

“EQUITY PORTFOLIO MANAGEMENT”

SD = Standard Deviation
 ER = Equity Research
 MF = Mutual Fund

L/S = Long-Short
 IR = Information Ratio
 CSP = Core-Satellite Portfolio
 IT = Information Technology

1. INTRODUCTION

Decision of how to invest in competing equity investments ranks second compared to how much to allocate to equities.

2. THE ROLE OF THE EQUITY PORTFOLIO

- As an investor’s domestic market’s global weight increases, so does his domestic market focus.
- Investing across countries provides diversification because no one market fully captures all global economic factors & no exact home-market equivalent.
- Equities provide inflation hedge (certain limitations, taxes are not inflation hedged so reduce after tax real return, price competition may limit price \uparrow due to inflation).
- Equities play growth role in portfolio.
- For the above reasons investors are equity biased in their asset allocation.
- Both domestic & international equities play an important role in individual/institutional portfolios.

3. APPROACHES TO EQUITY INVESTMENT

Passive Management

- Investor does not reflect his expectations in security selection.
- Dominant passive approach is indexing.
- Indexed portfolios are passive in implementation.

Active Management

Seeks to outperform benchmark through security selection.

Semi Active Management

More concerned about tracking risk while trying to beat benchmark.

- Information ratio \Rightarrow mean active return / tracking risk (efficiency with which tracking risk deliver active return).
- Efficient markets favor indexing.
- Information ratio is higher in enhanced indexing.
- Client constraints should also be considered when selecting an appropriate approach.

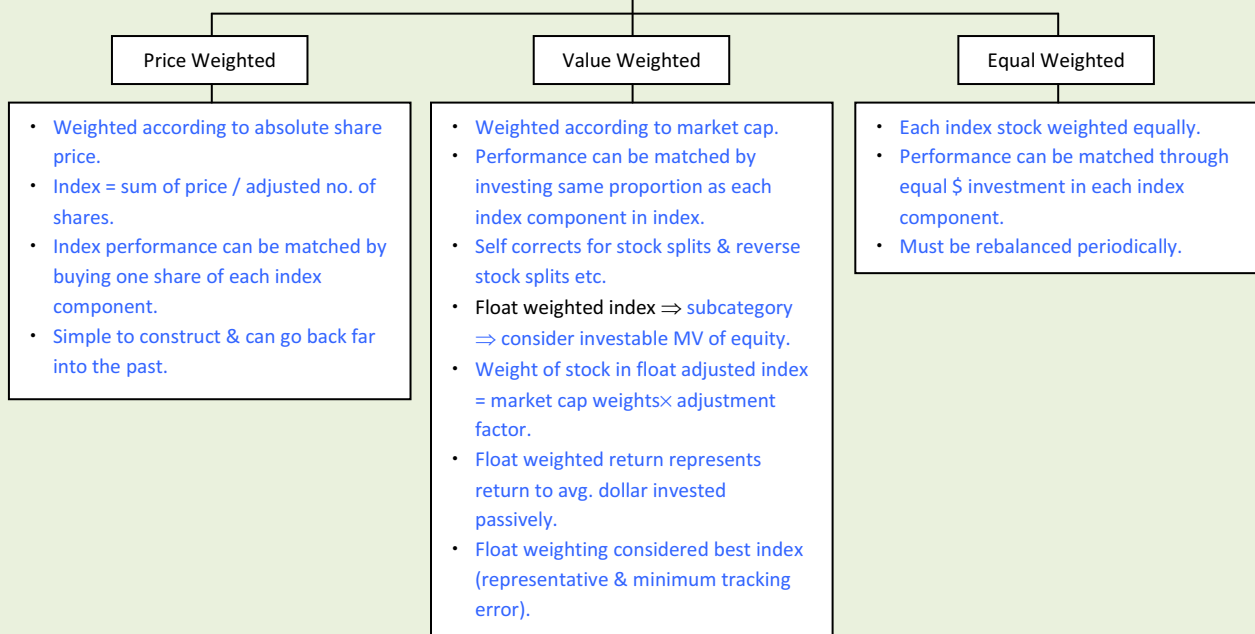
4. PASSIVE EQUITY INVESTING

- Historically before cost avg. active return is approximately equal to index return (active investment underperform after-cost basis).
- Passive investing has tax benefit than active investing (low turnover).
- Indexing is appropriate in large cap equity market (informationally efficient), small cap (heavy transaction cost) & unfamiliar overseas markets.

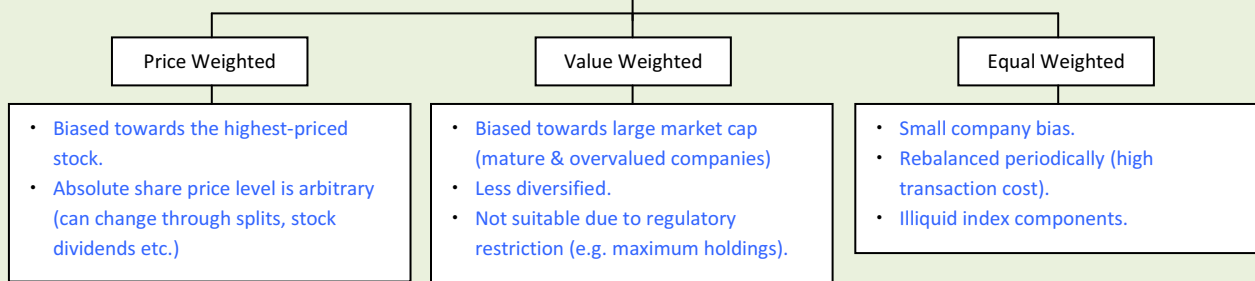
4.1 Equity Indices

- Indexes are used to;
 - Create index fund.
 - As benchmark.
 - To perform technical analysis & β calculation.
 - Explain factors that influence share prices.
- Boundaries of index universe, criteria for inclusion, weighting schemes & how returns are calculated, determine stock index’s characteristics.

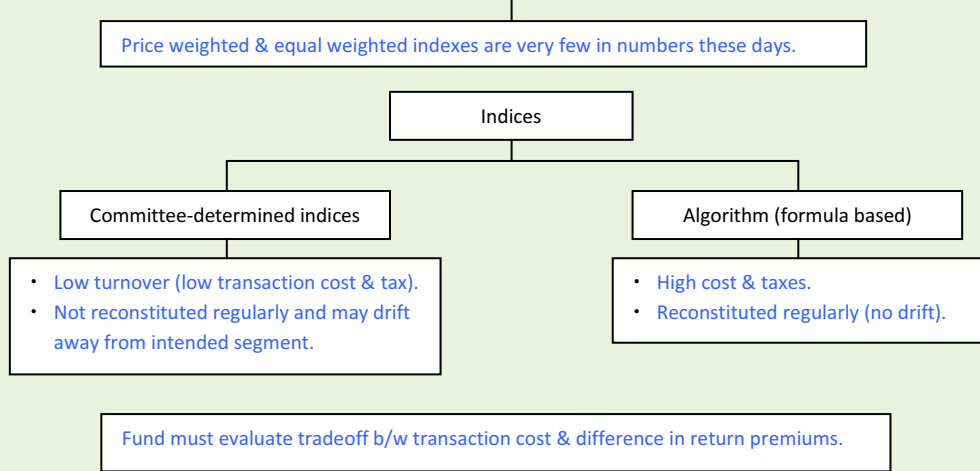
4.1.1 Index Weighting Choices



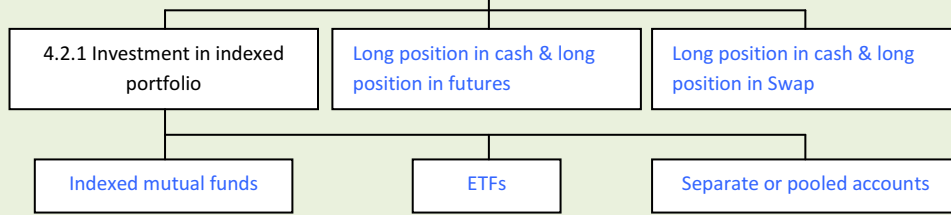
Weighting Scheme Biases



4.1.2 Equity Indices: Composition & Characteristics of Major Indices



4.2 Passive Investment Vehicles



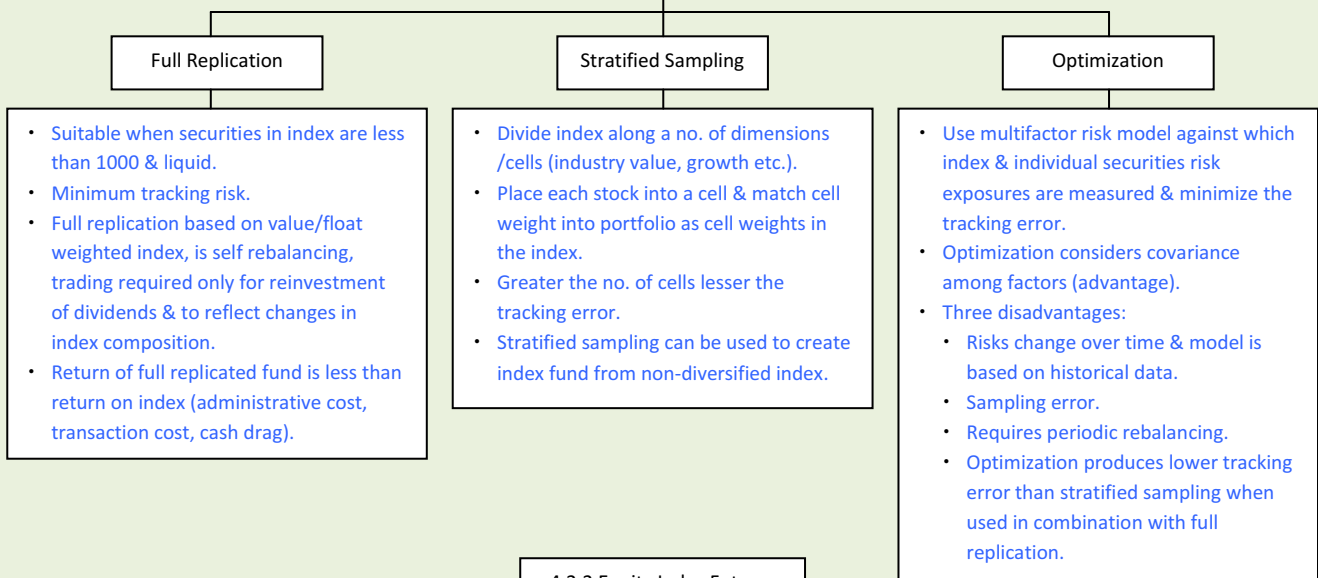
Difference b/w Indexed Mutual Funds & ETFs

	Mutual Funds	Exchange Traded Funds
Trading frequency	Trade at NAV once at market close	Trade in public market anytime during trading day
Index licensing fee	Lower	Higher
Tax efficiency	Lower	Higher
Cost of providing liquidity	Yes	No, due to in-kind creation/redemption
Shareholder accounting expense	Yes	No fund level shareholder accounting

Separate or Pooled Accounts

- Indexed institutional portfolios (separate or pooled) are cost efficient than MF & ETFs.
- In some cases securities lending revenue can equal or exceed total portfolio management & custody expense.

Indexing a Portfolio



4.2.2 Equity Index Futures

- Exchange of future for physicals ⇒ exchange the stock basket for future contract on index (reduce transaction cost).
- Facilitate risk management transaction.
- Rolling costs (futures position must be rolled over).
- Shorting on Basket trades impeded due to Uptick rule (i.e. no short sale on down tick relative to last trade at a different price).
- ETFs are better risk management & hedging tools (no uptick rule, lack of expiration date).

4.2.3 Equity Total Return Swaps

Motivated by different tax treatment of shareholders in different countries or to acquire exposure to an asset class for strategic/tactical asset allocation (less cost of rebalancing).

5. ACTIVE EQUITY INVESTING

- To outperform benchmark within risk & other constraints.
- Range of products from active to passive to satisfy investors' needs.

5.1 Equity Styles

Value

Focus is low share price relative to earnings or BV.

Growth

High earning growth companies are key considerations.

Market oriented

Intermediate grouping for investments (neither value nor growth).

- Market cap frequently specified in describing investor's style.
- Styles play a role in risk management & performance evaluation.

5.1.1 Value Investment Styles

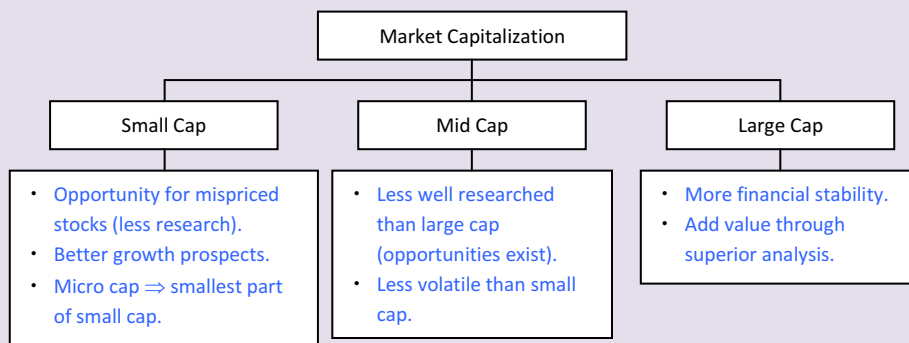
- Focus on cheap stocks relative to earnings or BV.
- Possible arguments:
 - Earnings have mean reverting tendency so earnings will \uparrow causing \uparrow in multiples & stock prices.
 - Growth investing contains risk of contraction in earnings & multiples.
- Main risks
 - Misinterpreting a stock's cheapness.
 - Undervaluation may not correct with in investment horizon.
- Three substyles
 - Low P/E \Rightarrow Invest in stocks with low price hoping industry & stock will recover & P/E will improve.
 - Contrarian \Rightarrow investment in very depressed industries usually $P/B < 1$.
 - Yield investor \Rightarrow focus on high current & future dividend yield (component of total return).

5.1.2 Growth Investment Styles

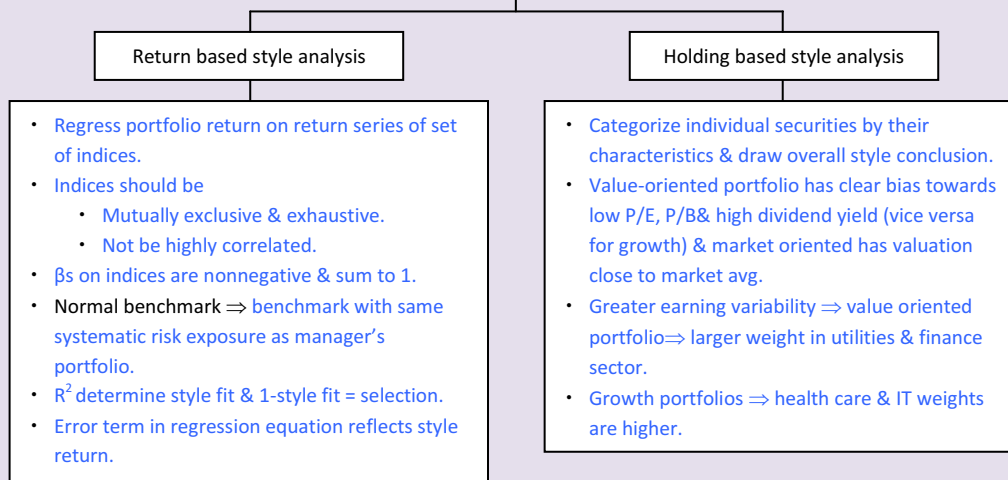
- Focus on future EPS growth rate & major risk is that growth will not take place & price will \downarrow .
- Substyles
 - Consistent growth \Rightarrow invest in companies with long growth history.
 - Earning momentum \Rightarrow higher quarterly year-over-year earnings growth but less sustainable.
- Growth investors do better in economic contraction than economic expansion.

5.1.3 Other Active Management Styles

- Market oriented investor buys stocks below its perceived intrinsic value irrespective of where it falls (growth / value).
- Drawback ⇒ if portfolio achieves market like return, indexing or enhanced indexing presents a lower cost alternative.
- Substyles
 - Market oriented with value biased (hold well diversified portfolios).
 - Market oriented with growth biased (hold well diversified portfolios).
 - Growth-at-reasonable price ⇒ investor favors companies with above avg. growth with conservative valuation (portfolios are less diversified than other growth investors).
 - Style rotators ⇒ invest in most favored near term style.



5.1.4 Techniques for Identifying Investment Styles



Two approaches to style analysis: Advantages and Disadvantages

	Advantages	Disadvantages
Returns-based style analysis	<ul style="list-style-type: none"> • Characterizes entire portfolio. • Facilitates comparisons of portfolios. • Aggregate the effects of the investment process. • Different models usually give broadly similar results and portfolio characterizations. • Clear theoretical basis for portfolio categorization. • Requires minimal information. • Can be executed quickly. • Cost effective. 	<ul style="list-style-type: none"> • May be ineffective in characterizing current style. • Error in specifying indices in the model may lead to inaccurate conclusions.
Holding-based style analysis	<ul style="list-style-type: none"> • Characterizes each position. • Facilitates comparisons of individual positions. • In looking at present, may capture changes in style more quickly than returns-based analysis. 	<ul style="list-style-type: none"> • Does not reflect the way many portfolio managers approach security selection. • Requires specification of classification attributes for style; different specifications may give different results • More data intensive than returns-based analysis.

5.1.5 Equity Style Indices

- Style indices construction uses multiple variables (price, earnings, book value etc).
- Index publishers capture licensing fees from ETF & other investment products.
- All style indices use holding-based style analysis.
- Overlap \Rightarrow some securities may be assigned in part to both value & growth.
- No overlap \Rightarrow security is assigned to either value, growth or market oriented.
- Buffering \Rightarrow rules for maintaining the previous stock assignment when stock has not clearly moved to a new style.
- Buffering reduces turnover & transaction expenses.
- Index publisher uses growth & value as categories (no overlap) or as quantities (with overlap).

5.1.6 The Style Box

- Style box is used for looking at a style.
- Style box used by Morningstar divides fund portfolio by market cap (large, mid, small) & style (value, core & growth).
- Categorizing a stock by size is relatively standard technique but techniques used in styles are diverse across firms.

5.1.7 Style Drift

- Inconsistency or straying from stated style.
- Two consequences
 - Investor may lose exposure to desired style.
 - Manager is operating outside area of expertise.

5.2 Socially Responsible Investing

- Consider ethics, social & religious concerns while taking investment decisions.
- Negative stocks screens \Rightarrow reduce investment universe.
- Positive SRI Screens \Rightarrow identify companies with ethically desirable characteristics.
- SRI often exhibits style bias towards growth investing & market cap bias towards small cap stocks.
- Two benefits of being aware of these biases.
 - Portfolio manager tries to minimize their biases if inconsistent with client's objective & constraints.
 - Manager can choose appropriate benchmark.
- Progress towards style bias issue can be identified & measured through return-based style analysis.

5.3 Long-Short investing

- Style investing focuses on portfolio characteristics while L/S investing focuses on constraints (short selling).
- Long only strategy can hold single alpha while L/S market neutral (zero β) holds two alphas.
- Portable alpha \Rightarrow added a variety of systematic risk exposures.
- Pair trade \Rightarrow long / short in two single industry firms' stocks by equal currency amounts (almost zero β , only firm specific risk).
- Leverage used in L/S strategy magnifies risk & return.
- If the price of short position tends to rise, loss can be unlimited.

5.3.1 Price Inefficiency on the Short Side

- Four pricing inefficiencies exist on short side (can cause higher short side alpha than long side).
 - Short positions difficult to obtain (e.g. find lender).
 - Management manipulations & window dressing (stock is more likely to be overvalued rather than undervalued).
 - More frequent issuance of “buy” recommendations due to greater commissions & potential buyers > sellers & short sellers.
 - Fear of management lawsuits & business lost prevent analyst from sell recommendations [against standard I (B)].

5.3.2 Equitizing a Market-Neutral Long-Short Portfolio

- Equitizing⇒ market exposure through futures& Swaps.
- Notional value of futures= value of cash position from short position.
- Rate of return on total portfolio is sum of;
 - G/L on L/S securities position.
 - G/L on long futures position.
 - Interest earned on cash position.
 - All above divided by portfolio equity.
- ETF is an alternative to futures & cost effective way of equitizing & de-equitizing.
- Market neutral L/S should be benchmarked against RFR & equitizing should be benchmarked against relative index.

5.3.3 The Long-Only Constraint

- L/S strategies have advantage of “allowing action on negative insights” over long only portfolio.
- Investor’s opportunity set is not symmetric for long only portfolio (can not take short position).

5.3.4 Short Extension Strategies

- Modify long-only strategy by specifying a stated level of short selling.
- Generally designed to have market β of 1.
- More efficient use of negative information.
- In 130/30 strategy, L/S portfolio decision are coordinated (consider single portfolio) while in 100/0 & 30/30 they are not (consider two portfolios).
- Several advantages of short extension.
 - No need for liquid futures a swap market as in equitizing market natural L/S.
 - ↑ Manager’s investment insight as compared to long only.
- Disadvantage
 - Market return & alpha from same source (less flexible than equitizing market neutral L/S).
- Market neutral L/S is considered part of alternative investments.

5.4 Sell Disciplines/Trading

Strategy of Substitution

- Replace existing holding with better opportunity by considering transaction cost & taxes.
- Also known as opportunity cost sell discipline.

Deteriorating Fundamentals

Reduce or eliminate a position if company’s business prospects are expected to deteriorate.

Rule Driven

- Valuation level (e.g. if P/E reaches historical avg.).
- Down-from-cost.
- Up-from-cost.
- Target price sell discipline.

These sell disciplines are not mutually exclusive.

6. SEMIACTIVE EQUITY INVESTING

- Designed to outperform benchmark while carefully managing portfolio risk exposure.
- Highest IR as compared to indexing & active management.

Basic Forms

Derivative-Based

- Achieve desired equity exposure through derivatives & enhanced return through something other than equity investments.
- Most common strategy \Rightarrow equitize a cash portfolio & add value through duration management.
- Low investment breadth.
- Straight forward strategy.

Stock Based

- Identify overvalued & undervalued stocks & outperform through stock selection.
- Risk is controlled through factor exposure & industry concentration.
- If manager has no opinion on stock, hold it at benchmark weight.
- Limitations
 - Positive alpha may disappear as other managers try to exploit it.
 - Quantitative & mathematical models, based on historical data, will not work if economy changes.

Fundamental Law of Active Management

- $IR \approx IC \sqrt{\text{Breadth}}$
Where IC = information coefficient (effectiveness of investment insight).
Breadth = no. of independent active investment decisions.
- Higher the ratio, the better it is.

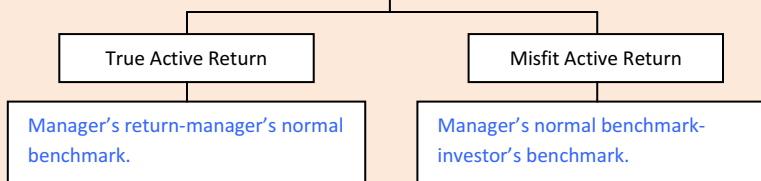
7. MANAGING A PORTFOLIO OF MANAGERS

- When investing a pool of assets, determine overall asset allocation i.e. which classes to use & how to invest within each asset class.
- Allocation should maximize expected total return at a given level to total risk.
- Maximize (by choice of managers) $U_A = r_A - \lambda_A \delta_A^2$
Where
 U_A = expected utility of active return of manager mix.
 r_A = expected active return.
 λ_A = active risk aversion.
 δ_A^2 = variance of active return.
- How much active risk an investor assumes determines mix of managers.
- Investors are more averse to active risk than total risk, because;
 - They believe that successful active management is possible & that they have the skill to select outperforming managers.
 - Answerable to someone i.e. institutional conservatism, where overall performance is judged relative to benchmark, which is difficult to outperform.
 - More active risk less manager diversification on efficient frontier (active risk limitation by institutional investors).
- Portfolio active return = $\sum_{i=1}^n h_{Ai} \delta_{Ai}$
Where
 h_{Ai} = weight assigned to ith manager.
 δ_{Ai} = active return of ith manager.
- Portfolio active risk (active returns are uncorrelated); $\sqrt{\sum_{i=1}^n h_{Ai}^2 \delta_{Ai}^2}$ if returns are correlated include covariance term under square root sign.

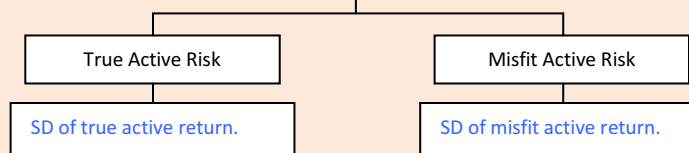
7.1 Core-Satellite

- Core-satellite portfolio \Rightarrow consists of a core holding (index & semi active) & satellite (active managers).
- CSP is a result of optimization applied to a group of equity managers or some other heuristic.
- Objective is to achieve passive as well as active exposure.
- Core should closely resemble investor's benchmark while satellite portfolios may have different benchmarks.

Decomposition of Active Return



Decomposition of Active Risk



- Total active risk = $\sqrt{[(manager's\ true\ active\ risk)^2 + (manager's\ misfit\ risk)^2]}$
- Most accurate risk-adjusted performance measure is;

$$True\ IR = \frac{True\ active\ return}{True\ active\ risk}$$
- Two main uses of true / misfit distinction.
 - Performance appraisal.
 - Optimization (allow optimal level of "misfit" risk).

7.2 Completeness Fund

- Active managers' portfolios have number of risk exposures or biases in CSP.
- Bottom-up stock picker's portfolios reflect industry concentrations.
- Completeness fund \Rightarrow when added to active managers' positions, establishes an overall portfolio with same risk exposure as investor's overall equity benchmark.
- Value added through stock selection.
- Can be managed passively or semi actively & re-estimated periodically.
- Drawback \Rightarrow eliminates misfit risk where non-zero misfit risk may be optimal, hence losing part of true active return.

7.3 Other Approaches: Alpha & Beta Separation

- Long active equity portfolio \Rightarrow provides both α & β exposure.
- Market neutral L/S \Rightarrow can better manage α & β (can use portable α in asset class outside β asset class).
- Risks to market neutral L/S \Rightarrow short positions are difficult to construct or portfolio may not really be market neutral.
- Portable alpha can be used even without investing on a L/S basis e.g.

β	[long on S & P 500 future]
α	[Long on Japanese manager portfolio (TOPIX index) and short on TOPIX future]

8. IDENTIFYING, SELECTING, AND CONTRACTING WITH EQUITY PORTFOLIO MANAGERS

When funds are delegated to outside management a consultant is required for investment manager search.

8.1 Developing a Universe of Suitable Manager Candidates

- Consultants use research staff to determine which managers are talented & truly add value.
- Use both qualitative (people, investment philosophy etc.) & quantitative (comparison with peers, style orientation etc.) factors.

8.2 The Predictive Power of Past Performance

- Legally “past performance is no guarantee of future result”.
- Past performance must be examined (e.g. active manager exhibiting consistent underperformance from benchmark not likely to be selected).

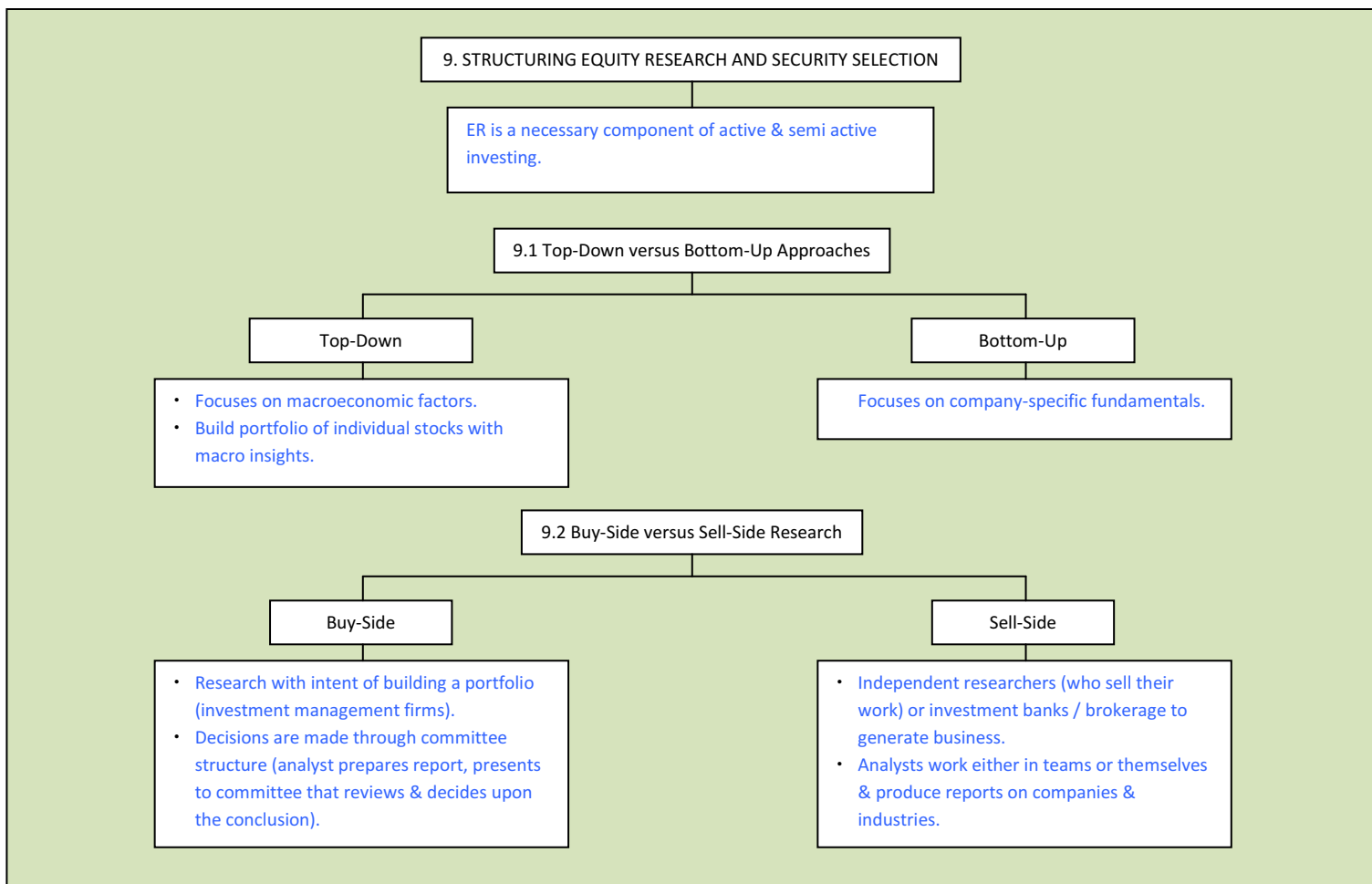
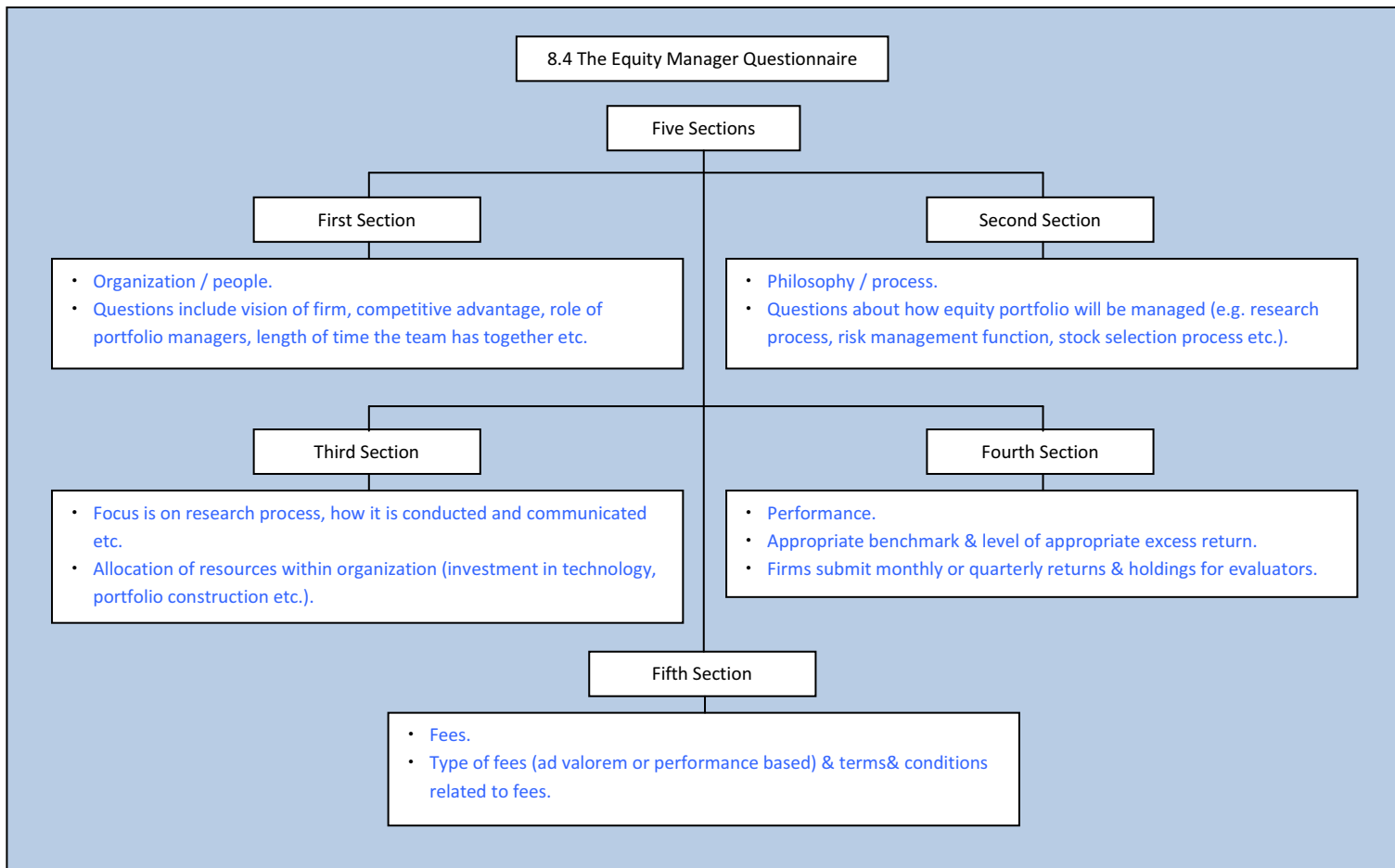
8.3 Fee Structures

Ad Valorem Fees

- Calculated by multiplying a % by value of assets managed.
- Advantage ⇒ simple & predictable.
- Also called assets under management fees.

Performance-Based Fees

- Base fee plus sharing %.
- Fee cap ⇒ upper limit to total fee (limit manager from high risk).
- High water mark ⇒ provision requiring cumulatively generated outperformance since last performance-based fee paid.
- Symmetric incentives fees ⇒ reduce (poor performance) as well as increase (good performance) compensation (better align manager & plan sponsor interest). ↑ manager’s revenue volatility.
- One-sided performance based fee ⇒ conveys a call option to investment manager & value is determined through option pricing model.



9.3 Industry Classification

- Equity research departments organized along industry or sector lines.
- Company is categorized into sector, industry group, industry & sub-industry.