PART I

Understanding the Relationship between Market Turbulence and Option Volatility

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CHAPTER 1

Managing Risk and Uncertainty with Options

Trading in the financial markets can be summarized by the phrase, "You just don't know what you don't know." On one hand, an investor can spend hours with research, due diligence, charts, and mathematical models only to end up with a worthless stock certificate, the result of a rare event that could not have been predicted. On the other hand, an investor can reap a bountiful reward on any stock, option, or future with less due diligence than that performed when purchasing a microwave oven. No charts or formulas involved—just plain profit resulting from old-fashioned intuition.

Today, the flow of information and the speed of its dissemination are simply astounding. In this age of electronic financial instruments, one can review information from a myriad of up-to-the-minute sources and subsequently amass a large trading position via a few clicks on the computer. Equally astounding is the sheer depth and liquidity of the exchange markets, where options are often quoted pennies wide and in multiple thousands on both the bid and offer. The markets have evolved from a disjointed fragmentation of phone calls and hand signals to a symphony of speed and synchronization.

Yet despite all the growth and development of the financial markets, there remains a great equalizer. Within the trading space there lies an element that is applicable equally to the eighteenth-century bourse trader, who anxiously awaited the latest information flow via flag signals along the stagecoach line between New York and Philadelphia, and to the twenty-first-century day trader, enveloping himself with television screens, statistical forecasts, and computer monitors.

The great equalizer—the factor that surpasses both time and knowledge—is volatility. Volatility is the ultimate unknown. No matter what is said, modeled, or written about it, volatility simply cannot be forecasted. Volatility amounts to risk to the investor. Learning to harness that risk is the subject of this book. Volatility and risk can be construed synonymously, and both terms are derived from uncertainty. In terms of the financial markets, *uncertainty generates volatility, and volatility results in risk*.

What Is Risk?

Risk is the direct result of a random event which has a quantifiable probability. The probability of an event—whether it is tomorrow's weather, the outcome of a baseball game, or the closing price of a stock—can be determined by using either the practical observance of the frequency of past events or theoretical forecasting models. For instance, an observer with high school math skills can work out the probabilities of the possible outcomes of a card game. Similarly, economists use complex theoretical models to construe probability distributions for stock market returns.

It is also possible to calculate probabilities from past patterns of behavior when theoretical models are not available or reliable. For example, an insurance actuarial can estimate the probability that a motorcyclist will suffer a head injury by observing how frequently such injuries have occurred in the past. Similarly, casinos review probability distributions for blackjack winners on the basis of past winners.

What Is Uncertainty?

Uncertainty is . . . The concept of uncertainty is more intricate than that of risk. Whereas risk can be observed and quantified, uncertainty cannot. Uncertainty applies to situations in which the world is not well charted. The way in which the world operates is always changing—at least to the extent that observations of past events offer little guidance for the future.

Years ago, National Football League (NFL) owners were reluctant to televise games, believing that doing so would decrease ticket sales. Yet in actuality, the opposite occurred. Ticket sales in the NFL have increased significantly over the years, due in part to increased exposure through televised games. Ironically, concerns about the relationship between television and ticket sales changed when NFL owners began managing the observed ticket sales risk on the basis of previously observed relations between cause and effect.

All decisions typically involve some degree of both risk and uncertainty. Many choices are made in circumstances encountered for the first time, and uncertainty thrives in the relationship between cause and effect. Given that risk is quantifiable and more accessible to theoretical treatment than uncertainty is, it should be no surprise that literature on market randomness deals specifically with risk. Dismissing uncertainty—the conduit to volatility—can prove perilous to the investor.

Seven Lessons Learned from Market Volatility

An unprecedented number of financial crises have occurred in the past few decades. Without the benefit of hindsight, who could have predicted any of the turbulent market conditions over the preceding thirty-plus years? The list is formidable, including the breakdown of the Bretton Woods Agreement, the first oil crisis of 1973, Black Monday, the Japanese stock market crash, the collapse of Long-Term Capital Management (LTCM), the Russian ruble crisis, the Asian currency crisis, 9/11, Hurricane Katrina, the 2008 credit crisis, and the recent volatility of commodity prices. These rare events have had both short-term and long-term effects on market volatility.

Researchers who are conveniently removed in both time and emotion from such events have carefully documented and learned from them, whereas the average investor is still reeling from the too-recent, hard-hitting, real-life lessons of volatility and risk.

Macroeconomic data and fine points aside, several simple lessons about volatility seem relevant.

Lesson One

Financial crisis and market volatility often appear in waves. Like a tsunami, volatility is felt first on the shores of one country, followed by fierce waves appearing on other shores, often in very close succession. These financial tsunamis are often unleashed by episodes of economic weakness, political instability, and financial turmoil.

Lesson Two

The next wave of crises is sure to be different from the last. Money is made and money is lost in crises. Those who lose money typically set up safety measures to avoid incurring loss in the same fashion twice. As institutions evolve, those

who profit during crises and other periods of volatility look elsewhere for weak points. From this simple dynamic, it follows that the next series of financial crises will be distinctive and different from previous debacles.

Lesson Three

Market volatility tends to be persistent. That is, periods of both high and low volatility typically persist for extended periods of time. In particular, periods of high volatility tend to occur when stock prices are falling and continue throughout rare events. The persistence of volatility is derived from the overall health of the economy, including volatility in economic variables such as inflation, industrial production, and debt levels in the corporate sector.

Lesson Four

Volatility is the product of an inefficient financial marketplace. It is rational to expect that financial markets will be efficient, setting prices at their real values, since buyers and sellers both behave according to rational self-interest based on broadly shared information about the economy and its individual parts. Yet people are often caught off guard when unexpected shocks—for example, severe drought, a sudden bankruptcy, or an aggressive change in government policy—disrupt the norm. Markets can and will move for any reason or for no reason at all.

Lesson Five

Volatility directly affects the average investor's willingness to hold what is perceived to be a risky asset. In uncertain markets—volatile markets—humans tend to engage in a type of behavior that economists refer to as the "herding effect" and which floor traders effectively name a "bull rush." This tendency creates a self-fulfilling prophecy: As more investors sell, it becomes increasingly likely that others will be convinced that there must be a good reason for them to sell also. The subsequent panic can actually serve to magnify trends instead of countering them. As a result, the implied volatility of stocks or options can move drastically without any real news to justify such a move.

Lesson Six

Sharp changes in the level of market volatility can discourage market participants from providing deep, two-way price quotations. The absence of a deep, two-way

quotation, or liquidity, could potentially trigger adverse price reactions, which in turn can force irrational decision making, resulting in the wholesale liquidation of a position. It is absolutely essential that investment goals and theoretical knowledge about options are combined with an assessment of the possible hazards of ill liquidity.

Lesson Seven

Both the intensity and the frequency of investors' changing beliefs about market fundamentals will directly affect market volatility. When investors' sense of what the future holds is in flux, stock prices and option volatility will change rapidly, frequently, and significantly. This lesson is not necessarily intuitive, since one might expect uncertainty to generate only tentative volatility oscillations rather than huge waves of selling. However, such irrational behavior is what causes a trader to be convinced on Monday that the world is ending, and by Friday to be equally convinced that the world has weathered the storm.

Lessons Summary

Volatility is an alternate for investment risk. The persistence of volatility suggests that the risk and return tradeoff adjusts in a predictable fashion. That being said, options perform well as both potential portfolio enhancers and volatility reducers. However, options are not good or suitable if they cause an investor to make irrational judgments, chase returns, double up on losers, or engage in risks that are better absorbed by those who are more capable and more appropriately positioned to take them.

Understanding Derivatives

Derivatives are financial instruments whose value and guaranteed payoffs are derived from the value of something else, generally called the underlying. This underlying is often a singular company or a government's interest rate, but it definitely does not have to be. For instance, derivatives exist based on the price of the Standard & Poor's 500, the temperature at O'Hare Airport, the number of bankruptcies filed among a group of selected companies, or even the implied volatility of the market.

There are two variations of derivative products: plain vanilla and exotic. Plain vanilla derivatives are defined as either an option or future contract.

Exotics conjure up names like "knock-outs," "double-touch," or even "barrier options," and they are far beyond both the intention and scope of this book.

Options Defined

An option is a contract to buy or sell a specified quantity of an asset at a fixed price at or before a predetermined date in the future. An option can be bought or sold at the asset's current price (at the money), well below the current price (in the money), or far above the prevailing traded price (out of the money). In addition, options contracts can be traded with expiration dates ranging from one day to several years in the future. Exchange-traded options can be bought or sold at any time, although there is a specific difference in expiration style. An American style option can be exercised at any time on or before its expiration date. A European style option can be exercised only on its expiration date.

Futures Defined

A futures contract refers to a standardized contract to buy or sell a particular commodity of consistent quality at a predefined date in the future at a market-determined price.

For example, a corn future is a contract to buy or sell a specified amount of physical corn at the market-determined price. Similarly, a futures contract on XYZ stock gives the buyer of the futures contract the right to buy a predefined quantity of XYZ at the present market price. The vast majority of futures contracts end up being closed out as a result of buying or selling in the marketplace. Physical delivery does occur, but only on the future's settlement date, which transpires at a predefined time once per quarter.

Understanding Options

Although options can be traded on just about anything imaginable, let's use options on common stock as an example. A call option gives its buyer or holder the right—not the obligation—to buy a fixed number of shares at a given price at some future date. A put option gives its buyer the right to sell a fixed number of shares at a given price at some future date. The specified price is called the exercise price. The seller of an option at its beginning is called the writer. When the buyer (holder) of an option takes advantage of his right, he is said to have exercised his option. A holder (purchaser) who cannot

gain from exercising his option before expiration either sells his option to close or allows the option to expire. The purchase price of an option is called the option premium. Options enable buyers to leverage their resources while limiting their risk.

The Six Benefits of Options

Although exchange-traded options have existed since 1973, many investors have chosen to avoid them, deeming them to be either too risky or difficult to understand. Others have had bad experiences with options because neither they nor their brokers were properly trained in how to handle them strategically. Although options can be difficult, risky, and downright frustrating if not strategically employed, they don't necessarily need to be. A game plan that includes a reasonable risk/reward profile and an ironclad exit strategy can help the investor reduce the ill effects of volatility and improve the possibility of enhanced returns.

Benefit One: The Ability to Leverage

Options provide both individuals and firms with the ability to leverage. In other words, options are a way to achieve payoffs that would usually be possible only at a much greater cost. Options can cause markets to become more competitive, creating an environment in which investors have the ability to hedge an assortment of risks that otherwise would be too large to sustain.

Benefit Two: Creating Market Efficiency

Options can bring about more efficiency in the underlying market itself. Option markets, in and of themselves, tend to produce information flow. Options enable investors to access and trade on information that otherwise might be unobtainable or very expensive. In the equity market, for instance, short sales of stock are often difficult to apply. This difficulty slows down the speed with which adverse information is incorporated into stock prices and makes markets less efficient. With put options, investors can more easily take advantage of adverse information about stock prices.

Benefit Three: Cost Efficiency

Derivatives are cost efficient. Options can provide immense leveraging ability. An investor can create an option position that will imitate a stock position

identically, or almost identically, although at a large cost savings. For example, in order to buy 500 shares of a $20 stock, an investor must outlay $10,000 (500 shares × $20 = $10,000). However, if the investor were to purchase five $20 call options (with each contract representing 100 shares), the total outlay could be far less. For example, if the investor bought five 30-day $20 calls for, say, $2 each, he would spend $1,000 ($2 × 100 shares × = contracts = $1,000) to somewhat replicate the stock for a 30-day period. In practice, stock replication is not always as straightforward as this example implies. The investor must choose the right call to purchase, determine the optimum time frame, have a solid understanding of the implications of volatility, and be familiar with the greeks.

Benefit Four: 24/7 Protection

Options provide relative immunity to potential catastrophic effects of gap openings in the underlying. There are numerous circumstances in which buying options is riskier than owning the underlying, but there are also times when options can be used to reduce risk. It really depends on how you utilize them. Employed efficiently, options can serve as the most dependable form of hedging.

For instance, when an investor purchases stock, a stop-loss order is often placed to protect the position and to prevent losses below a predetermined price set by the investor. The stop order is executed when the stock trades at or below the limit indicated on the order. The risk with stop orders is inherent in the nature of the order itself.

For example, suppose you purchase XYZ stock at $30. You do not wish to lose any more than 15 percent of your investment, so you place a $25.50 stop order. This order will become a market order to sell if the stock trades at or below $25.50. This type of order is effective during the day, but it could prove disastrous after the market closes. Suppose that the next morning there is terrible news about XYZ, and the stock is expected to open at around $5. When the market opens, your stop-loss will be triggered at $5, since it is the first price below your initial stop-loss implementation—which means you end up taking a considerable loss on the trade. The stop-loss strategy simply did not work when you needed it most.

Had you purchased a put option for downside protection, you would not be subject to such a catastrophic loss. Unlike stop-loss orders, options do not shut down when the market closes. They offer insurance twenty-four hours a day, seven days a week—something that stop orders can't do.

Benefit Five: Flexibility

Options are flexible tools that offer a variety of investment alternatives. Options can present the investor with a means to capture downside opportunity or to hedge downside risk. Many brokers charge a cost-prohibitive margin when the investor wants to short a stock. Other brokers simply do not allow for the shorting of stocks. This inability to trade or to effectively hedge the downside virtually handcuffs the investing public, forcing them onto an uneven playing field with the professional trading community. Options offer the individual investor a way to hedge a myriad of risks under specific circumstances.

Benefit Six: Trading Additional Dimensions

Implementation of options opens up opportunities of additional asset classes to the investor that are embedded in the options themselves. Options allow the investor not only to trade underlying movements, but to allow for the passage of time and the harnessing of volatility. The investor can take advantage of a stagnant market or a range-bound market. Unlike the traditional "buy and hope" investment theory, options, if applied correctly, can serve to limit downside exposure, stop a loss, and lock in a range for possible profit. Options can provide flexibility and a genuine risk/reward profile like no other investment. In many ways, options are profoundly confusing. But at the same time, they can be easy to understand.