

## Chapter 10

### Some Lessons from Capital Market History

### Key Concepts and Skills

- Know how to calculate the return on an investment
- Understand the historical returns on various types of investments
- Understand the historical risks on various types of investments

## Chapter Outline

- Returns
- The Historical Record
- Average Returns: The First Lesson
- The Variability of Returns: The Second Lesson
- More on Average Returns
- Capital Market Efficiency

## Risk, Return, and Financial Markets

- We can examine returns in the financial markets to help us determine the appropriate returns on non-financial assets
- Lessons from capital market history
  - There is a reward for bearing risk
  - The greater the risk, the greater the potential reward
  - This is called the risk-return trade-off

## Dollar Returns

- Total dollar return = income from investment + capital gain (loss) due to change in price
- Example:
  - You bought a bond for \$950 one year ago. You have received two coupons of \$30 each. You can sell the bond for \$975 today. What is your total dollar return?
    - Income =  $\$30 + \$30 = \$60$
    - Capital gain =  $\$975 - \$950 = \$25$
    - Total dollar return =  $\$60 + \$25 = \$85$

## Percentage Returns

- It is generally more intuitive to think in terms of percentages than dollar returns
- Dividend yield = income / beginning price
- Capital gains yield = (ending price – beginning price) / beginning price
- Total percentage return = dividend yield + capital gains yield

## Example: Calculating Returns

- You bought a stock for \$35 and you received dividends of \$1.25. The stock is now selling for \$40.
  - What is your dollar return?
    - Dollar return =  $1.25 + (40 - 35) = \$6.25$
  - What is your percentage return?
    - Dividend yield =  $1.25 / 35 = 3.57\%$
    - Capital gains yield =  $(40 - 35) / 35 = 14.29\%$
    - Total percentage return =  $3.57 + 14.29 = 17.86\%$

## The Importance of Financial Markets

- Financial markets allow companies, governments, and individuals to increase their utility
  - Savers have the ability to invest in financial assets so they can defer consumption and earn a return to compensate them for doing so
  - Borrowers have better access to the capital that is available, allowing them to invest in productive assets
- Financial markets also provide us with information about the returns that are required for various levels of risk

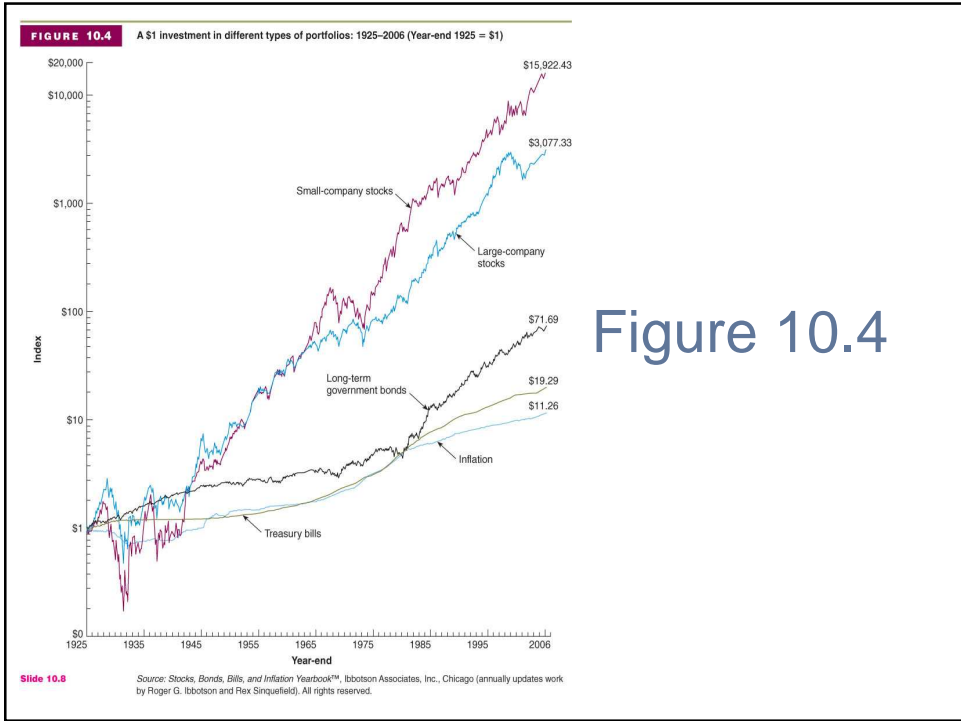


Figure 10.4

## Average Returns

Investment	Average Return
Large Stocks	12.3%
Small Stocks	17.4%
Long-term Corporate Bonds	6.2%
Long-term Government Bonds	5.8%
U.S. Treasury Bills	3.8%
Inflation	3.1%

## Risk Premiums

- The “extra” return earned for taking on risk
- Treasury bills are considered to be risk-free
- The risk premium is the return over and above the risk-free rate

## Historical Risk Premiums

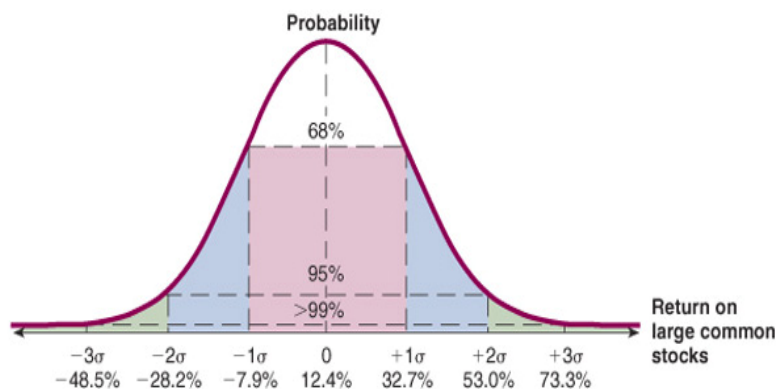
- Large Stocks:  $12.3 - 3.8 = 8.5\%$
- Small Stocks:  $17.4 - 3.8 = 13.6\%$
- Long-term Corporate Bonds:  $6.2 - 3.8 = 2.4\%$
- Long-term Government Bonds:  $6.2 - 3.8 = 2.4\%$
- U.S. Treasury Bills:  $3.8 - 3.8 = 0$  (by definition!)







## Figure 10.11



## Arithmetic vs. Geometric Mean

- Arithmetic average – return earned in an average period over multiple periods
- Geometric average – average compound return per period over multiple periods
- The geometric average will be less than the arithmetic average unless all the returns are equal
- Which is better?
  - The arithmetic average is overly optimistic for long horizons
  - The geometric average is overly pessimistic for short horizons
  - So the answer depends on the planning period under consideration
    - 15 – 20 years or less: use arithmetic
    - 20 – 40 years or so: split the difference between them
    - 40 + years: use the geometric

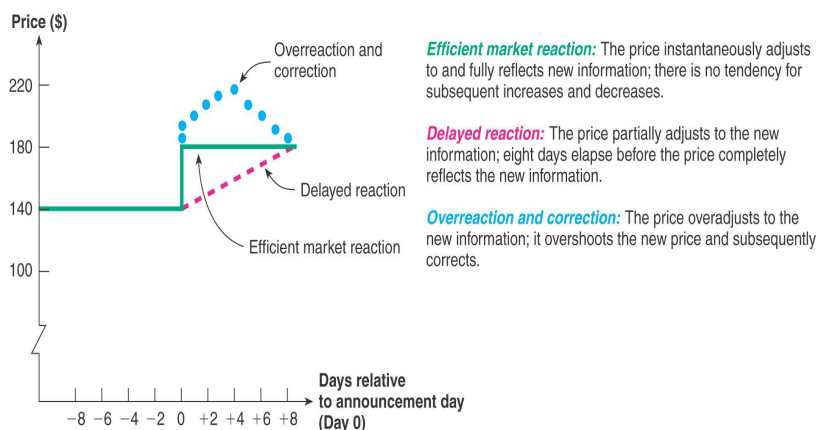
## Example: Computing Returns

- What are the arithmetic and geometric averages for the following returns?
  - Year 1        5%
  - Year 2        -3%
  - Year 3        12%
  - Arithmetic average =  $(5 + (-3) + 12)/3 = 4.67\%$
  - Geometric average =  $[(1+.05)*(1-.03)*(1+.12)]^{1/3} - 1 = .0449 = 4.49\%$

## Efficient Capital Markets

- Stock prices are in equilibrium - they are “fairly” priced
- If this is true, then you should not be able to earn “abnormal” or “excess” returns
- Efficient markets **DO NOT** imply that investors cannot earn a positive return in the stock market

## Figure 10.12



## What Makes Markets Efficient?

- There are many investors out there doing research
  - As new information comes to market, this information is analyzed and trades are made based on this information
  - Therefore, prices should reflect all available public information
- If investors stop researching stocks, then the market will not be efficient

## Common Misconceptions about EMH

- Efficient markets do not mean that you can't make money
- They do mean that, on average, you will earn a return that is appropriate for the risk undertaken, and there is not a bias in prices that can be exploited to earn excess returns
- Market efficiency will not protect you from wrong choices if you do not diversify – you still don't want to put all your eggs in one basket

## Strong Form Efficiency

- Prices reflect all information, including public and private
- If the market is strong form efficient, then investors could not earn abnormal returns regardless of the information they possessed
- Empirical evidence indicates that markets are NOT strong form efficient, and that *insiders* can earn abnormal returns (may be illegal)

## Semistrong Form Efficiency

- Prices reflect all publicly available information including trading information, annual reports, press releases, etc.
- If the market is semistrong form efficient, then investors cannot earn abnormal returns by trading on public information
- Implies that fundamental analysis will not lead to abnormal returns

## Weak Form Efficiency

- Prices reflect all past market information such as price and volume
- If the market is weak form efficient, then investors cannot earn abnormal returns by trading on market information
- Implies that technical analysis will not lead to abnormal returns
- Empirical evidence indicates that markets are generally weak form efficient

## Quick Quiz

- Which of the investments discussed have had the highest average return and risk premium?
- Which of the investments discussed have had the highest standard deviation?
- What is capital market efficiency?
- What are the three forms of market efficiency?