CHAPTER 3

Index, Interest Rate, and Currency Options

INTRODUCTION

In an effort to gauge the market's overall performance, industry participants developed indexes. Two of the most widely followed indexes are the Dow Jones Industrial Average and the Standard and Poor's (S&P) 500. There are two types of indexes: broad-based indexes, such as the S&P 500 (SPX) or S&P 100 (OEX) that track a large number of stocks, and narrow-based indexes, such as the semiconductor index (SOX) that track only a particular industry. The following table details some of the more popular indexes an investor can trade options on:

Broad-Based Indexes	Narrow-Based Indexes
S&P 500/SPX	Semiconductor index/SOX
S&P 100/OEX	Oil index/OIX
Dow Jones Industrials/DJX	Pharmaceutical index/DRG
Nasdaq 100/NDX	Computer technology/XCT

INDEX OPTION SETTLEMENT

Investors who want to take a position in index options will purchase calls and puts just like investors in stock options. However, an index is not a security and cannot be physically delivered if the option is exercised. An investor cannot

call the index away from someone who is short a call and cannot put an index to an investor who is short a put. As a result, the exercise of index options will be settled in cash. An option holder who elects to exercise the option will have their account credited the in-the-money amount in cash. The amount that will be credited to their account will be the in-the-money amount at the close of the market on the day of exercise. The exercise of an index option settles between broker dealers on T + 1 and customer accounts will be credited or debited accordingly. To determine the option's premium and the amount of money to be delivered upon exercise index options, use 100 as a multiplier.

EXAMPLE

An investor establishes the following position:

Long 1 OEX March 550 call at $4

The investor has purchased an S&P 100 (OEX) 550 call for $4. The contract value is 55,000 and the total premium paid by the investor is $400. The investor is bullish on the overall market and believes the market will rise and the OEX will be higher than 550 by expiration.

If at expiration, the index is at 556.20, the investor will have their account credited the in the money amount as follows:

556.20
–550.00
6.20
× 100
$620.00

The investor's account will be credited $620. Because the investor paid $400 for the option, their profit is $220.

EXERCISING AN INDEX OPTION

It is usually not wise to exercise an index option prior to its expiration because the investor would lose any amount of time value contained in the options premium. Additionally, if the investor exercises their option at 10:00 AM, the investor will receive the in-the-money amount as of the close of the market that day. It is quite possible for an investor to exercise their in-the-money option at 10:00 AM and have the option be out-of-the money at the close of business because the market moved against them. In both scenarios, it is better to sell the option.

INDEX OPTION POSITIONS

An investor may establish all of the following positions using index options:

- Long calls and puts
- Short calls and puts
- Long spreads and straddles
- Short spreads and straddles
- Long and short combinations

Index options also may be used to:

- Speculate on the direction of the market.
- Protect a long portfolio by purchasing puts or selling calls.
- Protect a short portfolio by purchasing calls or selling puts.

CAPPED INDEX OPTIONS

A capped index option trades like a spread and will automatically be exercised if the underlying index closes above the capped price. Capped index options have a 30-point cap and look as follows:

Buy 1 OEX June 550 call

Sell 1 OEX June 580 call

If the OEX index closed above 580 at any point during the life of the option, both options will be exercised and credited the in-the-money amount. In the previous example, 580 would be known as the capped price. An investor also can trade capped put options in a similar manner. A capped put option would look as follows:

Buy 1 OEX May 600 put

Sell 1 OEX May 570 put

In this case, the capped option would automatically be exercised if the OEX closed below 570 at any point during the life of the option. With a capped put option, the lower strike price is known as the capped price.

INTEREST RATE OPTIONS

Investors can use interest rate options to speculate on the direction of interest rates or to hedge a portfolio of Treasury securities. Investors can establish a position in either price-based options or rate-based options to achieve their objective.

PRICE-BASED OPTIONS

Priced-based options are used by investors to speculate on or to hedge against a change in Treasury securities' prices. As interest rates change, the prices of Treasury securities will move in the opposite direction. Interest rates and bond prices are inversely related to each other. An investor who believes that interest rates are likely to rise would purchase price-based puts or sell price-based calls. Alternatively, an investor who believes that rates are likely to fall will purchase price-based calls or sell price-based puts. Priced-based options on Treasury notes and bonds are based on a $100,000 par amount of a specific Treasury note or bond. Price-based options on Treasury bills are based on $1,000,000 par value. Price-based options, when exercised, will result in the delivery of the specific security.

PREMIUMS PRICE-BASED OPTIONS TREASURY NOTES AND BONDS

Treasury notes and bonds are priced as a percentage of par down to 32nds of 1%. Price-based options also are quoted as a percentage of par down to 32nds of 1%.

EXAMPLE

A May Treasury bond 103 call on a 7% Treasury maturing in October 2015 is quoted at 1.16. The premium is calculated as follows:

1.16 = 1.16/32% × $100,000

1.5% × $100,000 = $1,500

The investor will pay $1,500 for the right to purchase this 7% Treasury bond maturing in October 2015 at 103.

To determine the investor's potential profit and loss on price-based options, use the same rules that were applied to equity options. This investor

will break even if this bond is trading at 104.16 at expiration. Price-based options settle with the delivery of the underlying security two business days after the option has been exercised. The buyer must pay the exercise price plus accrued interest on the underlying security.

PREMIUMS PRICE-BASED OPTIONS TREASURY BILLS

Price-based options for Treasury bills are based on $1,000,000 par value of a 13-week Treasury bill that has yet to be issued. The option's premium is quoted as an annualized percentage of the $1,000,000 par value. Because there are four 13-week quarters in a year, the premium would have to be divided by 4 to determine the amount owed or due.

EXAMPLE A price-based Treasury bill option is quoted at 100. A quote of 100 = 1%

1% × $1,000,000 = $10,000

$10,000/4 = $2,500

TAKENOTE!

Each basis point in the premium quote for a Treasury bill option equals $25.

Because the Treasury bill covered by the option has not yet been issued, an investor may not write a covered Treasury bill call. If a Treasury bill option is exercised, the Treasury bills will be delivered the following Thursday. Because Treasury bills are issued at a discount, the buyer does not owe accrued interest.

RATE-BASED OPTIONS

An investor may speculate on interest rates or hedge a portfolio by using rate-based options. Rate-based options are open for trading, based on the most recently issued Treasury bill, note, and bond. Because an investor cannot deliver a "rate," rate-based options settle in cash and use a contract multiplier of 100. Rate-based options have a direct correlation to a change in interest rates. An investor who believes that rates will rise would purchase rate-based calls or sell rate-based puts. An investor who believes that rates are going to fall would purchase rate-based puts or sell rate-based calls.

EXAMPLE An investor believes that rates are going to rise and purchases 1 March 70 call at 5. The strike price of 70 = an interest rate of 7%.

The premium of 5 = 5 × 100 = $500.

If rates were to go to 8% by expiration, the investor would have a $500 profit.

$$\begin{array}{r} 80 \\ -\ 70 \\ \hline 10 \end{array}$$

The 7% call option would be 10 points in the money at expiration and the investor's account would be credited $1,000. This is found by multiplying the in-the-money amount by the contract multiplier of 100. Because the investor paid $500 for the option, their profit would be $500.

	Rates Up	Rates Down	Settlement
Priced-Based Options	Buy puts or sell calls	Buy calls or sell puts	Underlying security is delivered
Rate-Based Options	Buy calls or sell puts	Buy puts or sell calls	In cash

CURRENCY MARKETS

The value of one country's currency relative to another's is constantly changing and is known as the exchange rate. Large commercial banks exchange currencies for their own accounts and for the accounts of large banks and commercial customers in the interbank market. The interbank market is a large unregulated marketplace where currencies are traded in spot and forward transactions. A spot transaction is an exchange of currencies that will settle in two business days. A forward transaction is an exchange of currencies that will settle on an agreed-upon date that is more than two business days in the future. Most forward transactions will settle in either 1, 3, 6, 9, or 12 months. The exchange rate under which the currencies will be exchanged for both spot and forward transactions is agreed upon on the trade date.

SPOT RATES

The term spot rate is used by traders and investors to reference or quote the exchange rate between currencies. The spot rate can be quoted in U.S. or European terms. A U.S. quote states the number of U.S. dollars needed to

purchase a unit of the relevant foreign currency. If, for example, the British pound is quoted in U.S. terms at 1.75 it takes $1.75 to purchase one British pound. The corresponding European quote would be the reciprocal of the U.S. quote. To find the European terms use the following formula: 1/U.S. terms. In this case 1/1.75 = .571 British pounds are required to purchase one U.S. dollar. Accordingly, the U.S. quote is the reciprocal of the European quote. If a spot rate is quoted in European terms, to find the corresponding U.S. quote use the following formula: 1/European terms.

FOREIGN CURRENCY OPTIONS

The value of one currency relative to another constantly fluctuates. The U.S. dollar is the benchmark against which the value of all other currencies is measured. During any given point, one U.S. dollar may buy more or less of another country's currency. Businesses engaged in international trade can hedge their currency risks through the use of foreign currency options. Foreign currency options also may be used by investors to speculate on the direction of a currency's value relative to the U.S. dollar.

FOREIGN CURRENCY OPTION BASICS

As the value of another country's currency rises, the value of the U.S. dollar falls. As a result, it would now take more U.S. dollars to purchase one unit of that foreign currency. Conversely, if the value of the foreign currency falls, the value of the U.S. dollar will rise and it would now take fewer U.S. dollars to purchase one unit of the foreign currency. The value of foreign currencies is inversely related to each other. U.S. investors can only trade options on the foreign currency. No options trade domestically on the U.S. dollar. Foreign currency options trade on the Nasdaq OMX/PHLX. The exchange sets the strike prices, expiration cycle, and the amount of the foreign currency covered under each contract. Foreign currency options settle in the delivery of U.S. dollars equal to the in-the-money amount of the option and are European exercise. To calculate the total premium for a foreign currency option, use the following table:

Currency	Australian Dollar	British Pound	Canadian Dollar	Euro	Japanese Yen	Swiss Franc
Contract Size	10,000	10,000	10,000	10,000	1,000,000	10,000
Premium Quote	Cents per unit	Cents per unit	Cents per unit	Cents per unit	Hundredth of cents per unit	Cents per unit
Quote	$.01	$.01	$.01	$.01	$.0001	$.01

To calculate the total premium, multiply the quoted premium by .01. If the option is for the Japanese yen, multiply the quoted premium by .0001. Once you have determined the quoted premium, multiply it by the number of foreign currency units covered by the contract.

TAKENOTE!

You will not be required to remember the amount of the foreign currency covered under the contract. If you receive a question relating to foreign currency, the question will contain the amount of the foreign currency covered under the contract.

BUYING FOREIGN CURRENCY CALLS AND PUTS

Businesses and investors will trade foreign currency options for very different reasons. A business will trade foreign currency options to manage its foreign currency risk. An importer will purchase calls on the foreign currency of the country where it purchases products to reduce the risk of that country's currency rising in value in relation to the U.S. dollar. If the country's currency becomes stronger, it will take more U.S. dollars to purchase the same amount of the foreign currency. As a result, the cost to the importer will rise. Alternatively, in the case of an exporter, a fall in the value of a foreign currency will make their products more expensive to the foreign customer and will make their products less attractive. As a result, the exporter—to manage their foreign currency risk—will purchase puts on the foreign currency. Investors in foreign currency options can establish all the same positions that an investor in stock or index options can, such as spreads, straddles, combinations, covered calls, and protective puts. All accounts investing in foreign currency options and all foreign currency trades must be approved in writing by the foreign currency option principal.

TESTTIP!

Remember the pneumonic EPIC: Exporters buy Puts; Importers buy Calls.

An investor in foreign currency options would take the following positions given the following circumstances:

An investor would buy calls or sells puts if:

- There is good economic news from that country.
- The stock market in that country rises.
- There is a large discovery of oil or gold in that country.
- Government instability subsides.

An investor would buy puts and sell calls if:

- There is bad economic news from that country.
- The stock market in that country falls.
- There is an increase in political instability.

The following rules have been set for foreign currency options expiration and exercise:

- Foreign currency options trade on the Nasdaq OMX/PHLX from 9:30 AM to 4:00 PM EST.
- Options expire on the Saturday following the third Friday at 11:59 PM EST and must be exercised by 5:30 PM EST.
- The maximum position limit is 600,000 contract on the same side of the market.
- European-style option exercise will settle in U.S. dollars the next business days after exercise.
- Quarterly expiration of March, June, September, and December with two additional near term months trading.

MARKET VOLATILITY OPTIONS/VIX

The rate of change in prices is known as volatility. Active traders, in many cases, need both volatility in prices and changes in the volatility of prices to realize profits. Investors also can speculate on market volatility by trading VIX options. VIX options measure the market volatility of the S&P 500 (SPX) by calculation the spread between the bid and ask of S&P 500 index options. The VIX calculation uses the spread from the two closest option expiration cycles with at least eight days remaining to expiration to calculate a 30-day volatility for the index. VIX options trade from 8:30 AM to 3:15 PM CST in 1 to 2.5 point intervals and differ from other options in several ways.

VIX options:

- Are European style exercise.
- Expire Wednesday 30 days prior to the third Friday of the following month.
- Settlement values are quoted under the symbol VRO.

FLEX OPTIONS

Large and sophisticated investors often need to set up trades based on their specific needs. For these investors, the terms and conditions of standardized options often do not meet their requirements. Flex options allow investors to set the:

- expiration.
- strike price (can be set as a dollar amount or as a percentage of the price of the underlying security, rounded to the nearest $.01).
- expiration style (American or European).
- value of the contract.

The expiration for flex options can be set from one day up to 15 years. However, a flex option may not expire on any day that is on or within two business days of a nonflex option expiration date. Flex options are not subject to positions limits, but are subject to reporting requirements. A trader must present the specifics of the desired flex option contract in the trading crowd to receive a market or quote for the flex option by either stepping into the crowd or electronically via the CBOE's CFLEX system. The exchanges may set minimum values for flex options contracts and there is a limited secondary market for the flex option after the position has been established. Flex options can trade on the following instruments:

- Equities
- ETFs
- Indexes
- Currencies

The exercise of the flex option for equities and ETFs will result in the delivery of the underlying security the next business day following the receipt of an exercise notice. Each flex option for equities and ETFs is for 100 shares of the underlying instrument.