Market Efficiency

Chapter 12

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Efficient Markets

- How well do markets respond to new information?
- Should it be possible to decide between a profitable and unprofitable investment given current information?
- Efficient Markets
  - The prices of all securities quickly and fully reflect all available information

Conditions for an Efficient Market

- Large number of rational, profit-maximizing investors
  - Actively participate in the market
  - Individuals cannot affect market prices
- Information is costless, widely available, generated in a random fashion
- Investors react quickly and fully to new information

Consequences of Efficient Market

- Quick price adjustment in response to the arrival of random information makes the reward for analysis low
- Prices reflect all available information
- Price changes are independent of one another and move in a random fashion
  - New information is independent of past

Market Efficiency Forms

- Efficient market hypothesis
  - To what extent do securities markets quickly and fully reflect different available information?
- Three levels of Market Efficiency
  - Weak form - market level data
  - Semistrong form - public information
  - Strong form - all (nonpublic) information

Weak Form

- Prices reflect all past price and volume data
- Technical analysis, which relies on the past history of prices, is of little or no value in assessing future changes in price
- Market adjusts or incorporates this information quickly and fully

Semistrong Form

- Prices reflect all publicly available information
- Investors cannot act on new public information after its announcement and expect to earn above-average, risk-adjusted returns
- Encompasses weak form as a subset

Strong Form

- Prices reflect all information, public and private
- No group of investors should be able to earn abnormal rates of return by using publicly and privately available information
- Encompasses weak and semistrong forms as subsets

Evidence on Market Efficiency

- Keys:
  - Consistency of returns in excess of risk
  - Length of time over which returns are earned
- Economically efficient markets
  - Assets are priced so that investors cannot exploit any discrepancies and earn unusual returns
    - Transaction costs matter

Weak Form Evidence

- Test for independence (randomness) of stock price changes
  - If independent, trends in price changes do not exist
  - Overreaction hypothesis and evidence
- Test for profitability of trading rules after brokerage costs
  - Simple buy-and-hold better

Semistrong Form Evidence

- Event studies
  - Empirical analysis of stock price behavior surrounding a particular event
  - Examine company unique returns
    - The residual error between the security's actual return and that given by the index model
    - Abnormal return (Ar_{it}) $= R_{it} - E(R_{it})$
    - Cumulative when a sum of Ar_{it}

Semistrong Form Evidence

- Stock splits
  - Implications of split reflected in price immediately following the announcement
- Accounting changes
  - Quick reaction to real change in value
- Initial public offerings
  - Only issues purchased at offer price yield abnormal returns
- Announcements and news
  - Little impact on price after release

Strong Form Evidence

- Test performance of groups which have access to nonpublic information
  - Corporate insiders have valuable private information
  - Evidence that many have consistently earned abnormal returns on their stock transactions
- Insider transactions must be publicly reported

Implications of Efficient Market Hypothesis

- What should investors do if markets efficient?
- Technical analysis
  - Not valuable if weak form holds
- Fundamental analysis of intrinsic value
  - Not valuable if semistrong form holds
  - Experience average results

Implications of Efficient Market Hypothesis

- For professional money managers
  - Less time spent on individual securities
    - Passive investing favored
    - Otherwise must believe in superior insight
  - Tasks if markets informationally efficient
    - Maintain correct diversification
    - Achieve and maintain desired portfolio risk
    - Manage tax burden
    - Control transaction costs

Market Anomalies

- Exceptions that appear to be contrary to market efficiency
- Earnings announcements affect stock prices
  - Adjustment occurs before announcement but significant amount after
  - Contrary to efficient market because the lag should not exist

Market Anomalies

- Low P/E ratio stocks tend to outperform high P/E ratio stocks
  - Low P/E stocks generally have higher risk-adjusted returns
  - But P/E ratio is public information
- Should portfolio be based on P/E ratios?
  - Could result in an undiversified portfolio

Market Anomalies

- Size effect
  - Tendency for small firms to have higher risk-adjusted returns than large firms
- January effect
  - Tendency for small firm stock returns to be higher in January
  - Of 30.5% size premium, half of the effect occurs in January

Market Anomalies

- Value Line Ranking System
  - Advisory service that ranks 1700 stocks from best (1) to worst (5)
    - Probable price performance in next 12 months
  - 1980-1993, Group 1 stocks had annualized return of 19.3%
    - Best investment letter performance overall
  - Transaction costs may offset returns

Behavioral Finance

- Rationality as a principle of behavior
- Are there systematic deviations from the norms of rationality?
- How do human beings make decisions?
  - Distortion throughout the process of decision-making
    - In making predictions, perceiving the environment
  - Marriage of psychology and finance

Conclusions About Market Efficiency

- Support for market efficiency is persuasive
  - Much research using different methods
  - Also many anomalies that cannot be explained satisfactorily
- Markets very efficient but not totally
  - To outperform the market, fundamental analysis beyond the norm must be done

Conclusions About Market Efficiency

- If markets operationally efficient, <u>some</u> investors with the skill to detect a divergence between price and semistrong value earn profits
  - Excludes the majority of investors
  - Anomalies offer opportunities
- Controversy about the degree of market efficiency still remains