The Handbook of Pairs Trading

Strategies Using Equities, Options, and Futures

DOUGLAS S. EHRMAN

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For the women in my life . . .

my daughter, Victoria, the answer to any father's prayers;
my wife, Veronica, without whom I would be lost; and
my mom, one of the true unsung heroes, who always keeps me going.

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The Handbook of Pairs Trading

Introduction

In today's atmosphere of market uncertainty, geopolitical unrest, and a weak economic landscape, many investors find themselves still feeling the sting that was created when the bull market reversed in early 2000. The days of triple digit returns are long gone and, for many, so is a substantial percentage of the personal wealth that was created in the late 1990s. It is no wonder, therefore, that many of these same investors have sought shelter in fixed income securities, cash instruments, or in increasingly popular market-neutral strategies.

Broad exploration of one particular market-neutral strategy that has not been widely publicized but which has endured for years as a successful approach among many institutional money managers and hedge fund experts is the focus of the following pages. The strategy is called pairs trading. In simple terms, pairs trading consists of buying one stock in an industry and selling short another stock (with which it has been paired via standards to be explained later), usually in the same industry. This approach has become something of a lost or rarefied skill, but currently it is resurfacing rapidly in the mainstream.

This work is divided into five distinct parts. The first four explore the elements that make up the trading of equity pairs and the requisite skills that accompany that endeavor. The final part introduces alternative applications of the theory to alternate security types including options, futures, and currencies. This part also takes the reader step-by-step through a series of trade examples across the various asset classes to both highlight the nuances of each and solidify the reader's understanding of the theory. The discussion of each topic, equities and advanced strategies, is designed to serve a specific purpose and, in a sense, be able to stand alone. Collectively, however, this work should serve the reader as a comprehensive resource for all of the various types of pairs trading.

EQUITIES

The first four parts of this book explore pairs trading from a variety of angles, each with the goal of both illustrating the general tenets of the strategy and presenting one particular approach that the author believes to be superior to others. Toward that end, each section consists of two approaches. The first outlines the general principles that govern the strategy; this will allow those readers who wish to develop their own systems to apply the concepts as appropriate to their ultimate end. The second provides specific instructions about how to trade pairs of equities following the guidelines that the author believes are critical to portfolio optimization. It is important to acknowledge that no two traders will ever agree fully on the best way to manage a portfolio, and no one is suggesting that the methods favored in this book are final or foolproof words on the subject. What can be said with confidence is that when readers come to the end of these pages, they will not only be familiar with the concepts behind pairs trading but will also have a concrete approach from which to build their individual methodology.

Another issue that should be addressed early on is that of security type. The majority of this book focuses on trading equity pairs. The strategy can be employed with derivative instruments as well and made more complex with various detailed options strategies. These are not the focus of this work because some of the central ideas that drive pairs trading are easily lost under the vagaries of various complex derivative theories. Remaining focused on equities will provide a foundation necessary to understanding the strategy. Options theory will be added later.

A first perspective for our exploration will be a more formal definition of pairs trading:

Pairs trading: a nondirectional, relative-value investment strategy that seeks to identify two companies with similar characteristics whose equity securities are currently trading at a price relationship that is outside their historical trading range. This investment strategy entails buying the undervalued security while short-selling the overvalued security, thereby maintaining market neutrality.

This definition lays out three main areas of focus which play out as subtexts to the overall idea of pairs trading and must be considered and understood before the unified strategy will make sense: market neutrality, relative value or statistical arbitrage, and technical analysis. While there

are certainly smaller topics that flow from these three main subjects, those are addressed later as each is explored individually.

In this section, a brief and topical overview of each of these focal points is considered so that the advanced reader may consider which topics he may wish to skip. The reader should keep in mind that this text is not attempting to replace other books written on market-neutral strategies, arbitrage theory, or technical analysis. The aim is to set forth simply the building blocks that go into understanding pairs trading. Many sections may be redundant for experienced traders; anyone who already understands the underlying topic of discussion may wish to skip ahead and focus on only the second part of each section where specific theory and application are discussed. Others may feel that too much of a knowledge base is assumed on the part of the author as they approach pairs trading. These readers are urged to explore other sources to expand their understanding of the underlying subject matter. The goal here is to find a middle ground that will prevent the beginner from getting lost and the experienced trader from becoming bored. As this investigation proceeds, each concept builds upon the last, with the assumption that the preceding principles have been well understood.

Market Neutrality

Market neutrality is the first of the three major features of pairs trading selected for investigation. The term *market-neutral* has come to be a quite appealing label in the past several years because many investors mistakenly take the term to mean risk free. The marketing community has fixated on the term and applied it, often inappropriately, to any methodology that could be loosely construed to reduce risk. The label does, in fact, cover a broad range of trading and investment strategies. The proliferation of so-called market-neutral products makes it important to understand the key features of market neutrality, the different ways in which they can be applied, and how they relate to pairs trading.

There are three key features to a market-neutral strategy: the combination of long and short investing, the ability to use leverage, and the inclusion of an arbitrage situation. Arbitrage is a central element of pairs trading and will be discussed in detail in Part Two, but it is important to take note of its presence. Furthermore, as leverage is not a necessary feature of either market-neutral investing or pairs trading, it will not be discussed in great detail, but should again be noted. The long/short relationship is key to pairs trading and is therefore the focus of the market-neutral discussion in Part One.

While this definition will be repeated and refined, it will be useful to

state a working definition of market-neutrality that can be applied to any type of market-neutral strategy:

Market-neutral strategy: A trading strategy that derives its returns from the relationship between the performance of its long position and the performance of its short positions, regardless of whether this relationship is done on the security or portfolio level.

This definition speaks to the central idea of market neutrality: that portfolio performance is achieved through relative performance rather than through the absolute performance one would expect to find in a traditional portfolio. In a market-neutral strategy, the return on the portfolio is a function of the return differential between the securities that are held long and those that are held short. In a perfectly market-neutral portfolio, holding all other factors constant, the performance of the long portfolio and the performance of the short portfolio are perfectly explained by fluctuation in the general market. Net performance for the overall portfolio will be near zero because for every move up or down in the long portfolio, there will be an offsetting move in the opposite direction for the short portfolio. In such a case, the investor would expect to earn roughly the risk-free rate. In a managed market-neutral portfolio, however, if the manager is skilled, the investor expects the long portfolio to outperform the short portfolio in rising markets and the short to outperform the long in falling markets, thus creating a consistently positive return regardless of market conditions.

In more traditional long only strategies, managers are constrained by the client-specified benchmark, and are not permitted to maintain short positions. This long only constraint reduces managers' ability to efficiently utilize their forecasts of the relative attractiveness of all the securities in their investment universe. A typical forecasting model ranks stocks based on their expected relative return within the universe under consideration; a stock that receives a high rank is expected to outperform one that receives a lower rank. A traditional portfolio makes the assumption that this outperformance must be positive and constrains the manager based on this assumption. If the outperformance is negative, however (both stocks decline, but the higher-ranked stock declines by less), the return is still negative because the manager failed to capture the complete predictive value contained in the model. A market-neutral strategy is designed to bridge this gap and take more complete advantage of the information available. This ability to transfer this information to the portfolio enhances the return for a given level of risk. Simply put, the ability to use

more information translates into a higher information ratio for market-neutral strategies.

There are several types of market neutrality, all of which will be discussed later in more detail: share neutrality, dollar neutrality, sector neutrality, and beta neutrality. Each of these has a different impact on the portfolio and relates differently to pairs trading. Understanding each and how to apply it appropriately will directly impact the portfolio construction process.

Market neutrality is perhaps the most important feature of pairs trading, and the one on which all others must be built. It is important to have a solid understanding of this concept before continuing to subsequent chapters.

Relative Value or Statistical Arbitrage

At the most basic level, arbitrage seeks to exploit an inefficiency in the market by buying a security and simultaneously selling it for a profit. While the existence of such opportunities seems somewhat fantastic in the information age, it was once possible for a select group of individuals with superior resources to capitalize on just such situations. Today, however, with a nearly unlimited level of computing power available on any desktop, simple arbitrage is mostly a thing of the past.

While certain market inefficiencies do still exist, the majority of arbitrage activity today is based on perceived or implied pricing flaws rather than on real ones. These pricing flaws are not the result of faulty or slow information, but are the result of an individual's perception that the relationship between two securities has deviated from its historical average in a statistically significant way. Relative value arbitrage, therefore, is the activity of taking offsetting positions in securities that are historically or mathematically related, but where the relationship is temporarily distorted. Over time, these relationships fluctuate around an average, moving away and then back to a mathematically determined midpoint. In terms of pairs trading, then, the most important feature of arbitrage is the convergence of these fluctuations back to their expected values.

Understanding statistical arbitrage is important to understanding pairs trading because it is essentially the same thing, or should at least be considered a form of pairs trading. Where pairs trading may be driven by either fundamental or technical information and may have almost any time horizon, statistical arbitrage is based purely on historical, statistical data that is utilized in the very short term for numerous small positions. The most significant point of differentiation is that statistical arbitrage is almost purely model and computer driven, with very little human analysis affecting any single trade. Once a statistical arbitrage model is constructed and accepted,

it is fed into a computer that makes all trading decisions based on the prescreened criteria. This often involves hundreds of trades a day, each trying to capture a very small positive price movement. This kind of trading obviously requires both very sophisticated modeling capabilities and a fairly extensive technology infrastructure.

Pairs trading has elements of both relative value and statistical arbitrage. While every pairs trader uses different criteria when selecting his stocks, all are centered around the concept of mean reversion. These managers operate under the assumption that anomalies among stock valuations may occur in the short term, but that over time these anomalies will correct or mean-revert. When one stock's price anomaly reverts back to the mean price of its group, this is known as mean reversion. Thus, within a group of stocks that trade similarly, such as within a specific industry, despite the fact that some of these stocks may underperform the group during certain periods while others will outperform, over time virtually every stock in the group will follow the average performance of the whole industry. The strategy seeks to take advantage of this phenomenon by capturing the move in stock price as a give stock moves back toward the group average. Traders seek groups of stocks with a sector, industry, or specific risk factor that are positively correlated. Over longer periods of time, these groups have relatively smooth trend lines. In the short term, however, the trend lines for the individual stocks within the group fluctuate significantly; these fluctuations can be exploited with a relative arbitrage structure.

The pairs system is essentially an arbitrage system where the trader is able to capture profits from the divergence of two correlated stocks. The market as a whole is broken into indexes, which are divided into sectors, which are made up of individual equities. The retail stocks make up the retail sector, and the trucking stocks make up the trucking sector, and so on. Obviously, the retail stocks must then follow one another in price movement. Can these stocks trade in perfect tandem with one another? The answer is no; there has to be divergence, as no two equities can trade with a perfect correlation coefficient of 1. They cannot be identical twins. They can trade very closely though, veering away occasionally to come back together once again. This divergence and convergence produces opportunities of which pairs traders may take advantage.

Pairs trading contains elements of both relative value and statistical arbitrage in that it often uses a statistical model as the initial screen for creating a relative value trade. A careful pairs trader will perform several layers of analysis on top of the model output before any pairs trades are actually executed. Clearly arbitrage theory plays a fairly central role in understanding pairs trading; it therefore receives very careful consideration later in the book.

Technical Analysis

The third central element to pairs trading that will be discussed is technical analysis. While it is possible to use fundamentals as the primary basis on which to base a pairs trading approach, the methodology favored through this book relies more heavily on a technical approach and reserves fundamental analysis as an overlay to check the logic of the original positions. It should be made quite clear to readers that this is not another book on technical analysis and that the explanations and discussions contained in these pages are offered for the sole purpose of advancing the exploration of pairs trading. Countless books have been written on technical analysis for those readers who wish to delve more deeply into the subject. While it will be necessary to cover a number of technical indicators, and relevant terms and formulas will be used when appropriate, no final authority on the subject is suggested and readers are encouraged to bring some of their own expertise to bear when considering the methods described herein.

While a fundamental analyst considers a huge amount of very subjective data, the technical analyst deals with only three pieces of data: price, trading volume, and sentiment. These are evaluated to form an opinion on the likely direction of prices over a shorter period of time. The complete analyst looks at the fundamentals to decide whether a significant movement is likely or to compare two or more companies on a longer-term scale, and employs technical analysis to determine the most propitious time to enter the market. From a pairs trading standpoint, and especially a short-term statistical arbitrage standpoint, technical analysis plays a much more important role, and, in a majority of cases, is the driving force behind trades.

Technical analysts use computers to reconstruct past market activity in an attempt to predict the likely behavior of a stock or group of stocks in the future. The underlying assumption of this technique is that patterns that can be identified in the past are likely to repeat themselves in the future. System traders seek to identify a group of quantifiable indicators that, when used together, have a high predictive value for stock behavior. The process of analyzing which indicators are most effective when used in tandem is called *optimization*. This process seeks to build a model that has the greatest ability to both predict profits and avoid losses. The inherent difficulty, however, with such an approach, is that there is not guarantee that past behavior will be repeated. This is a significant risk that faces the pairs trader and is know as *model risk*; a major flaw in a trading model can result in a complete breakdown in the system and have significant negative results.

Delving more deeply into technical analysis later in this book requires

covering some of the major indicators that are most helpful in analyzing pairs of stocks. Some of the very basic principles that are used when building a trading model are covered. It is important to note that the vast majority of these "black box" models, whether they are being used as preliminary screening tools or feeding complex statistical arbitrage systems, are proprietary. How some of these models are constructed is briefly explored, but since specific construction usually requires the assistance of both a mathematician and a skilled programmer, no model is endorsed as most successful, nor are exact details presented for building one.

There are, however, ways in which an individual can benefit from the use of proprietary models. By opening a managed account with a skilled manager, an investor can get the benefits not only of that manager's model but also of his experience. In other cases, it is possible to receive the output of a model, along with a detailed explanation of what the model does, without needing to receive the actual proprietary structure of the model's construction. While this may seem inadequate to some readers, many of the most successful traders on the street use the services of other traders and managers as a part of their investment process.

Unified Pairs Trading Theory

After exploring each of the three major components of pairs trading, it is necessary to spend a little time putting these components together. Most of the interrelations between each section will be fairly clear, but only after each has been explored will some of the big picture issues that affect pairs trading become clear. Part Four examines the risks involved with the strategy and how to manage them, various approaches to pairs trading that can be taken, and finally the methodology the author believes to be superior to the rest.

When readers come to the end of this book, they should understand the major components of the strategy, various approaches to trading pairs, the methodology that is being recommended, and, most importantly, how to integrate pairs trading into their investment or trading style.

ADVANCED STRATEGIES

The final part of this book explores the application of the Unified Pairs Trading Theory to alternate asset classes and securities types. While pairs trading is easiest to understand when considering equities, the addition of options, futures, and currencies gives a trader an expanded collection of tools by which to manage his portfolio. Readers are again

cautioned to keep in mind that this book is not attempting to be a comprehensive tool for understanding option theory, futures trading or the currency markets. The aim is to set forth simply the building blocks that go into understanding pairs trading. Many sections may be redundant for experienced traders; anyone who understands the underlying topic of discussion may wish to skip ahead and focus on only the second part of each section where specific theory and application are discussed. Others may feel that too much of a knowledge base is assumed on the part of the author as they approach pairs trading. These readers are urged to explore other sources of reference to expand their understanding of the underlying subject matter. The goal here, again, is to find a middle ground that will prevent the beginner from getting lost and the experienced trader from becoming bored. As this investigation proceeds, each concept builds upon the last with the assumption that the preceding principles have been well understood. It is assumed that the reader has a working understanding of equity pairs trading as each new security type is introduced.

Options

Through the use of options, a pairs, trader is able to greatly expand both the number of approaches and the tools available in the construction of a trade or an entire portfolio. In some cases, the trader may wish to substitute options for equities when doing so provides a distinct advantage, while in other cases, options may be used as an overlay to manage risk or adjust the complexion of a particular trade. The addition of an options strategy will be more or less complex and thus difficult, depending on the approach employed, but will always involve greater skill, experience, and care than a straight equity trade.

As a basis to begin our exploration of options theory as it applies to pairs trading, it will be helpful to begin with a working definition of an options contract:

Option: The right, but not the obligation, to buy or sell a stock (or other security) for a specified price, on or before a specific date. Intrinsic value and time value are two of the main determinants of an option's price and are driven by both the price and volatility of the underlying stock or security.

From this definition, it should become immediately evident that when constructing a matched equity pair using options, one must consider the

factors that drive the associated options as well as the elements of the underlying pair. There are four key factors when considering an option, each of which must be assessed prior to executing a trade: relative value, timing, volatility, and changes in the relationship between the option and the underlying stock. Each of these affects how the option is priced as well as how the option is likely to react to various changes in the underlying stock and in the general market.

While all of these four key factors are explored in detail, it is helpful to begin with a basic understanding of each before proceeding. It should be noted that in aiming for clarity, some of the formal jargon of the options markets has been purposely omitted. This language is introduced in Part Five but would do little to advance this preliminary discussion and can be confusing to the uninitiated.

Relative Value While this term has many meanings that appear throughout this book, in the case of options it refers to the strike price of the option contract relative to the price of the underlying stock. Options are classified into three groups of relative value that carry the following definitions:

At-the-money (**ATM**): At-the-money means that the strike price of the option is the same as the market price of the underlying stock. In the case of ATM options, the price of the options contract represents time premium only and is neutral relative to the underlying stock.

In-the-money (**ITM**): In-the-money means that the option is carrying a degree of intrinsic value. For call options, this means that the strike price of the option is below the current market price of the underlying stock. If the option were to be exercised (the stock called and purchased at the strike price), an automatic profit could be generated by immediately selling the newly purchased shares at the higher market price. For put options, ITM options carry a strike price that is above the current market value of the underlying stock. If the option were to be exercised (the stock put and sold at the strike price), an automatic profit could be generated by purchasing shares at the lower market price and reselling them at the higher strike price.

Out-of-the-money (**OTM**): Out-of-the-money means that the option is carrying no intrinsic value (time premium only) and would result in

an immediate loss if exercised. For call options, this means that the strike price of the option is above the current market price of the underlying stock. If the option were exercised (the stock called and purchased at the strike price), an automatic loss would be generated because the stock was purchased at a price above that which is now available in the market. The reverse mechanics apply to put options.

Timing Timing, when referring to an options-based pairs trade, refers to both the appropriate expiration date of the option and the time premium built into the price of the option. Traders must consider the expected time horizon of the trade and select their options carefully. Options that carry a lower time premium, that is less likely to be eroded during the life of the trade, are likely to produce greater returns than those with higher time premiums if all other factors are held constant. While time premium serves as an indication of the underlying volatility of the options being considered (higher time premium indicates higher volatility), the net effect of time premium must be considered.

Selecting the appropriate expiration month is equally important and directly tied to time premium. Options contracts that have shorter time until expiration will always carry a lower time premium than those with longer expirations. It is important to allow sufficient time for the expected mean reversion to occur, but a trader does not want to overpay for additional time premium that is not needed. If an option expires too quickly, the desired mean reversion process may not be complete. If an option's expiration is too distant, however, the added expense may significantly affect the return the trade generates. It should be evident that of the two choices, selecting options that carry unneeded time until expiration is preferable, as this choice still allows the trade to successfully run its course, but careful analysis should be performed to determine what duration is reasonable.

Volatility Volatility is central to all types of options trading and is of particular importance in the context of options-based pairs trading. The volatility of an underlying security is one of the critical factors in determining an options price; generally, the lower the volatility of the underlying stock, the lower the time premium that will be built into the price of any associated options contracts. This relationship exists because a lower volatility underlying the stock provides less return potential and thus a lower price. In another sense, options are priced so that return potential is similar; an option based on a stock that is likely to move only a few percentage points before expiration is priced lower so that the return, based on the price of the option, is similar to that of a more expensive option on a stock expected to move more significantly.

When constructing a pairs trade, a trader not only must consider the volatility of each of the stocks being analyzed for pairing, as this will affect time premium and options price, but also must consider the relative volatilities of the two stocks. Similar to beta neutrality, this can have a significant impact on the degree to which systematic risk is controlled in a given trade. In certain cases, as will be discussed later, pairing the options of securities with mismatched volatilities can yield successful results. In either case, prudent traders do well to be aware of the volatilities of the stocks they are analyzing in order to avoid taking on unwanted risk.

Changes in the Option-to-Stock Relationship In addition to considering the relationship of an options contract to its underlying security, a trader must also consider how that relationship changes. Over the expected duration of a given trade, changes in this relationship can have a significant impact on the success of the trade. For example, if during the duration of a given trade the volatilities of the two stocks decrease significantly, this will likely cause the relationship between an option's price and the price of the underlying stock to change. In this case, one would expect the option to decrease in price more rapidly than initially expected because the market will no longer require the buyer of the option to pay as much time premium for a contract on the now less volatile underlying stock; the relationship between an option and its underlying stock changes over time and must be factored in when considering initiating a trade.

The rate at which this relationship changes is quantified in options theory and referred to as gamma, one of three relationships labeled with Greek letters; along with vega, these four statistics are commonly referred to as "the Greeks." Gamma is the first derivative, or the rate of change of delta, the relationship between the price of an option and the price of its underlying security. The definitions are:

Theta: The rate of time decay of a given option.

Delta: The degree of change in an option's price based on a change in the price of the underlying security.

Gamma: The rate of change of delta.

Vega: The relationship between the price of an option and the implied volatility of that option.

The Greeks are formally defined and discussed in the options chapters in Part Five, as is their relationship to pairs trading. While they are considered some of the most subtle and complex material in options theory, they are very useful in pairs trading and need to be adequately addressed.

Futures and Currencies

Futures contracts are similar to options contracts but, much as the name implies, there is no option feature; upon expiration, a futures contract is executed either for cash or for physical delivery. Futures contracts are most commonly associated with commodities, but the futures markets for financial indexes, bonds, and currencies are among the most liquid in the United States. Much of this discussion is focused on commodity futures, although the differences are explored later. There are a few unique attributes that distinguish futures pairs trades from those is the equity or option markets, but most of the mechanics are very similar. There are three major features that distinguish a futures pairs trade: Their dependence of extrinsic events, the inclusion of natural correlations, and the speed with which they change.

Extrinsic Events Climatic, geopolitical, and government forces tend to have a more direct and therefore significant impact on the prices of commodities. As a result, futures prices are highly dependent on the same factors: A drought may send corn prices soaring, a war in Iraq may drive up gasoline prices, and a new protective tariff on cotton may change the demand structure and therefore the price of the associated futures contract. In each of these cases, an outside force is responsible for pushing the price of a commodity in a much more direct and uncontrollable way than a news event in the stock market. While the announcement that Intel is releasing a new, faster processor can be predicted and planned for, a drought that cuts soy output is much more difficult to predict.

The effect of these outside forces on pairs trading in the commodity markets is critical because it violates many of the principles already discussed. When a trader observes a significant divergence in two correlated commodities that are statistically likely to mean-revert, an understanding of the external factors affecting the trade is critical. The divergence may be caused by an extrinsic event that will not sway under the pressure of statistical analysis; a two standard deviation divergence

implying a 97 percent chance of mean reversion cannot make it rain. Furthermore, there are often conflicting forces, the effects of which are difficult to determine. For example, while a war may push gas prices up, consumer preference for hybrid or diesel engines may help to keep prices down. Predicting the power of these individual trends and how they interact can be a serious challenge.

Natural Correlation Throughout the commodity universe there are many natural correlations that can affect how a pairs trader approaches the market. Soybeans relative to soy meal relative to soy oil is one such example, known as the "soy crush." Many of these spreads have been traded by futures traders forever, which aids in the probability that they can continue to be successful (the difference between spread trading and pairs trading will be discussed later). While it can be argued that two retailers share a type of natural correlation and both are affected by general trends in consumer spending, their products are neither interchangeable nor dependent on the other. A rise in soybean prices must result in an increase in soy oil prices, as one is derived from the other. While paradigm shifts may occasionally occur (such as the development of a cheaper refining process), these will only serve to adjust rather sever the relationship. In the example of the retailers, by contrast, one may miss earnings or go out of business without destroying the other.

The effect of natural correlation on pairs trading is that while in many cases the trader may be more confident that a particular trade will ultimately mean-revert, the corresponding moves may be very small and difficult to capture. A relative-value strategy is dependent on the trader's ability not only to identify but also to capture the divergence and mean-reversion movement. In stable markets, certain opportunities may be lost because there is insufficient volatility in the relationship between the two related commodities to make a trade profitable.

Speed The final significant difference between a commodity futures pairs trade and one in the equity or options markets is that of speed. This can also be expressed as a difference in the expected duration of any given trade. The futures markets employ large degrees of margin. The result of highly leveraged positions is that small moves in a trade result in very significant changes in the dollar value of the trade. While options are also built on margin, the denominations tend to be smaller and the delta measure, rarely 1, ensures that small moves do not impact the dollar value of a trade as quickly. A single point move in certain futures trades can result in tens of thousands of dollars gained or lost very quickly. The result is that a commodity futures pairs trader may be in and out of the market very quickly, picking up and losing fractional points in each trade toward

the end of net profit. This often means that analysis must be purely technical and that execution becomes of supreme importance.

Currencies Currencies are a specialized form of futures contract that trade globally and are highly liquid. These are the only pairs relationships that are tracked and reported as pairs (exchange rates). The result of such high visibility is that these pairs tend to offer a plethora of resources and opinions as to their likely behavior. They are more deeply influenced by macroeconomic events than any other security type and, as such, require a degree of awareness that may be troubling to beginning traders. They are presented here in an effort to be thorough, but the combination of the depth of information available and the nuance associated with successful trade execution makes it unlikely that significant advantage can be gained from their exploration in this context.

Trade Examples

The final chapter of this book examines a number of trades spanning security type, approach (technical, fundamental, and blended), and success from start to finish. This chapter can serve as a layman's step-by-step guide on how to initiate a pairs trade from a variety of perspectives, how to manage the trade, and how to exit the trade. It is intended to reinforce the principles that have been explored before it and to allow the reader a glimpse into the daily activity of a pairs trader. From this material the reader will be able to get a feel for which style of pairs trading is most appropriate for his own level of experience, time availability, and dedication.