

LM02 Active Equity Investing: Strategies

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1. Introduction

This reading gives a broad overview of active equity investing. Section 2 discusses the two main approaches to active management – the fundamental and quantitative approaches. Sections 3 to 9 discuss bottom-up, top-down, factor-based, and activist investing strategies. Section 10 describes how to create fundamental active investment strategies. Section 11 describes the process of creating quantitative active investment strategies. Finally, Section 12 discusses style classifications of active strategies and uses/limitations of such classifications.

2. Approaches to Active Management

The two main approaches to active management are ‘fundamental’ and ‘quantitative’.

Fundamental approaches are based on analyzing the fundamentals of a company such as – cash flows, earnings, and revenue. Different aspects of a company are forecasted to determine if it is currently undervalued or overvalued. For example: Consider an auto analyst who is evaluating five of the largest auto companies. He carefully studies the past financial statements of these companies and prepares forecasted financial statements. He also evaluates their corporate governance and management quality. Based on this analysis he determines the intrinsic values of these companies and compares them with the current market values to reach a buy/sell decision.

Quantitative approaches, on the other hand, rely heavily on computer programs and analyzing substantial amounts of data. A pattern or relationship between a given set of variables and security prices is established. A portfolio is then constructed by selecting securities with the desired exposure to the chosen set of variables. For example, consider a universe of 5,000 stocks. An analyst believes that companies with consistent dividends, P/B ratio less than 2, and earnings trending up over the last 12 quarters are likely to perform well. With the help of computer programs, the analyst will identify companies that meet these criteria and create a portfolio of selected companies.

The two approaches are not necessarily mutually exclusive. Fundamental approaches may involve the use of computer programs to analyze financial statements, predict financial statements, etc. Quantitative approaches may use variables that relate to company fundamentals. Quantitative analysis can be used to identify a small subset of stocks and fundamental approaches can then be applied to these stocks.

Exhibit 1 of the curriculum summarizes the typical differences between fundamental and quantitative approaches.

	Fundamental	Quantitative
Style	Subjective	Objective

Decision- making process	Discretionary	Systematic, non-discretionary
Primary resources	Human skill, experience, judgment	Expertise in statistical modeling
Information used	Research (company/industry/economy)	Data and statistics
Analysis focus	Conviction (high depth) in stock-, sector-, or region-based selection	A selection of variables, subsequently applied broadly over a large number of securities
Orientation to data	Forecast future corporate parameters and establish views on companies	Attempt to draw conclusions from a variety of historical data
Portfolio construction	Use judgment and conviction within permissible risk parameters	Use optimizers

These differences are discussed in detail in the following sections.

Differences in the Nature of the Information Used

Fundamental	Quantitative
<p>Relies heavily on research data.</p> <p>Bottom-up fundamental analysts use company data. They identify companies that are likely to perform well. A portfolio is created using these companies.</p> <p>Top-down fundamental analysts start first with region, country, or sector information and then narrow down to companies.</p> <p>Not all data can be quantified. For example, corporate governance, quality of company management, ESG considerations, etc. are important factors used in the analysis but are not easily quantifiable.</p> <p>A significant amount of judgment is required in the fundamental analysis as it involves making predictions about future performance.</p>	<p>Relies heavily on data and statistics.</p> <p>Analysts use historical data.</p> <p>The focus is on quantitative information. Non-quantitative information, such as corporate governance, management quality, etc. is usually not given much importance.</p> <p>Judgment is used in model building, for example – what screening criteria to use and in which order. Once a model is finalized, computer programs are used to process data in a systematic way rather than a judgmental way.</p> <p>Analysts need to avoid survivorship and look ahead biases.</p>

Differences in the Focus of the Analysis

Fundamental	Quantitative
<p>Analysts have conviction in stock-, sector-, or region-based selection.</p> <p>Here the focus is on a small group of stocks.</p> <p>An in-depth analysis is performed on these stocks.</p>	<p>Analysts focus on a selection of variables that are subsequently applied broadly over a large number of securities.</p> <p>Here the focus is on factors across a large group of stocks.</p>
<p>Relatively large positions are taken in selected stocks.</p>	<p>Analysts have conviction in the selection criteria, and not in any particular stock. Therefore, relatively smaller positions are taken across many stocks that meet the criteria.</p>

Difference in Orientation to the Data: Forecasting Fundamentals vs. Pattern Recognition

Fundamental	Quantitative
<p>Analysts forecast future corporate parameters to establish a view on companies. For example, revenues, earnings, and cash flows can be forecasted to determine the intrinsic value of a company.</p> <p>Analysts also identify catalysts that generate future growth.</p>	<p>Analysts attempt to draw conclusions from a variety of historical data.</p> <p>A typical strategy is to construct models by back-testing past data.</p>

Back-testing: Consider a simple example to understand how back-testing works. An analyst believes that stocks with a $P/B < 2$ will perform well. To back-test, the analyst can apply this selection criterion at any point of time in the past, for example, end of 2010. Using the data that was available at the end of 2010, stocks with $P/B < 2$ can be selected. Consequently, an analyst can then determine whether these stocks outperformed the market on a risk adjusted basis in the upcoming year i.e., 2011.

A similar exercise can be conducted for other periods and other selection criteria to evaluate which criteria are most likely to give superior returns. An implicit assumption made here is that criteria that worked well in the past will continue to work in the future.

While performing back testing an analyst should avoid look-ahead bias. Only information that would have been available at the chosen time period should be used in the analysis. Information that was available later should not be considered.

Instructor's Note: For a more detailed explanation of how to avoid a look-ahead bias read the embedded example in the curriculum "Forestalling look-ahead bias."

Differences in Portfolio Construction: Judgment vs. Optimization

Fundamental	Quantitative
<p>Analysts use judgment and conviction within permissible risk parameters.</p> <p>Extensive research is carried out to select stocks, which leads to a high level of conviction.</p>	<p>Portfolios are constructed using optimizers that control risk at the portfolio level. For example, a portfolio can be constructed to maximize excess return subject to certain constraints.</p>
<p>The position size in a stock depends on the level of conviction in that stock. The higher the conviction, the higher the position size.</p> <p>The risk is that despite the high level of conviction, the company's performance will differ from the analyst's expectations.</p> <p>Portfolios are constantly monitored and rebalanced at any time. If an analyst believes that a company is not going to perform well, the position size in that company is reduced and the portfolio rebalanced.</p>	<p>Investors are exposed to a risk that the factor returns will not perform as expected.</p> <p>This risk is at the portfolio level rather than at the stock level.</p> <p>Portfolios are rebalanced at regular intervals based on pre-defined rules.</p>

Example: Fundamental vs. Quantitative Approach

(This is Example 1 from the curriculum.)

Consider two equity portfolios with the same benchmark index, the AC MSCI Asia ex Japan. The index contains 1,210 stocks as of September 2021. One portfolio is managed using a fundamental approach, while the other is managed using a quantitative approach. The fundamental approach-based portfolio is made up of 50 individually selected stocks, which are reviewed for potential sale or trimming on an ongoing basis. In the fundamental approach, the investment universe is first pre-screened by valuation and by the fundamental metrics of earnings yield, dividend yield, earnings growth, and financial leverage. The quantitative approach-based portfolio makes active bets on 400 stocks with monthly rebalancing. The particular approach used is based on a five-factor model of equity returns.

Contrast fundamental and quantitative investment processes with respect to the following:

1. Constructing the portfolio
2. Rebalancing the portfolio

Solution to 1:

Fundamental: Construct the portfolio by overweighting stocks that are expected to outperform their peers or the market as a whole. Where necessary for risk reduction, underweight some benchmark stocks that are expected to underperform. The stocks that fell out in the pre-screening process do not have explicit forecasts and will not be included in the portfolio.

Quantitative: Construct the portfolio by maximizing the objective function (such as portfolio alpha or information ratio) with risk models.

Solution to 2:

Fundamental: The manager monitors each stock continuously and sells stocks when their market prices surpass the target prices (either through appreciation of the stock price or through reduction of the target price due to changes in expectations).

Quantitative: Portfolios are usually rebalanced at regular intervals, such as monthly.

3. Bottom-Up Strategies

Instructor's Note: On the exam, a scenario depicting the process followed by a portfolio manager may be presented, and the candidate may be asked to identify the strategy employed.

The stock selection process starts with data at the individual company level. Bottom-up strategies can be applied by quantitative analysts, but they are more common with fundamental analysts.

When evaluating a particular company, fundamental investors focus on:

- Business model and branding: Business model refers to a company's strategy for running its business and generating profits. Companies with strong business models are likely to perform well. Similarly, the brand of a company is also important. Companies like Apple and BMW have built very strong brands that allow them to charge premium prices.
- Competitive advantages: Companies with competitive advantages can generate higher profits as compared to other companies.
- Company management: Analysts need to evaluate the quality and competence of a company's management team.
- Corporate governance: Analysts need to check if management's interests are aligned with shareholders' interests. The risk management process of a company needs to be analyzed. Evaluating ESG factors has also become increasingly important.

- **Stock valuation:** There are several ways to perform a stock valuation. Relative valuation models or discounted cash flow models that use forecasted cash flows can be used. Apart from the quantitative factors, qualitative factors discussed above should also be considered in the models. Using these models, the analyst can calculate the intrinsic value of a company's stock and compare it with the market value to reach an investment decision.

Bottom-up strategies can be categorized as value-based or growth based.

Value-based approaches: The basic idea is to identify companies with attractive valuation metrics. The different styles of value-based approaches are:

- **Relative value:** Analysts look at metrics such as P/E, P/B to identify companies that are undervalued relative to similar companies. However, in addition to a simple comparison of price multiple, an analyst should also determine if a premium or discount is justified by the company's fundamentals and if the company is truly worth investing in.
- **Contrarian investing:** This style is based on a behavioral finance concept that market participants tend to overreact. Contrarian investors, therefore, purchase and sell stocks against the current market sentiment. They buy poorly performing stocks that they believe are attractively priced and sell overperforming stocks that they believe have become too expensive.
The difference between contrarian investing and relative value investing is that relative value investors focus on valuation metrics, whereas contrarian investors focus on market sentiments and rapid changes in prices.
- **High-quality value:** Along with value, equal emphasis is placed on financial strength and demonstrated profitability. For example, companies with consistent earnings power, above-average return on equity, financial strength, and good management are selected and purchased when they are attractively priced. This style is often associated with the well-known investor Warren Buffet.
- **Income investing:** Companies with high dividend yields are selected. These companies are perceived to be safe because consistent dividends put a floor on the stock price. Also, such companies have a greater ability to withstand poor market conditions.
- **Deep-value investing:** Companies with very low P/B ratios are selected. Investors buy such stocks expecting a turnaround. For example, there may be reorganization after which the company may bounce back.
- **Restructuring and distressed investing:** This style is generally applied to fixed income investing, but the same idea can also be applied to equity investing. Investors purchase the equity of companies in financial distress. A distressed

company that goes through restructuring may still have valuable assets, distribution channels, or patents that can make it an attractive acquisition target.

- **Special situations:** Investors try to exploit mispricing that may arise because of corporate events such as spin-offs, divestitures, or mergers.

Growth-based approaches: Investors look for companies that are expected to grow faster than their industry or faster than the overall market. Growth is generally measured in terms of revenues, earnings, or cash flows. Investors also look for companies with consistent growth, strong business models, and competitive advantage. Typically, such companies will trade at high P/E multiples.

Growth at a reasonable price (GARP) is a sub-discipline within growth investing. Here investors look at the P/E ratio relative to the growth rate, the P/E-to-growth (PEG) ratio. The PEG ratio is calculated as the stock's P/E divided by the expected earnings growth rate. Companies with a PEG ratio less than 1 are considered attractive because this implies that the growth rate is more than the P/E multiple.

Example: Characteristic Securities for Bottom- Up Investment Disciplines

(This is Example 2 from the curriculum.)

The following table provides information on four stocks.

Company	Price	12-Month Forward EPS	3-Year EPS Growth Forecast	Dividend Yield	Industry Sector	Sector Average P/E
A	50	5	20%	1%	Industrial	10
B	56	2	2%	0%	Information technology	35
C	22	10	-5%	2%	Consumer staples	15
D	32	2	2%	8%	Utilities	16

Using only the information given in the table above, for each stock, determine which fundamental investment discipline would most likely select it.

Solution:

- Company A's forward P/E is $50/5 = 10$, and its P/E-to-growth ratio (PEG) is $10/20 = 0.5$, which is lower than the PEGs for the other companies ($28/2 = 14$ for Company B, negative for Company C, and $16/2 = 8$ for Company D). Given the favorable valuation relative to growth, the company is a good candidate for investors who use GARP.
- Company B's forward P/E is $56/2 = 28$, which is lower than the average P/E of 35 for its sector peers. The company is a good candidate for the relative value approach.

- Company C's forward P/E is $22/10 = 2.2$, which is considered very low in both absolute and relative terms. Assuming the investor pays attention to company circumstances, the stock could be a good candidate for the deep-value approach.
- Company D's forward P/E is $32/2 = 16$, which is the same as its industry average. Company D's earnings are growing slowly at 2%, but the dividend yield of 8% appears high. This combination makes the company a good candidate for income investing.

Example: Growth vs. Value

(This is Example 3 from the curriculum.)

Tencent Holdings Limited is a leading provider of value-added internet services in China. The company's services include social networks, web portals, e-commerce, and multiplayer online games.

Exhibit 3 shows an excerpt from an analyst report on Tencent published following the release of the company's Q4 2020 results on 2 November 2021.

Exhibit 3: Financial Summary and Valuation for Tencent Holdings Limited

Market Data: 2 November 2021			2017	2018	2019	2020	2018E
Closing price	464.0	Revenue (HKD millions)	274,158	370,372	427,814	541,692	276,538
	251.5	YOY (%)		35.1	15.5	26.6	30.15
	9,380	Net income (HKD millions)	82,457	93,239	105,806	179,619	68,994
	3,669	YOY (%)	53.49	13.1	13.5	69.8	22.04
52-Week high/low	412.20/775.50	EPS (HKD)	8.76	9.87	11.18	18.93	7.39
Market cap (HKD millions)	4,470,000	Diluted EPS (HKD)	8.65	9.74	11.02	18.57	7.31
		ROE (%)	29.09	23.84	26.11	26.18	24.71
Shares outstanding	33,006,000	Debt/Assets (%)	52.02	60.20	61.33	61.26	60.37
Exchange rate (RMB/HKD)	0.8197	Dividend yield (%)	0.20	0.20	0.28	0.38	0.46
		P/E	54.78	55.17	38.27	28.80	23.60
		P/B	22.31	19.35	13.39	9.99	7.54
		EV/EBITDA	40.79	35.88	28.06	20.09	15.39

Notes: Market data are quoted in HKD; the company's filing is in RMB. Diluted EPS is calculated as if all outstanding convertible securities (such as convertible preferred shares, convertible debentures, stock options, and warrants) were exercised. P/E is calculated as closing price divided by each year's EPS.

Source: Bloomberg, author's analysis

From the perspective of the date of Exhibit 3:

1. Which metrics would support a decision to invest by a growth investor?
2. Which characteristics would a growth investor tend to weigh less heavily than a high-quality value investor?

Solution to 1:

A growth investor would focus on the following:

- The year-over-year change in revenue, which exceeded 25% in 2020.
- The year-over-year change in net income, which was nearly 70% in 2020.

Solution to 2:

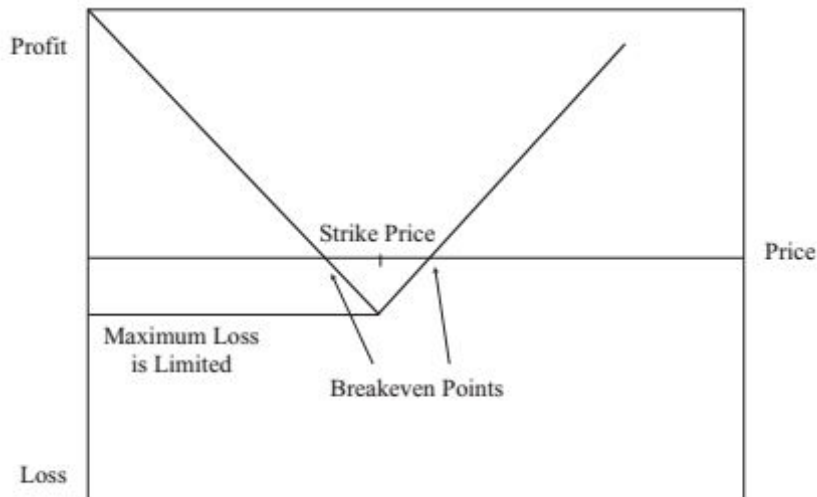
A growth investor would tend to be less concerned about the relatively high valuation levels (high P/E, P/B, and EV/EBITDA) and low dividend yield.

4. Top-Down Strategies

The stock selection process starts at the top or macro level and we then move down to individual companies. The different types of top-down strategies are:

- **Country and Geographic Allocation to Equities:** Investors form their portfolios by investing in different geographic regions based on their assessment of the region's prospects. For example, consider a benchmark index with equal weightage to Asia, Europe, and the Americas. If an analyst believes that Asian markets will outperform the other regions, then he can assign a higher weightage to Asia as compared to the benchmark. In making these decisions, analysts look at macroeconomic trends such as projected growth rates, inflation, demographic trends, and government policies. Top-down and bottom-up analyses are not mutually exclusive. Country or geographic allocation decisions can be made using both approaches. For example, just as macroeconomic data for a country is available, the market valuation of a country can be calculated by aggregating the market capitalization of all companies in that country.
- **Sector and Industry Rotation:** This strategy is similar to the previous one. For example, consider a benchmark with equal weightage to the Technology, Healthcare, and Energy sectors. If an analyst believes that the technology sector will outperform the other sectors, he may assign a higher weightage to this sector as compared to the benchmark. Rotation refers to changing the preferred sectors over time. For example, an analyst may overweight the technology sector this year, but depending on market conditions, overweight the healthcare sector next year. This strategy is based on the rationale that even an average company in a strong sector is likely to do well than a good company in a weak sector. Global industries (e.g. energy) are subject to global supply and demand dynamics and are therefore suitable for global sector allocation decisions. On the other hand, industries that are more local (e.g. real estate) are more suitable to sector allocation within a country.

- **Volatility-Based Strategies:** These are based on investors' views on volatilities and implemented via derivatives. For example, assume an investor expects the market to have higher volatility than anticipated by others but does not have an opinion on the direction of the move. He can use an index straddle strategy to profit from this expectation. An index straddle position involves the purchase of call and put options with the same strike price and expiry date. This strategy is profitable if volatility is higher than expected, but will result in a loss if the market stays flat. Exhibit 4 of the curriculum shows the payoff diagram for an index straddle strategy.



- **Thematic Investment Strategies:** These strategies are based on new trends/themes that are expected to drive the market in the future. For example, advancements in medical technology, rapid growth in mobile communication, or explorations for clean energy avenues may present investment opportunities and challenge existing companies. Investors select companies that are likely to benefit from the chosen themes. It is important to determine if the chosen theme is short-term or structural (likely to persist for a long time). Thematic strategies are normally based on structural changes rather than short-term changes.

5,6&7: Factor-Based Strategies

A factor is a variable or characteristic with which asset returns are correlated. The commonly used factors are:

- **Size:** Companies can be categorized according to their market capitalization into small-cap, mid-cap, and large-cap categories. Small-cap companies are expected to provide highest returns over the long term, but they have significantly higher risk.
- **Value:** Stocks that trade at relatively lower valuation multiples such as P/E, P/B, P/Cash flow, P/EBITDA, etc. are called value stocks. Value stocks are expected to perform well in the long term.

- **Growth:** Stocks that have been growing strongly in the recent past and are expected to continue this growth in the foreseeable future can be classified as growth stocks. Growth stocks are expected to outperform the market in the long term. Growth stocks typically trade at higher valuation multiples such as the P/E ratio.
- **Quality:** This factor generally refers to earnings quality. Earnings with relatively low accrual component and relatively high cash component are considered high quality. Companies with high-quality earnings are expected to do well.
- **Price momentum:** This refers to stock performance in the recent past. Price momentum relies on patterns of price persistence for certain time horizons, usually short term. For example, stocks that are 'winners' over the last quarter are expected to outperform past 'losers' in the subsequent quarters.
- **Unconventional factors:** Apart from the commonly used factors stated above, several unconventional factors can also be used.

These factors are not standardized. For example, the definition of value stocks and growth stocks can vary from analyst to analyst. This strategy is therefore different from geography or sector-based classification where the definitions of geographies or sectors are fairly standardized.

A factor-based strategy involves identifying favorable factors and tilting the portfolio towards these factors. For example, if the value factor is considered favorable, then the investor can increase the portfolio weights for value stocks.

Some investors may time their exposure to factors. This strategy is called equity style rotation. For example, if small-cap stocks are expected to outperform in the upcoming period, then portfolio weights for small-cap stocks can be increased. If large-cap stocks are expected to outperform in the subsequent period, exposure to large-cap stocks can be increased in the subsequent period. While equity style rotation strategies can be used in both fundamental and quantitative investment approaches, it is more commonly used in quantitative approaches.

New factors are identified through academic research and external research performed by investment companies. When a new factor is identified it should pass the 'smell' test, i.e. the factor should make economic and logical sense (it should smell right).

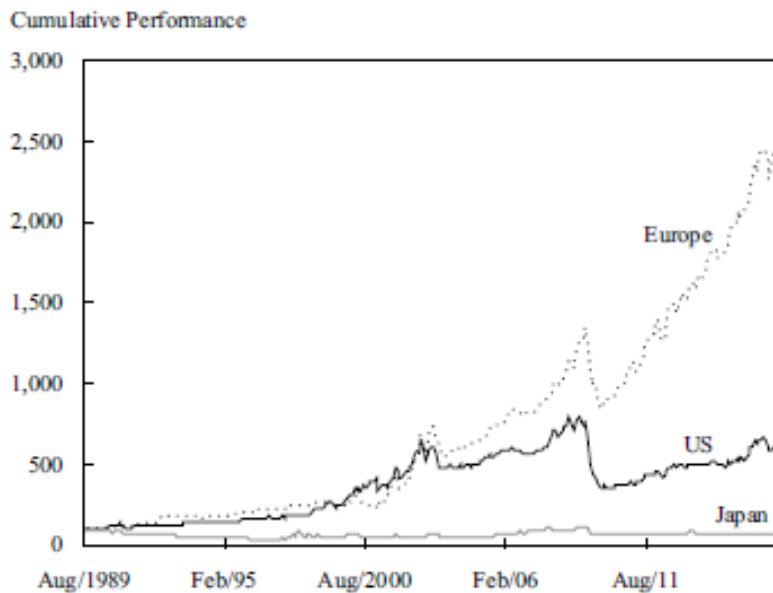
Example: Factor Investing

(This is Example 4 from the curriculum.)

A quantitative manager wants to expand his current strategy from US equities into international equity markets. His current strategy uses a price momentum factor. Based on Exhibit 13:

1. State whether momentum has been a factor in European and Japanese equity returns overall in the time period examined.
2. Discuss the potential reasons why neutralizing sectors reduces downside risk.

Exhibit 13 Performance of the Sector-Neutralized Price Momentum Factor In US, European, and Japanese Markets (Long/Short Decline Portfolio)



Sources: Compustat, FTSE Russell.

Solution to 1:

As shown in Exhibit 13, price momentum has performed substantially better in Europe than in the United States. On the other hand, there does not appear to be any meaningful pattern of price momentum in Japan. Exhibit 13 suggests that the price momentum factor could be used for a European portfolio but not for a Japanese portfolio. However, managers need to perform rigorous backtesting before they can confidently implement a factor model in a market that they are not familiar with. Managers should be aware that what appears to be impressive performance in backtests does not necessarily imply that the factor will continue to add value in the future.

Solution to 2:

Using the simple price momentum factor means that a portfolio buys past winners and shorts past losers. The resulting portfolio could have exposure to potentially significant industry bets. Sector-neutral price momentum focuses on stock selection without such risk exposures and thus tends to reduce downside risk.

Example: Researching Factor Timing

(This is Example 5 from the curriculum.)

An analyst is exploring the relationship between interest rates and style factor returns for the purpose of developing equity style rotation strategies for the US equity market. The analysis takes place in early 2017. The first problem the analyst addresses is how to model the interest rate variable. The data in Exhibit 17 show an apparent trend of declining US government bond yields over the last 30 years. Trends may or may not continue into the future. The analyst decides to normalize the yield data so that they do not incorporate a prediction on continuation of the trend and makes a simple transformation by subtracting the yield's own 12-month moving average:

$$\text{Normalized yield}_t = \text{Nominal yield}_t - \frac{1}{12} \sum_{\tau=1}^{12} \text{Nominal yield}_{t-\tau+1}$$

The normalized yield data are shown in Exhibit 18. Yields calculated are as of the beginning of the month. Do the fluctuations in yield have any relationship with style factor returns?

The analyst explores possible contemporaneous (current) and lagged relationships by performing two regressions (using the current month's and the next month's factor returns, respectively) against the normalized long-term bond yield:

$$f_{i,t} = \beta_{i,0} + \beta_{i,1} \text{Normalized yield}_t + \varepsilon_{i,t}$$

and

$$f_{i,t+1} = \beta_{i,0} + \beta_{i,1} \text{Normalized yield}_t + \varepsilon_{i,t}$$

where $f_{i,t}$ is the return of style factor i at time t and $f_{i,t+1}$ is the subsequent (next) month's return to style factor i . The first regression reveals the contemporaneous relationship between interest rate and factor performance—that is, how well the current interest rate relates to the current factor performance. The second equation states whether the current interest rate can predict the next month's factor return. Exhibit 18 shows the findings.

Exhibit 16: Current and Expected Bond Yield, US

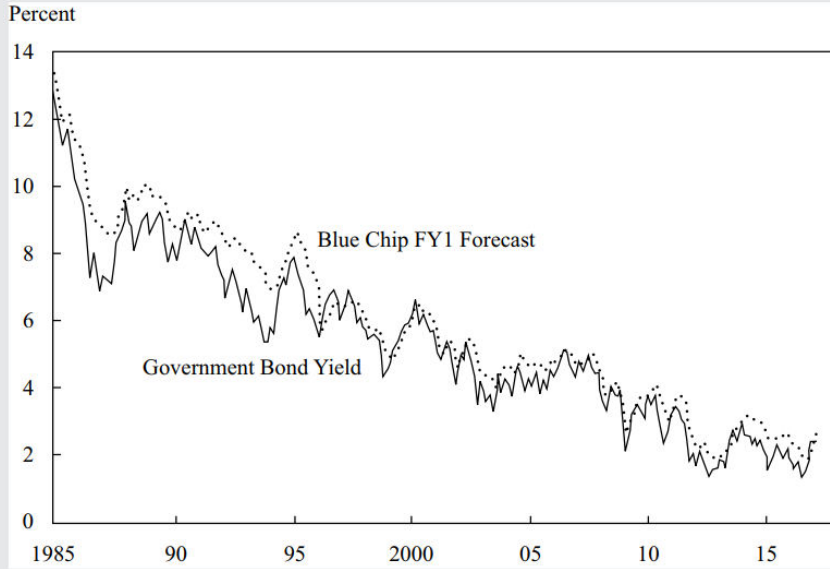
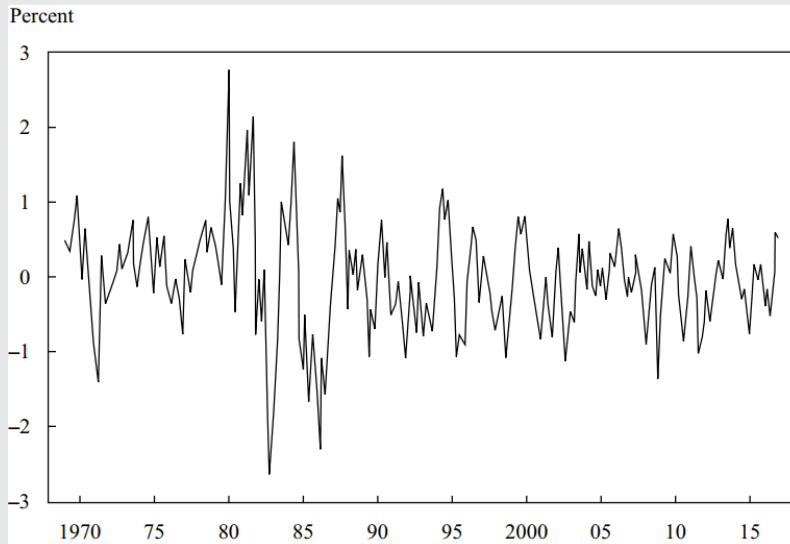
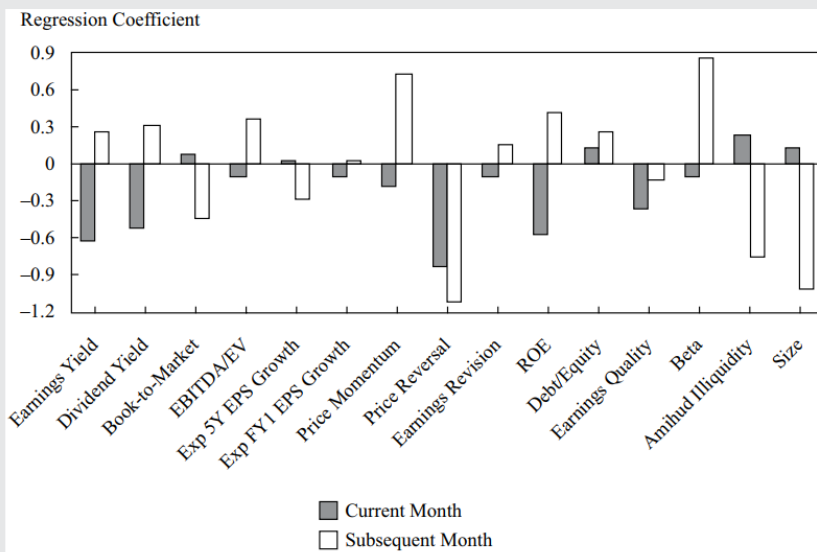


Exhibit 17: Normalized 10-Year Treasury Bond Yield, US



Source: Haver Analytics.

Exhibit 18: Normalized Bond Yield and Style Factor Returns

Source: Haver Analytics.

Using only the information given, address the following:

1. Interpret Exhibit 18.
2. Discuss the relevance of contemporaneous and forward relationships in an equity factor rotation strategy.
3. What concerns could the analyst have in relation to an equity factor rotation strategy, and what possible next steps could the analyst take to address those concerns?

Solution to 1:

Exhibit 18 suggests an inverse relationship between concurrent bond yields and returns to the dividend yield, price reversal, and ROE factors. For some factors (such as earnings quality), the relationship between bond yields and forward (next month's) factor returns is in the same direction as the contemporaneous relationship.

Solution to 2:

Attention needs to be given to the timing relationship of variables to address this question. A contemporaneous style factor return becomes known as of the end of the month. If the known value of bond yields at the beginning of the month is correlated with factor returns, the investor may be able to gain some edge relative to investors who do not use that information. The same conclusion holds concerning the forward relationship. If the contemporaneous variable were defined so that it is realized at the same time as the variable we want to predict, the forward but not the contemporaneous variable would be relevant.

Solution to 3:

The major concern is the validity of the relationships between normalized interest rates and the style variables. Among the steps the analyst can take to increase his or her conviction in the relationships' validity are the following:

- Establish whether the relationships have predictive value out of sample (that is, based on data not used to model the relationship).
- Investigate whether or not there are economic rationales for the relationships such that those relationships could be expected to persist into the future.

Exhibit 18 shows both weak relationships (e.g., for earnings revision) and strong relationships (e.g., for size and beta) in relation to the subsequent month's returns. This fact suggests some priorities in examining this question.

8. Activist Strategies

Activist investors take stakes in listed companies and advocate changes to produce a gain on their investment. They generally target companies with the following characteristics:

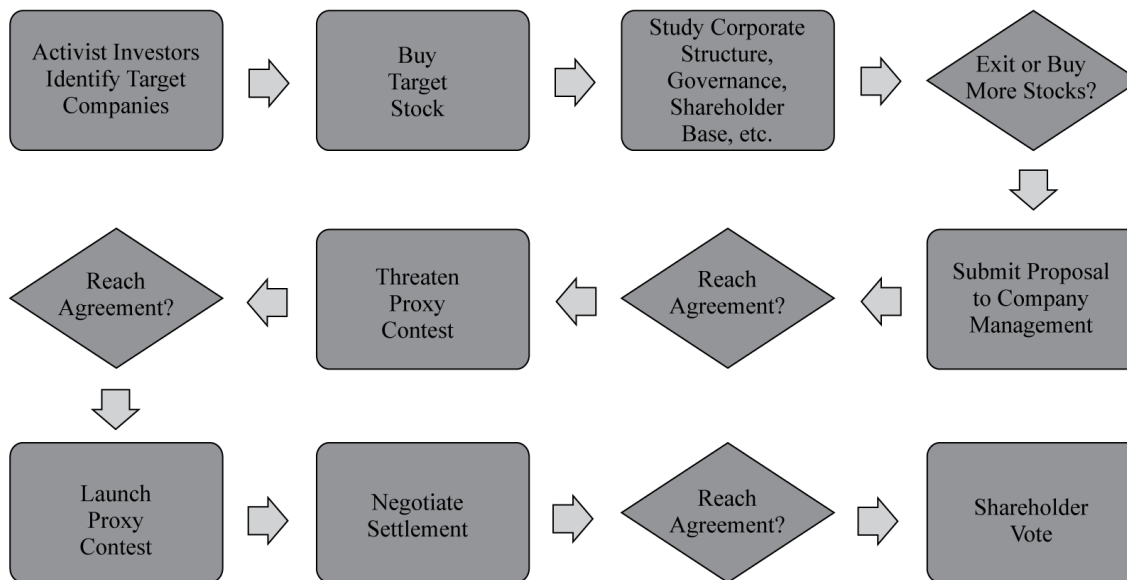
- Decreasing revenue, earnings growth, and return on equity
- Declining corporate governance score
- Increasing debt/equity ratio
- Negative price momentum

Such companies generally trade at a discount. Activist investors hope to unlock value by engaging with these companies and transforming them through cost-cutting, streamlining operations, focusing on core competencies, and so on.

Tactics used by activist investors to advocate changes include:

- Seeking board representation and nominations.
- Engagement with management.
- Proposing significant changes during the AGM.
- Proposing restructuring of the balance sheet to better utilize capital.
- Reducing or realigning management compensation with share price performance.
- Launching legal proceedings against existing management for breach of fiduciary duties.
- Reaching out to other shareholders to coordinate action.
- Launching a media campaign against existing management practices.
- Breaking up a large conglomerate to unlock value.

Exhibit 19 of the curriculum shows a typical shareholder activist investing process.



Example: Activist Investing

(This is Example 6 from the curriculum.)

Kendra Cho is an analyst at an investment firm that specializes in activist investing and manages a concentrated portfolio of stocks invested in listed European companies. Cho and her colleagues hope to identify and buy stakes in companies with the potential to increase their value through strategic, operational, or financial change. Cho is considering the following three companies:

- Company A is a well-established, medium-sized food producer. Its profitability, measured by operating margins and return on assets, is ahead of industry peers. The company is recognized for its high corporate governance standards and effective communication with existing and potential investors. Cho's firm has invested in companies in this sector in the past and made gains on those positions.
- Company B is a medium-sized engineering business that has experienced a significant deterioration in profitability in recent years. More recently, the company has been unable to pay interest on its debt, and its new management team has recognized the need to restructure the business and negotiate with its creditors. Due to the company's losses, Cho cannot use earnings-based price multiples to assess upside potential, but based on sales and asset multiples, she believes there is significant upside potential in the stock if the company's current difficulties can be overcome and the debt can be restructured.
- Company C is also a medium-sized engineering business, but its operating performance, particularly when measured by the return on assets, is below that of the rest of the industry. Cho has identified a number of company assets that are under-utilized. She believes that the management has significant potential to reduce fixed-asset investments, concentrate production in fewer facilities, and dispose of assets, in line

with what the company's peers have been doing. Such steps could improve asset turnover and make it possible to return capital to shareholders through special dividends.

Identify the company that is most appropriate for Cho to recommend to the fund managers:

Solution:

Company C is the most appropriate choice. The company offers upside potential because of its ability to improve operating performance and cash payout using asset disposals, a strategy being implemented by other companies in its sector. Neither Company A nor Company B offers an attractive opportunity for activist investing: Company A is already operating efficiently, while Company B is more suitable for investors that focus on restructuring and distressed investing.

The curriculum also presents and answers the following questions:

- Do activists really improve company performance?
Yes, data presented in the curriculum shows that activists do improve company performance.
- Do activist investors generate alpha?
The data presented indicates that there is only a small improvement in the Sharpe ratio as compared to the benchmark index.
- How does the market react to activist events?
Generally, the market reacts positively. Stock prices go up on the announcement day.

9. Other Active Strategies

This section covers two other categories of active strategies that do not fit neatly into the previous categories. These are statistical arbitrage and event-driven strategies.

Strategies Based on Statistical Arbitrage and Market Microstructure

These strategies (also called 'stat arb' strategies) use statistical and technical analysis to exploit pricing anomalies. They make extensive use of data and analytical tools such as:

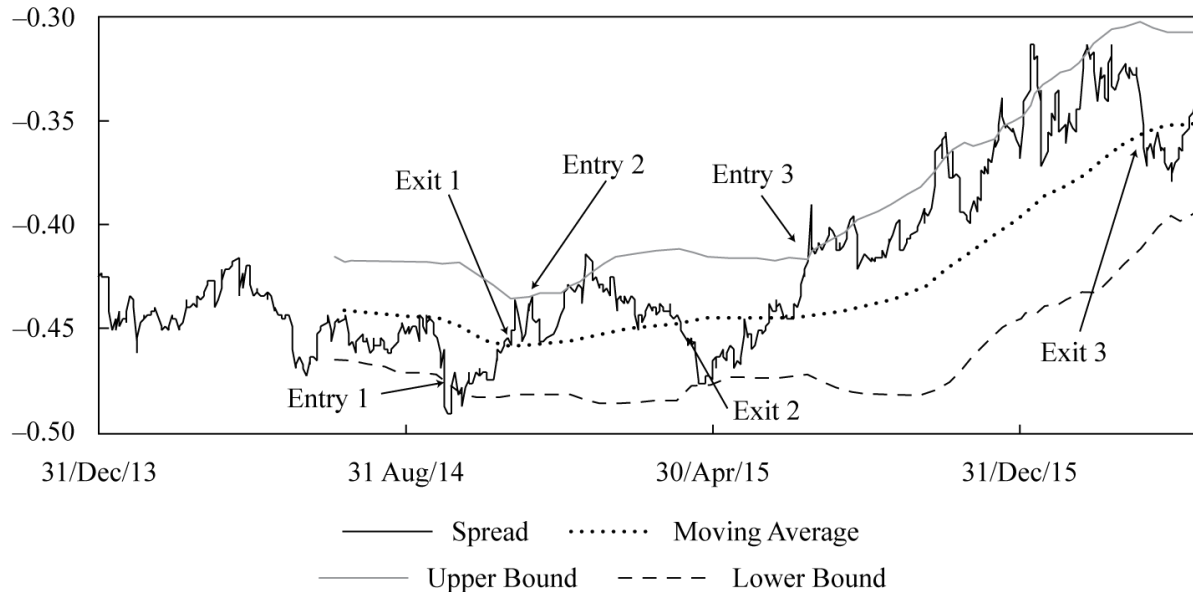
- Traditional technical analysis
- Sophisticated time-series analysis
- Econometric models
- Machine-learning techniques

Pairs trading: A popular example of a stat arb strategy is 'Pairs trading'. Two securities that are highly correlated are identified using statistical tools. When the price difference between these two securities deviates from its long-term average, investors buy the underperforming security and sell the outperforming security. The underlying assumption is that the prices will converge and these positions will result in a profit. The biggest risk in

pairs trading is that prices do not converge because the price deviation is due to long-term structural changes.

Exhibit 24 of the curriculum shows a pairs trade between two highly correlated securities.

Spread



Y axis represents the spread between the two securities. Bollinger bands are also plotted by using a 130-day moving average of the spread and two standard deviations below and above the moving average of the spread. A trade is entered into, when the spread is more than (or less than) two standard deviations from the moving average. The trade is closed when the spread reaches the moving average again or when the stop loss is triggered.

Example:

(This is Example 7 from the curriculum.)

An analyst is asked to recommend a pair of stocks to be added to a statistical arbitrage fund. She considers the following three pairs of stocks:

- Pair 1 consists of two food-producing companies. Both are mature companies with comparable future earnings prospects. Both typically trade on similar valuation multiples. The ratio of their share prices shows mean reversion over the last two decades. The ratio is currently more than one standard deviation above its moving average.
- Pair 2 consists of two consumer stocks: One is a food retailer, and the other is a car manufacturer. Although the two companies operate in different markets and have different business models, statistical analysis performed by the analyst shows a strong correlation between their share prices that has persisted for more than a decade. The stock prices have moved significantly in opposite directions in recent days. The analyst,

expecting mean reversion, believes this discrepancy represents an investment opportunity.

- Pair 3 consists of two well-established financial services companies with a traditional focus on retail banking. One of the companies recently saw the arrival of a new management team and an increase in acquisition activity in corporate and investment banking—both new business areas for the company. The share price fell sharply on news of these changes. The price ratio of the two banks now deviates significantly from the moving average. Based on the information provided, select the pair that would be most suitable for the fund.

Solution:

Pair 1 is the most suitable for the fund. The companies' share prices have been correlated in the past, with the share price ratio reverting to the moving average. They have similar businesses, and there is no indication of a change in either company's strategies, as there is for Pair 3. By contrast with the price ratio for Pair 1, the past correlation of share prices for Pair 2 may have been spurious and is not described as exhibiting mean reversion.

Event-Driven Strategies

Event-driven strategies aim to profit from market inefficiencies that may occur near corporate events such as:

- Mergers and acquisitions
- Earnings or restructuring announcements
- Share buybacks, special dividends, and spinoffs.

A popular example of an event-driven strategy is merger and acquisition risk arbitrage. In a cash-only transaction, the acquirer offers to buy the shares of the target company at a certain price. It has been observed that the shares of the target company remain below the offered price until the deal is completed. An arbitrageur can therefore earn a profit by buying stocks of the target company and selling them when the acquisition closes.

In a share-for-share exchange transaction, the acquirer uses its own shares to buy the target company at a certain exchange ratio. It has generally been observed that the stock price of target company rises and the stock price of the acquirer falls after the acquisition is complete. Therefore, an arbitrageur can earn a profit by going long on target shares and going short on the acquirer's stock at the given exchange ratio.

A major risk in this strategy is the risk of the deal failing. If the deal fails, the arbitrageur may incur losses. The arbitrageur also has to consider the estimated deal duration. If the deal concludes quickly, then on an annualized basis the returns will be good. However, if the deal takes longer than expected to conclude, then on an annualized basis the returns will be lower than expected.

10. Creating a Fundamental Active Investment Strategy

The Fundamental Active Investment Process

The general goal of active investing is to outperform the selected benchmark on a risk-adjusted basis, after taking into account fees and transaction costs. Value can be added based on:

- Proprietary data
- Skill in security analysis
- Insight into industry/sector allocation

A typical fundamental active investment process includes the following steps:

1. Define the investment universe and market opportunity set. Investment universe is based on the investment mandate. For example, if the investment mandate is to outperform Hong Kong's Hang Seng index, then the investment universe will primarily include the 50 stocks in this index, some non-index stocks that trade on the same exchange may also be included. The market opportunity is known as the investment thesis. For example, if the investor believes that some stocks are currently undervalued and will perform well in the future, then the market opportunity is to identify these undervalued stocks.
2. Prescreen the investment universe to get a smaller set of securities for more detailed analysis.
3. Understand the industry and business of the selected stocks by analyzing the industry/competitors and the financial reports of the selected companies.
4. Forecast company performance, usually in terms of cash flows or earnings.
5. Convert forecast to valuations to identify profitable investments.
6. Construct a portfolio with these investments, which meet the desired risk profile.
7. Rebalance the portfolio with buy and sell disciplines.

Example: Fundamental Investing

(This is Example 8 from the curriculum.)

A portfolio manager uses the following criteria to prescreen his investment universe:

1. The year-over-year growth rate in earnings per share from continuing operations has increased over each of the last four fiscal years.
2. Growth in earnings per share from continuing operations over the last 12 months has been positive.
3. The percentage difference between the actual announced earnings and the consensus earnings estimate for the most recent quarter is greater than or equal to 10%.
4. The percentage change in stock price over the last four weeks is positive.

5. The 26-week relative price strength is greater than or equal to the industry's 26-week relative price strength.
6. The average daily volume for the last 10 days is in the top 50% of the market.

Describe the manager's investment mandate.

Solution:

The portfolio manager has a growth orientation with a focus on companies that have delivered EPS growth in recent years and that have maintained their earnings and price growth momentum. Criterion 1 specifies accelerating EPS growth rates over recent fiscal years, while criterion 2 discards companies for which recent earnings growth has been negative. Criterion 3 further screens for companies that have beaten consensus earnings expectations have had a positive earnings surprise in the most recent quarter. A positive earnings surprise suggests that past earnings growth is continuing. Criteria 4 and 5 screen for positive recent stock price momentum. Criterion 6 retains only stocks with at least average market liquidity. Note the absence of any valuation multiples among the screening criteria: A value investor's screening criteria would typically include a rule to screen out issues that are expensively valued relative to earnings or assets.

Pitfalls in Fundamental Investing

Pitfalls in fundamental investing include behavioral biases, the value trap, and the growth trap.

Behavioral Bias:

Behavioral biases can be divided into two broad groups:

- Cognitive biases:
 - Belief preservation biases: Investors hold on to original beliefs and react selectively to new information.
 - Information processing biases: Investors process information incorrectly. There may be memory errors or faulty reasoning.
- Emotional biases: Biases influenced by feelings and emotions. Investors try to avoid pain and produce pleasure.

The following table summarizes several biases that are relevant to active fundamental equity management.

Bias	Description	Examples/Implications
Confirmation (Cognitive – Belief Preservation)	Look for and notice what confirms prior beliefs	<ul style="list-style-type: none"> • Focus on confirmatory/positive information about existing investments • Over-react to confirmatory/positive information • Excessive risk exposure; poorly performing stocks in portfolio

Illusion of Control (Cognitive–Belief Preservation)	False belief that one can influence or control outcomes	<ul style="list-style-type: none"> • Excessive trading • Heavy investment in a few stocks
Availability (Cognitive – Information Processing)	Influenced by how easily outcome comes to mind	<ul style="list-style-type: none"> • Place high weight on easily available information • Select alternatives with which one has greater resonance • Select alternatives that are easily retrievable • Insufficient diversification
Loss Aversion (Emotional)	Prefer avoiding losses over achieving gains	<ul style="list-style-type: none"> • Hold on to losing stocks too long and sell winning stocks too early • Unbalanced portfolios with poorly performing positions
Overconfidence (Emotional)	Unwarranted faith in one’s abilities	<ul style="list-style-type: none"> • Excessive trading • Underestimate risk and overestimate expected returns
Regret Aversion (Emotional)	Avoid pain of regret associated with bad decisions	<ul style="list-style-type: none"> • Might prevent investors from making decisions • Hold on to positions for too long • Lose out on profitable opportunities

To mitigate these biases, an investor can take the following steps:

- **Confirmation:** Actively seek out the opinions of other investors and look at information from a range of sources to challenge existing beliefs.
- **Illusion of control:** Seek contrary viewpoints and enforce proper trading and portfolio diversification rules.
- **Availability:** Set an appropriate investment strategy in line with the investment horizon, as well as conduct a disciplined portfolio analysis with a long-term focus.
- **Loss aversion:** Have disciplined trading strategies and firmly established stop-loss rules.
- **Overconfidence:** Regularly review actual investment records and seek constructive feedback from other professionals.
- **Regret aversion bias:** Periodically review and justify existing positions and validate decision not to have exposure to other stocks.

Value trap: A value trap is a stock that appears to be attractively valued- with low P/E, P/B multiples, but that may still be overpriced due to its worsening future prospects. To avoid

this trap investors should conduct thorough research to fully understand the reasons for the low multiples. Also, stock prices usually need catalysts to trigger a revival in its prices. If a company doesn't have any catalysts, then the stock price may not adjust to its fair value.

Growth trap: Investors are willing to pay high multiples for growth stocks expecting the high growth to continue in the future. However, this growth may not materialize. The market position of the company may be unsustainable or the earnings may have grown quickly from a very low base. If the company's growth falls short of expectations, then the stock performance will be negatively affected.

11. Creating a Quantitative Active Investment Strategy

Creating a Quantitative Investment Process

Defining the Market Opportunity (Investment Thesis): The first step is to define the market opportunity. The premise behind a quantitative investment process is that a market is competitive but not necessarily efficient. It is possible to identify factors that will help generate abnormal returns.

Acquiring and Processing Data: The next step is to acquire and process data. This is a long and cumbersome process involving the following:

- Company mapping: Data for analysis may come from different sources and these sources may have their own tags/identifiers for different companies. Also, each company may have multiple classes of shares. A data mapping exercise is required to track companies over time and across sources.
- Company fundamentals: This includes company demographics, financial statements, and other market information such as price, trading volume, splits, dividends, etc. Generally, this data is obtained from data providers, since it is difficult for investors to collect this data themselves.
- Survey data: This includes corporate earnings, forecasts and estimates by other market participants, macroeconomic variables, etc.
- Unconventional data: This is unstructured data that may include satellite imaging, sentiment information based on social media comments, etc.

Information collected from these sources has to be checked for consistency, cleaned up to remove errors and outliers, and transformed into the required format.

Back-testing the Strategy: Once the required data is available, strategy back-testing is carried out. In this exercise, an analyst tries to identify factors based on which an investment strategy can be created. For example, in a standard monthly back-test, one can build a portfolio based on a value factor as of a given month-end, perhaps 10 years ago, and then track the return of this portfolio over the subsequent month. This process involves periodic rebalancing according to predefined rules to evaluate how well this strategy performed over time.

Information coefficient: This is a measure of the correlation between factor exposures and their holding period returns. The value of the correlation coefficient has to be between -1 and +1 (or -100% to +100%). The higher the IC, the higher the predictive power of the factor. The two types of information coefficients are:

Pearson IC – It ranges from -100% to +100%. An average monthly IC of 5%-6% is considered very strong.

Spearman rank IC: This is similar to the Pearson IC but it is based on ranked factor scores and ranked forward returns.

Exhibit 26 of the curriculum illustrates these measures.

Stock	Factor Score	Subsequent Month Return (%)	Rank of Factor Score	Rank of Return
A	-1.45	-3.00%	9	8
B	-1.16	-0.60%	8	7
C	-0.60	-0.50%	7	6
D	-0.40	-0.48%	6	5
E	0.00	1.20%	5	4
F	0.40	3.00%	4	3
G	0.60	3.02%	3	2
H	1.16	3.05%	2	1
I	1.45	-8.50%	1	9
Mean	0.00	-0.31%		
Std Dev	1.00	3.71%		
Pearson IC		-0.80%		
Spearman rank IC				40.00%
Long/short tercile portfolio returns				0.56%

Note: The portfolio is split into terciles, with each tercile containing one-third of the stocks.
Source: QES (Wolfe Research).

The Pearson IC is -0.80% which indicates that the signal did not perform well. The Pearson IC is sensitive to outliers and a single outlier (in this case Stock I) can turn a good factor into a bad one.

On the other hand, the Spearman rank IC is more robust and a value of 40% indicates that the factor has strong predictive power.

As indicated by the long/short tercile portfolio returns, if three equally weighted portfolios had been constructed, the long basket (Stocks G, H, and I) would have outperformed the short basket (Stocks A, B, and C) by 56 bps in this period.

Creating a Multifactor Model: After identifying several strong factors, a manager needs to decide which factors to select and how to allocate weights to these factors. This is a complex exercise, but one possible strategy is to treat each factor like an asset. So, the factor weighting decision becomes similar to the asset allocation decision.

Evaluating the Strategy: To evaluate a strategy, its performance is measured on out-of-sample data. Managers look at several statistics such as the Sharpe ratio, Sortino ratio, VaR, conditional VaR, etc. to evaluate performance.

Portfolio Construction Issues in Quantitative Investment: The following issues may arise while constructing portfolios:

- Risk models: The riskiness of the portfolio depends on the riskiness of the individual stocks as well as the correlation between the stocks. When the number of stocks in a portfolio is large, the exercise of determining correlation between stocks becomes very tedious. Therefore, managers usually rely on external vendors for this data.
- Trading costs: There are two kinds of trading costs- explicit and implicit. If two stocks have similar expected risk-return characteristics, the one with the lower execution costs is preferred.

Pitfalls in Quantitative Investment Processes

Survivorship bias: This issue arises if back-tests only use those companies that are currently in business today and ignore stocks that did not survive due to bankruptcy, delisting, or acquisition. Survivorship bias leads to overly optimistic results.

Look-ahead bias: This issue arises from using information that was unknown or unavailable at the time an investment decision was made.

Data mining: This issue arises because of excessive search analysis of past data to conform to a pre-determined model to use in the investment process. This bias results in model overfitting.

Turnover, Transaction Costs, and Short Availability: While conducting back-tests we assume an ideal world without transaction costs, constraints on turnover, or limits on availability of different positions. These assumptions are not valid for the real world. Strategies that may seem profitable in the ideal world, may not be profitable in the real world because of these constraints.

Example: How to Start a Quantitative Investment Process

(This is Example 9 from the curriculum.)

An asset management firm that traditionally follows primarily a fundamental value investing approach wants to diversify its investment process by incorporating a quantitative element. Discuss the potential benefits and hurdles involved in adding quantitative models to a fundamental investment approach.

Solution:

Quantitative investing is based on building models from attributes of thousands of stocks. The performance of quantitative strategies is generally not highly correlated with that of fundamental approaches. Therefore, in theory, adding a quantitative overlay may provide some diversification benefit to the firm.

In practice, however, because the processes behind quantitative and fundamental investing tend to be quite different, combining these two approaches is not always straightforward. Quantitative investing requires a large upfront investment in data, technology, and model development. It is generally desirable to use factors and models that are different from those used by most other investors to avoid potential crowded trades.

Managers need to be particularly careful with their back-testing so that the results do not suffer from look-ahead and survivorship biases. Transaction costs and short availability (if the fund involves shorting) should be incorporated into the back-testing.

12. Equity Investment Style Classification

The investment style classification process splits stocks into two or three groups. Each group contains stocks with similar characteristics. The correlations within groups are relatively high and the correlations across groups are relatively low.

Exhibit 29 lists some examples of investment style classifications.

Characteristics based	Value, Growth, or Blend/Core Capitalization Volatility
Membership based	Sector Country Market (developed or emerging)
Position based	Long/short (net long, short, or neutral)

Exhibit 30 of the curriculum shows the Morningstar fund style classification box. It splits stocks along two dimensions investment style and size, creating a grid of nine squares. For example, a stock classified in the topmost right corner box will be a large-cap growth stock.

Fund Investment Style

Value	Blend	Growth	
			Size Large
			Mid
			Small

Different Approaches to Style Classification

Three broad approaches to identify the investment styles of active managers are:

- Holdings-based approaches
- Returns-based approaches
- Manager self-identification

Holdings-based approaches: This is a bottom-up approach, where we look at the style classifications of each individual security in the portfolio. The style of the portfolio is then simply the aggregate of all individual stock styles.

Different commercial information providers such as Morningstar, Lipper, and MSCI use different techniques to classify stocks as value, growth, or blend. Morningstar and Lipper both assign every stock a unique category – value, growth, and blend, such that there is no overlap between the categories. However, in the MSCI approach, there is overlap between the categories and a stock can have both value and growth characteristics, for example, a stock can be 2/3 value and 1/3 growth.

Morningstar's Classification Criteria: For any given stock there are five components based on which a value score is calculated. These components include - Price to projected earnings, Price to book, Price to sales, Price to cash flow, and Dividend yield. Similarly, a growth score is calculated based on the following five components- Long-term projected earnings growth, Historical earnings growth, Sales growth, Cash flow growth, and Book value growth. Both the value score and growth score range from 0-100. The overall score, the net style score for a stock is Growth score – Value score. For example, if a given stock has a growth score of 100 and a value score of 20, the overall score is 80 and the stock will be classified as a growth stock.

Returns-based style analysis: Sometimes a portfolio manager may not share detailed information about the specific holdings of his portfolio. In such a case, a returns-based style analysis can be used. In this approach, the portfolio returns are compared with the relevant style index. For example, if we believe that a manager's investment style is value, then the

manager's portfolio returns should be compared to a value index. If the returns are comparable then our belief is confirmed.

Manger self-identification: Managers usually disclose their investment strategy in the fund prospectus. However, we should use either a holdings-based analysis or a returns-based analysis to validate the manager's claim.

Strengths and Limitations of Style Analysis

Holdings-based analysis is generally more accurate than return-based analysis. It shows how specific holdings are contributing to the portfolio style. Therefore, it is a deeper analysis as compared to a returns-based analysis.

However, holdings-based analysis relies on information being made available. If this information is not available, then it is difficult to apply the holdings-based analysis. Even if current holdings are available, historical data may not be available. For example, based on current holdings we may classify a portfolio as a value portfolio, but it is possible that historically this was a growth portfolio.

Returns-based analysis is less accurate but it can be more widely applied. This is because historical portfolio returns and historical index returns are more easily available. Ideally, both approaches should be used to make a more accurate decision.

Example: Equity Investment Styles

(This is Example 10 from the curriculum.)

Consider an actively managed equity fund that has a five-year track record. An analyst performed both holdings-based and returns-based style analysis on the portfolio. She used the current portfolio holdings to perform the holdings-based style analysis and five-year historical monthly returns to carry out the returns-based analysis. The analyst found the following:

- Holdings-based style analysis on the current portfolio shows that the fund has value and growth exposures of 0.85 and 0.15, respectively.
- Returns-based style analysis with 60 months' historical returns shows that the value and growth exposures of the fund are equal to 0.4 and 0.6, respectively.

Explain possible reason(s) for the inconsistency between the holdings-based and returns-based style analyses.

Solution:

Some active equity managers may maintain one investment style over time in the belief that that particular style will outperform the general market. Others may rotate or switch between styles to accommodate the then-prevailing investment thesis. Returns-based style analysis regresses the portfolio's historical returns against the returns of the corresponding style indexes (over 60 months in this example). Its output indicates the

average effect of investment styles employed during the period. While the holdings-based analysis suggests that the current investment style of the equity fund is value oriented, the returns-based analysis indicates that the style actually employed was likely in the growth category for a period of time within the past five years.

Summary

LO: Compare fundamental and quantitative approaches to active management.

	Fundamental	Quantitative
Style	Subjective	Objective
Decision- making process	Discretionary	Systematic, non-discretionary
Primary resources	Human skill, experience, judgment	Expertise in statistical modeling
Information used	Research (company/industry/economy)	Data and statistics
Analysis focus	Conviction (high depth) in stock-, sector-, or region-based selection	A selection of variables, subsequently applied broadly over a large number of securities
Orientation to data	Forecast future corporate parameters and establish views on companies	Attempt to draw conclusions from a variety of historical data
Portfolio construction	Use judgment and conviction within permissible risk parameters	Use optimizers

LO: Analyze bottom-up active strategies, including their rationale and associated processes.

The stock selection process starts with data at individual company level. Analysts use company and industry data to calculate the intrinsic value of a company and determine if it is undervalued or overvalued. Bottom-up strategies can be categorized as value based or growth based.

LO: Analyze top-down active strategies, including their rationale and associated processes.

The stock selection process starts at the top or macro level and we then move down to individual companies. This strategy is based on the rationale that even an average company in a strong sector/region is likely to do well than a good company in a weak sector/region. The different types of top-down strategies are: country and geographic allocation to equities, sector and industry rotation, volatility-based strategies, thematic investment strategies.

LO: Analyze factor-based active strategies, including their rationale and associated processes.

A factor-based strategy involves identifying favorable factors and tilting the portfolio towards these factors. The commonly used factors are: size, value, growth, quality, and price momentum.

LO: Analyze activist strategies, including their rationale and associated processes.

Activist investors take a stake in listed companies and advocate changes to produce a gain on their investment. They believe that they can turn around these companies by engaging with them to bring down costs, streamline operations, focus on core competencies, etc.

LO: Describe active strategies based on statistical arbitrage and market microstructure.

Statistical arbitrage strategies use statistical and technical analysis to exploit pricing anomalies. A popular example of a stat arb strategy is 'Pairs trading'. Here we identify two securities that are highly correlated. When the price difference between these two securities deviates from its long-term average, investors buy the underperforming security and sell the outperforming security.

Event-driven strategies aim to profit from market inefficiencies that may occur near corporate events such as: mergers and acquisitions, earnings or restructuring announcements, share buybacks, special dividends, and spinoffs.

LO: Describe how fundamental active investment strategies are created.

The fundamental active investment process includes the following steps:

1. Define the investment universe
2. Prescreen the universe.
3. Understand the industry and business.
4. Forecast the company's financial performance.
5. Convert forecasts into a target price.
6. Construct the portfolio with the desired risk profile.
7. Rebalance the portfolio according to a buy and sell discipline.

LO: Describe how quantitative active investment strategies are created.

The quantitative active investment process includes the following steps:

1. Define the investment thesis.
2. Acquire, clean, and process the data.
3. Backtest the strategy.
4. Evaluate the strategy.
5. Construct an efficient portfolio using risk and trading cost models.

LO: Discuss equity investment style classifications.

The investment style classification process splits stocks into two or three groups. Each

group contains stocks with similar characteristics. The correlations within groups are relatively high and the correlations across groups are relatively low.

Two main approaches to style classification are:

- Holdings-based approaches: aggregate the style scores of individual holdings
- Returns-based approaches: Compare the returns of the strategy with style indexes.