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