) + \alpha_A$$

Develop optimal risky portfolio, mix of active and passive using

$$r_p(w) = wr_a + (1-w)r_m, \text{ to find}$$

$$w^* = w_0 / (1 + (1 - \beta_A) w_0), \text{ where}$$

$$w_0 = (\alpha_A / \sigma^2(e_A)) / \{ [E(r_m) - r_f] / \sigma_M^2 \}$$

Optimal contributions to performance of index and active portfolio are

$$S_P^2 = S_M^2 + \frac{\alpha_A^2}{\sigma^2(e_A)} = \left[ \frac{E(r_M) - r_f}{\sigma_M} \right]^2 + \left[ \frac{\alpha_A}{\sigma(e_A)} \right]^2$$

And weight for kth security in active portfolio is

$$w_k = \frac{\alpha_k / \sigma^2(e_k)}{\sum_{i=1}^n \alpha_i / \sigma^2(e_i)}$$

## **Performance evaluation for portfolio managers 1**

Simple rate of return is proceeds (cash plus capital gains). Problem if cash added or withdrawn in evaluating performance, as well as allowing optimal weight on past and future, and allowing for risk:

- Time and dollar weighted returns
- Arithmetic and geometric means
- Simple return comparisons and shortcomings

# Risk adjusted returns

Sharpe:

$$\frac{E(r_P) - r_f}{\sigma_P}$$

Treynor:

$$\frac{E(r_P) - r_f}{\beta_P}$$

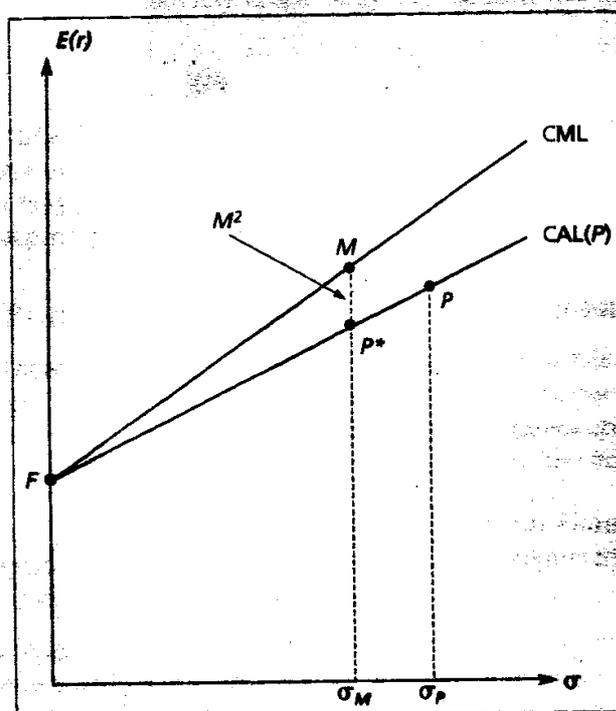
Jensen, or alpha:

$$\alpha_P$$

Appraisal ratio:

$$\frac{\alpha_P}{\sigma(e_P)}$$

## M2 measure



## **Difficulties of comparison and calibration of the various measures**

- Use varying with situation
  - Entire risky portfolio
  - Active portfolio mixed with market index
  - Active portfolio which is one of many
- Problem of statistical inference and shifting portfolios – need for unrealistically long observation periods

# SHARPE RATIOS FOR INTERNATIONAL INVESTMENT (real return/standard deviation)

	Actual portfolios	50-50	20% foreign	40% foreign	Global portfolio
Australia	0.16	0.20	0.24	0.28	0.33
Canada	0.48	0.33	0.40	0.45	0.48
Denmark	0.44	0.32	0.32	0.31	0.20
Germany	1.01	0.36	0.36	0.35	0.21
Japan	0.43	0.36	0.40	0.44	0.43
Netherlands	0.78	0.30	0.31	0.32	0.33
Sweden	0.16	0.40	0.43	0.46	0.43
Switzerland	0.23	0.13	0.15	0.18	0.22
United Kingdom	0.46	0.30	0.33	0.36	0.39
United States	0.38	0.33	0.39	0.44	0.49
<b>OECD average</b>	<b>0.45</b>	<b>0.30</b>	<b>0.34</b>	<b>0.36</b>	<b>0.35</b>
Chile (1980-95)	1.37				0.5
Singapore	0.78				0.39
Malaysia	0.23				0.27

# Performance evaluation for portfolio managers 2

## Attribution for market timing

- Slope of SCL steepens in bull market of can time properly
- Econometric methods for detection (Treynor and Mazuy), estimate

$$r_p - r_f = \alpha + \beta(r_m - r_f) + c(r_m - r_f)^2 + e_p$$

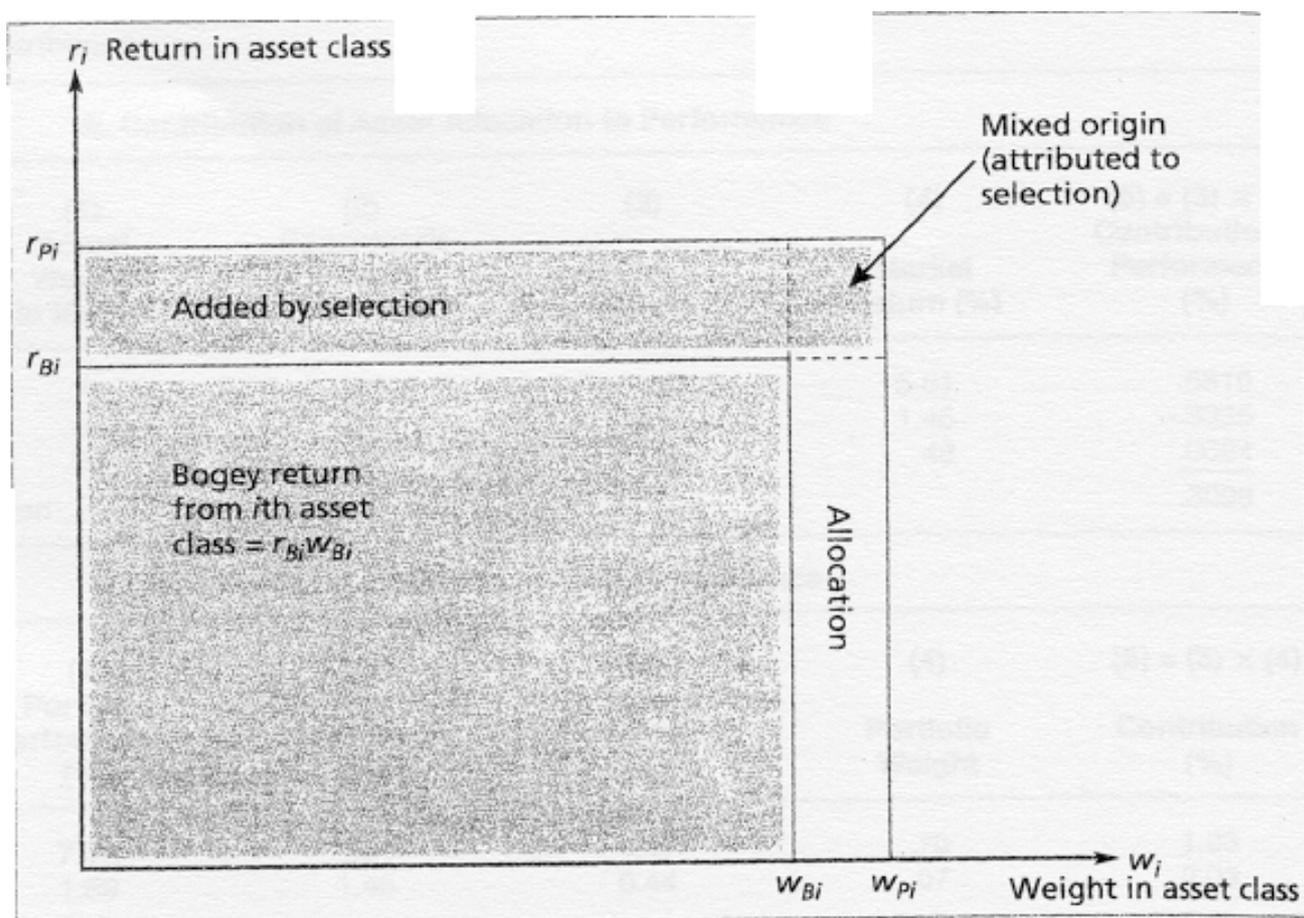
If c positive, have timing ability

## Procedures for performance attribution

- Setting benchmark portfolio
- Comparing actual performance in various dimensions

# Performance attribution diagram

Contribution from asset allocation	$(W_{Pi} - W_{Bi})r_{Bi}$
+ Contribution from security selection	$W_{Pi}(r_{Pi} - r_{Bi})$
= Total contribution from asset class $i$	$W_{Pi}r_{Pi} - W_{Bi}r_{Bi}$



## **Difficulties of performance evaluation**

- observations needed
- shifting parameters
- shifting portfolios
- observations too infrequent

## **The (ab)use of performance data in advertising**

Risk of window dressing of portfolios due to infrequent disclosure:

Choice of dates when performance was optimal; Omission of unsuccessful portfolios; Omission of fees

Guidelines to ensure accurate representation:

Company wide data and no cherry picking; Independent verification; Total returns; All years (at least 10); Before fees

# **Results in the literature on performance**

(Detailed references in Davis and Steil)

Basic outcomes for mutual funds  
(largely security selection)

- Activities do not earn risk adjusted return superior to market (Jensen)
- Index funds superior in virtually all “styles” (Bogle)
- Market timing inaccurate - invest at peak (Carhart)
- High fee funds perform worst (Bogle)
- Often deviate strongly from professed objectives (di Bartelomeo)

Persistence in performance? (Brown and Goetzmann) over 1-3 years

- But strongest for low performers and equivocal for highest (Hendricks et al)
- Survival bias accounts for persistence (Carhart)

Can investors select winners?

- Variables predicting performance also link to subsequent cash flows (Gruber)
- Or just an artifact of marketing? (Sirri and Tufano)
- And risk taking (Bogle), which is seasonal and linked to window dressing (Chevalier and Ellison)

## UK evidence (Blake)

- considerable variance in performance
- Closure and takeover of funds protracted –danger of being “locked in”

## Passive manager performance

- UK segregated equity funds average tracking error 10 bp (6 bp minimum, 15 bp maximum),
- US equity funds 11bp, 4 bp minimum, 35 bp maximum

## Performance of hedge funds and bond funds

- High risk adjusted returns prior to 1998
- And returns orthogonal to market
- But 1998 showed risks – illustrate problem of performance assessment from limited sample

## Performance of pension funds

- Additional focus on asset allocation
- UK: underperformance in terms of security selection (Blake et al)
- Most returns link to asset allocation (closet indexation)
- Large degree of variation about mean
- Internal management outperforms external

- US: underperformance reflects agency problems (Lakonishok et al)...
- ...or hedging due to shortfall risk (Bodie)

Passive indexation likely to be optimal for both mutual and pension funds

## **DISTRIBUTION OF RETURNS BY U.K. MUTUAL FUNDS (UNIT TRUSTS), 1972–1995**

<b>Sector</b>	<b>Top Quartile</b>	<b>Median</b>	<b>Bottom Quartile</b>	<b>Ratio of Fund Sizes</b>
U.K. Equity Growth	16.0	13.6	11.9	3.2
U.K. Equity General	14.3	13.4	13.1	1.4
U.K. Equity Income	15.4	14.0	12.4	2.3
U.K. Smaller Companies	18.7	15.5	12.8	5.3

## **U.K. PENSION FUNDS: LONG-TERM RETURNS ON EQUITY RELATIVE TO BENCHMARK INDICES**

	1981– 1998		1981– 1989		1990– 1998	
	Average	Standard deviation	Average	Standard deviation	Average	Standard deviation
United States	-2.3	2.1	-3.7	2.0	-0.9	1.0
Japan	0.3	7.5	-2.0	9.9	2.5	3.2
Continental Europe	-1.0	3.1	-1.8	4.0	-0.2	1.6
World	-1.6	6.0	-3.1	5.1	-0.2	6.7
United Kingdom	-0.4	0.7	-0.4	0.9	-0.3	0.6

## UK PENSION FUNDS: PERFORMANCE BY MANAGEMENT METHOD, 1989– 1998

	1998	3 Years	5 Years	10 Years	Memo: Average Management Cost (bp)
Internal management (excluding property)	14.8 (14.9)	14.4 (14.4)	11.5 (11.6)	13.3 (14.2)	6
External management (excluding property)	13.7 (13.7)	13.6 (13.6)	10.8 (10.8)	13.4 (13.7)	17

## U.K. PENSION FUNDS: FRACTILES OF TOTAL RETURN BY ASSET CLASS, 1986–1994

	UK Equit- ies	Intl. Equities	U.K. Bonds	Intl. Bonds	U.K. Index Bonds	Cash	U.K. Prop- erty	Total
Minimum	8.6	4.4	6.6	-0.6	5.6	2.7	3.1	7.2
25%	12.4	9.6	10.4	8.3	7.9	9.0	8.0	11.5
50%	13.1	10.7	10.8	11.4	8.2	10.3	8.8	12.1
75%	13.9	11.8	11.2	13.4	8.5	11.7	10.0	12.6
Maximum	17.4	14.7	17.2	26.3	10.1	19.7	13.5	15.0
Difference 25%-75%	1.5	2.2	0.8	5.1	0.6	2.7	2.0	1.1
Difference maximum – minimum	8.8	10.3	10.6	27.0	4.5	17.1	10.5	7.8

# Style management and performance

What is style management?

Adherence to given approach to management/types of investment

Why is it used?

- Communication with investors
- Measure performance of managers
- Assist diversification
- Improve risk control
- Market timing

Can it add value?

- Hard to classify managers
- Managers deviate from styles
- Contrary to EMH
- Costs of lost diversification
- Explained by empire-building?