CHAPTER

14

Efficient Capital Markets and Behavioral Challenges

McGraw-Hill/Irwin

Key Concepts and Skills

- Understand the importance of capital market efficiency
- Be able to define the forms of efficiency
- Know the various empirical tests of market efficiency
- Understand the implications of efficiency for corporate finance managers

Chapter Outline

14.1 Can Financing Decisions Create Value?

14.2 A Description of Efficient Capital Markets

14.3 The Different Types of Efficiency

14.4 The Evidence

14.5 The Behavioral Challenge to Market Efficiency

14.6 Empirical Challenges to Market Efficiency

14.7 Reviewing the Differences

14.8 Implications for Corporate Finance

14.1 Can Financing Decisions Create Value?

- Earlier parts of the book show how to evaluate investment projects according to the NPV criterion.
- The next few chapters concern *financing* decisions, such as:
  - How much debt and equity to sell
  - When to sell debt and equity
  - When (or if) to pay dividends
- We can also use NPV to evaluate financing decisions.

Creating Value through Financing

1. Fool Investors
   - Empirical evidence suggests that it is hard to fool investors consistently.
2. Reduce Costs or Increase Subsidies
   - Certain forms of financing have tax advantages or carry other subsidies.
3. Create a New Security
   - Sometimes a firm can find a previously-unsatisfied clientele and issue new securities at favorable prices.
   - In the long-run, this value creation is relatively small.

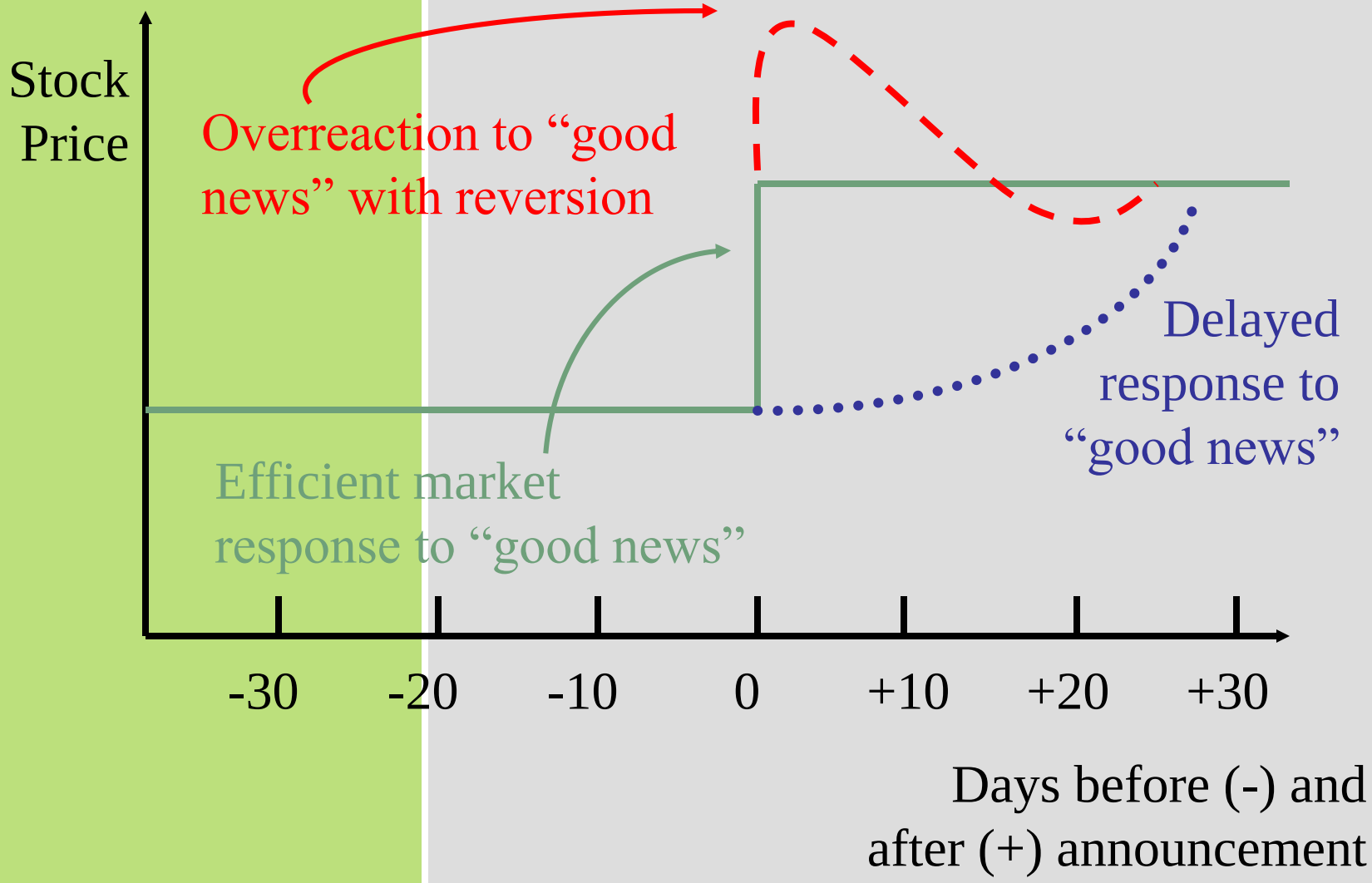
14.2 A Description of Efficient Capital Markets

- An *efficient* capital market is one in which stock prices fully reflect available information.
  - Since the flow of new information is random, stock prices should follow a random walk process, i.e., stock price movements are also unpredictable.
- Implications of EMH for investors and firms.
  - Since information is reflected in security prices quickly, knowing information *when it is released* does an investor little good, i.e., zero NPV.
  - Firms should expect to receive the fair value for securities that they sell. Firms cannot profit from fooling investors in an efficient market.

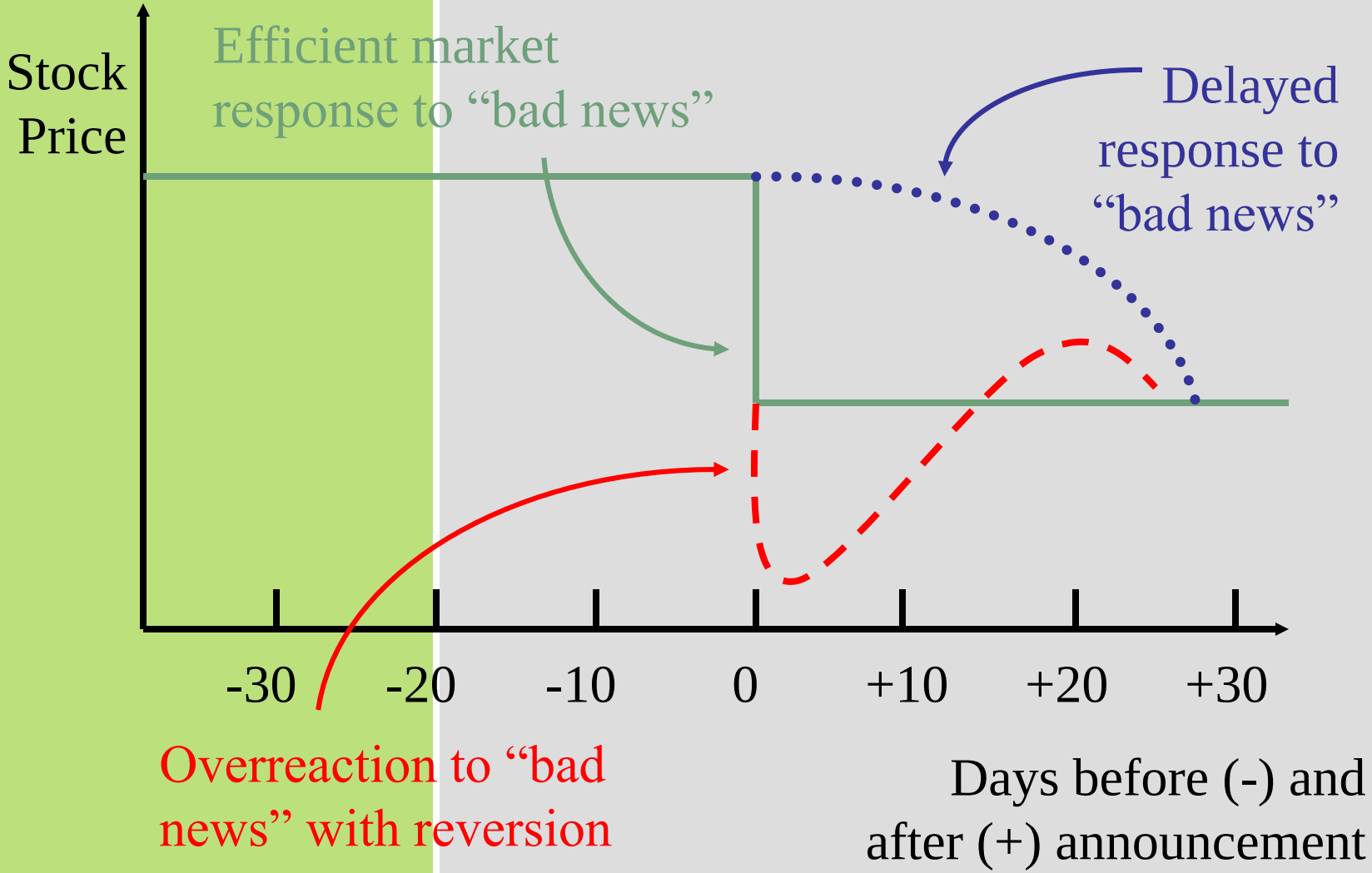
Foundations of Market Efficiency

- Investor Rationality
- Independence of events
- Arbitrage

Stock Price Reactions



Stock Price Reactions



14.3 The Different Types of Efficiency

- Question – How efficient is the market?
- Weak Form
  - Security prices reflect all historical information found in past prices and volume, i.e., market trading data.
- Semi-strong Form
  - Security prices reflect all publicly available information i.e., both market trading and firm's fundamental data.
- Strong Form
  - Security prices reflect all information—public and private.

Weak Form Market Efficiency

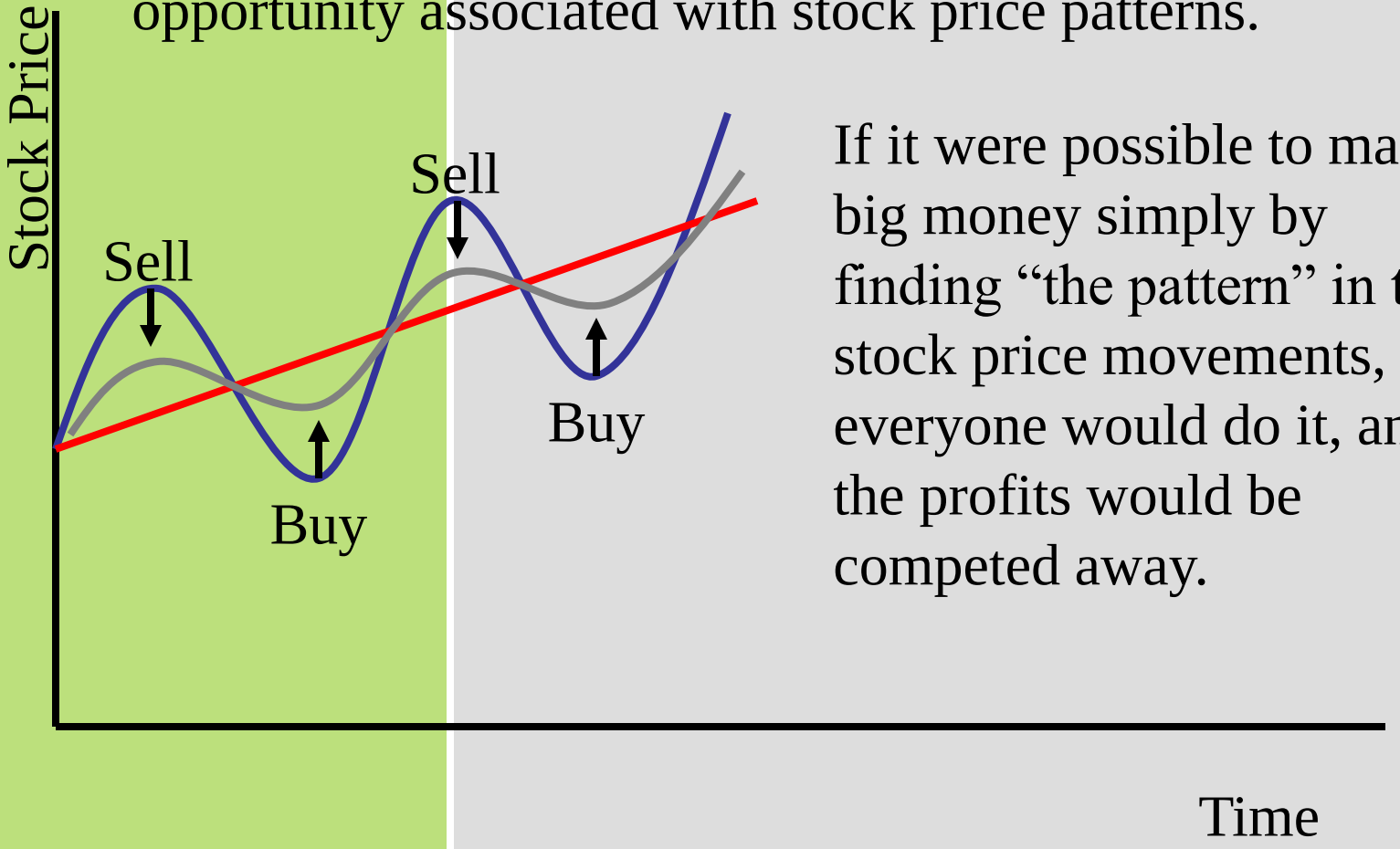
- Security prices reflect all information found in past prices and volume.
- If the weak form of market efficiency holds, then technical analysis is of no value.
- Often weak-form efficiency is represented as

$$P_t = P_{t\text{-}1} + \text{Expected return} + \text{random error}_t$$

- Since stock prices only respond to *new* information, which by definition arrives randomly, stock prices are said to follow a random walk (with a positive trend).

Why Technical Analysis Fails

Investor behavior tends to eliminate any profit opportunity associated with stock price patterns.



If it were possible to make big money simply by finding "the pattern" in the stock price movements, everyone would do it, and the profits would be competed away.

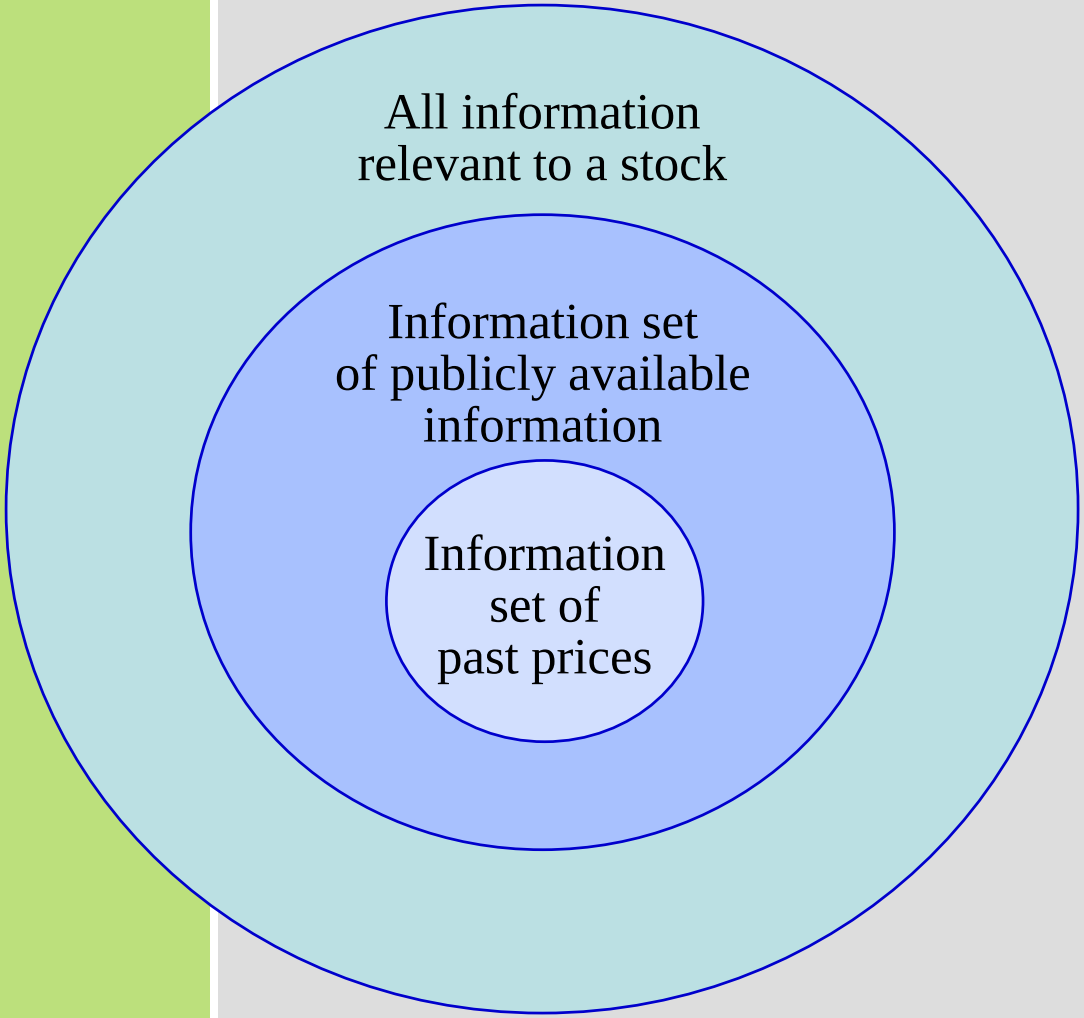
Semistrong Form Market Efficiency

- Security prices reflect all publicly available information.
- Semi-Strong form efficiency implies weak form efficiency
- Publicly available information includes:
  - Historical price and volume information
  - Published accounting statements
  - Information found in annual reports

Strong Form Market Efficiency

- Security prices reflect all information—public and private.
- Strong form efficiency incorporates weak and semistrong form efficiency.
- Strong form efficiency says that *anything* pertinent to the stock and known to at least one investor is already incorporated into the security's price.

Information Sets



What the EMH Does and Does NOT Say

- Investors can throw darts to select stocks.
  - This is almost, but not quite, true.
  - An investor must still decide how risky a portfolio he wants based on risk aversion and expected return.
- Prices are random or uncaused.
  - Prices reflect information.
  - The price CHANGE is driven by *new* information, which by definition arrives randomly.
  - Therefore, financial managers cannot “time” stock and bond sales.

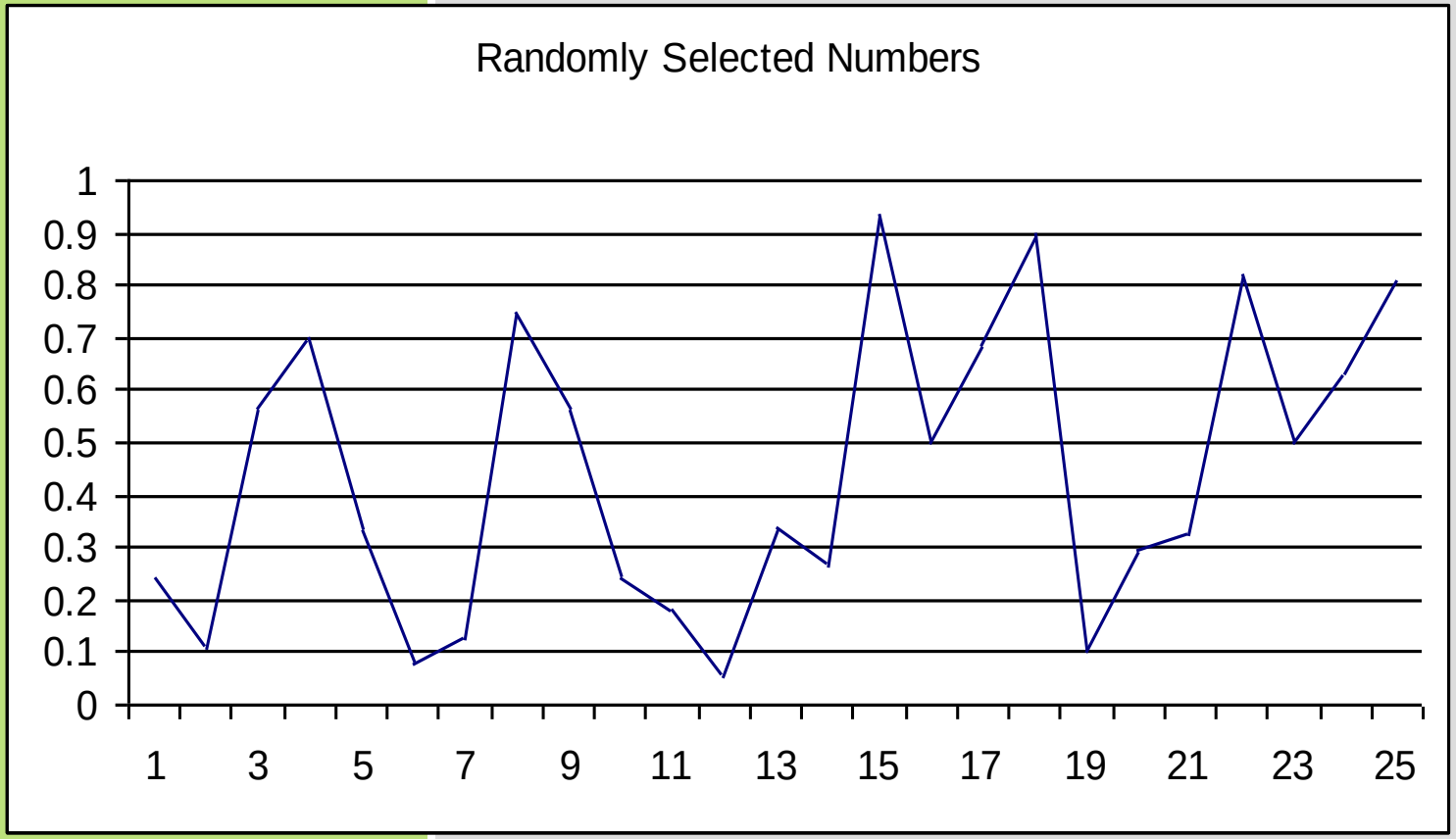
14.4 The Evidence

- The record on the EMH is extensive, and, in large measure, it is reassuring to advocates of the efficiency of markets.
- Studies fall into three broad categories:
  1. Are changes in stock prices random? Are there profitable “trading rules?”
  2. Event studies: does the market quickly and accurately respond to new information?
  3. The record of professionally managed investment firms.

Are Changes in Stock Prices Random?

- Can we really tell?
  - Many psychologists and statisticians believe that most people want to see patterns even when faced with pure randomness.
  - People claiming to see patterns in stock price movements are probably seeing optical illusions.
- A matter of degree
  - Daily returns are weakly serially correlated
    - Positive ➔ momentum; Negative ➔ reversal/correction
  - Even if we can spot patterns, i.e., stock returns are serially correlated, we need to have returns that beat our transactions costs.
- Random stock price changes support weak form efficiency.

What Pattern Do You See?



Event Studies

- Event Studies are one type of test of the semi-strong form of market efficiency.
  - ✓ Recall, this form of the EMH implies that prices should reflect all publicly available information.
- To test this, event studies examine prices and returns over time—particularly around the arrival of new information.
- Test for evidence of underreaction, overreaction, early reaction, or delayed reaction around the event.

Event Studies

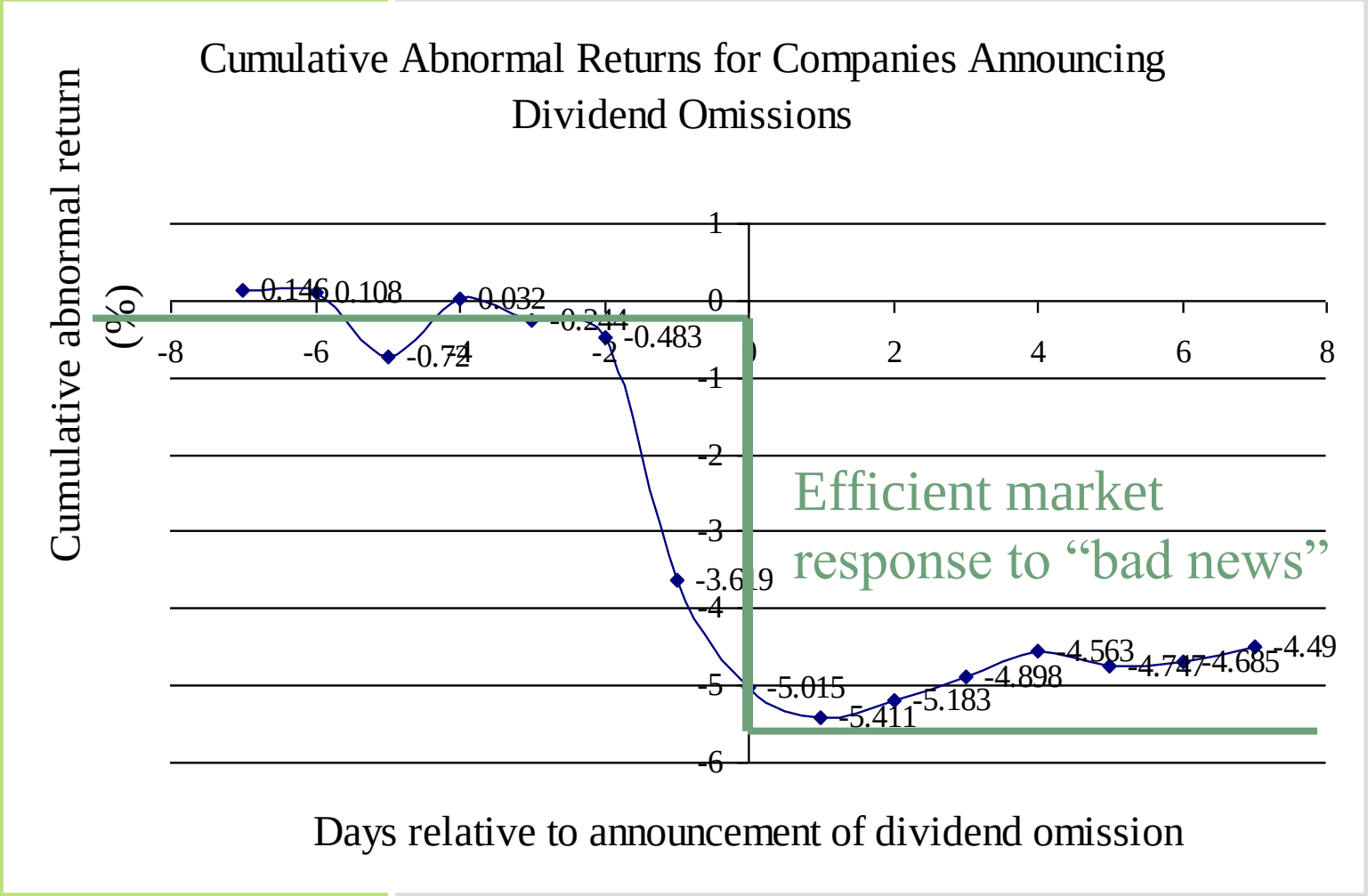
- Returns are adjusted to determine if they are *abnormal* by taking into account what the rest of the market did that day.
- The *Abnormal Return* on a given stock for a particular day can be calculated by subtracting the market's return on the same day (R_M) from the actual return (R) on the stock for that day:

$$AR = R - R_M$$

- The abnormal return can be calculated using the Market Model approach:

$$AR = R - (\alpha + \beta * R_M)$$

Event Studies: Dividend Omissions



Event Study Results

- Over the years, event study methodology has been applied to a large number of events including:
  - Dividend increases and decreases
  - Earnings announcements
  - Mergers
  - Capital Spending
  - New Issues of Stock
- The studies generally support the view that the market is semi-strong form efficient.
- Studies suggest that markets may even have some foresight into the future, i.e., news tends to leak out in advance of public announcements.

Issues in Examining the Results

- Magnitude Issue
  - Statistically insignificant abnormal returns can still be economically significant.
- Selection Bias Issue
  - It tends to be in favor of supporting market efficiency because winners will not share their tricks.
- Lucky Event Issue
  - One-time big shots make the news but they keep their mouths shut when they fail.

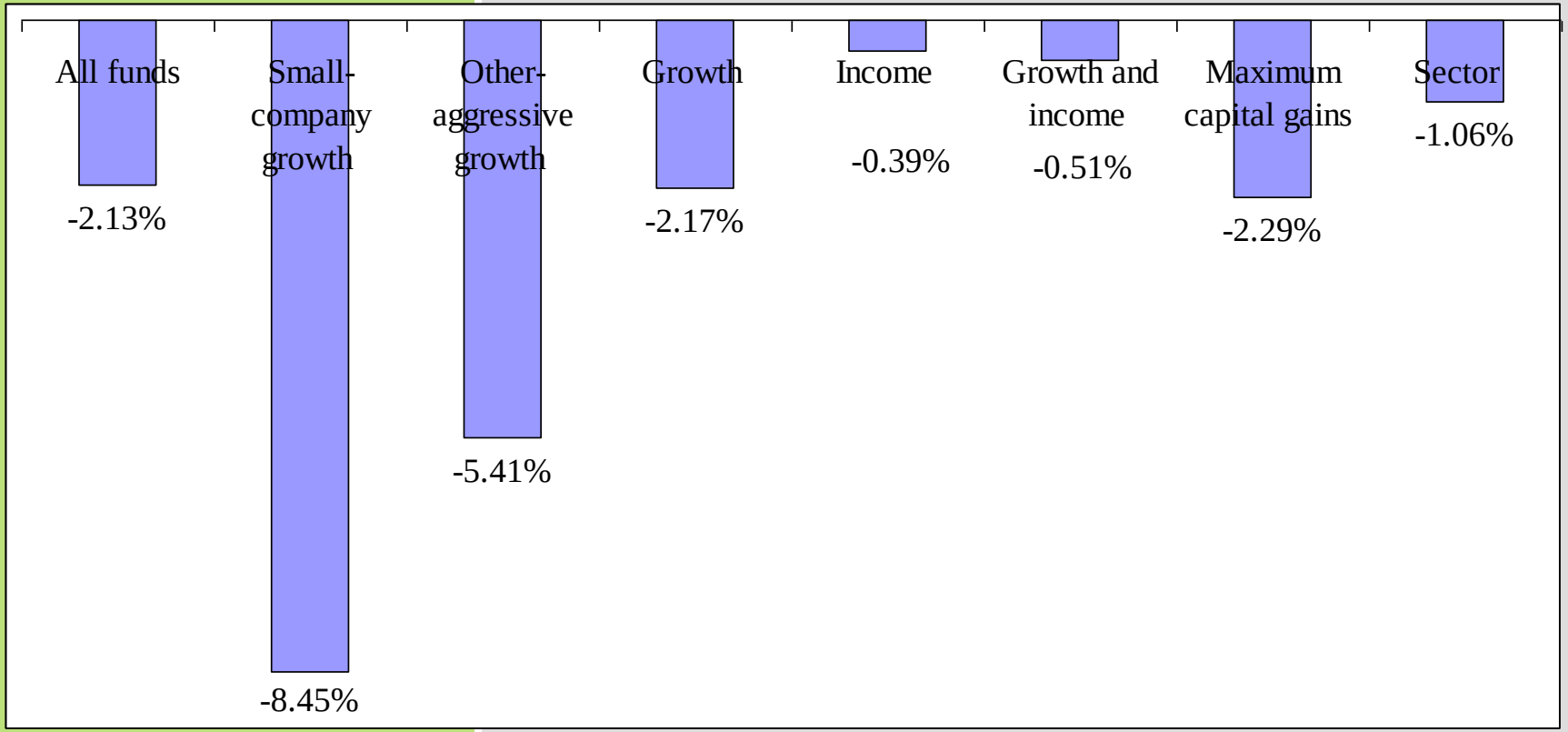
Issues in Examining the Results

- Possible Model Misspecification
  - Most empirical tests are joint tests of the EMH and the model that is used to detect abnormal returns. Thus, evidence of abnormal returns may not necessarily imply that the market is inefficient. It may have resulted from the deficiency of the model used in measuring abnormal returns.

The Record of Mutual Funds

- If the market is semi-strong form efficient, then no matter what publicly available information mutual fund managers rely on to pick stocks, their average returns should be the same as those of the average investor in the market as a whole.
- We can test efficiency by comparing the performance of professionally managed mutual funds with the performance of a market index.
- The evidence is that the mutual funds as a whole underperform the market after transaction costs

The Record of Mutual Funds



Taken from Lubos Pastor and Robert F. Stambaugh, "Mutual Fund Performance and Seemingly Unrelated Assets," *Journal of Financial Exonomics*, 63 (2002).

The Strong Form of the EMH

- One group of studies of strong form market efficiency investigates insider trading.
- A number of studies support the view that insider trading is abnormally profitable.
- Thus, strong form efficiency does not seem to be substantiated by the evidence.

14.5 The Behavioral Challenge

- Rationality
  - People are not always rational.
  - Many investors fail to diversify, trade too much, and seem to try to maximize taxes by selling winners and holding losers.

The Behavioral Challenge

- Independent Deviations from Rationality
  - Psychologists argue that people deviate from rationality in predictable ways:
    - Representativeness: drawing conclusions from too little data
      - This can lead to bubbles in security prices.
    - Conservativism: people are too slow in adjusting their beliefs to new information.
      - Security prices seem to respond too slowly to earnings surprises.

The Behavioral Challenge

- Arbitrage
  - Suppose that your superior, rational, analysis shows that company ABC is overpriced.
  - Arbitrage would suggest that you should short the shares.
  - After the rest of the investors come to their senses, you make money because you were smart enough to "sell high and buy low."
- But what if the rest of the investment community does not come to their senses in time for you to cover your short position?
  - This makes arbitrage risky.

14.6 Empirical Challenges

- Limits to Arbitrage
  - "Markets can stay irrational longer than you can stay insolvent." *John Maynard Keynes*
- Earnings Surprises
  - Stock prices adjust slowly to earnings announcements.
  - Behavioralists claim that investors exhibit *conservatism*.
- Size
  - Small cap stocks seem to outperform large cap stocks.
- Value versus Growth
  - High book value-to-stock price stocks and/or high E/P stocks outperform growth stocks.

Empirical Challenges

- Crashes
  - On October 19, 1987, the stock market dropped between 20 and 25 percent on a Monday following a weekend during which little surprising news was released.
  - A drop of this magnitude for no apparent reason is inconsistent with market efficiency.
- Bubbles
  - Consider the tech stock bubble of the late 1990s.

14.7 Reviewing the Differences

- Financial Economists have sorted themselves into three camps:
  1. Market efficiency
  2. Behavioral finance
  3. Those that admit that they do not know
- This is perhaps the most contentious area in the field.

14.8 Implications for Corporate Finance

- Because information is reflected in security prices quickly, investors should only expect to obtain a normal rate of return.
  - Awareness of information when it is released does an investor little good. The price adjusts before the investor has time to act on it.
- Firms should expect to receive the fair value for securities that they sell.
  - *Fair* means that the price they receive for the securities they issue is the present value.
  - Thus, valuable financing opportunities that arise from fooling investors are unavailable in efficient markets.

mplications for Corporate Finance

- The EMH has three implications for corporate finance:
  1. The price of a company's stock cannot be affected by a change in accounting.
  2. Financial managers cannot "time" issues of stocks and bonds using publicly available information.
  3. A firm can sell as many shares of stocks or bonds as it desires without depressing prices.
- There is conflicting empirical evidence on all three points.

Why Doesn't Everybody Believe?

- There are optical illusions, mirages, and apparent patterns in charts of stock market returns.
- The truth is less interesting.
- There is some evidence against market efficiency:
  - Seasonality
  - Small versus large stocks
  - Value versus growth stocks
- The tests of market efficiency are weak.

Quick Quiz

- Define capital market efficiency.
- What are the three forms of efficiency?
- What does the evidence say regarding the efficiency of capital markets?
- What are the implications for corporate finance managers?