

Lecture 1: Behavioral Finance and Technical Analysis

1. Efficient Market Hypothesis

- EMH says stock prices already *reflect all available information*
- A forecast about favorable future performance → favorable current performance
 - Result: prices change until expected returns are exactly commensurate with risk
- New information is unpredictable → stock prices that change in response to new information also must move unpredictably
 - Stock price changes follow a *random walk*

2. Versions of the EMH

- $Abnormal\ return = Actual\ return - Expected\ return$
- Weak
 - **Technical Analysis**: Won't earn Abnormal Returns
 - **Fundamental Analysis**: Fundamental analysis/Insider information can earn ARs
 - Only price and volume information – known to the market
- Semi-strong
 - Only *Insider Information* can earn ARs
 - Weak form + financial/economic information – known to the market
- Strong
 - *No possibility* to earn ARs
 - Weak form + Semi-strong form + insider information – known to the market

3. Errors in Information Processing → misestimate true probabilities

- Forecasting errors: put too much weight on recent information
- Overconfidence: investors overestimate their abilities and the precision of their forecasts
- Conservatism: investors are slow to update their beliefs and under react to new information
- Sample size neglect and representativeness: investors are too quick to infer a pattern or trend from a small sample

4. Behavioral Biases

- Framing
 - How the risk is described → 'risky losses' vs. 'risky gains' can affect investor decisions
- Mental accounting
 - Investors may segregate accounts or monies and take risks with their gains that they would not take with their principal
- Regret avoidance
 - Investors blame themselves more when an unconventional or risky bet turns out badly
- Prospect theory
 - Conventional view: utility depends on level of wealth
 - Behavioral view: utility depends on changes in current wealth

5. Limits to Arbitrage

- Behavioral biases would not matter if arbitrageurs could fully exploit the mistakes of behavioral investors
- Fundamental risk
 - Intrinsic value and market value may take long to converge
- Implementation costs
 - Transaction costs and restrictions on short selling can limit arbitrage activity
- Model risk
 - What if you have a bad model and the market value is actually correct?

6. Fundamental Analysis

- Using *economic and accounting* information to predict future prices
- Try to find firms that are better than everyone else's estimate
- Try to find poorly run firms that are not as bad as the market thinks

7. Technical Analysis

- Using *prices and volume* information to predict future prices
- Success depends on a sluggish response of stock prices to fundamental supply-and-demand factor
- Behavioral Finance
 - Technical analysis attempts to exploit recurring and predictable patterns in stock prices
 - Prices adjust gradually to a new equilibrium
 - Intrinsic values and market values converge slowly
 - **Disposition effect**: The tendency of investors to hold on to losing investments
 - Demand for shares depends on price history
 - Can lead to momentum in stock prices
- Trends and Corrections
 - Momentum and moving averages
 - **Moving average**: the average level of prices over a given interval of time, where the interval is updated as time passes
 - **Bullish signal**: market price breaks through the moving average line from below, it is time to buy
 - **Bearish signal**: when market prices fall below the moving average, it is time to sell
- Relative Strength
 - Measures the extent to which a security has out- or underperformed either the market as a whole or its particular industry
 - **Relative strength** = $\frac{\text{Security price}}{\text{Industry price index}}$
 - **Breath (Net advances)** = $\frac{\text{No. of stocks advancing in prices} - \text{No. of stocks declining in prices}}{\text{No. of stocks declining in prices}}$
 - Breath > 0 → Bullish
 - Breath < 0 → Bearish
- Sentiment indicators
 - **Trin statistic** = $\frac{\text{Volume declining/Number declining}}{\text{Volume advancing/Number advancing}}$
 - Trin statistic > 1 → Bearish

- Trin < 1 → Bullish
- Trin statistic = 1 → Neither bearish nor bullish
- **Confidence Index** =
$$\frac{\text{Yield on top-rated corporate bonds}}{\text{Yield on intermediate-grade corporate bonds}}$$
 - Higher the current value with respect to previous value → bullish
- **Put/call ratio:**
 - Calls are the right to buy: a way to bet on rising prices
 - Puts are the rights to sell: a way to bet on falling prices
 - A rising ratio may signal investor pessimism and a coming market decline
 - Contrarian investors see a rising ratio as a buying opportunity

8. Predictable volatile → consistent with EMH
 Predictable returns → contradict with EMH

Lecture 2: Equity investments: Financial statement analysis

1. Financial Statement Analysis

- Income statement: profitability overtime
- Balance sheet: financial condition at a point of time
- Statement of Cash Flows: tracks the cash implications of transactions

$$2. \text{ Net profit margin} = \frac{\text{Net income}}{\text{Revenue}}$$

3. Efficiency Ratios

- Measure how efficiently the company utilizes assets

<u>Ratios</u>	<u>Formula</u>	<u>Interpretation</u>
Inventory Turnover	$\text{Inventory Turnover} = \frac{\text{Costs of goods sold}}{\text{Average inventories}}$ $\text{Days of Inventory On Hand (DOH)} = \frac{365}{\text{Inventory turnover}}$	<ul style="list-style-type: none"> ▪ E.g. if we were to buy \$1 of inventory on day 0, sell this in one month and repeat every month for a year → we would have turned the inventory over 12 times during the year → Inventory turnover = 12 ▪ Indicates the resources tied up in inventory ▪ High inventory turnover → low DOH → indicate highly effective inventory management ▪ Low inventory turnover → high DOH → indicate slow-moving industry
Receivable Turnover	$\text{Receivable Turnover} = \frac{\text{Revenue}}{\text{Average receivables}}$ $\text{Days of Sales Outstanding (DSO)} = \frac{365}{\text{Receivable turnover}}$	DSO → represents the elapsed time between a sale and cash collection → reflect how fast the company collects cash from customers to whom it offers credit
Payable Turnover	$\text{Payable Turnover} = \frac{\text{Purchases}}{\text{Average trade payables}}$ $\text{Days of payables} = \frac{365}{\text{Payable turnover}}$	Days of payables → reflects the average number of days the company takes to pay its suppliers