Lecture 5: Asset allocation, risk control and passive management

In this lecture we will examine further topics related to asset allocation. We first will look in detail at issues relating to international investment. We continue by looking at risk control by institutional investors which complements diversification. To link to security selection, we conclude by looking at passive management. This is of major importance given the growth of indexation in overall securities investment, and its support from the EMH.

Asset allocation in active and passive strategies (review)

- Stages in asset allocation
- Approaches to asset allocation
- The importance of asset allocation as a source of excess returns – typically more important than security selection
- Principal choices are equities vs bonds (lecture 2) and domestic vs foreign, discussed here
- Other potential assets:
    - Property
    - Cash
    - Hedge funds
- Background: comparative asset returns for the G-7 countries

REAL ASSET RETURNS AND RISKS OVER 1967–1995

Average Real Return (and Standard Deviation)	Shares	Bonds	Short-Term Assets	Property	Foreign Equities	Foreign Bonds
Australia	8.3	–0.1	1.8	4.4	7.5	4.4
	(19.9)	(18.5)	(4.3)	(18.7)	(20.7)	(17.8)
Canada	5.0	2.0	2.7	9.4	8.2	5.1
	(15.8)	(13.3)	(3.3)	(8.3)	(17.8)	(15.0)
Denmark	5.9	4.4	2.3		5.2	2.1
	(25.6)	(19.1)	(2.8)		(21.4)	(17.7)
France	7.7	2.5	2.9	4.3	6.9	3.8
	(18.4)	(15.8)	(3.4)	(14.5)	(17.2)	(14.5)
Germany	10.8	3.9	3.1	10.9	5.5	2.4
	(23.8)	(15.7)	(2.1)	(11.5)	(21.4)	(17.4)
Italy	4.1	–2.0	–0.3		7.9	4.9
	(32.5)	(20.8)	(4.4)		(16.3)	(14.5)
Japan	8.5	3.1	–0.2	11.5	7.8	4.4
	(20.9)	(19.5)	(4.5)	(19.4)	(20.4)	(12.8)
Netherlands	8.8	2.6	2.1	5.9	6.2	3.1
	(26.6)	(14.1)	(3.8)	(8.3)	(18.7)	(13.9)
Sweden	14.1	1.4	2.1	10.3	7.7	4.6
	(31.4)	(16.3)	(3.9)	(27.1)	(17.6)	(15.4)
Switzerland	7.8	0.0	1.3	1.7	5.3	2.2
	(22.8)	(18.7)	(2.0)	(9.1)	(19.9)	(15.9)
United Kingdom	8.3	1.0	2.1	1.5	8.0	4.1
	(17.8)	(14.9)	(4.6)	(15.3)	(17.7)	(15.7)
United States	6.2	1.2	2.0	5.6	8.5	5.5
	(14.8)	(15.2)	(2.3)	(22.1)	(18.7)	(14.9)

International investment 1

Arguments for international investment

- correlation of markets
- correlation of profit shares
- correlation of demographic changes

Expands frontier of efficient portfolios
Illustrations of the benefits of international investment (see tables above and chart below)

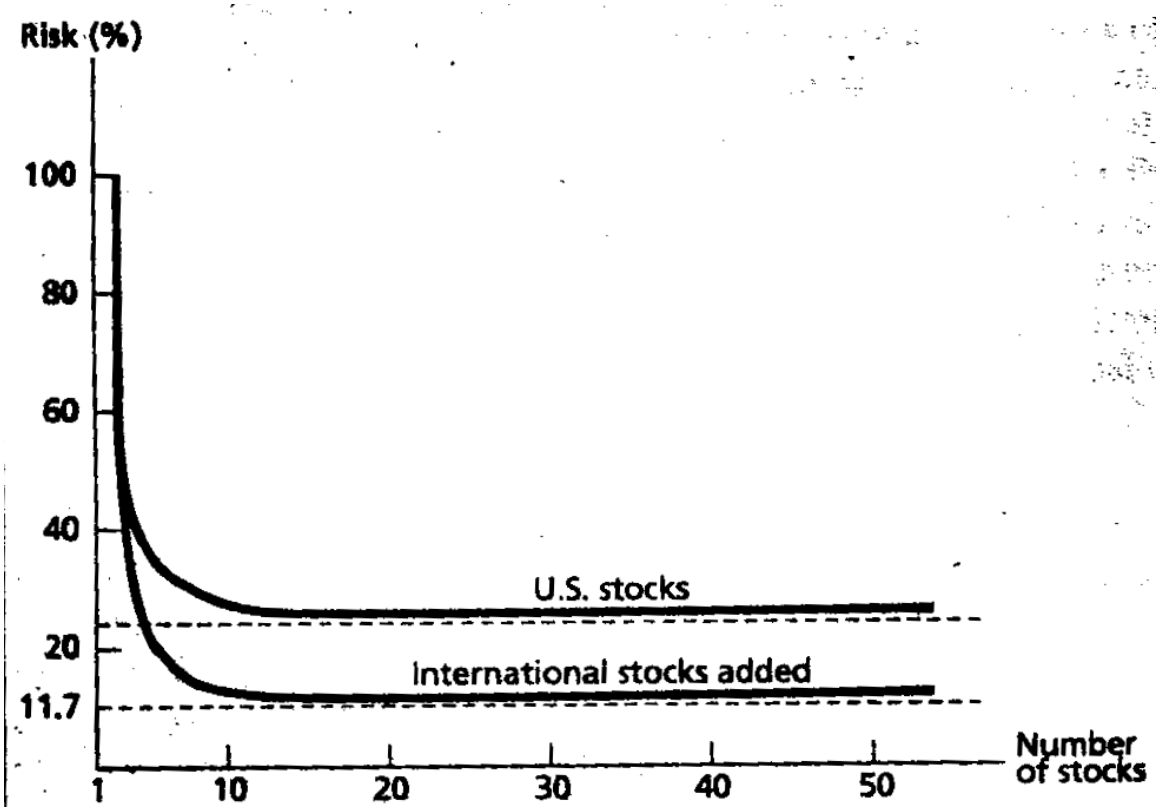
Most international market correlations below 0.5 while domestic correlation coefficients between diversified portfolios close to 0.9

CORRELATION OF MONTHLY % CHANGES IN MSCI INDICES

1970-2002	UK	US	France	Italy	Japan	Canada	Ger-many
UK	1.00						
US	0.51	1.00					
France	0.55	0.46	1.00				
Italy	0.34	0.26	0.47	1.00			
Japan	0.37	0.31	0.40	0.35	1.00		
Canada	0.51	0.72	0.46	0.31	0.31	1.00	
Ger-many	0.44	0.41	0.63	0.42	0.37	0.37	1.00

1985-2002	UK	US	France	Italy	Japan	Canada	Ger-many
UK	1.00						
US	0.64	1.00					
France	0.60	0.53	1.00				
Italy	0.37	0.32	0.57	1.00			
Japan	0.46	0.33	0.46	0.39	1.00		
Canada	0.55	0.77	0.49	0.36	0.36	1.00	
Ger-many	0.54	0.49	0.76	0.52	0.30	0.46	1.00

Benefits of international investment



Comparing portfolios with optimal levels based on

- global portfolio shares
- Import shares in consumption basket (typically around 20%)

Implies “home asset preference” – more assets in domestic market than optimisation would suggest

INTERNATIONAL DIVERSIFICATION OF INSTITUTIONAL INVESTORS, 1996

Percent of Asset Class	**Pension Funds**		**Insurance Companies**		**Mutual Funds**		**Market Cap. as a Percent of Global**
	Total	Equities	Total	Equities	Total	Equities	
United States	11	16	7	4	7	10	45
Japan	23	35	13	10			16
Germany	4	21					4
France			1	1			3
Italy			15	40	16	34	1
United Kingdom	28	28	18	19	15	16	9
Canada	17	37	26	30	37	40	3
Australia	20	27	22	29			2
Netherlands	30	58	18	21	7		2
Sweden	6	27	16	36	20	23	1
Switzerland	16	33			49	51	2

International investment 2

Reasons for home asset preference

- Liabilities, especially if nominal-fixed
- Case applies less to bonds (global integration greater)
- Property less liquid
- Systemic risks in global capital markets
- Information costs to investing in foreign markets (may suffer asymmetric information vis a vis local investors)
- Transactions costs
- Additional risks – liquidity, transfer and exchange rate risks – but can be reduced or hedged

Passive international investment

- Passive benchmarks for global indexation – GDP or capitalization? (Japan problems of market weights)
- Distortion of benchmarks by cross holding (account for 50% of Japanese market and none of US)

Country	Market Capitalization	Gross Domestic Product (GDP)
Australia	2.4%	2.4%
Austria	0.4	1.6
Belgium	1.1	1.9
Denmark	0.6	1.2
Finland	0.3	0.8
France	5.8	11.4
Germany	6.7	15.4
Hong Kong	3.3	0.9
Italy	1.9	9.2
Ireland	0.2	0.4
Japan	48.3	33.4
Malaysia	1.6	0.5
New Zealand	0.3	0.3
Netherlands	2.9	2.8
Norway	0.3	0.9
Singapore	0.9	1.4
Spain	1.8	4.6
Sweden	1.3	1.8
Switzerland	4.2	2.1
U.K.	16.7	8.0

Active international investment

- Asset allocation takes primary role – set benchmark then switch tactically between under and over valued markets, possibly using index funds
- Performance attribution (Lecture 4) usually split into
  - Currency selection
  - Country selection
  - Security selection

- International securities analysis – accounting difficulties

Using APT multifactor model in an international context, using world stock index, national stock index, industry sector and currency movement as factors (Solnik and De Freitas)

$r_i = E(r_i) + B_{i1}F_1 + B_{i2}F_2 + e_i$

- Low international influences on average – domestic dominant
- Consistent with low cross country correlations and value of international investment

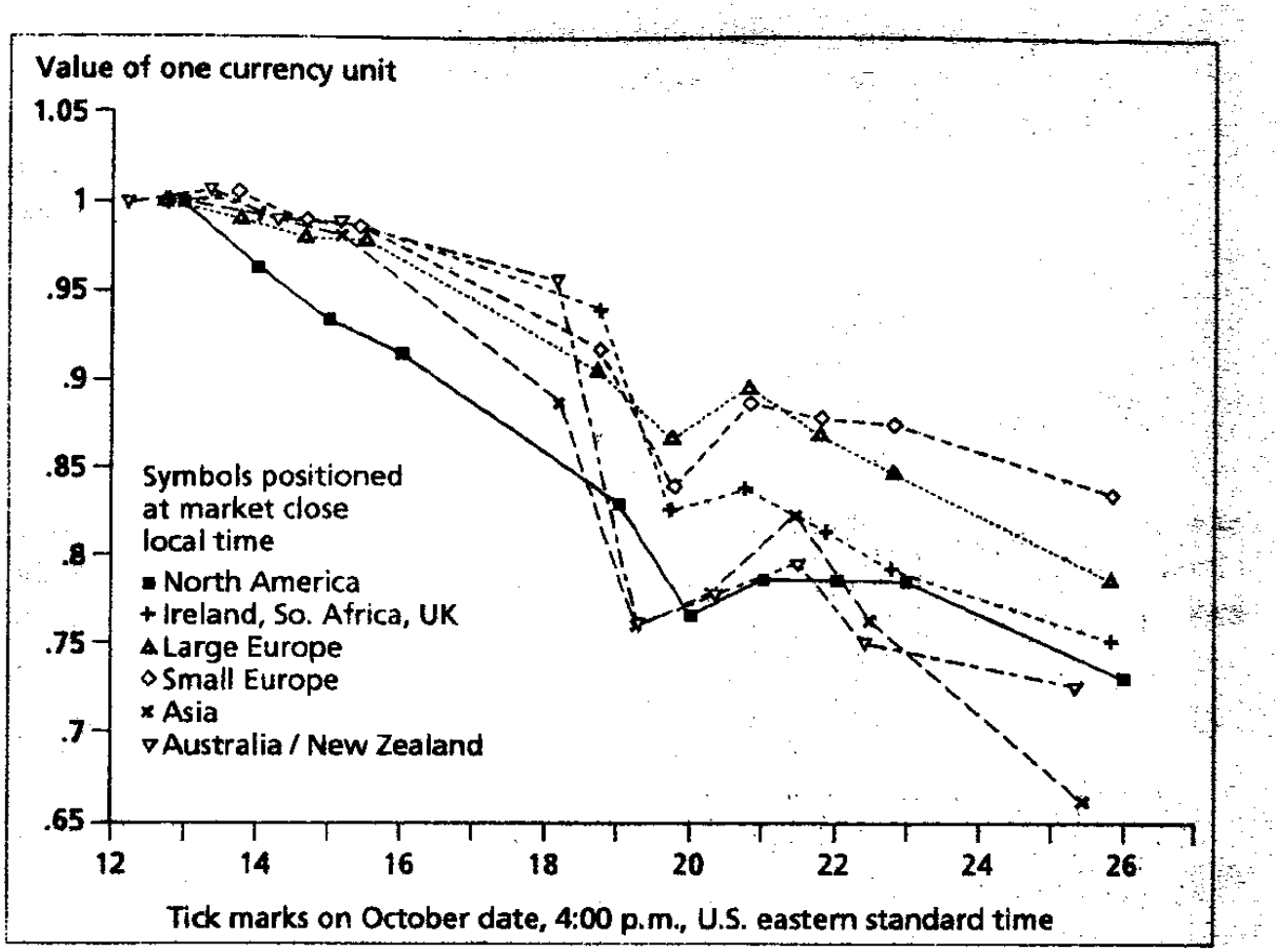
Relative importance of factors in explaining returns of a stock

In Explaining Return of a Stock

	Average *R*-SQR of Regression on Factors				
	Single-Factor Tests				
Locality	World	Industrial	Currency	Domestic	Joint Test All Four Factors
Switzerland	.18	.17	.00	.38	.39
West Germany	.08	.10	.00	.41	.42
Australia	.24	.26	.01	.72	.72
Belgium	.07	.08	.00	.42	.43
Canada	.27	.24	.07	.45	.48
Spain	.22	.03	.00	.45	.45
United States	.26	.47	.01	.35	.55
France	.13	.08	.01	.45	.60
United Kingdom	.20	.17	.01	.53	.55
Hong Kong	.06	.25	.17	.79	.81
Italy	.05	.03	.00	.35	.35
Japan	.09	.16	.01	.26	.33
Norway	.17	.28	.00	.84	.85
Netherlands	.12	.07	.01	.34	.31
Singapore	.16	.15	.02	.32	.33
Sweden	.19	.06	.01	.42	.43
All countries	.18	.23	.01	.42	.46

- High correlations in 1987 crash, showing issue of systemic risk at a global level (increased weight to world factor) – see also bear market table

Regional indices during October 14-27, 1987



Risk control by institutional investors

Whereas diversification reduces overall risk of portfolio, can also seek to manage particular sources of risk

Examples of hedging

- General point – calculation of hedge ratios – number of hedge positions needed to offset risk of position

- Hedging against systematic risk
Sell index futures in order to offset market falls on portfolio
Avoid market risk on individual holding

- Hedging against interest rate changes
Calculation of price value of a basis point (PVBP)
Offsetting interest rate future position
Problem of cross hedging

- Hedging on mispriced options
Purchase stock to offset options exposure, using option delta

Derivatives facilitate separation of the components of portfolio management

Examples of risk control by use of derivatives in domestic markets

- Controlling exposure to asset class
- Cutting costs when large change in asset allocation expected
- Speed in changing asset allocation
- Replicate position while managers changed

Examples of risk control by use of derivatives in international markets

- Bonds generally hedged and equities not hedged

- Overlay strategies, avoiding need to transact in underlying and disturb long run portfolios
- Overlays as a means of dividing aspects of asset management

Link of risk control to the portfolio objectives:
Shortfall risk

- The regulatory causes of shortfall risk
- Immunisation as a strategic response, using derivatives

Portfolio insurance

- Use of options for downside protection
- Synthetic put protection using cash and equities
- Updating of protection as market evolves – dynamic hedging
- Difficulties in the 1987 crash

The 1987 crash and portfolio insurance

Buoyant investor expectations, leading to suspicion of a bubble
Impression/illusion of high liquidity
“News” was not commensurate with outcome
Portfolio insurance and index arbitrage interaction
- Sell orders of insurers drove down market sharply
- Backwardation futures discount to market
- Arbitrageurs bought stock and sold futures – “cascade”

Institutional investors heavily involved in selling, especially of
cross border holdings
Particular concern about lending to brokers and dealers
Challenge for monetary policy

The nature of passive management

Definition: non-discretionary, rule based approach to asset management involving holding of securities without seeking to profit from trading them; usually associated with portfolio indexation.

- It assumes that the market is efficient and hence returns are maximized by "holding the market" (tangency point on frontier of efficient portfolios). Active management not remunerative, especially net of fees

Focus is on equity funds (indexation less common for bonds)

Reasons for growth of indexation

- Costs of active management rising (e.g. 40 bp compared to 8 bp for passive in the UK)

- Inadequate returns from security selection
- Errors in tactical asset allocation
- Cyclical aspects – bull market
- Take-up in UK 25% of pension assets, US 22% of pension fund assets and 35% of their equities
- Future growth
    - Core/satellite approaches
    - Enhanced indexation
    - Defined contribution funds
    - Multinationals cutting costs of disparate pools of assets

Limit when dominates market?

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

The issue of index construction/selection

Basic task for passive management (as well as setting benchmark for active managers)

- Efficiency (risk return profile and cost of management)
- Investability (include securities available for purchase and liquid)

- Measurability (statistics on returns, constituents etc available and updated regularly)
- Transparency (of calculation, construction, selection criteria)
- Stability (no excessive turnover in constituents generating trading)
- Comprehensiveness (tradeoff of coverage and liquidity)
- Representation (relevance to investor)

Constructing an index fund

Issue to minimise costs of trading etc while tracking closely
Need to agree with client what tracking error is acceptable

- Full replication – buy all the shares in the index (high cost)

- Stratified sampling – dividing index into groups (size, yield, industry) and taking sample – reduce to 1/3
- Optimisation
    - Linear programming: imposing set of constraints on portfolio, usually to maximize return
    - quadratic: maximise client's utility function, including risk penalty for tracking error
- Tilting of funds, build index fund with bias to a factor such as company size or yield

The issue of execution

Main aim is to avoid trading: hierarchy of approaches:

- Internal crossing
- External crossing
- Programme (basket) trading

Practical issues and day-to-day management

- New entrants to indices – risk of price being boosted by passive and active managers
- Corporate governance – index funds tend to be active, as have to hold stocks and want good corporate performance
- Cash management- needs depend on market liquidity – increase tracking error

Outturns:

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, while active managers fail to outperform, change higher fees.