12

Historical Performance of US Markets

Figure 12.1 Stock markets are affected by many factors, such as interest rates, inflation, and politics. (credit: modification of "That was supposed to be going up, wasn't it? by Rafael Matsunaga/flickr, CC BY 2.0)

Chapter Outline

Why It Matters

Author Mark Twain spoke for many when he wrote, "October—this is one of the peculiarly dangerous months to speculate in stocks. The others are July, January, September, April, November, May, March, June, December, August, and February." Twain's comment, though humorous, reflects the serious risks associated with investing in the stock market. So why should we study the history of the US financial markets? Financial experts regularly remind us that past performance is no guarantee of future results. However, past performance can provide targets or benchmarks around which to build expectations. We can learn about the past to prepare for future possibilities, or we can suffer what Winston Churchill warned, "Those that fail to learn from history are doomed to repeat it."

Carlos Slim Helu, a Mexican businessman and the richest person in the world from 2010 to 2013, once said, "With a good perspective on history, we can have a better understanding of the past and present, and thus a clear vision of the future."[1] In this chapter, we examine current and historical performance in money, bond, and stock markets. Studying past market risk and return also allows investors to understand what is reasonable and what is not.

1 Dan Western. "45 Carlos Slim Helu Quotes About Wealth and Success." *Wealthy Gorilla*. https://wealthygorilla.com/carlos-slim-helu-quotes/

12.1 Overview of US Financial Markets

Learning Outcomes

By the end of this section, you will be able to:

- Identify the various aspects of the US money markets.
- Characterize government and corporate bond markets.
- Detail the structure and operations of US equity markets.

Money Markets

The money market is a multitrillion-dollar market. Features of money market securities include being short-term (with maturities of less than one year) and very low risk (rarely failing to make their required payments). Further, money market securities are also liquid, which means that they trade easily without losing value.

Financial institutions, corporations, and governments that have short-term borrowing and/or lending needs issue securities in the money market. Most of the transactions are quite large, with typical amounts of $10,000, $100,000, $1 million, or more. Money market securities are available in smaller amounts if you choose to invest in money market mutual funds (MMMFs) or certain types of exchange-traded funds (ETFs).

Treasury bills (T-bills) are short-term debt instruments issued by the federal government. T-bills are auctioned weekly by the Treasury Department through the trading window of the Federal Reserve Bank of New York, with maturities of 4, 8, 13, or 26 weeks. The Treasury also auctions 52-week T-bills once every four weeks. The federal government uses T-bills to meet short-term liquidity needs. T-bills have very short maturities and a broad secondary market and are default-risk free. T-bills are also exempt from state and local income taxes. As a result, they carry some of the lowest effective interest rates on publicly traded debt securities.

The volume of T-bills auctioned depends upon government borrowing needs. Much of the money raised at weekly T-bill auctions goes to repay the money borrowed 4, 8, 13, 26, or 52 weeks earlier. The gross amount of new T-bills issued in December 2020 was $1,591.1 billion, and the amount of T-bills retired in the same month was $1,570.6 billion, resulting in net new borrowing of "only" $20.5 billion.

In addition to the regular auction of new T-bills, there is also an active secondary market where investors can trade used or previously issued T-bills. Since 2001, the average daily trading volume for T-bills has exceeded $75 billion.

Commercial paper (CP) is a short-term, unsecured debt security issued by corporations and financial institutions to meet short-term financing needs such as inventory and receivables. For example, credit card companies use commercial paper to finance credit card payments. Commercial paper is a short-term debt instrument, with a typical maturity of 30 days and up to 270 days. The short maturity reduces US Securities and Exchange Commission (SEC) oversight. The lesser oversight and the unsecured nature of CP means that only highly rated firms are able to issue the uninsured paper.

Commercial paper typically carries a minimum face value of $100,000 and sells at a discount, with the face value as the repayment amount. Corporations and financial institutions, not the government, issue CP; thus, returns are taxable. Further, unlike T-bills, there is not a robust secondary market for CP. Most purchasers are large, such as mutual fund investment companies, and they tend to hold commercial paper until maturity. The default rate on commercial paper is typically low, but default rates did increase into the double-digit range during the financial crisis of 2008.

Negotiable certificates of deposit (NCDs) are very large CDs issued by financial institutions. They are redeemable only at maturity, but they can and often do trade prior to maturity in a broad secondary market. NCDs, or jumbo CDs, are so called because they sell in increments of $100,000 or more. However, typical amounts are $1 million, with a maturity of two weeks to six months.

NCDs differ in some important ways from the typical CD you may be familiar with from your local bank or credit union. The typical CD has a maturity date, interest rate, and face amount and has FDIC insurance. However, if an investor wishes to cash out prior to maturity, they will incur a substantial penalty from the issuer (bank or credit union). An NCD also has a maturity date and amount, but it is much larger than a regular CD and appeals to institutional investors. The principal is not insured. When the investor wishes to cash out early, there is a robust secondary market for trading the NCD. The issuing institution can offer higher rates on NCDs compared to CDs because it knows it will have use of the purchase amount for the entire maturity of the NCD and because the reserve requirements on NCDs by the Federal Reserve is lower than for other types of deposits.

Investment companies such as Vanguard and Fidelity, among many others, sell shares in money market mutual funds (MMMFs). The investment company purchases money market instruments, such as T-bills, CP, or NCDs; pools them; and then sells shares of ownership to investors (see Table 12.1). Generally, MMMFs invest only in taxable securities, such as commercial paper and negotiable certificates of deposit, or only in tax-exempt government securities, such as T-bills. Investors can then choose which type of short-term liquid securities they would like to hold, taxable or nontaxable. MMMFs provide smaller firms and investors the opportunity to participate in the money market by facilitating smaller individual investment amounts.

Financial Instrument	Typical Maturity	Minimum Amount	Issuer
Treasury bills	4–52 weeks	$10,000	Federal government
Commercial paper	270 days	$100,000	Businesses
Negotiable CDs	6 months	$100,000	Financial institutions
MMMFs			Investment companies
Federal funds	1 day	$1 million	Financial institutions

Table 12.1 Money Market Instrument Characteristics (Selected)

The market for federal funds is notable because the Federal Reserve (Fed) targets the equilibrium interest rate on federal funds as one of its most important monetary policy tools. The federal funds market traditionally consists of the overnight borrowing and lending of immediately available funds among depository financial institutions, notably domestic commercial banks. Financial institutions such as banks are required to keep a fraction of their deposits on reserve with the Fed. When banks find they are short of reserves and immediately need cash to meet reserve requirements, they can borrow directly from the Fed through the so-called "discount window" or purchase excess reserves from other banks in the federal funds market. Often, the maturity of a federal funds contract is as short as a single day or overnight. The participants in the market negotiate the federal funds interest rate. However, the Federal Reserve effectively sets the target interest rate range in the federal funds market by controlling the supply of funds available for use in the market.

Since the financial crisis of 2008, the activities and functioning of the federal funds market has changed. The federal funds rate is still the rate targeted by the Fed for monetary policy, but the participants have evolved for several reasons. The market now includes foreign banks and non-depository financial institutions, such as the Federal Home Loan Banks. These institutions do not need to meet Fed reserve requirements and are not required to keep reserves with the Fed. In addition, the Fed now pays interest to commercial banks for reserves held at the Federal Reserve banks. Paying interest on reserves reduces the incentive for domestic commercial banks to enter the federal funds market since they can already earn interest on their excess reserves.

Daily trading volume in the federal funds market from 2016 through 2020 ranged from a high of $115 billion in March of 2018 to a low of only $34 billion on December 31, 2020.[2] The volume of federal funds activity is lower in periods of slower economic growth because banks have fewer good opportunities to issue loans and are less likely to be short of required reserves.

Bond Markets

Bond markets are financial markets that make payments to investors for a specific period of time. Investors decide how much to pay for a bond depending on how much they expect **inflation** to affect the value of the fixed payment. There are several types of bonds: government bonds, corporate bonds, and municipal bonds.

Government Bond Markets

In the section on money markets, we discussed T-bills, and we now discuss longer-term government securities in the form of Treasury notes and Treasury bonds.

We learned in Bonds and Bond Valuation that the federal government issues Treasury notes and bonds to raise money for current spending and to repay past borrowing. The size of the Treasury market is quite large, as the US federal government over the years has accumulated a total indebtedness of over $28 trillion dollars. The debt has grown so large we even have a real-time debt calculator online at https://www.usdebtclock.org/ (https://openstax.org/r/usdebtclock).

Treasury notes (T-notes) are US government debt instruments with maturities of 2, 3, 5, 7, or 10 years. The Treasury auctions notes on a regular basis, and investors may purchase new notes from TreasuryDirect.gov (https://openstax.org/r/treasurydirect.gov) in the same way they would a T-bill. T-notes differ from T-bills in that they are longer term and pay semiannual coupon interest payments, as well as the par or face value of the note at maturity. T-bills, as you will recall, sell at a discount and pay the face value at maturity with no explicit interest payments. Upon issue of a note, the size, number, and timing of note payments is fixed. However, prices do change in the secondary market as interest rates change. Like T-bills, T-notes are generally exempt from state and local taxes.

Economists and investors keep a close eye on the 10-year T-note for several reasons. Mortgage lenders use it as a basis for setting and adjusting mortgage interest rates. In general, the rate on the 10-year T-note is a reliable market indicator of investor confidence.

There is an active secondary market for Treasury notes. From 2001 to 2020, the daily trading volume for Treasury notes has averaged $395 billion, or roughly five times the daily trading volume of T-bills. Treasury notes are the largest single type of government debt instrument, with over $11 trillion outstanding. As you can see from Figure 12.2, the Treasury dramatically increased borrowing by issuing notes following the 2008 financial crisis.

Brokers, dealers, and investment companies provide secondary market opportunities for individual and institutional investors. Exchange-traded funds (ETFs) are popular investment vehicles for many types of government T-bill, T-note, and T-bond portfolios. An ETF is a basket of securities that can trade like stocks on a stock exchange. For example, IEI is an iShares ETF managed by BlackRock that invests in Treasury securities with three to seven years to maturity. When investors buy this ETF, they purchase a small bundle of Treasury notes that they can buy or sell, just as if they owned an individual share of stock. ETFs are a convenient way for investors to own broad portfolios of securities while still being able to trade the whole group in a single transaction if they choose.

2 Federal Reserve Bank of New York. "Effective Federal Funds Rate." *Federal Reserve Bank of New York.* https://www.newyorkfed.org/markets/reference-rates/effr

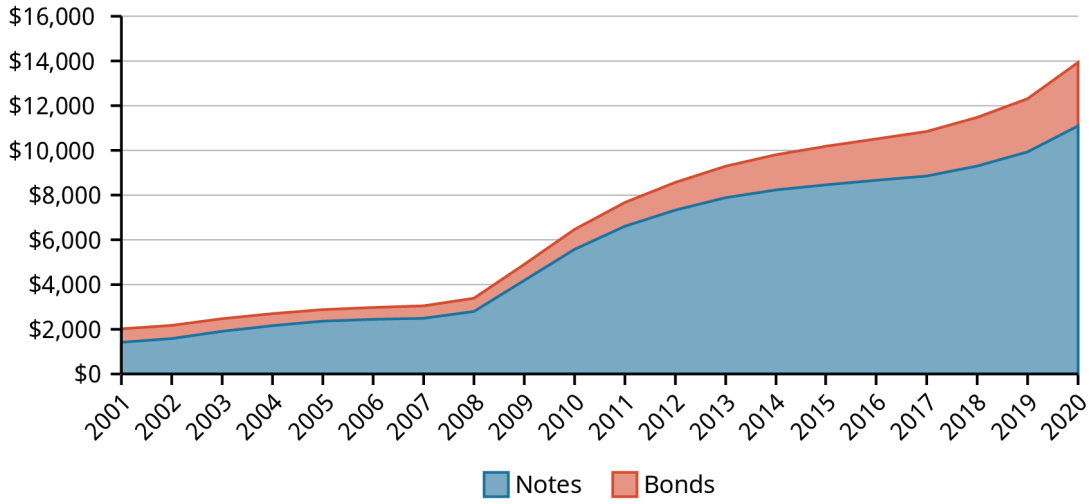

Figure 12.2 Daily Trading Volume for US Treasury Notes and Bonds in Billions (data source: treasurydirect.gov)

Longer-term Treasury issues, **Treasury bonds**, have maturities of 20 or 30 years. T-bonds are like T-notes in that they pay semiannual coupon interest payments for the life of the security and pay the face value at maturity. They are longer term than notes and typically have higher coupon rates. T-bonds with maturities of 20 and 30 years are each auctioned only once per month. At the end of 2020, there were approximately $2.8 trillion of T-bonds outstanding, compared to approximately $11.1 trillion and $5 trillion of T-notes and T-bills.

In 1997, the Treasury began offering a new type of longer-term debt instrument, Treasury Inflation-Protected Securities, or TIPS. TIPS currently have maturities of 5, 10, or 30 years and are auctioned by the Treasury once per month. Like T-notes and T-bonds, they offer semiannual coupon interest payments for the life of the security and pay face value at maturity. The coupon interest rates are fixed, but the principal value adjusts monthly in response to changes in the consumer price index (CPI). Inflation and deflation cause the value of the principal to increase or decrease, which results in a larger or smaller semiannual coupon payment. With a total outstanding value of approximately $1.6 trillion at the end of 2020, TIPS are the smallest form of Treasury borrowing we have discussed.[3]

State and local governments and taxing districts can issue debt in the form of **municipal bonds (*munis*)**. Local borrowing carries more risk than Treasury securities, and default or bankruptcy is atypical but possible. Thus, munis have ratings that run a spectrum similar to corporate bonds in that they receive a bond rating based on the perceived default risk. The defining feature of municipal bonds is that some interest payments are tax-free. Interest on munis (municipal bonds) is always exempt from federal taxes and sometimes exempt from state and local taxes. This makes them very attractive to investors in high income brackets.

There are two primary types of municipal bonds: revenue bonds and general obligation (GO) bonds. GO bonds generate cash flows to repay the bonds by taxing a project. For instance, a local school district may tax residents to pay for capital construction, or a city may tax citizens to pay for a new public works building. Revenue bonds, on the other hand, may apply to projects that generate sufficient cash flows to repay the bond—perhaps a utility or local toll road.

Corporate Bond Markets

Just as governments borrow money in the long-term from investors, so do corporations. A corporation often uses bank loans, commercial paper, or supplier credit for short-term borrowing needs and issues bonds for longer-term financing. Bond contracts identify very specific terms of agreement and outline the rules for the order, timing, and amount of contractual payments, as well as processes for when one or more of the required activities lapse. **Indenture** is the legal term for a bond contract. The indenture also includes limitations on the

3 Nick Lioudis. "Where Can I Buy Government Bonds?" *Investopedia*. December 30, 2020. https://www.investopedia.com/ask/answers/where-can-i-buy-government-bonds/; TreasuryDirect. "Today's Auction Results." *TreasuryDirect*. https://www.treasurydirect.gov/instit/annceresult/press/press_auctionresults.htm

corporation for how they may use the bond proceeds.

A bond indenture includes both standard boilerplate contract language and specific conditions unique to a particular issue. Because of these non-standardized features of a bond contract, the secondary market for trading used bonds typically requires a broker, dealer, or investment company to facilitate a trade.

When a corporation uses a real asset, such as property or buildings, to guarantee a bond, the firm has issued a **mortgage bond**. However, it is more common for a corporation to issue an unsecured bond known as a **debenture**. The risk of a debenture reflects the risk of the entire corporation and does not rely on the value of a specific underlying asset, as is the case with a mortgage bond.

The risk a bondholder bears for buying a bond depends in part on the terms of the bond indenture, market conditions over the life of the bond contract, and the ability or inability of the firm to generate sufficient cash flows to meet its bond obligations. Fortunately, investors do not have to make these determinations about risk on their own. They can rely on bond rating services such as Moody's, Standard and Poor's, or Fitch to generate evaluations of the creditworthiness of bond issuers.

Ratings firms must adhere to rigorous standards when evaluating client creditworthiness. For example, Standard and Poor's begins the explanation of its evaluation process with these paragraphs:

> "S&P Global Ratings provides a Credit Rating only when, in its opinion, there is information of satisfactory quality to form a credible opinion on creditworthiness, consistent with its Quality of the Rating Process – Sufficient Information (Quality of Information) Policy, and only after applicable quantitative, qualitative, and legal analyses are performed. Throughout the ratings and surveillance process, the analytical team reviews information from both public and nonpublic sources."
>
> "For corporate, government, and financial services company or entity (collectively referred to as "C&G" Credit Ratings), the analysis generally includes historical and projected financial information, industry and/or economic data, peer comparisons, and details on planned financings. In addition, the analysis is based on qualitative factors, such as the institutional or governance framework, the financial strategy of the rated entity and, generally, the experience and credibility of management."[4]

Table 12.2 is a summary of how the three major credit rating agencies identify their ratings. Bond ratings are important for many reasons. The higher a firm's rating, the lower the expected default risk and the lower the cost of borrowing for the firm. Pension funds may be restricted to investing in only medium- or higher-grade bonds. This could limit the number of investors who can participate in the market for lower-grade bonds, thereby reducing the liquidity, price, and tradability of those debt securities.

There are only two US companies with AAA credit ratings: Microsoft and Johnson & Johnson.[5] Over the past 40 years, there has been a steady decline of AAA-rated companies (from sixty in 1980). Many institutions have found that this rating requires a more conservative approach to debt that can inhibit growth and revenue. So, in today's market, credit ratings have begun to lose their importance. It seems that the ability to pay debts has become secondary to the potential for growth.

Fitch	Moody's	S&P	Bond Grade/Risk
AAA	Aaa	AAA	Investment/low risk
AA	Aa	AA	Investment/low risk
A	A	A	Investment/low risk
BBB	Baa	BBB	Investment/medium risk

Table 12.2 Credit Scale Ratings from the Three Credit Rating Agencies

4 S&P Global Ratings. "Transparency Statement." *S&P Global Ratings*. https://www.spglobal.com/ratings/en/about/transparency
5 The Wall Street Insider. "Why Only Two Companies Are Left with the AAA Rating." *The Wall Street Insider.* June 12, 2020. https://www.thewallstreetinsider.com/trends/why-only-two-companies-are-left-with-the-aaa-rating

Fitch	Moody's	S&P	Bond Grade/Risk
BB	Ba	BB	Junk/high risk
B	B	B	Junk/high risk
CCC	Caa	CCC	Junk/highest risk

Table 12.2 Credit Scale Ratings from the Three Credit Rating Agencies

Equity Markets

An important goal of firm managers is to maximize owners' wealth. For corporations, shares of stock represent ownership. A corporation could have 100 shares, one million shares, or even several billion shares of stock. Stocks are difficult to value compared to bonds. Bonds typically provide periodic interest payments and a principal payment at maturity. The bond indenture specifies the timing and the amount of payments. Stocks might have periodic dividend payments, and an investor can plan to sell the stock at some point in the future. However, no contract guarantees the size of the dividends or the time and resale price of the stock. Thus, the cash flows from stock ownership are more uncertain and risky.

Corporations are the dominant form of business enterprise in the United States because of the ability to raise capital, the ease of transfer of ownership, and the benefit of limited liability to the owners. There are generally two types of stock, preferred and common. Preferred stock is a hybrid between common stock and bonds. Preferred stock has a higher claim to cash flows than common stockholders have (thus the term *preferred*), but it is lower than that of bondholders. In addition, preferred stock has fixed cash flows as bonds have and typically has no or few voting rights. Preferred stock dividends are after-tax payments by the corporation, as are common stock dividends, but bond interest payments, paid prior to taxes, are tax-deductible for firms. Of the three, preferred stock is the least used form of capital financing for corporations.

Common stockholders are the residual claimants and owners of the corporation. After all others who have a claim against the firm are paid, the common stockholders own all that remains. Common stockholders have voting rights, typically one vote per share, and choose the board of directors.

One popular way to rank the size of companies is to determine the value of their market capitalization, or market cap. Market cap is equal to the current stock price multiplied by the number of shares outstanding. According to the World Bank, the total market cap of US firms at the end of 2020 was $50.8 trillion, making up over half of the world's total value of equity, estimated at $90 trillion.[6] The largest US company at that time was Apple, followed by Microsoft, Amazon, Alphabet (Google), and Facebook. The largest company by sales volume in 2020 was Walmart.[7]

Geographical Location of Exchanges

Ownership is easily transferable for stocks that trade in one of the organized stock exchanges or in an over-the-counter (OTC) market. Definitions of a stock exchange and an OTC market blur as financial markets quickly adapt to innovations. However, stock markets have a centralized trading location, transactions require a broker to connect buyers and sellers, and the exchanges guarantee a basic level of liquidity so that investors are always able to buy or sell their stocks. An OTC market is an electronic market conducted on computer screens and consists of direct transactions among buyers and sellers, with no broker to bring the two together. Because there is no formal exchange present, it is possible that investors will have trouble finding buyers or sellers for their stocks.

6 Siblis Research. "Total Market Value of US Stock Market." *Siblis Research*. https://siblisresearch.com/data/us-stock-market-value/; The World Bank. "Market Capitalization of Listed Domestic Companies (current US$)." *The World Bank*. https://data.worldbank.org/indicator/CM.MKT.LCAP.CD

7 Companies Market Cap. "Largest American Companies by Market Capitalization." *Companies Market Cap*. https://companiesmarketcap.com/usa/largest-companies-in-the-usa-by-market-cap/; National Retail Federation. "Top 100 Retailers 2020 List." *National Retail Federation*. 2020. https://nrf.com/resources/top-retailers/top-100-retailers/top-100-retailers-2020-list

Most of the trading consists of used or previously issued stocks in over-the-counter markets and organized exchanges. The two largest stock exchanges in the world, as measured by the market capitalization of the companies listed on the exchange, are the New York Stock Exchange (NYSE) and the NASDAQ. Both exchanges are located in the United States. Other large stock exchanges are located in Japan, China, Hong Kong, continental Europe, London, and Saudi Arabia.

Process of Offering Equities

The **primary market** is the market for new securities, and the **secondary market** is the market for used securities. When issuing new equity, the issuing firm receives the proceeds of the sale. Having an active secondary market makes it easier for corporations to issue stock, as investors know they can resell if desired. Most of the trading of equity securities is for used securities on the secondary market.

An **initial public offering**, or IPO, occurs when a firm offers stock to the public for the first time. With a typical IPO, a private company decides to raise capital and go public with the help of an investment banker. The investment banker agrees to provide financial advice, recommend the price and number of shares to issue, and establish a syndicate of underwriters to finance and ultimately distribute the new shares to investors (see Figure 12.3). An IPO is expensive for the issuing firm, and it can expect to incur costs of 5% to 8% or more of the value of the IPO. As of the end of 2020, the largest successful IPO belongs to Saudi Aramco, a petroleum company, valued at $25.6 billion at issue in December 2019.[8] The Ant Group had planned an IPO valued at over $34 billion dollars in 2020, but as of the end of 2020 that issue was put on hold by the Chinese government.[9]

Institutional and preferred individual investors are typically the initial purchasers of IPOs. Smaller investors rarely have the opportunity to purchase. However, any investor can buy the new shares once available for public trading. Investment author and financial expert Professor Burton Malkiel cautions that buying IPOs immediately after issue can be a money-losing investment. He cites research showing that, historically, IPOs have underperformed the market by an average of 4% per year.[10]

Another way for a corporation to raise capital in the equity market is through a **seasoned equity offering (SEO)**. An IPO occurs when a firm transitions from a private to a public company. An SEO takes place when a corporation that is already publicly traded issues additional shares of stock to the public. An SEO is often part of a SEC Rule 415 offering, or so-called **shelf registration**. Shelf registrations allow a company to register with the SEC to issue new shares but wait up to two years before issuing the shares. This gives companies the ability to register their intent to issue new shares and to "set them on the shelf" until market conditions are most favorable for issuance to the public.

8 Jennifer Rudden. "Largest IPOs Worldwide as of January 21, 2021." *Statista*. 2021. https://www.statista.com/statistics/269343/worlds-largest-ipos/

9 Deborah D'Souza. "Ant Group Set to Be World's Largest IPO Ever." *Investopedia*. October 27, 2020. https://www.investopedia.com/ant-group-set-to-be-world-s-largest-ipo-ever-5084457; Jasper Jolly. "Ant Group Forced to Suspend Biggest Share Offering in History." *The Guardian*. https://www.theguardian.com/business/2020/nov/03/biggest-share-offering-in-history-on-hold-as-ant-group-suspends-launch

10 Burton Malkiel. *A Random Walk down Wall Street*. 10th ed. W. W. Norton, 2012.

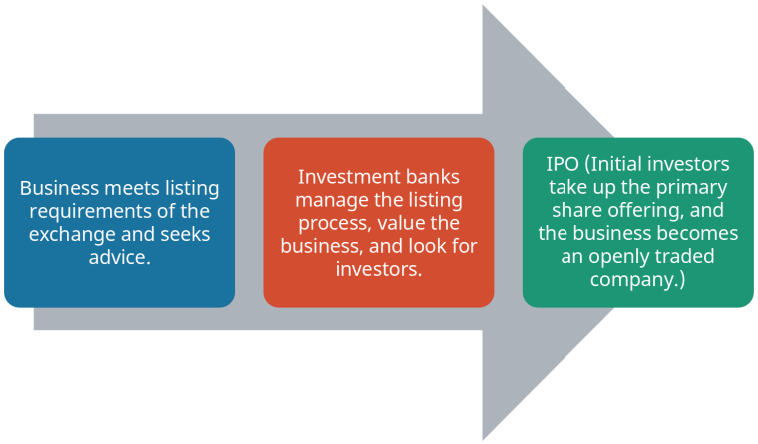

Figure 12.3 The IPO Process

Alternative Methods of Raising Capital

Special purpose acquisition companies (SPACs) were born in the 1990s and came of age in 2019.[11] SPACs are a special form of IPO. We know that firms with products or services to sell and a documented operational and financial history often initiate an IPO to raise money by going public. A SPAC, however, is like an IPO that puts the cart before the horse. By this, we mean that rather than having a company ready to go public to raise capital, with a SPAC, a sponsor raises capital in anticipation of finding a firm ready to go public. This is why we sometimes refer to SPACs as "blank check" companies. Investors are providing capital to a firm that has no assets with the expectation that the sponsor will find a good investment.

Forming a SPAC shifts the risk and expenses associated with a firm going public. Because the money raised by the SPAC sponsor is the only asset, the process of filing with the SEC is less complicated, less expensive, and less time-consuming than filing an IPO. Often, when formed, a SPAC has a target company in mind, but this is not a requirement. Once the SPAC identifies a target firm, the sponsor can negotiate a purchase price and essentially merge with the target. Underpricing of IPOs is well documented,[12] and the owners of a private company going public do not capture the significant increase in stock price that frequently occurs in the months following an IPO.

A SPAC offering allows the private firm owners to negotiate for a better price. A July 2020 study from Renaissance Capital reports that "of 223 SPAC IPOs conducted from the start of 2015 through July 2020, 89 have completed mergers and taken a company public." According to the study, of those 89 mergers, "the common shares have delivered an average loss of 18.8% and a median return of minus 36.1%. That compares with the average after-market return from traditional IPOs of 37.2%" over the same time period.[13]

Sequence of Trade Execution

Investors who wish to trade stocks (buy or sell) execute trades via a broker. Many online brokers today will execute your trades at low to no cost once you have established a brokerage account. When trading, it is most common to make a market order or a limit order. A market order executes a trade at the current price, while a limit order specifies the price at which the investor is willing to buy or sell. Figure 12.4 provides a visual representation of how payment for an order flow works.

11 Nicholas Jasinksi. "Blank Check Companies Are Hot on Wall Street. Investors Can't Ignore Them." *Barron's.* January 17, 2020. https://www.barrons.com/articles/boom-in-blank-check-companies-or-spacs-what-investors-need-to-know-51579299261; Julie Young. "Special Purpose Acquisition Company (SPAC)." *Investopedia.* November 24, 2020. https://www.investopedia.com/terms/s/spac.asp

12 R. G. Ibbotson, J. L. Sindelar, and J. R. Ritter. "The Market's Problems with the Pricing of Initial Public Offerings." *Journal of Applied Corporate Finance* 7 (Spring 1994).

13 Ciara Linnane. "2020 Is the Year of the SPAC—Yet Traditional IPOs Offer Better Returns, Report Finds." *MarketWatch.* September 16, 2020. https://www.marketwatch.com/story/2020-is-the-year-of-the-spac-yet-traditional-ipos-offer-better-returns-report-finds-2020-09-04; Barron's. "What Is a SPAC?" *Barron's* (video). December 11, 2020. https://www.barrons.com/video/what-is-a-spac/86E80342-FBC2-44DA-99E2-DF808CD147FF.html

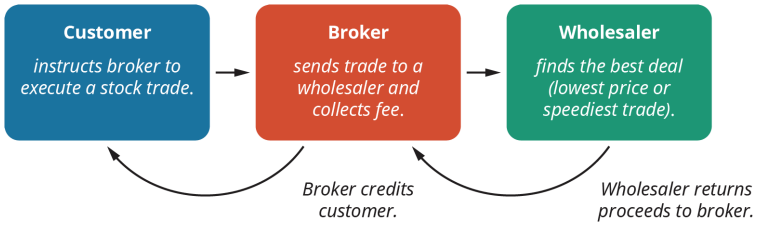

Figure 12.4 The Order of Payments for Trade Executions

12.2 Historical Picture of Inflation

Learning Outcomes

By the end of this section, you will be able to:

- Define inflation with concrete examples.
- Describe the practical impact of inflation on consumption and salary.
- Explain how expected and actual inflation are measured.
- Detail the behavior of inflation over various historical periods.

Over time, returns in the stock market have easily outperformed returns in the bond market. However, not everyone is comfortable investing in stocks. Taking a more informed and opposing view, financial economist Jeremy Siegel queries, "You have never lost money in stocks over any 20-year period, but you have wiped out half your portfolio in bonds (after inflation). So which is the riskier asset?"[14] Siegel brings up a valid point about inflation. Returns adjusted for changes in prices provide a better measure of value or wealth. Baseball pundit Sam Ewing noted, "Inflation is when you pay fifteen dollars for the ten-dollar haircut you used to get for five dollars when you had hair."[15] If what you have earned on your investments fails to keep up with changing prices, you may have a larger portfolio with less purchasing power.

Expected versus Actual Inflation

Inflation occurs when things cost more and your money buys less today than it did yesterday. It is understandable to dislike inflation and to be concerned over the prospect of rising prices. In fact, two of the primary policy objectives of the Federal Reserve are to work for price stability and moderate interest rates. However, is inflation necessarily good or bad? In practice, inflation can benefit some people and harm others at the same time. Consider the impact of differences in expected and actual realized inflation. Empirical evidence suggests that, on average, economists do a good job of developing inflation rate forecasts that match the actual rate of inflation. Estimated inflation is built into the interest rates investors require or are willing to pay for financial products, such as fixed-rate loans or bonds. When the actual rate of inflation exceeds the estimated rate on a product, such as a mortgage loan, this means borrowers are repaying the loan with less-valuable dollars and benefit from the increased inflation rate. Lenders, however, receive those inflation-impacted dollars and are harmed due to their unexpected decrease in purchasing power.

Deflation, or falling prices, is associated with economic recessions or even depressions and is thought to be an even more serious problem than inflation. Generally, policy makers tend to support moderate inflation, being careful to stay away from zero or negative price changes.

Inflation Impacts

Ultimately, inflation redistributes wealth. Lenders providing fixed-rate loans receive less-valuable dollars in return. Borrowers repay with those same less-valuable dollars. Workers receive less-valuable dollars, especially when their wage increases lag behind changes in prices. Modest inflation can benefit a consumer-driven economy like the United States if consumers are motivated to spend money before prices increase. However,

14 Jeremy J. Siegel. *Stocks for the Long Run: The Definitive Guide to Financial Market Returns & Long-Term Investment Strategies.* McGraw-Hill, 2002. First published 1994.
15 Sam Ewing. "Sam Ewing Quotes." *Brainy Quotes.* https://www.brainyquote.com/authors/sam-ewing-quotes

too much inflation can cause frenzied buying, drive prices even higher, and outpace the rate of wage increases. Higher inflation raises the rates on new borrowing instruments and can slow the rate of business investment and economic growth. Inflation raises overall prices and may cause hardship for consumers on a fixed income.

Finally, inflation does not have an equal impact on all goods and services. As Table 12.3 shows, consumer prices did not increase at the same rate for the selected items shown. From 1980 to 2020, inflation, as measured by the consumer price index (CPI), grew at an average annual rate of 2.90%. However, the price of college tuition and fees increased at more than double that rate. Rent, another large expense for most college students, increased at an annual rate of 3.67%, also well above the average increase in the CPI. The price increases for ground beef and butter were slightly less than the CPI average. For the selected items presented here, only the average price for used cars and trucks rose at a rate significantly lower than the average rate of inflation.

Year	1980	2000	2020	Annual Change
College tuition and fees	70.8	331.9	877.3	6.49%
Rent	80.9	183.9	341.5	3.67%
Used cars and trucks	62.3	155.8	144.2	2.12%
Ground beef	104.6	125.2	296.2	2.64%
Butter	89.4	135.9	248.7	2.59%
CPI (1982 to 1984 = 100)	**82.4**	**172.2**	**258.8**	**2.90%**

Table 12.3 Changing Consumer Price Levels—Selected Goods (source: US Bureau of Labor Statistics, Consumer Price Index)

Using Graphs and Charts to Plot Inflation Behavior

The CPI is a measure of how prices have changed for a basket of goods across the United States. Figure 12.5 shows the eight major categories of expenditures included in the CPI.[16] Different regions of the country and population subgroups may experience different rates of inflation. Retired people may spend a greater portion of their income on healthcare than someone in their twenties.[17] Residents on the East and West Coasts spend a higher percentage of their earnings on housing than those living in the Midwest.[18] As such, there are several different measures of inflation based on geographic region or other factors.[19] It is worth noting that a basket of goods and services that cost $100 in 1984 would cost approximately $260 by the end of 2020, an increase of 160% (see Figure 12.6)! Over that same period, the average annual rate of inflation as measured by the CPI was 2.55%. These numbers make it easy to see that even a relatively modest annual inflation rate, lower than the long-run annual US inflation rate of 3%, results in significant price increases.

16 US Bureau of Labor Statistics. "Consumer Price Index." *US Bureau of Labor Statistics.* https://www.bls.gov/cpi/
17 Chris Farrell. "The Truth About Health Care Costs in Retirement." *Forbes.* June 28, 2018. https://www.forbes.com/sites/nextavenue/2018/06/28/the-truth-about-health-care-costs-in-retirement/
18 US Department of Housing and Urban Development, Office of Policy Development and Research. "Rental Burdens: Rethinking Affordability Measures." PD&R Edge. September 22, 2014. https://www.huduser.gov/portal/pdredge/pdr_edge_featd_article_092214.html
19 Khan Academy. "How Changes in the Cost of Living Are Measured." *Khan Academy.* https://www.khanacademy.org/economics-finance-domain/macroeconomics/macro-economic-indicators-and-the-business-cycle/macro-price-indices-and-inflation/a/how-changes-in-the-cost-of-living-are-measured-cnx

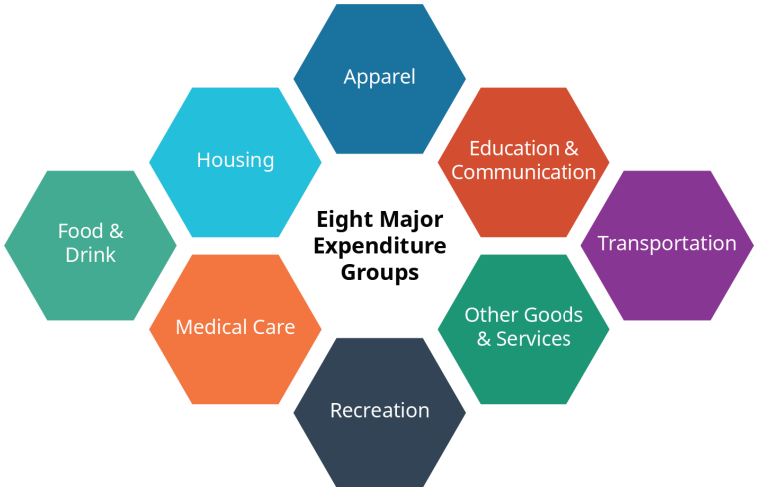

Figure 12.5 The Market Basket Categories of the CPI

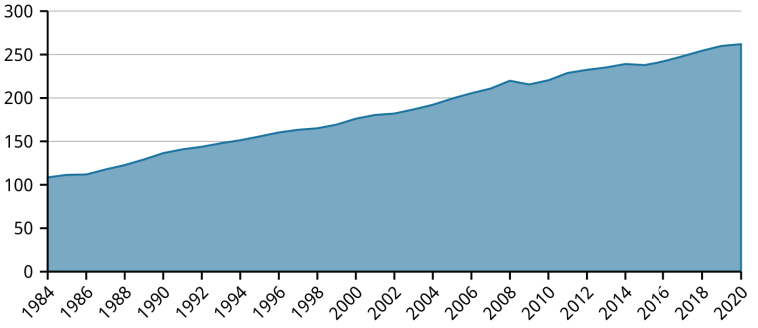

Figure 12.6 United States Consumer Price Index (CPI) 1984–2020 (data source: US Bureau of Labor Statistics)

CONCEPTS IN PRACTICE

Profile of Janet Yellen

Figure 12.7 Janet Yellen (credit: "Janet Yellen Official Federal Reserve Portrait." United States Federal Reserve/Wikimedia Commons, Public Domain)

Janet Yellen has led a life of firsts. After graduating as valedictorian of her high school class, Yellen later attended Yale University and was the only woman in her 1971 PhD graduating class in economics. Men have long dominated the "dismal science" of economics, but Yellen has proved to be an exception.

Motivated by an undergraduate economics professor at Pembroke College of Brown University, Yellen realized how much the US central bank, known as the Federal Reserve, could influence the lives of ordinary people. She changed her major to economics, and the rest, as they say, is history.

In her first stint working with the Federal Reserve in 1977, Yellen met and married George Ackerlof. Ackerlof would go on to win a Nobel Prize in Economics. Ackerlof and Yellen eventually established themselves as faculty members at the University of California, Berkeley. Yellen was twice named Outstanding Teacher in the Haas School of Business and was recognized for her award-winning research.

In 1993, Yellen began her second tour at the Federal Reserve as an appointed member of the Board of Governors. She left this position in 1997 to head President Bill Clinton's Council of Economic Advisers. Yellen became just the second woman to head the presidential council.

She then returned to California and the Bay Area, eventually becoming president of the Federal Reserve Bank of San Francisco from 2004 to 2010. Later that year she became the vice chair of the Federal Reserve. Four years later, in 2014, Yellen assumed leadership as the first woman chair of the Federal Reserve System.

As Fed chair, Yellen earned an enviable record. During her four-year tenure, the rate of unemployment decreased by more than 2.5%, and employment increased in every month of her term. This is the first and only time in the history of the Federal Reserve that the board chair has overseen continuous increases in

employment over their entire tenure.

Now, another first: In 2021, President Joe Biden appointed Yellen as the first woman Secretary of the Treasury. Yellen has a storied career and a long list of accomplishments, but surely her record of firsts will prove to be an important and lasting legacy for women in business, government, and economics everywhere.

(Sources: Ann Saphir. "Factbox: Janet Yellen's Road to US Treasury Secretary." Reuters. November 24, 2020. https://www.reuters.com/article/idUSKBN2832WS; Ylan Q. Mui. "New Fed Chief Janet Yellen Lets a Long Career of Breaking Barriers Speak for Itself." *Washington Post.* February 2, 2014. https://www.washingtonpost.com/business/economy/new-fed-chief-janet-yellen-has-long-history-of-breaking-barriers/2014/02/02/9e8965ca-876d-11e3-833c-33098f9e5267_story.html; Stephanie Grace. "Banker to the Nation." *Brown Alumni Magazine*. October 30, 2013. https://www.brownalumnimagazine.com/articles/2013-10-30/banker-to-the-nation)

12.3 Historical Picture of Returns to Bonds

Learning Outcomes

By the end of this section, you will be able to:

- Detail the behavior of sovereign (government) bonds over various historical periods.
- Detail the behavior of corporate bonds over various historical periods.
- Extract sovereign and corporate bond investment results from plots and charts.

Federal Government Bond Behavior, Discussion, Charts, and Graphs

United States Treasury (sovereign) bonds are among the safest investments available. In fact, T-bonds often serve as the proxy for a risk-free investment in financial modeling. However, even though T-bonds may be essentially default-risk free, they do change value as interest rates change. Look at Figure 12.8, showing annual T-bond returns from 1980 to 1999. None of these bonds defaulted, yet investors realized very different returns on their investments from year to year. The **total returns** reflect interest payments plus the change in price because of changes in interest rates.

The late 1970s experienced high rates of inflation and interest rates. As those rates began to fall in late 1981, bond prices rose. Investors holding T-bond portfolios realized very large returns on their risk-free investments in 1982. That year provided the highest annual return in the 20-year period, with an annual return of 32.81%. The lowest annual return was in 1999, as the Federal Reserve began to raise rates to temper an overheating stock market caused by dot-com speculation gaining momentum. When the Fed raised interest rates, the prices on existing bonds fell, and investors realized a -8.25% return on their bond portfolios. Thus, the range in returns on these "low risk" investment securities was over 41% from the highest to the lowest annual return in this particular two-decade span. Overall, the average annual return on T-bonds from 1980 to 1999 was a robust 10.21%, boosted in part by the above average annual inflation rate of 4.28%.

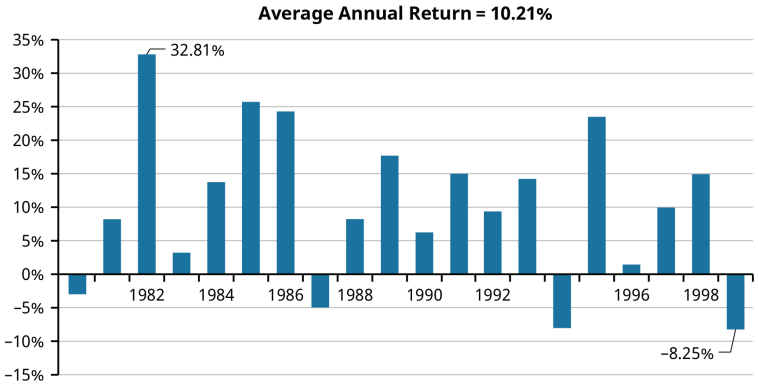

Figure 12.8 Treasury Bond Performance, 1980–1999 (data source: Aswath Damodaran Online)

Inflation slowed from 2000 to 2020, and the average annual rate of return on T-bonds fell accordingly (see Figure 12.9). With reduced variability of interest rates in the new century and interest rates in general being lower, the returns on bond portfolios were also lower on average. T-bonds in the first two decades of the twenty-first century averaged an annual return of 5.77%, very close to the long-run average return in the previous century. The range of returns was also smaller than the previous two decades, with the highest annual return topping out at 20.10% in 2008 and the lower end dipping down to -11.12% in 2009 as the Fed made a significant effort to reduce interest rates in an attempt to stimulate the economy following the Great Recession.

Corporate Bond Behavior, Discussion, Charts, and Graphs

The performance of Baa bonds is very similar to T-Bonds over the four decades spanning 1980 to 2020 (see Figure 12.10). These bonds are not default-risk free and require a risk premium for investors. The average annual return of 12.07% from 1980 to 1999 topped T-bonds by 1.86%. The margin was greater in the period from 2000 to 2020 (see Figure 12.11), with Baa bonds (mid-tier corporate bonds) realizing an average annual premium of 2.30% over the default-risk free T-bonds.

These premiums translate to a substantial increase in investment performance. For example, had an investor placed $100 into a T-bond portfolio in 1980, the value of the investment would have been $1,931 by year-end 2020. This would have easily outpaced the rate of inflation but significantly lagged the ending value of $4,506 on a similar Baa bond portfolio investment (see Figure 12.12).

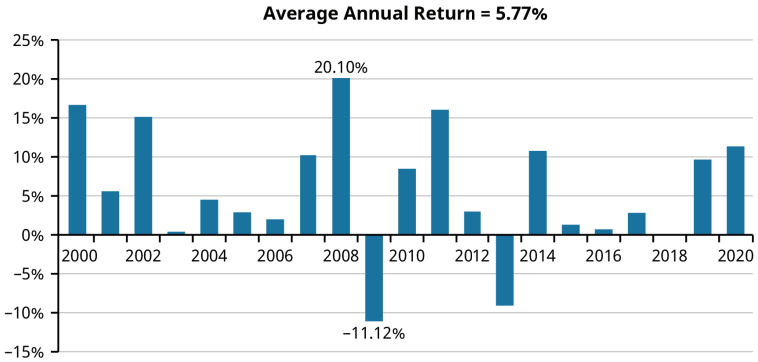

Figure 12.9 Treasury Bond Performance, 2000–2020 (data source: Aswath Damodaran Online)

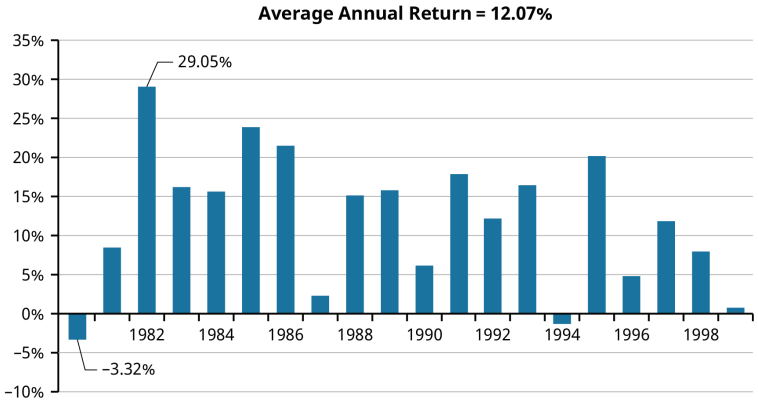

Figure 12.10 Baa Bond Performance, 1980–1999 (data source: Aswath Damodaran Online)

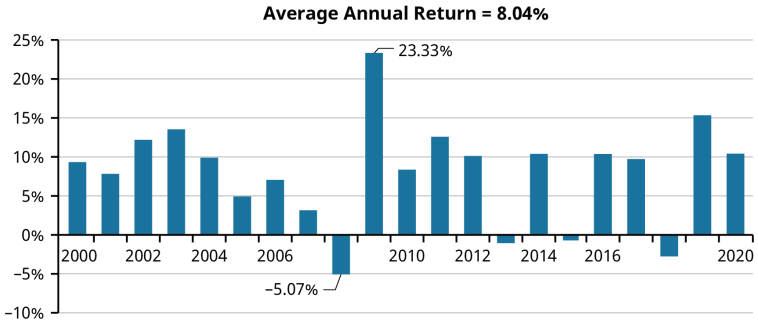

Figure 12.11 Baa Bond Performance, 2000–2020 (data source: Aswath Damodaran Online)

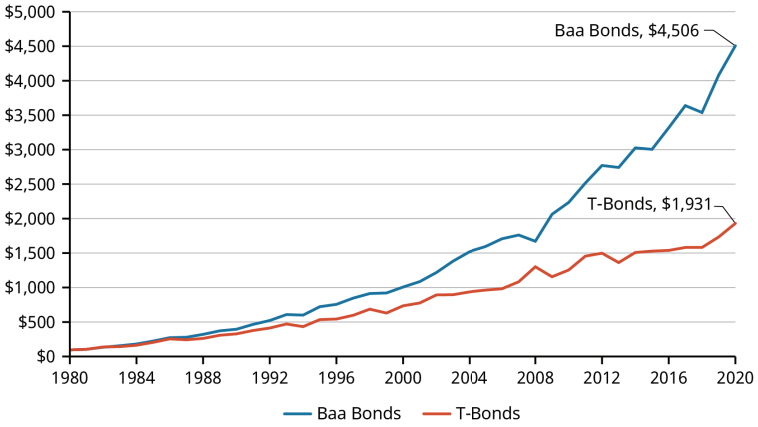

Figure 12.12 Baa Bonds versus T-Bonds Performance, 1980–2020 (data source: Aswath Damodaran Online)

CONCEPTS IN PRACTICE

Profile of Bill Gross

Bill Gross may be the most successful fixed-income investor ever, but he is also a prime example of the application of the efficient market theory. In over 40 years of investing in bonds and other types of fixed-income securities worldwide, Bill Gross earned his moniker "the bond king."

In 1971, Gross cofounded and began his long tenure as managing director and chief investment officer of Pacific Investment Management Company, better known as Pimco. Gross was not yet 30 years old, but he had already graduated from college, served in the Navy in Vietnam, and even briefly worked as a professional blackjack player in Las Vegas to bankroll the cost of his MBA from UCLA.

Gross helped change the definition of success for bond investors by focusing on total returns, including

price changes, rather than simply bond yields. He used mathematical modeling and invested worldwide and in different types of bond markets seeking risk-adjusted returns. Gross made active rather than passive management of bond funds a successful investment strategy. In the process, he changed how mangers oversee fixed-income portfolios today.

Pimco grew into an investment powerhouse under Gross's direction, eventually managing over $1.5 trillion dollars in assets. During the financial crisis of 2008, Gross served as an adviser to the US Treasury. Morningstar named him "fixed income fund manager of the decade" in 2010. In addition, Gross profited from his investment prowess, amassing a fortune in excess of $2 billion.

Gross's investment strategy was to carefully analyze the known factors about debt instruments and pair that analysis with the unknown future. He was uncanny in his ability to estimate future prices, interest rates, and macroeconomic conditions to make profitable investments.

However, as efficient markets would posit, the odds began to catch up with Gross in the latter part of his investing career. After leaving Pimco in 2014, Gross was unable to match his earlier performance successes and failed to beat bond fund performance averages. Much of Gross's investment strategy allowed him to look for **bond returns** by investing in any type of bond, with any maturity, in any country, and in any location. For decades, he was right more often than wrong in his investment choices. However, statistically, his approach to investing suggested that, unless he could see the future, at some point his expectations would be incorrect. Perhaps Gross's greatest competition comes from a generation of investment managers who learned and improved upon his proven strategies. He retired as an active public fund manager in 2019.

Today, Gross continues to manage his personal fortune, as well as the assets in his family charitable foundation. Gross and the foundation have donated over $800 million to several causes over the last two decades. In 2020, Gross joined Bill Gates, Warren Buffett, and hundreds of other billionaires in signing the Giving Pledge, whose signees promise to donate over 50% of their wealth during their lifetime and/or upon their death.

(Sources: Mary Childs. "Bill Gross Made the Bond Market What It Is Today." *Barron's.* February 8, 2019. https://www.barrons.com/articles/bill-gross-bond-market-investing-legacy-51549669974; Jeff Sommer. "Once the 'Bond King,' Bill Gross Is Retiring, His Star Dimmed." *New York Times.* February 4, 2019. https://www.nytimes.com/2019/02/04/business/bond-king-bill-gross-retirement.html; CNN. "Bill Gross Fast Facts." *CNN.* March 31, 2021. https://www.cnn.com/2013/04/08/us/bill-gross-fast-facts/)

12.4 Historical Picture of Returns to Stocks

Learning Outcomes

By the end of this section, you will be able to:

- Explain overall equity market behavior over various historical periods.
- Explain different equity style and size behavior over various historical periods.
- Extract various equity market performance results from plots and charts.

Using Graphs and Charts to Plot Equity Market Behavior Stock Size Considerations

The Dow Jones Industrial Average (DJIA), also known as the Dow 30) and the S&P 500 Index are the most frequently quoted stock market indices among scholars, businesses, and the public in general. Both indices track the change in value of a group of large capitalization stocks. The changes in the two indices are highly correlated.

It may be fair to question if either index is a good representation of the value of equity and the changes in value in the market because there are over 6,000 publicly traded companies listed on organized exchanges and thousands of additional companies that trade only over the counter. As of year-end 2020, the S&P 500 firms had a combined market capitalization of $33.4 trillion, about 66% of the estimated US equity market capitalization of $50.8 trillion.[20] It is widely agreed that the performance of the S&P 500 is a good representation of the broader market and more specifically of large capitalization firms.

Figure 12.13 provides a visualization of how S&P 500 **stock returns** have stacked up since 1900. This figure makes it clear that equity returns roughly follow a bell curve, or normal distribution. Thus, we are able to measure risk with standard deviation. A lower standard deviation of returns suggests less uncertainty of returns and therefore less risk.

Capital market history demonstrates that the average return to stocks has significantly outperformed other financial security classes, such as government bonds, corporate bonds, or the money market. Table 12.4 provides the return and standard deviation of several US investment classes over the 40-year period 1981–2020. As you can see, stocks outperformed bonds, bills, and inflation. This has led many investment advisers to emphasize asset allocation first and individual security selection second. The intuition is that the decision to invest in stocks rather than bonds has a greater long-run payoff than the change in performance resulting from the selection of any individual or group of stocks.

Figure 12.14 demonstrates the growth of a $100 investment at the start of 1928. Note that the value of the large company portfolio is more than 50 times greater than the equal investment in long-term US government bonds. This supports the importance of thoughtful asset allocation.

Still, the size of a firm has a significant impact on how investors choose equity securities. Capital market history also shows that a portfolio of small company stocks has realized larger average annual returns, as well as greater variability, than a portfolio of large companies as represented by the S&P 500. Small-cap stock total returns ranged from a high of 142.9% in 1933 to a low of -58.0% in 1937.

More recently, the differential return between small and large capital stocks has not been as pronounced. From 1980 through 2020, the Wilshire US Small-Cap Index has averaged an annual compound return of 12.13% compared to the Wilshire US Large Cap Index average of 11.82% over the same period. The 31-basis point premium is much smaller than that realized in the 1926–2019 period, which saw a small-cap average annual compounded return of 11.90% versus 10.14% for the large-cap portfolio.

20 Spencer Israel. "The Number of Companies Publicly Traded in the US Is Shrinking—Or Is It?" *MarketWatch.* October 30, 2020. https://www.marketwatch.com/story/the-number-of-companies-publicly-traded-in-the-us-is-shrinkingor-is-it-2020-10-30; Siblis Research. "Total Market Value of US Stock Market." *Siblis Research.* https://siblisresearch.com/data/us-stock-market-value/

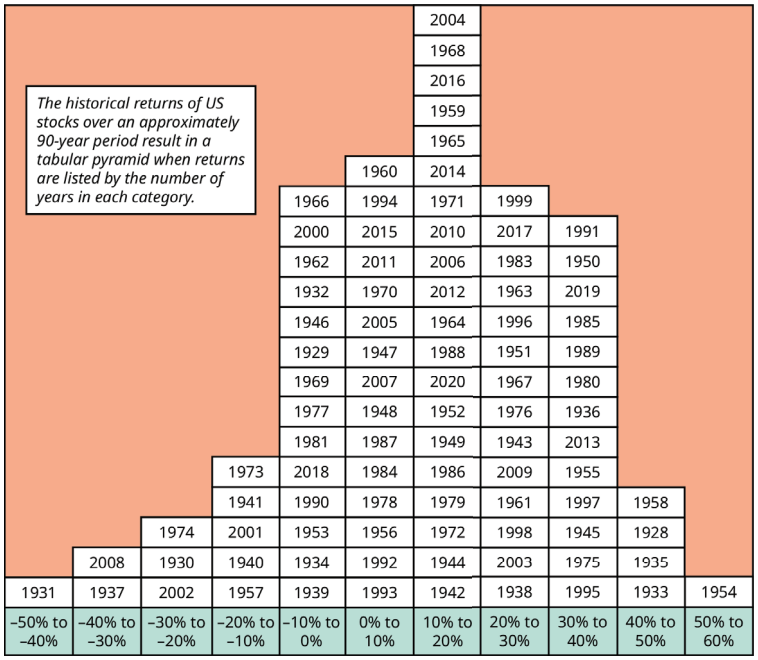

Figure 12.13 The Pyramid of Equity Returns: Distribution of Annual Returns for the S&P 500 Index, 1928–2020 (data source: Aswath Damodaran Online)

Asset Class	Nominal Average Annual Returns 1981–2020	Standard Deviation of Returns 1981–2020
Large company stocks	12.64%	16.06%
Baa bonds	10.34%	7.67%
10-year T-bonds	8.21%	9.92%
US T-bills	3.94%	3.39%
Inflation	2.93%	1.76%

Table 12.4 Arithmetic Average Annual Returns and Standard Deviation by Asset Class, 1981–2020 (source: Aswatch Damodaran Online)

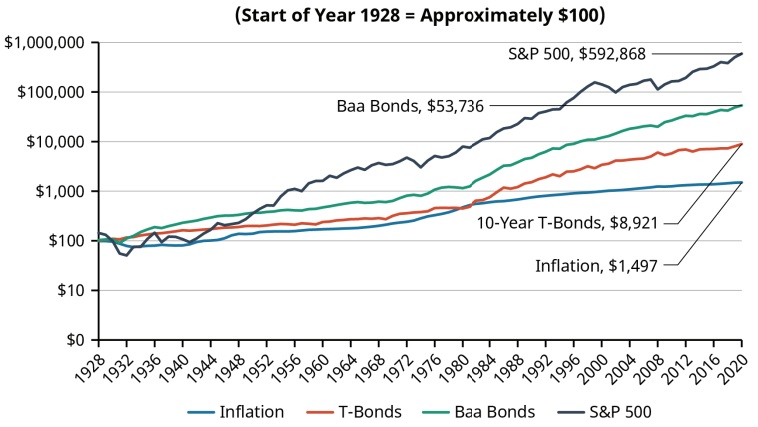

Figure 12.14 Growth of a $100 Investment into Selected Asset Portfolios, 1928–2020 (data source: Aswath Damodaran Online)

LINK TO LEARNING

Would You Like to Research More Historical Returns?

This article on historical returns and risks (https://openstax.org/r/6-what-to-invest-in) contains calculators that can help you find returns over your selected periods for US stocks, bonds, and inflation. How have the markets done since you were born? This second article about global equity markets (https://openstax.org/r/returns-of-global-stocks) has a comparable calculator. You can also go to the *Global Wealth Report (https://openstax.org/r/global-wealth-report)*, an annual publication by Credit Suisse, to dig more deeply.

LINK TO LEARNING

Does It Pay to Time the Market?

Over the period 1980 to mid-2020, an investment of $10,000 into an S&P 500 index fund would have yielded the investor $697,421. However, missing the 5 best-performing days in the market would have reduced the final portfolio balance to $432,411. Stay out of the market on the 10 best days, and the balance would have ended at only $313,377, or less than half of the return earned in the full time period. Watch this *Wall Street Journal (https://openstax.org/r/wall-street-journal-video)* video on the DJIA to learn more.

CONCEPTS IN PRACTICE

Warren Buffett

Figure 12.15 Warren Buffett (credit: "Warren Buffet at the 2015 Select USA Investment Summit." USA International Trade Administration/Wikimedia Commons, CC Public Domain Mark)

Warren Buffett has not always been one of the richest people in the world, but he has always been one of the hardest workers. An entrepreneur from an early age, Buffett's yearbook photo caption noted that he "likes math: a future stockbroker." Before leaving high school, Buffett had already earned thousands of

dollars running a paper route and through one of his start-up businesses of installing and maintaining pinball machines in barbershops.

As they say in Nebraska, "you need to make hay while the sun shines," and Buffett has made his share of hay, so to speak. In his career, Buffett has accumulated enough hay to be one of the wealthiest people in the world, with a net worth of over $80 billion by the end of 2020.

The "Oracle of Omaha," as Buffett is known, grew his fortune through investing partnerships and most notably as the chairman, president, CEO, and largest stockholder of Berkshire Hathaway (BRK). Berkshire Hathaway was a New England textile manufacturer when Buffett and his investment partners began buying shares in the 1960s. By 1966, after a dispute with the then CEO of Berkshire, Buffett assumed control of the company and fired the CEO. Soon, Buffett's partnerships merged into Berkshire and moved the business away from textiles; it eventually became the largest financial services company in the world, including total ownership of the Geico Insurance Company.

Buffett's career is notable for how he developed his fortune, how he explained his philosophy, and for his current and future plans. Buffett followed the method of Benjamin Graham, famous value investor and author of *Security Analysis*, *The Intelligent Investor*. However, Buffett expanded beyond Graham's analysis of financial statements and intrinsic value to examine the character of executive management. He applied the same criteria to hiring employees as well. Buffett once noted, "We look for three things when we hire people. We look for intelligence, we look for initiative or energy, and we look for integrity. And if they don't have the latter, the first two will kill you, because if you're going to get someone without integrity, you want them lazy and dumb." When speaking of integrity, Buffett went on to say, "Only when the tide goes out do you discover who's been swimming naked."

Buffett's folksy way of making his point will undoubtedly be another of his legacies. When asked repeatedly about how he managed to be such a successful investor, Buffett replied, "Never invest in a business you can't understand." Never was this truer than in the late 1990s and 2000, when the dot-com craze fueled the stock market with technology firms enjoying tremendous price increases without the corresponding earnings. Buffett's value investing lagged until the bubble burst, and suddenly he was back on top. When asked about his change in fortune he replied, "In the business world, the rearview mirror is always clearer than the windshield."

Buffett believes in long-term rather than short-term investing. He once remarked that "Someone's sitting in the shade today because someone planted a tree a long time ago" and "If you aren't willing to own a stock for 10 years, don't even think about owning it for 10 minutes."

The third aspect of Buffett's legacy will be how his money works now and after he is gone. With Bill and Melinda Gates, Buffett started the Giving Pledge, and to date they have gathered the pledge of over 200 billionaires to give away half or more of their fortune during and after their lifetimes. Buffett states, "If you're in the luckiest 1% of humanity, you owe it to the rest of humanity to think about the other 99%." Buffett has begun the process to give away most of his fortune, but he has left this pearl of wisdom for his own children: "A very rich person should leave his kids enough to do anything, but not enough to do nothing."

(Sources: Joshua Kennon. "How Warren Buffett Became One of the Wealthiest People in America." *The Balance.* May 4, 2021. https://www.thebalance.com/warren-Buffett-timeline-356439; Ty Haqqi. "Five Largest Financial Services Companies in the World." *Insider Monkey.* November 26, 2020. https://www.insidermonkey.com/blog/5-largest-financial-services-companies-in-the-world-891348/2/; Mohit Oberoi. "Warren Buffett: Growth Stocks Look Like Dot-Com Bubble." *Market Realist.* September 4, 2020. https://marketrealist.com/2020/07/warren-buffett-growth-stocks-like-dot-com-bubble/)

LINK TO LEARNING

Does It Pay to Invest Globally?

On a global basis, US equity markets have been among the highest performing since 1900. Only Australia shows a higher average annual return over the 121-year period. Many factors contribute to long-run stock performance in any given country. However, over the period studied, the United States benefited from an entrepreneurial spirit and distance from the center of two world wars. An article reviewing global stock market returns from 1900 to 2020 summarizes and analyzes global market return information created by researchers Elroy Dimson, Paul Marsh, and Mike Staunton for Credit Suisse.[21]

While most established economies have not generated higher returns than the US equity markets, they do offer the benefits of diversification. Further, the greatest return potential—and the greatest risk of loss—may lie in developing economies. Investing experts are not in complete agreement about the advantages and disadvantages of investing in foreign equity markets. This article provides a framework for analysis and tools (https://openstax.org/r/returns-of-global-stocks) for comparing equity returns by country from 1970 through 2020. Has Australia continued to be the top-performing equity market since 1970? Have equity markets performed as well or better in the last 21 years compared to the 121-year period? Does the article encourage you to diversify internationally or focus only on domestic securities?

21 Karl Steiner. "Historical Returns of Global Stocks." *Mindfully Investing*. July 6, 2020. https://www.mindfullyinvesting.com/historical-returns-of-global-stocks/; Elroy Dimson, Paul Marsh, and Mike Staunton. *Summary Edition Credit Suisse Global Investment Returns Yearbook 2020*. Credit Suisse, February 2020. https://www.credit-suisse.com/media/assets/corporate/docs/about-us/research/publications/credit-suisse-global-investment-returns-yearbook-2020-summary-edition.pdf

Summary

12.1 Overview of US Financial Markets

One way to parse financial markets is by the maturity of financial instruments. With this dichotomy, we explored the money market and the capital market. The money market consists of short-term securities and the capital market of longer-term securities. The capital market discussion focused on debt and equity as financial instruments used to finance longer-term capital financing needs. IPOs or SPACs are vehicles for raising new equity. Most trading on organized exchanges or over-the-counter markets is for used, or secondary, securities.

12.2 Historical Picture of Inflation

The Federal Reserve considers moderate inflation rates optimal in their oversight of the US economy. We measure inflation by comparing the price of a bundle or basket of goods over time and documenting how prices change. Since not everyone consumes similar baskets of goods, we calculate several different measures of inflation. The most commonly quoted measure of inflation uses changes in the Consumer Price Index (CPI).

12.3 Historical Picture of Returns to Bonds

Historical bond yields are published going back hundreds of years but are only reliably available for the last 100 years or so. In large part, the returns realized on portfolios of bonds have been smaller and less variable than the returns realized for equities.

12.4 Historical Picture of Returns to Stocks

Stocks have produced the greatest average annual rates of return of the money and capital market assets discussed in this chapter. Stockholders bear more risk than bondholders or money market investors and receive on average higher average annual returns. Despite the relatively high average annual rate of return for portfolios of stock, history shows that the equity markets earn negative annual returns about 25% of the time. The negative returns realized by equities occur far more often than the negative results realized by money market or debt market instruments.

Key Terms

bond returns sums the periodic interest payments and the change in bond price in a given period and divides by the bond price at the beginning of the period

commercial paper (CP) a short-term, unsecured security issued by corporations and financial institutions to meet short-term financing needs such as inventory and receivables

debenture a common type of unsecured bond issued by a corporation

indenture legal term for a bond contract

inflation a general increase in prices and a reduction in purchasing power; expected rate is a key component of interest rates

initial public offering (IPO) the first time a firm offers stock to the public

mortgage bond bond issued by a corporation using a real asset, such as property or buildings, to guarantee it

municipal bonds (munis) bonds issued by a local government, territory, or agency; generally used to finance infrastructure projects

negotiable certificates of deposit (NCDs) large CDs issued by financial institutions; redeemable at maturity but can trade prior to maturity in a broad secondary market

primary market market for new securities

seasoned equity offering (SEO) a method used by new IPOs to raise capital by offering additional shares of stock to the public

secondary market market for used securities

shelf registration part of Securities and Exchange Commission (SEC) Rule 415; allows a company to register with the SEC to issue new shares but allows up to two years before issuing the shares

special purpose acquisition companies (SPACs) a special form of IPO

stock returns sums the periodic dividend payments plus the change in stock price in a given period divided by the stock price at the beginning of the period

total returns the sum of all cash flows received from an investment; includes periodic cash flows plus price appreciation or price depreciation

Treasury bills (T-bills) short-term debt instruments issued by the federal government and maturing in a year or less

Treasury bonds government debt instruments with maturities of 20 or 30 years

Treasury notes (T-notes) government debt instruments with maturities of 2, 3, 5, 7, or 10 years

Multiple Choice

1. Which of the following statements about Treasury bills is false?
   a. T-bills sell at a discount from face value and pay the face value at maturity.
   b. T-bills have maturities of 2, 3, 5, 7, or 10 years.
   c. T-bill auctions take place weekly.
   d. T-bill denominations are relatively small compared to other money market instruments, with initial auction sizes of as little as $10,000 per T-bill.

2. If an investor wishes to simply execute a stock trade at the current market price, they should issue a _____.
   a. limit order
   b. stop loss order
   c. market order
   d. hedge order

3. Based on nominal average annual returns over the period 1980–2020, list the order of returns by asset class from highest to lowest.
   a. large company stocks, Baa bonds, small company stocks, T-bills
   b. small company stocks, large company stocks, Baa bonds, T-bills
   c. T-bills, Baa bonds, small company stocks, large company stocks
   d. small company stocks, large company stocks, T-bills, Baa bonds

4. A $1 investment in a portfolio of small company stocks in 1928 would have grown to over _____ by mid-2019.
   a. $35,000
   b. $8,000
   c. $800
   d. $80

5. Since 1980, the compound average annual growth rate for large company stocks has been _____.
   a. greater than Baa bonds but less than small company stocks
   b. greater than small company stocks but less than Baa bonds
   c. greater than Baa bonds and small company stocks
   d. less than Baa bonds and small company stocks

Review Questions

1. Define the competitive and noncompetitive bid process for US Treasury bills.

2. How does a negotiable certificate of deposit (NCD) differ from the typical certificate of deposit you may see advertised by your local bank?

3. If you are an investor concerned about unexpected inflation in the coming years which of the following investments offers the greatest protection against inflation, and why: T-notes, T-bonds, or TIPS?
4. Debentures are more common than mortgage bonds issued by corporations. Why do you think debentures are more popular with investors? Be sure to define each bond contract in your discussion.
5. Market capitalization is a common way to rank firm size. Search the internet to identify and define at least two other ways to rank firms based on size. Identify at least one reason you prefer market capitalization as the method of choice to rank firm size.
6. Compare and contrast an SEO, IPO, and SPAC. If Ford Motor Company wished to raise new equity capital, which of these vehicles would they use?
7. Compared to a "best efforts" form of underwriting, how does "firm commitment" underwriting transfer risk from the issuing firm to the underwriter?
8. How would a decrease in inflation affect the interest rate on an adjustable-rate debenture?
9. If inflation unexpectedly rises by 3%, would a corporation that had recently borrowed money by issuing fixed-rate bonds to pay for a new investment benefit or lose?
10. If wages on average rise at least as fast as inflation, why do people worry about how inflation affects incomes?
11. Identify at least one item that you use regularly whose price has changed significantly.
12. What has been the average annual rate of inflation between 1985 and 2020? What is the long-run average annual rate of inflation over the last century?
13. Between 1985 and 2020, what year had the lowest realized annual rate of inflation in the United States? Why do you think inflation was so low in this particular year?
14. Go to https://www.usinflationcalculator.com/ (https://openstax.org/r/usinflationcalculator). How much money would it take today to purchase what one dollar would have bought in 1950, in 1975, and in your birth year?
15. Are US Treasury bonds truly risk free?
16. At the end of 2020 and the beginning of 2021, coupon rates on long-term T-notes and T-bonds were near historic lows. Further, the federal government was running a historically large budget deficit in an effort to stimulate an economy battered by COVID-19 and to support millions of unemployed workers. Some investment advisers warned that this could be a particularly bad time to invest in government bonds or bonds in general. Why?
17. Which group of securities earned a higher average annual return from 2000 to 2020, T-bonds or Baa bonds? Why do think this was so?
18. Which earned a higher average annual return, a portfolio of T-bonds from 1980 to 2000 or from 2000 to 2020? Why do think this was so?
19. Why is standard deviation of returns a reasonable measure of risk for a portfolio of equity securities?
20. Many popular-press articles claim that growth investing is "clearly better" than value investing or that value investing is "dead." How would you respond to proponents of growth investing after observing Figure 12.15?
21. Over the last 120 years, few countries have achieved the realized rate of returns enjoyed by US equity markets. Does this mean investors should ignore international investments and focus only on domestic markets in an effort to maximize returns?

Video Activity

How Private Companies Are Bypassing the IPO Process

Access multimedia content (http://openstax.org/books/principles-finance/pages/12-video-activity)

1. Can you identify three apparent advantages and three disadvantages for investors in a SPAC (special purpose acquisition company) versus a traditional IPO process?
2. The video concludes with a question about whether SPACs are a current fad doomed to fade away or a new and growing method of publicly financing firms. What do you think? Search for information related to SPACs and proposals for SPAC regulation, and report your conclusion.

A Secret Meeting and the Birth of the Federal Reserve

Access multimedia content (http://openstax.org/books/principles-finance/pages/12-video-activity)

3. How can an institution like the United State Federal Reserve System prevent bank runs?
4. After the passage of the Federal Reserve Act in 1913 (https://openstax.org/r/federal-reserve-act), the United States has suffered through three great global financial crises: the Great Depression of the 1930s, the Great Recession of 2007–2009 (https://openstax.org/r/the-worlds-most-devastating), and the COVID-19 pandemic of 2020–2021 (https://openstax.org/r/tracking-the-covid-19-recessions-effects). Research one of the latter two crises, and identify and discuss some of the tools used by the Fed to lessen the length and economic severity of the economic hardships. In what ways has this research project supported or changed your opinion about the United States having the Federal Reserve System?

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Statistical Analysis in Finance

Figure 13.1 Graphical displays are used extensively in the finance field. (credit: modification of "Analysing target market" by Marco Verch/flickr CC BY 2.0)

Chapter Outline

Why It Matters

Statistical analysis is used extensively in finance, with applications ranging from consumer concerns such as credit scores, retirement planning, and insurance to business concerns such as assessing stock market volatility and predicting inflation rates. As a consumer, you will make many financial decisions throughout your life, and many of these decisions will be guided by statistical analysis. For example, what is the probability that interest rates will rise over the next year, and how will that affect your decision on whether to refinance a mortgage? In your retirement planning, how should the investment mix be allocated among stocks and bonds to minimize volatility and ensure a high probability for a secure retirement? When running a business, how can statistical quality control methods be used to maintain high quality levels and minimize waste? Should a business make use of consumer focus groups or customer surveys to obtain business intelligence data to improve service levels? These questions and more can benefit from the use and application of statistical methods.

Running a business and tracking its finances is a complex process. From day-to-day activities such as managing inventory levels to longer-range activities such as developing new products or expanding a customer base, statistical methods are a key to business success. For finance considerations, a business must manage risk versus return and optimize investments to ensure shareholder value. Business managers employ a wide range of statistical processes and tools to accomplish these goals. Increasingly, companies are also