
The following is a review of the Financial Markets and Products principles designed to address the learning objectives set forth by GARP®. This topic is also covered in:

MUTUAL FUNDS AND HEDGE FUNDS

Topic 33

EXAM FOCUS

Not every investor has the time or the skill to manage his own financial assets. For this reason, investors will sometimes hire a professional manager in the form of a mutual fund or perhaps a hedge fund. These pooled investment vehicles offer instant diversification and professional management to their investors. Mutual funds are often used by smaller investors while hedge funds are tools for wealthy individuals. Because hedge funds are limited only to those who can afford to lose their investment, they are subject to much less regulation. For the exam, be able to describe the various types of mutual funds and hedge funds along with their regulatory environments and typical fee structures.

TYPES OF MUTUAL FUNDS

LO 33.1: Differentiate among open-end mutual funds, closed-end mutual funds, and exchange-traded funds (ETFs).

Mutual funds are pooled investment vehicles that offer instant diversification for their investors. This diversification is very important because it spreads out risk to different sectors and asset classes. Most investors either do not have the time or the skill to properly diversify on their own. For this reason, investment vehicles like open-end mutual funds, closed-end mutual funds, and exchange-traded funds (ETFs) were created.

Open-End Mutual Funds

Open-end mutual funds, which are often simply called *mutual funds*, are the most common pooled investment vehicle. Figure 1 shows the growth in open-end mutual fund assets since World War II. Essentially, investors are commingling their funds to be better diversified, to save on transaction fees, and to hire a professional management team. The professional management team will conduct research and ultimately invest commingled assets on behalf of their investors. These investors begin their investment by purchasing a set dollar amount of an open-end mutual fund and then they receive a proportional ownership interest (in the form of shares) in the mutual fund. This means that the number of shares goes up as new investors arrive and goes down as investors withdraw assets. When investors decide that they want to exit their investment in an open-end mutual fund, they can redeem their shares directly from the fund company, who will promptly send them either a check or a digital transfer of the value of their investment.

Figure 1: Growth of Mutual Fund Assets

<i>Year</i>	<i>Invested Assets (\$ billions)</i>
1940	0.5
1960	17.0
1980	134.8
2000	6,964.6
2015	15,652.0

Source: Investment Company Institute

At a high level, open-end mutual funds are broken down into four main categories: money market funds, equity funds, bond funds, and hybrid funds. Money market funds invest in short-term interest-bearing instruments, such as Treasury bills, commercial paper, and banker's acceptances. Money market investors are typically risk averse. This category is an alternative to interest-bearing bank accounts and is often the "cash" portion of an investor's asset allocation mix. Equity funds invest solely in stocks. Within this category you can find index funds that track a broad market index, such as the S&P 500 Index, funds that follow a certain style, such as medium company value funds, or sector funds, such as a health care sector fund. Bond funds invest only in fixed-income instruments, such as sovereign debt, corporate bonds, and asset-backed securities. Hybrid funds will blend stock and bond ownership into the same fund.

Open-end funds trade at the fund's **net asset value (NAV)**, which is essentially the sum of all assets owned minus any liabilities of the fund then divided by the shares outstanding. When investors decide they want to buy shares of an open-end mutual fund, they will transact at the next available NAV, which is not actually calculated until after the market closes at 4:00 pm in New York City. An investor who decides at 10:00 am that they want to buy shares will enter a buy order for a set dollar amount, but they will not know the price at which they will transact until after the market closes. For this reason, we say that open-end fund investors have poor price visibility. Since shares are transacted at an unknown price, investors cannot use stop orders or limit orders. They must place a market order to transact in shares of an open-end mutual fund.

Taxes are levied against open-end mutual fund investors as if they owned the diversified fund's holdings outright. If the underlying investment pays a dividend, then the investors must pay taxes on their proportional ownership interest in that dividend. The open-end fund may also buy and sell underlying investments and generate taxable short-term or long-term capital gains. These taxable events are also passed on to investors. Dividends and capital gains are distributed to investors typically toward the end of the calendar year, but they can be automatically reinvested in the fund to purchase more shares. Investors often choose reinvestment if they do not need the cash flow for current consumption.

The cost of investing is also a major consideration for any investment category. Open-end mutual funds have a management fee, an advertising surcharge (called a 12b-1 fee), and potentially a sales charge. The management fee covers the operational costs of the open-end mutual fund company, including the salaries of the management team. Management fees are typically around 1.0%, but they can be as high as 2.5–3.0% for international funds because they have increased complexity. The advertising surcharge is a stipend paid to the advisor who recommends the investment, and these fees can range from 0.0–1.0% with

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the most common fee being 0.25%. Sales charges are commonly called *loads*. A **front-end load** is a set percentage that is charged to the investor when the asset is originally sold. Alternatively, some funds choose to charge a sales charge if an investor leaves a fund within a certain window of time. This is called a **back-end load**. Figure 2 shows the average cost of ownership for an open-end mutual fund per year over a five-year holding period.

Figure 2: Average Total Cost of Ownership (% of Assets)

<i>Country</i>	<i>Bond Funds</i>	<i>Equity Funds</i>
Australia	0.75	1.41
Austria	1.55	2.37
Belgium	1.60	2.27
Canada	1.84	3.00
Denmark	1.91	2.62
Finland	1.76	2.77
France	1.57	2.31
Germany	1.48	2.29
Italy	1.56	2.58
Luxembourg	1.62	2.43
Netherlands	1.73	2.46
Norway	1.77	2.67
Spain	1.58	2.70
Sweden	1.67	2.47
Switzerland	1.61	2.40
United Kingdom	1.73	2.48
United States	1.05	1.53
<i>Average</i>	1.39	2.09

Source: Khorana, Servaes, and Tufano, "Mutual Fund Fees Around the World," *Review of Financial Studies* 22 (March 2009): 1279–1310.

Closed-End Mutual Funds

Closed-end mutual funds are a similar concept to open-end funds with a few notable differences. The first difference is that closed-end funds tend to invest in niche areas like specific emerging markets, while open-end mutual funds tend to invest in broader areas like a diversified emerging markets fund. Consider the difference between the China Fund (CHN), which is a closed-end fund that only invests in China, and the Vanguard Emerging Markets Index Fund (VEMAX), which is an open-end mutual fund with only 28.7% invested in China as of October 1, 2016.

The second difference is that a purchase of shares in an open-end mutual fund will increase the number of shares outstanding because new shares are created, but a closed-end fund's number of shares remains static. Investors who desire to purchase shares of a closed-end fund do not transact directly with the fund company but rather with other investors. Recall that investors who want to close their investment position in an open-end fund can simply redeem their shares from the fund company. This is where the fund gets the name "open-end."

The third difference is that closed-end fund investors cannot simply redeem their shares from the fund company. They must find another investor to buy their shares. This process is streamlined using a broker like Charles Schwab or Merrill Lynch.

The fourth difference is that, while open-end funds always transact at the next available NAV, a closed-end fund can transact at a price other than NAV. It is very common for a closed-end fund to trade at either a discount or a premium to its actual NAV. It then becomes important to know the historical norms for a closed-end fund's discount or premium before buying. For example, if a certain closed-end fund normally trades at a discount of 10% to its NAV but is now trading at a discount of only 3%, then it may still be overvalued and the investor would be wise to wait to make an investment.

Professor's Note: In terms of trading, a closed-end fund behaves much like an individual stock. Investors can trade closed-end funds throughout the trading day, which means they have better price visibility and can utilize stop orders and limit orders if they so choose.

Exchange-Traded Funds

Exchange-traded funds (ETFs) represent an innovative twist on the open-end mutual fund. They enable instant diversification like an open-end fund, but they are exchange-traded, which means they trade throughout the day on the open market just like a closed-end fund does. Because they trade throughout the day, investors can utilize stop orders, limit orders, and even short selling in some cases.

A few ETFs also have call options and put options available. Unlike a closed-end fund, ETFs typically trade at their NAV. The vast majority of ETFs are passively managed index funds, although some new actively managed ETFs are beginning to come to market. One of the most widely known ETFs is the SPDR S&P 500 Index Fund (SPY).

Exchange-traded funds must disclose their holdings twice each day, which enables investors to have tremendous visibility into their underlying investments. Open-end mutual funds, on the other hand, disclose their holdings very infrequently, perhaps as delayed as once per quarter.

Another big difference is the management fees. Exchange-traded funds often have a considerably lower internal expense ratio, which means less of a hurdle for the investment to rise above. Lower fees equal higher potential after-fee returns for investors.

Because open-end funds, closed-end funds, and exchange-traded funds all solicit investment from small retail customers, they are subject to significant regulatory oversight. They are all regulated by the Securities and Exchange Commission (SEC) and must register with the SEC and provide a very detailed disclosure document, called a prospectus, to all investors prior to investing. The SEC also enforces the prevention of conflicts of interest, fraud, and excessive fees. Regulatory oversight theoretically helps protect investors and causes increased costs for the funds as they hire compliance specialists to ensure that all regulations are being followed.

Topic 33

Cross Reference to GARP Assigned Reading – Hull, Chapter 4

NET ASSET VALUE**LO 33.2: Calculate the net asset value (NAV) of an open-end mutual fund.**

In order to calculate the net asset value (NAV), the fund needs to know the current value of all investment holdings (including cash positions), any liabilities like management fees payable, and the total number of shares outstanding. Calculation of the NAV is shown as follows:

$$\text{NAV} = \frac{\text{fund assets} - \text{fund liabilities}}{\text{total shares outstanding}}$$

Example: Computing NAV

Consider an open-end mutual fund that owns \$1.1 billion in equities, \$350 million in bonds, and \$35 million in cash. They owe \$1.85 million in management fees payable at this point in the quarter and they have 39.635 million shares outstanding. Calculate this fund's NAV.

Answer:

$$\$37.42 = \frac{(\$1,100 + \$350 + \$35) - 1.85}{39.635}$$

Investors who wish to buy or sell this fund will transact at exactly \$37.42 per share, which is not calculated until after the market closes on the trading day in question. If they wanted to invest \$25,000, then they would buy exactly 668.092 (= \$25,000 / \$37.42) shares after the market closes on the relevant trading day.

Recall that the NAV for an open-end mutual fund is only calculated after the close of trading on any given day, while the NAV for closed-end funds and exchange-traded funds is calculated continuously throughout the day.

HEDGE FUNDS VS. MUTUAL FUNDS**LO 33.3: Explain the key differences between hedge funds and mutual funds.**

Hedge funds and mutual funds share some common characteristics, but several nuances between them are very different. Both hedge funds and mutual funds offer professional management, instant diversification, and the ability to commingle funds with other investors. However, mutual funds are marketed to any and all investors, while hedge funds are restricted to only wealthy and sophisticated investors. Because of this, hedge funds

escape certain regulations that apply to mutual funds. Specifically, they do not need to provide the redemption of shares at any time the investor chooses, a daily calculated NAV, or the full disclosure of their investment policies and strategies. Hedge funds are also permitted to use leverage while mutual funds are not. Because hedge funds can use leverage and are also permitted to use both long and short investment strategies, they are considered to be an alternative investment class.



Professor's Note: The term "hedge fund" implies that the fund is hedging some form of risk. This may be the case if the fund is using both long and short positions, but not all hedge funds focus on risk reduction. Some, like distressed debt funds, actually focus on risk enhancement.

Hedge funds have become much more mainstream for institutional investors as of late. One attraction is that many hedge funds have registered in tax-favorable jurisdictions. For example, a little over 30% of all hedge funds are domiciled in the Cayman Islands. Institutional investors have been using hedge funds to invest in short-selling, convertible debt instruments, credit default swaps, distressed debt, non-investment grade bonds, and sometimes illiquid assets.

Since hedge funds are not required to redeem shares any time an investor requests, they have implemented advance notification requirements and lock-up periods for any withdrawal requests. The advance notification could mean that the investor must wait 90 days after requesting a withdrawal before they can expect to have access to their money. The lock-up period is a certain amount of time in which the investor is not able to withdraw his funds. This could be one year, two years, or some other customized time period. The advance notification time period and the lock-up period will be disclosed to investors before they invest. They exist for one key reason—many hedge fund investments are not very easy to unwind on short notice. Some hedge fund investments are illiquid, which means managers cannot sell them quickly and retain a proper value. In addition, some hedge fund investments are bets on certain asset mispricing, and those trades can take time to unwind.

HEDGE FUND EXPECTED RETURNS AND FEE STRUCTURES

LO 33.4: Calculate the return on a hedge fund investment and explain the incentive fee structure of a hedge fund including the terms hurdle rate, high-water mark, and clawback.

While mutual funds charge fees as a set percentage of assets under management (AUM), hedge funds deploy a more complex compensation structure centered around incentive fees. These incentive fees are engineered to give hedge fund managers significant payouts based on their performance. The typical hedge fund fee structure is known as “2 plus 20%,” which means that they charge a flat 2% of all assets that they manage plus an additional 20% of all profits above a specified benchmark. This compares to a typical American open-end equity mutual fund that charges roughly 1.5% and an exchange-traded fund that typically charges less than 0.5%. This fee differential can prove very lucrative for hedge fund managers. In 2015, the top 25 hedge funds earned in excess of \$12 billion dollars from incentive fees.

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Hedge funds do soften the incentive fee structure with a few safeguards for investors. The first safeguard is the **hurdle rate**, which is the benchmark that must be beaten before incentive fees can be charged. The hurdle rate could be zero (used for absolute return strategies), Treasuries plus a premium, LIBOR plus a premium, or some other custom benchmark. It is usually not the S&P 500 Index.

The second safeguard is a **high-water mark clause**, which essentially states that previous losses must first be recouped and hurdle rates surpassed before incentive fees once again apply. Consider a hedge fund that just began with \$100 million in assets from investors. Their hurdle rate is the 10-year Treasury, which is currently yielding 1.5%. In the first year of operation, this hedge fund made some bad decisions and ended up losing \$10 million (ending balance of \$90 million). This means that the managers get to charge the 2% flat fee, but no incentive fees apply. Incentive fees would only have applied to any profits earned above a 1.5% return, meaning that only an ending balance higher than \$101.5 million would have triggered the 20% incentive fee. In year two, this hedge fund would need to get its fund up above \$103 million (two years of beating Treasuries) in order for incentive fees to apply. In this case, the high-water mark for year one is \$101.5 million, and for year two it is \$103 million.

The third safeguard for investors is a **clawback clause**, which enables investors to retain a portion of previously paid incentive fees in an escrow account that is used to offset investment losses should they occur.

The incentive fee structure of a hedge fund certainly encourages hedge fund managers to reach for profits, but this comes at the expense of also encouraging them to take risks. A hedge fund manager essentially owns a call option against the assets of the hedge fund and payoff for options are higher if volatility is higher. Consider an example where a hedge fund manager is presented with an opportunity that offers a 40% probability of returning 50% and a 60% probability of losing 50%. The expected return of the fund can be calculated as follows:

$$(0.4 \times 50\%) + (0.6 \times -50\%) = -10\%$$

In this example, the hedge fund manager might be willing to take a big risk (60% probability) of losing money, which would end in him only collecting his 2% flat fee. The alternative is that if he were to end up making a huge return with the lower probability event, then he would potentially earn a substantial incentive fee. If this hedge fund generates a 50% profit, then he could potentially earn fees of 11.6% [= 2% (flat fee) + 0.20 × 48% (incentive fee on return above the 2% flat fee)]. The expected payoff for fees then becomes 5.84%:

$$(0.4 \times 11.6\%) + (0.6 \times 2\%) = 5.84\%$$

From the investor's perspective, the expected payoff is -15.84%:

$$[0.4 \times (50\% - 11.6\%)] + [0.6 \times (-50\% - 2\%)] = 0.1536 - 0.312 = -15.84\%$$

The expected return for the hedge fund is 5.84% and the expected return for the hedge fund investor is -15.84%. When these two numbers are added together, we arrive back at the original return of -10%. This shows the disproportionate payoff for the hedge fund manager. Why would investors be willing to make this investment? Clearly they are hoping that the incentive fees will motivate the hedge fund manager to do everything within their power to produce significant returns for both the investor and the hedge fund manager.

HEDGE FUND STRATEGIES

LO 33.5: Describe various hedge fund strategies, including long/short equity, dedicated short, distressed securities, merger arbitrage, convertible arbitrage, fixed income arbitrage, emerging markets, global macro, and managed futures, and identify the risks faced by hedge funds.

Hedge funds deploy numerous different strategies in their attempt to capture incentive fees. Not all hedge funds fall easily into a specific category, but the discussion in this section follows the classification system used by the Dow Jones, which provides indices to track various hedge fund strategies. Throughout this section, you will see the term **arbitrage**, which (in the hedge fund context) involves short selling an asset that is believed to be overvalued and buying an asset that is believed to be undervalued in an attempt to exploit a pricing differential.

Long/Short Equity

Long/short equity hedge funds endeavor to find mispriced securities. Managers of a long/short equity fund spend a great deal of time conducting fundamental analysis on stocks, that are largely ignored by most analysts, in an attempt to find mispricings. They will buy (go long) a stock that they believe to be undervalued, and they will short sell (go short) a stock that they believe to be overvalued. Sometimes funds can have a net long bias or a net short bias depending on what opportunities they see in the markets. Funds can also be sector neutral, where they net long and short positions that cancel out sector exposure. *Market neutral funds* are where long and short positions make the fund ambivalent to market direction, and *factor neutral funds* are where positions are isolated from a specific factor like oil or interest rate policy.

Dedicated Short

Dedicated short hedge funds are focused exclusively on finding a company that they think is overvalued and then short selling the stock. Traditionally, short sellers are looking for companies with weak financials, those that switch auditors frequently, those that delay SEC filings, those in industries with overcapacity, or those engaged in lawsuits that could go horribly wrong.

Distressed Securities

Bonds with a credit rating of BB or less are considered to be “junk” bonds, while those with a CCC rating are considered to be “distressed.” Distressed bonds usually trade at deep discounts to par value and often offer yields upwards of 10% greater than a comparable

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Treasury. Of course, an investment in a distressed bond could prove worthless if the wrong events happen. Distressed securities hedge funds are searching for distressed bonds with the potential to turn things around. Many of these distressed companies are in or close to being in bankruptcy proceedings. Some distressed bond investors passively wait for the investment to turn around, while others take an active approach to influencing the target company's reorganization. Distressed bond investors do their homework to figure out if they can gain an advantage by buying specific debt tranches. If they own more than one-third of any class of a bond, then they can block any reorganization plan that is not in their best interest. There is tremendous profit to be made in this area for investors who know what they are doing.

Merger Arbitrage

Merger arbitrage hedge funds try to find arbitrage opportunities after mergers are announced. These are primarily positive deals where the managers are planning on the deal going through. There are two different types of mergers: *cash deals* and *stock deals*.

Consider an all-cash deal where company A announces that it will buy company B at \$50 per share. Pre-announcement, company B was trading at \$37.50 and post-announcement company B will typically be trading somewhere near \$48. Why not at \$50, which is where the deal was announced? It could be because some market participants are slow to adjust to the new information, but it could also be that there is some cushion left in company B's price on the chance that the deal falls through. Either way, a merger arbitrage fund would buy the shares of company B and wait for the full \$50 (or better) price to be achieved.

Now consider an all-stock deal where company A offers one share of its stock for every four shares of company B's stock. This could be a realistic ratio if company B had a considerably lower market capitalization than company A. In this case, a merger arbitrage fund would buy a certain amount of company B's shares and, at the same time, they would short sell one-quarter of this number of shares in company A's stock. This is because the acquirer usually pays too much and their stock usually goes down after a merger. The merger arbitrage strategy is a very lucrative strategy, but there is also great potential for insider trading issues. The SEC will actively pursue insider trading violations, so these managers must make certain that they are only factoring public information into their decision-making process.

Convertible Arbitrage

Some hedge funds invest using convertible bonds, which are fixed-income instruments that can be converted into shares of stock if the stock price rises above a pre-specified value. If convertible bonds are not converted into shares of stock, then they simply retain their bond status and continue to offer interest payments and a certain principal repayment at maturity. This debt instrument conceptually merges a bond with a call option on the stock. Sometimes, if the convertible bond is also callable, the issuer will announce its intention to call the bond in order to force convertible bondholders to convert to stock. A conversion into stock will shift the investor from being a debtholder to an equity holder and will therefore reduce the debt burden of the issue without them actually repaying any debt. A convertible arbitrage hedge fund develops a sophisticated model to value convertible bonds that factors everything from default risk to interest rate risk. Sometimes they offset

investment risk by shorting the issuer's stock or by using more sophisticated assets like credit default swaps and interest rate swaps.

Fixed Income Arbitrage

Fixed income arbitrage hedge funds attempt to exploit perceived mispricings in the realm of fixed-income securities. Some hedge funds try to find arbitrage opportunities in estimating shifts in the Treasury yield curve. Others look for overvalued and undervalued positions with U.S. Treasuries, with other country's sovereign debt obligations, or with credit default swap rates. However, this strategy is risky business. Recall that Long-Term Capital Management (LTCM) realized 40% plus returns using this strategy in the 1990s only to have their trades move the wrong way and cause such panic in the broader markets that several Wall Street banks had to bail them out. The LTCM scenario turned from a profitable fixed income arbitrage opportunity to a significant systemic risk overnight. Some have compared fixed income arbitrage to picking up nickels in front of a steamroller.

Emerging Market

Emerging market hedge funds focus on investments in developing countries. These managers often expend great effort to research their investments by visiting potential investment targets, attending conferences, meeting with analysts, talking directly with management, and possibly hiring consultants with local knowledge. Some hedge funds choose to invest in developing country securities in their local market while others invest using *American depository receipts* (ADRs), which are certificates issued in America that provide ownership in foreign countries coupled with currency exposure. There are occasionally pricing discrepancies between the ADR and the underlying asset that an adept hedge fund manager can exploit as well. If managers decide to invest using emerging market debt, then they need to consider default risk because several countries have defaulted multiple times, including Russia, Argentina, Brazil, and Venezuela.

Global Macro

Several of the most financially successful hedge fund managers have made their fortunes with a global macro hedge fund strategy. In this strategy, hedge fund managers attempt to profit from a global macroeconomic trend that they feel is not in equilibrium (priced correctly and rationally). They will place very large dollar bets on the equilibrium being reestablished. Typically, the investment focus of global macro funds is either on foreign exchange rates or on interest rates. The biggest challenge for these funds is that there is no way to know for certain when a perceived deviation from equilibrium will be corrected. There is a saying that the markets can stay irrational (out of equilibrium) longer than most investors can stay solvent. In other words, a deviation from equilibrium could take a long time to correct itself and some hedge funds will not be able to wait out the trend.

Managed Futures

Managed futures hedge funds attempt to predict future movements in commodity prices based on either technical analysis or fundamental analysis. Technical analysis attempts to infer patterns from past price movements and use those patterns as a basis for predictions.

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When technical analysis is used, fund managers will backtest their trading rules using historical data. Fundamental analysis studies economic, political, and other relevant measurable factors to determine a valuation for the given commodity and then buy or short sell based on the outcome of this fundamental research.

HEDGE FUND PERFORMANCE AND MEASUREMENT BIAS

LO 33.6: Describe hedge fund performance and explain the effect of measurement biases on performance measurement.

Hedge fund performance is not as easy to assess as mutual fund performance, which is readily available and accurately reported by numerous independent parties. Participation in hedge fund indices is voluntary. If the fund had good performance, then they will report their results to the index vendor. If they did not have good results, then they simply do not report their results to the index. In the Barclay's Hedge Fund Index, the data for August 2016 had 2,914 funds reporting information, while September 2016 only had 617. This is known as the **measurement bias** of hedge fund index reporting. When returns are reported by a hedge fund, the database is then backfilled with the fund's previous returns. This is known as **backfill bias** and it creates an issue with reliability for hedge fund benchmarks. It is very common for a hedge fund to have a string of several good years and then have a meltdown. LTCM, for example, reported returns (before fees) of 28%, 59%, 57%, and 17% in 1994, 1995, 1996, and 1997, respectively. However, in 1998, the fund lost virtually everything.

Prior to 2008, most hedge funds performed very well. However, after the financial crisis of 2007–2009, hedge funds have underperformed relative to the S&P 500. Figure 3 shows historical performance for the Barclay's Hedge Fund Index from 2006–2015 relative to the S&P 500 Index.

Figure 3: Hedge Fund Historical Performance

	<i>Barclay's Hedge Fund Index</i>	<i>S&P 500 Index</i>
2006	12.39%	15.61%
2007	10.22%	5.48%
2008	-21.63%	-36.55%
2009	23.74%	25.94%
2010	10.88%	14.82%
2011	-5.48%	2.10%
2012	8.25%	15.89%
2013	11.12%	32.15%
2014	2.88%	13.52%
2015	0.04%	1.36%

Source: Barclay¹ and the Stern School of Business at NYU²

1. http://www.barclayhedge.com/research/indices/ghs/Hedge_Fund_Index.html.

2. http://pages.stern.nyu.edu/~admodar/New_Home_Page/datafile/histretSP.html.

In Figure 3, we see that hedge funds outperformed the S&P 500 in two out of ten years from 2006–2015. One of the years of outperformance was during a significant negative year for the S&P 500 Index. This is one reason why hedge funds remain attractive diversifiers for pension funds and other interested investors. Protection during periods of stock market volatility is one hallmark of hedge funds as they actively pursue short selling when traditional mutual funds are not allowed to do so.

KEY CONCEPTS

LO 33.1

There are three primary types of commingled pools of investments that are available to investors. They are open-end mutual funds, closed-end mutual funds, and exchange-traded funds (ETFs). Open-end funds transact at the next available net asset value (NAV), which occurs after the market has closed for the day. Shares may be redeemed directly from the fund company with an open-end fund. Closed-end funds transact throughout the trading day, but shares cannot be redeemed at the fund company and their price may differ substantially from their NAV—the shares must be bought or sold by other investors. Exchange-traded funds also trade throughout the day, but their shares do trade at the NAV. ETFs usually have the lowest internal fees, which is a big component of investment returns.

LO 33.2

The NAV is easily calculated as the total invested assets of the fund minus any liabilities (typically management fees payable) all divided by the total shares outstanding. The NAV for an open-end fund is set after the trading day is over, while the NAV for a closed-end fund and an exchange-traded fund is calculated continuously throughout the trading day. The NAV is used to determine the number of shares purchased or sold in a fund.

LO 33.3

Both mutual funds and hedge funds offer professional management, instant diversification, and the ability to commingle funds with other investors. However, there are some notable differences between mutual funds and hedge funds. Hedge funds are only marketed to wealthy and sophisticated investors. Because of this, hedge funds escape certain regulatory oversight, which enables them to avoid allowing investors to redeem shares at any time they want, calculating the NAV daily, and disclosing investment policies and strategies. They are also permitted to use leverage and short selling, which are commonly not permitted for mutual funds. In addition, hedge funds use lock-up periods to prevent investor withdrawals at the wrong time for the fund.

LO 33.4

Hedge funds commonly deploy a 2% and 20% incentive fee structure, where they earn management fees for investment results relative to a given hurdle rate. Investors are partially protected with the use of high-water marks and clawback clauses.

LO 33.5

There are many different types of hedge fund strategies. They all search for perceived mispricings in different corners of the markets and then try to exploit them for profit.

Long/short equity funds take both long and short positions in the equity markets, diversifying or hedging across sectors, regions, or market capitalizations, and have directional exposure to the overall market.

Dedicated short funds tend to take net short positions in equities, and their returns are negatively correlated with equities.

Distressed hedge funds invest across the capital structure of firms that are under financial or operational distress or are in the middle of bankruptcy. These hedge fund managers try to profit from an issuer's ability to improve its operation or come out of a bankruptcy successfully.

Merger arbitrage funds bet on spreads related to proposed merger and acquisition transactions.

Convertible arbitrage funds attempt to profit from the purchase of convertible securities and the shorting of corresponding stock.

Fixed income arbitrage funds try to obtain profits by exploiting inefficiencies and price anomalies between related fixed income securities.

Emerging market funds invest in currencies, debt, equities, and other instruments in countries with emerging or developing markets.

Global macro managers make large bets on directional movements in interest rates, exchange rates, commodities, and stock indices and do better during extreme moves in the currency markets.

Managed futures funds attempt to predict future movements in commodity prices based on either technical analysis or fundamental analysis.

LO 33.6

Hedge fund benchmarks are problematic due to measurement bias and backfill bias. Over the last ten years, reported hedge fund performance suggests that they have only beaten the S&P 500 Index in two of those years.

CONCEPT CHECKERS

1. Which of the following statements is not correct regarding investment funds available to all investors?
 - A. Open-end mutual funds always transact at the next available net asset value.
 - B. Stop orders can be used on closed-end funds.
 - C. Open-end mutual funds can be purchased with a limit order.
 - D. Short selling is available for some exchange-traded funds.

2. Which of the follow characteristics is a key differentiator between mutual funds and hedge funds?
 - A. Professional asset management.
 - B. Immediate access to withdrawals from the fund.
 - C. Charging a fee for providing investment services.
 - D. Easy diversification for an investor.

3. What is the expected return to a hedge fund if the fund uses a standard 2 and 20 incentive fee structure with an investment that has a 35% probability of making 55% and a 65% probability of losing 45%?
 - A. 5.71%.
 - B. 6.12%.
 - C. 3.78%.
 - D. 5.28%.

4. Which type of hedge fund focuses on isolating mispricings in foreign exchange markets?
 - A. Fixed income arbitrage hedge funds.
 - B. Global macro hedge funds.
 - C. Managed futures hedge funds.
 - D. Convertible arbitrage hedge funds.

5. Which of the following statements is/are most accurate regarding hedge fund performance reporting?
 - I. When a hedge fund's performance is recorded in an index, all of its prior results are also included.
 - II. Hedge funds are permitted to self-select if their performance is reported in index averages.
 - A. I only.
 - B. II only.
 - C. Both I and II.
 - D. Neither I nor II.

CONCEPT CHECKER ANSWERS

1. C Open-end mutual funds have very low price transparency because they trade at the next available NAV, which is not calculated until after the market closes. As such, they can only be bought or sold using a market order. Closed-end funds can be bought or sold using stop orders and limit orders. In some cases, ETFs can be sold short.
2. B Mutual funds must offer immediate access to withdrawals from their fund. This is an SEC requirement. Hedge funds have advance notification and lock-up periods, which prevent immediate access to withdrawals from the fund.
3. A The hedge fund could potentially earn fees of 12.6% [2% (flat fee) + 0.20 × 53% (incentive fee on return above the 2% flat fee)]. The expected payoff for fees then becomes 5.71% computed as follows:

$$(0.35 \times 12.6\%) + (0.65 \times 2\%) = 5.71\%$$

4. B Global macro funds focus on finding mispricings at the level of the global macro economy. They materialize in foreign exchange pricing and interest rates. Fixed income arbitrage funds focus on various mispricings with fixed-income securities. Managed futures funds focus on forecasting commodity prices. Convertible arbitrage funds focus on valuing convertible bonds.
5. C Statement I describes backfill bias and Statement II describes measurement bias. Backfill bias arises when the database is backfilled with the fund's previous returns. Measurement bias indicates that not all hedge funds report their performance to index providers.

The following is a review of the Financial Markets and Products principles designed to address the learning objectives set forth by GARP®. This topic is also covered in:

INTRODUCTION (OPTIONS, FUTURES, AND OTHER DERIVATIVES)

Topic 34

EXAM FOCUS

In this topic, we present the basic concepts of derivative securities and derivative markets. For the exam, know the basic derivative terms as well as the terms related to derivative markets. Also, be able to compute payoffs for the different derivative securities. Finally, be able to create a hedge and know how to take advantage of an arbitrage situation.

DERIVATIVE MARKETS

An **open outcry system** and **electronic trading system** are different forms of trading securities (matching buyers with sellers). The open outcry system (e.g., CBOT) is the more traditional system, which involves traders actually indicating their trades through hand signals and shouting. Electronic trading does not involve an actual “physical” exchange location, but rather involves matching buyers and sellers electronically via computers (e.g., NASDAQ).

LO 34.1: Describe the over-the-counter market, distinguish it from trading on an exchange, and evaluate its advantages and disadvantages.

An **over-the-counter (OTC) market** differs from a traditional exchange. It is a customized trading market which utilizes telephone and computers to make trades. This market typically involves much larger trades than traditional exchanges. The most typical OTC trade is conducted over the phone. Since terms are not specified by an “exchange,” participants have more flexibility to negotiate the most mutually agreeable or attractive trade.

The OTC market is several times the size of the traditional exchange market. For example, in 2007, the OTC market was over \$500 trillion, while the exchange-traded market was under \$100 trillion.

Advantages of over-the-counter trading:

- Terms are not set by any exchange.
- Participants have flexibility to negotiate.
- In the event of a misunderstanding, calls are recorded.

Disadvantages of over-the-counter trading:

- OTC trading has more credit risk than exchange trading. Exchanges are organized in such a way that credit risk is eliminated.

BASICS OF DERIVATIVE SECURITIES

LO 34.2: Differentiate between options, forwards, and futures contracts.

An **option contract** is a contract that, in exchange for the option price, gives the option buyer the right, but not the obligation, to buy (sell) an asset at the exercise price from (to) the option seller within a specified time period, or depending on the type of option, a precise date (i.e., expiration date). A call option gives the option holder the right to purchase the underlying asset by a certain specified date for a specified (in advance) price. A put option gives the option holder the right to sell the underlying asset by a selected date for a pre-selected price.

A **forward contract** is a contract that specifies the price and quantity of an asset to be delivered sometime in the future. There is no standardization for forward contracts, and these contracts are traded in the over-the-counter market. One party takes the long position, agreeing to purchase the underlying asset at a future date for a specified price, while the other party is the short, agreeing to sell the asset on that same date for that same price. Forward contracts are often used in foreign exchange situations as these contracts can be used to hedge foreign currency risk.

A **futures contract** is a more formalized, legally binding agreement to buy/sell a commodity/financial instrument in a pre-designated month in the future, at a price agreed upon today by the buyer/seller. Futures contracts are highly standardized regarding quality, quantity, delivery time, and location for each specific commodity. These contracts are typically traded on an exchange.



Professor's Note: Remember that a futures contract is an obligation/promise to actually complete a transaction, while an option is simply the right to buy/sell.

LO 34.3: Identify and calculate option and forward contract payoffs.

Call Option Payoff

The payoff on a **call option** to the option buyer is calculated as follows:

$$C_T = \max (0, S_T - X)$$

where:

C_T = payoff on call option

S_T = stock price at maturity

X = strike price of option

The payoff to the option seller is $-C_T$ [i.e., $-\max (0, S_T - X)$]. We should note that $\max (0, S_t - X)$, where time, t , is between 0 and T, is also the payoff if the owner decides to exercise the call option early (in the case of an American option as we will discuss later).

The price paid for the call option, C_0 , is referred to as the **call premium**. Thus, the profit to the option buyer is calculated as follows:

$$\text{profit} = C_T - C_0$$

where:

C_T = payoff on call option

C_0 = call premium

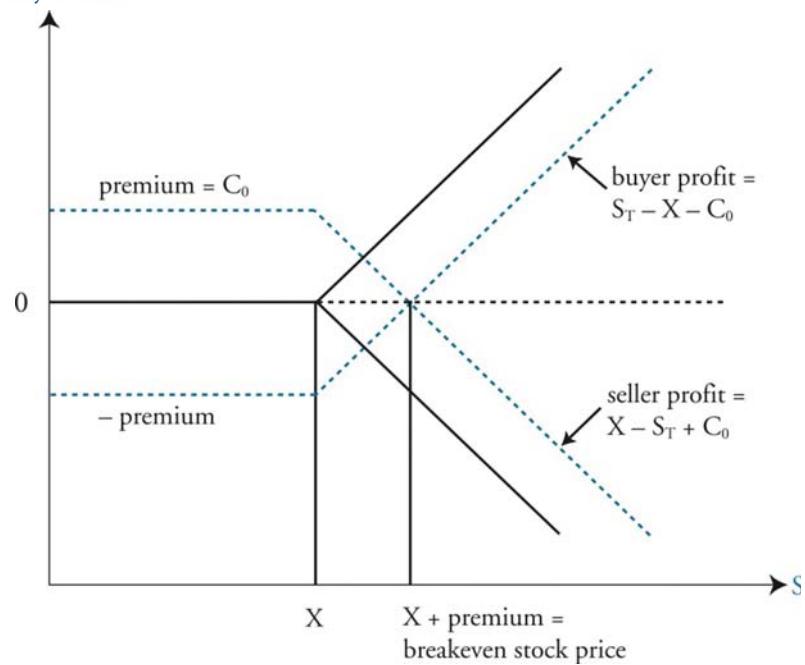
Conversely, the profit to the option seller is:

$$\text{profit} = C_0 - C_T$$

Figure 1 depicts the payoff and profit for the buyer and seller of a call option.

Figure 1: Profit Diagram for a Call at Expiration

Call Payoff/Profit



Put Option Payoff

The payoff on a **put option** is calculated as follows:

$$P_T = \max (0, X - S_T)$$

where:

P_T = payoff on put option

S_T = stock price at maturity

X = strike price of option

The payoff to the option seller is $-P_T$ [i.e., $-\max (0, X - S_T)$]. We should note that $\max (0, X - S_t)$, where $0 < t < T$, is also the payoff if the owner decides to exercise the put option early.

The price paid for the put option, P_0 , is referred to as the **put premium**. Thus, the profit to the option buyer is calculated as follows:

$$\text{profit} = P_T - P_0$$

where:

P_T = payoff on put option

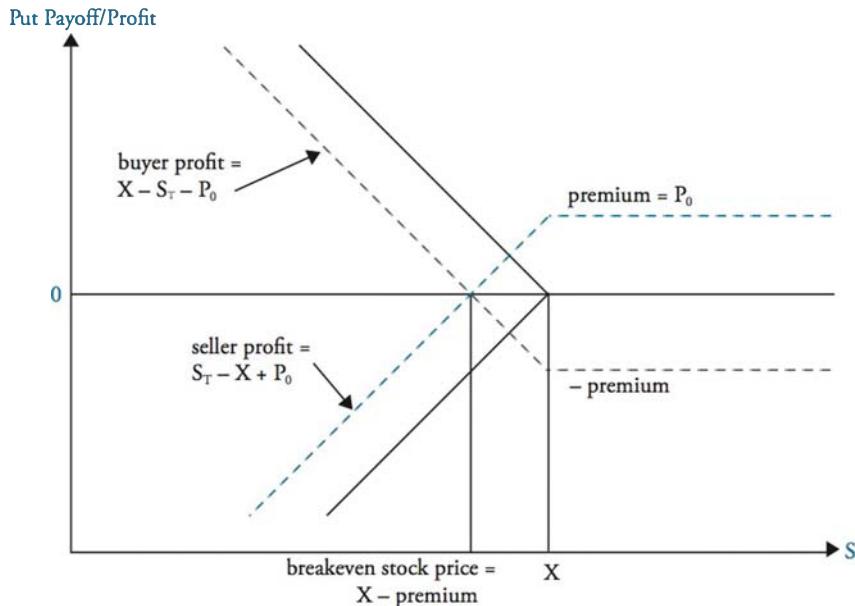
P_0 = put premium

The profit to the option seller is:

$$\text{profit} = P_0 - P_T$$

Figure 2 depicts the payoff and profit for the buyer and writer of a put option.

Figure 2: Profit Diagram for a Put at Expiration



Example: Calculating profit and payoffs from options

Compute the payoff and profit to a call buyer, a call writer, put buyer, and put writer if the strike price for both the put and the call is \$45, the stock price is \$50, the call premium is \$3.50, and the put premium is \$2.50.

Answer:**Call buyer:**

$$\text{payoff} = C_T = \max(0, S_T - X) = \max(0, \$50 - \$45) = \$5$$

$$\text{profit} = C_T - C_0 = \$5 - \$3.50 = \$1.50$$

Call writer:

$$\text{payoff} = -C_T = -\max(0, S_T - X) = -\max(0, \$50 - \$45) = -\$5$$

$$\text{profit} = C_0 - C_T = \$3.50 - \$5 = -\$1.50$$

Put buyer:

$$\text{payoff} = P_T = \max(0, X - S_T) = \max(0, \$45 - \$50) = \$0$$

$$\text{profit} = P_T - P_0 = \$0 - \$2.50 = -\$2.50$$

Put writer:

$$\text{payoff} = -P_T = -\max(0, X - S_T) = -\max(0, \$45 - \$50) = \$0$$

$$\text{profit} = P_0 - P_T = \$2.50 - \$0 = \$2.50$$

Forward Contract Payoff

The payoff to a long position in a forward contract is calculated as follows:

$$\text{payoff} = S_T - K$$

where:

S_T = spot price at maturity

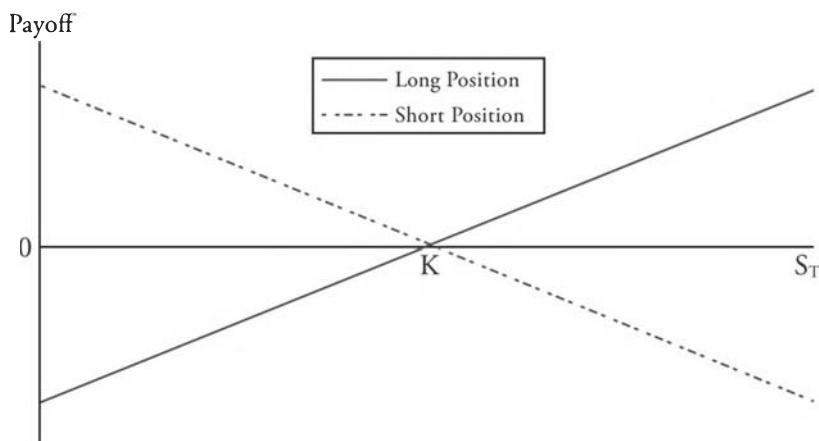
K = delivery price

Conversely, the payoff to a short position in a forward contract is calculated as follows:

$$\text{payoff} = K - S_T$$

Figure 3 depicts the payoff for the long and short positions in a forward contract.

Figure 3: Forward Contract Payoff



Example: Calculating forward contract payoffs

Compute the payoff to the long and short positions in a forward contract given that the forward price is \$25 and the spot price at maturity is \$30.

Answer:

Payoff to long position:

$$\text{payoff} = S_T - K = \$30 - \$25 = \$5$$

Payoff to short position:

$$\text{payoff} = K - S_T = \$25 - \$30 = -\$5$$

HEDGING STRATEGIES

LO 34.4: Calculate and compare the payoffs from hedging strategies involving forward contracts and options.

Hedgers use forward contracts and options to reduce or eliminate financial exposure. An investor or business with a long exposure to an asset can hedge exposure by either entering into a short futures contract or by buying a put option. An investor or business with a short exposure to an asset can hedge exposure by either entering into a long futures contract or by buying a call option.

Hedgers use forward contracts to lock in the price of the underlying security. Forward contracts do not require an initial investment, but hedgers give up any price movement that may have had positive results in the event that the position was left unhedged. Option contracts on the other hand function as insurance for the underlying by providing the downside protection that the hedger seeks and allowing for price movement in the direction that could yield positive results. This insurance does not come without a cost, as we described earlier, since hedgers are required to pay a premium to purchase options.

Example: Hedging with a forward contract

Suppose that a company based in the United States will receive a payment of €10M in three months. The company is worried that the euro will depreciate and is contemplating using a forward contract to hedge this risk. Compute the following:

1. The value of the €10M in U.S. dollars at maturity given that the company hedges the exchange rate risk with a forward contract at 1.25 \$/€.
2. The value of the €10M in U.S. dollars at maturity given that the company did not hedge the exchange rate risk and the spot rate at maturity is 1.2 \$/€.

Answer:

1. The value at maturity for the hedged position is:
 $\text{€}10,000,000 \times 1.25 \text{ $/€} = \$12,500,000$
2. The value at maturity for the unhedged position is:
 $\text{€}10,000,000 \times 1.2 \text{ $/€} = \$12,000,000$

Example: Hedging with a put option

Suppose that an investor owns one share of ABC stock currently priced at \$30. The investor is worried about the possibility of a drop in share price over the next three months and is contemplating purchasing put options to hedge this risk. Compute the following:

1. The profit on the unhedged position if the stock price in three months is \$25.
2. The profit on the unhedged position if the stock price in three months is \$35.
3. The profit for a hedged stock position if the stock price in three months is \$25, the strike price on the put is \$30, and the put premium is \$1.50.
4. The profit for a hedged stock position if the stock price in three months is \$35, the strike price on the put is \$30, and the put premium is \$1.50.

Answer:

1. Profit = $S_T - S_0 = \$25 - \$30 = -\$5$
2. Profit = $S_T - S_0 = \$35 - \$30 = \$5$
3. Profit = $S_T - S_0 + \max(0, X - S_T) - P_0$
 $= \$25 - \$30 + \max(0, \$30 - \$25) - \$1.50 = -\1.50
4. Profit = $S_T - S_0 + \max(0, X - S_T) - P_0$
 $= \$35 - \$30 + \max(0, \$30 - \$35) - \$1.50 = \3.50



Professor's Note: Notice that the max term is \$5 in Case #3 and \$0 in Case #4.

SPECULATIVE STRATEGIES

LO 34.5: Calculate and compare the payoffs from speculative strategies involving futures and options.

Speculators have a different motivation for using derivatives than hedgers. They use derivatives to make bets on the market, while hedgers try to eliminate exposures.

The motivation for using futures in speculation is that the limited amount of initial investment creates significant **leverage**. The amount of investment required for futures is the amount of the initial margin required by the exchange. This is generally a small percentage of the notional value of the underlying, and Treasury securities can typically be posted as margin. Futures contracts can result in large gains or large losses, and contract payoffs are symmetrical.

Options also create significant leverage as investors only need to pay the option premium to purchase an option instead of the face value of the underlying. Options differ from futures in that options have asymmetrical payoffs. Gains can be quite large going long options, but losses from long option positions are limited to the option premium.

Example: Speculating with futures

An investor believes that the euro will strengthen against the dollar over the next three months and would like to take a position with a value of €250,000. He could purchase euros in the spot market at 0.80 \$/€ or purchase two futures contracts at 0.83 \$/€ with an initial margin of \$10,000. Compute the profit from the following:

1. Purchasing euros in the spot market if the spot rate in three months is 0.85 \$/€.
2. Purchasing euros in the spot market if the spot rate in three months is 0.75 \$/€.
3. Purchasing the futures contract if the spot rate in three months is 0.85 \$/€.
4. Purchasing the futures contract if the spot rate in three months is 0.75 \$/€.

Answer:

1. Profit = €250,000 × (0.85 \$/€ – 0.80 \$/€) = \$12,500
2. Profit = €250,000 × (0.75 \$/€ – 0.80 \$/€) = -\$12,500
3. Profit = €250,000 × (0.85 \$/€ – 0.83 \$/€) = \$5,000
4. Profit = €250,000 × (0.75 \$/€ – 0.83 \$/€) = -\$20,000

A summary of these four transactions is as follows:

	<i>Purchase Euros in Spot Market</i>	<i>Purchase Long Forward Position</i>
Investment	\$200,000	\$10,000
Profit if spot at maturity = 0.85 \$/€	\$12,500	\$5,000
Profit if spot at maturity = 0.75 \$/€	-\$12,500	-\$20,000

Example: Speculating with options

An investor who has \$30,000 to invest believes that the price of stock XYZ will increase over the next three months. The current price of the stock is \$30. The investor could directly invest in the stock, or she could purchase 3-month call options with a strike price of \$35 for \$3. Compute the profit from the following:

1. Investing directly in the stock if the price of the stock is \$45 in three months.
2. Investing directly in the stock if the price of the stock is \$25 in three months.
3. Purchasing call options if the price of the stock is \$45 in three months.
4. Purchasing call options if the price of the stock is \$25 in three months.

Answer:

1. Number of stocks to purchase = $\$30,000 / \$30 = 1,000$
Profit = $1,000 \times (\$45 - \$30) = \$15,000$
2. Profit = $1,000 \times (\$25 - \$30) = -\$5,000$
3. Number of call options to purchase = $\$30,000 / \$3 = 10,000$
Profit = $10,000 \times [\max(0, \$45 - \$35) - \$3] = \$70,000$
4. Profit = $10,000 \times [\max(0, \$25 - \$35) - \$3] = -\$30,000$



Professor's Note: Since option contracts are traded in amounts of 100 options, the transactions in #3 and #4 above would entail the purchase of 100 call option contracts (i.e., $10,000 / 100 = 100$).

A summary of these four transactions is as follows:

	Purchase Stock	Purchase Call Option
# Shares/Call option	1,000	10,000
Profit if stock at maturity = \$45	\$15,000	\$70,000
Profit if spot at maturity = \$25	-\$5,000	-\$30,000

ARBITRAGE OPPORTUNITIES

LO 34.6: Calculate an arbitrage payoff and describe how arbitrage opportunities are temporary.

Arbitrageurs are also frequent users of derivatives. Arbitrageurs seek to earn a risk-free profit in excess of the risk-free rate through the discovery and manipulation of mispriced securities. They earn a riskless profit by entering into equivalent offsetting positions in one or more markets. Arbitrage opportunities typically do not last long as supply and demand forces will adjust prices to quickly eliminate the arbitrage situation.

Example: Arbitrage of stock trading on two exchanges

Assume stock DEF trades on the New York Stock Exchange (NYSE) and the Tokyo Stock Exchange (TSE). The stock currently trades on the NYSE for \$32 and on the TSE for ¥2,880. Given the current exchange rate is 0.0105 \$/¥, determine if an arbitrage profit is possible.

Answer:

Value in dollars of DEF on TSE = $\text{¥}2,880 \times 0.0105 \text{ $/¥} = \$30.24$

Arbitrageur could purchase DEF on TSE for \$30.24 and sell on NYSE for \$32.

Profit per share = $\$32 - \$30.24 = \$1.76$

RISK FROM DERIVATIVES

LO 34.7: Describe some of the risks that can arise from the use of derivatives.

Derivatives are versatile and can be used for hedging, arbitrage, and pure speculation. If, however, the “bet” one makes starts going in the wrong direction, the results can be catastrophic. Additionally, the risk exists that a trader with instructions to hedge a position may actually use derivatives to speculate. This risk is known as operational risk. Controls need to be carefully established and monitored within both financial and nonfinancial corporations to prevent misuse of derivatives. Risk limits should be set, and adherence to risk limits should be monitored.

COMMON TERMS RELATED TO DERIVATIVES

The following section discusses common terms associated with derivatives. Many of these terms have been mentioned earlier. Understanding these concepts will be helpful going forward as you progress through the derivatives material.

A **derivative security** is a financial security (e.g., options) whose value is derived in part from another security's characteristics or value. This other security is referred to as the underlying asset. A derivative effectively "derives" its price from some other variable.

A **market maker** is the individual that "makes a market" in a security. The market maker maintains bid and offer prices in a given security and stands ready to buy or sell lots of said security, at publicly quoted prices.

A **spot contract** is an agreement to buy/sell an asset *today*. A **forward contract** specifies the price/quantity of an asset to be delivered on or before a future pre-specified date. A **futures contract** is a legally binding agreement to buy/sell a commodity or financial instrument in a designated future month at a previously agreed upon price by the buyer/seller.

A **call option** gives its holder the right to buy a specified number of shares of the underlying security at the given strike price, on or before the option contract's expiration date. A **put option** gives the investor the right to sell a fixed number of shares at a fixed price within a given pre-specified time period. An investor may wish to have the option to sell shares of a stock at a certain price and time in order to hedge an existing investment.

An American-styled option contract can be exercised any time between issue date and expiration date. In contrast, a European-styled option contract may be exercised only on the actual expiration date. **American options** will be worth more than **European options** when the right to early exercise is valuable, and they will have equal value when it is not.

A **long position** refers to actually owning the security, while a **short position** is when a person sells a security he does not own. An investor taking a short position anticipates a drop in price of the security.

The **exercise, or strike price**, is the price at which the security underlying an options contract may be bought/sold.

Expiration date is the last date on which an option may be exercised.

The **bid price** is the "quoted bid," or the highest price, which a dealer is willing to pay to purchase a security. This is essentially the available price at which an investor can sell shares of stock. The **offer price** is the price at which the security is offered for sale, also known as the "asking price." The **bid-ask spread** is the difference between the ask (a.k.a. offer) price and the bid price.

Hedgers reduce their risks typically through the use of forward contracts or options. By using forward contracts, the trader is attempting to neutralize risk by fixing the price the hedger will pay/receive for the underlying asset. Option contracts, in contrast, are more of an insurance policy.

Speculators want to take a position in the market and profit from this position. Speculators are effectively betting on future price movement. When a speculator uses futures, there is a large possible gain/loss. Speculating using options is less risky since the maximum loss is the cost of the option itself.

Arbitrageurs take offsetting positions in financial instruments in order to lock in a riskless profit.

KEY CONCEPTS

LO 34.1

The over-the-counter (OTC) market is used for large trades, and a typical OTC trade is conducted over the phone. Terms are not set by an “exchange,” giving traders more flexibility to negotiate mutually agreeable terms. The OTC market has more credit risk. Exchanges are organized to eliminate credit risk.

LO 34.2

A call option gives its holder the right to buy a specified number of shares of the underlying security at the given strike price, on or before the option contract's expiration date, while a put option is the right to sell a fixed number of shares at a fixed price within a given pre-specified time period.

A forward contract is an agreement to buy or sell an asset at a pre-selected future time for a certain price.

A futures contract is a more formalized, legally binding agreement to buy or sell a commodity or financial asset in a pre-designated month in the future, at a price agreed upon today by the buyer/seller.

LO 34.3

The payoff on a call option to the option buyer is calculated as follows:

$$\text{Call}_T = \max (0, S_T - X)$$

where:

S_T = stock price at maturity

X = strike price of option

The payoff on a put option is calculated as follows:

$$\text{Put}_T = \max (0, X - S_T)$$

where:

S_T = stock price at maturity

X = strike price of option

The payoff to a long position in a forward contract is calculated as follows:

$$\text{payoff} = S_T - K$$

where:

S_T = spot price at maturity

K = delivery price

LO 34.4

Hedgers use derivatives to control or eliminate a financial exposure. Futures lock in the price of the underlying security and do not allow for any upside potential. Options hedge negative price movements and allow for upside potential since they have asymmetric payouts.

LO 34.5

Speculators use derivatives to make bets on the market. Futures require a small initial investment, which is the initial margin requirement. Futures contracts can result in large gains or large losses as futures have a symmetrical payout function.

LO 34.6

Arbitrageurs seek to earn a riskless profit through the discovery and manipulation of mispriced securities. Riskless profit is earned by entering into equivalent offsetting positions in one or more markets. Arbitrage opportunities do not last long as the act of arbitrage brings prices back into equilibrium quickly.

LO 34.7

Derivatives are versatile instruments and can be used for hedging, arbitrage, and pure speculation. Controls need to be carefully established to prevent misuse of derivatives. Risk limits must be carefully established and scrupulously enforced.

CONCEPT CHECKERS

1. Which of the following statements is an advantage of an exchange trading system?
On an exchange system:
 - A. terms are not specified.
 - B. trades are made in such a way as to reduce credit risk.
 - C. participants have flexibility to negotiate.
 - D. in the event of a misunderstanding, calls are recorded between parties.

2. Which of the following statements regarding futures contracts is most likely correct?
A business with a long exposure to an asset would hedge this exposure by either entering into a:
 - A. long futures contract or by buying a call option.
 - B. long futures contract or by buying a put option.
 - C. short futures contract or by buying a call option.
 - D. short futures contract or by buying a put option.

3. Which of the following statements is least likely correct regarding the use of derivatives?
 - A. Misuse of derivatives is not a very significant risk.
 - B. Risk limits for derivatives should be set, and adherence to these limits should be monitored.
 - C. Due to leverage inherent in derivatives, if a bet goes wrong, results can be catastrophic.
 - D. There is a risk that traders may use derivatives for unintended purposes.

4. An individual that maintains bid and offer prices in a given security and stands ready to buy or sell lots of said security is a(n):
 - A. hedger.
 - B. arbitrageur.
 - C. speculator.
 - D. market maker.

5. An agreement sold over an exchange to buy/sell a commodity or financial instrument at a designated future date is known as a(n):
 - A. spot contract.
 - B. option contract.
 - C. futures contract.
 - D. forward contract.

CONCEPT CHECKER ANSWERS

1. B Exchanges are organized to reduce credit risk. The other answer choices are advantages of over-the-counter trading.
2. D A business with a long exposure to an asset would hedge the exposure by either entering into a short futures contract or by buying a put option.
3. A Misuse of derivatives can be a significant risk for firms that engage in derivatives trading.
4. D A market maker maintains bid and offer prices in a security and stands ready to buy or sell lots of the given security.
5. C A futures contract is an agreement sold on an exchange to buy/sell a commodity or financial instrument in a designated future month.