Wiley Finance Series

Risk Arbitrage

SECOND EDITION

An Investor's Guide

KEITH M. MOORE

WILEY

Praise for The First Edition

"Never in history have there been so many mergers and takeovers like those in the late '90s! Keith Moore's Risk Arbitrage: An Investor's Guide *is the first systematic attempt to break the silence around the secrets of the investment and trading strategy that exploits these corporate restructurings: risk arbitrage. This is not just a book about the secrets of risk arbitrage but a real textbook and investor's guide on how to trade the risk arbitrage special situations and about the risk arbitrage industry including hedge funds."*

—Gabriel Burstein,
Head of Specialized Equity Sales and Trading
Daiwa Europe, London

"I am delighted that Keith Moore has been able to write a book describing the business of risk arbitrage in such a user-friendly way. This is a work that will prove useful to investors ranging from novices to professionals and should be especially helpful to those teaching finance courses at our colleges and universities. Congratulations, Keith, on accomplishing what none of your predecessors could."

—George A. Kellner, CEO,
Kellner, DiLeo & Co.

"This book fills a surprising void on the subject of arbitrage at a time that could not be more propitious. It is written clearly and comprehensively and should be helpful to all who are interested in the subject, regardless of experience."

—Albert B. Cohen,
Albert B. Cohen Partners, LP

Risk Arbitrage, Second Edition

Founded in 1807, John Wiley & Sons is the oldest independent publishing company in the United States. With offices in North America, Europe, Australia and Asia, Wiley is globally committed to developing and marketing print and electronic products and services for our customers' professional and personal knowledge and understanding.

The Wiley Finance series contains books written specifically for finance and investment professionals as well as sophisticated individual investors and their financial advisors. Book topics range from portfolio management to e-commerce, risk management, financial engineering, valuation and financial instrument analysis, as well as much more.

For a list of available titles, visit our website at www.WileyFinance.com.

Risk Arbitrage, Second Edition

An Investor's Guide

KEITH M. MOORE

WILEY

Published by John Wiley & Sons, Inc., Hoboken, New Jersey.

Published simultaneously in Canada.

Library of Congress Cataloging-in-Publication Data is Available

Names: Moore, Keith M., 1952– author.
Title: Risk arbitrage : an investor's guide / Keith M. Moore.
Description: Second edition. | Hoboken, New Jersey : John Wiley & Sons, Inc., [2018] | Series: Wiley finance series | Includes index. |
Identifiers: LCCN 2018010499 (print) | LCCN 2018011704 (ebook) | ISBN 9781118233856 (epub) | ISBN 9781118220139 (pdf) | ISBN 9780470379745 (cloth)
Subjects: LCSH: Arbitrage.
Classification: LCC HG6041 (ebook) | LCC HG6041 .M655 2018 (print) | DDC 332.64/5—dc23
LC record available at https://lccn.loc.gov/2018010499

Cover Design: Wiley
Cover Image: © Simfo/iStockphoto

Printed in the United States of America.

10 9 8 7 6 5 4 3 2 1

In memory of James M. Gallagher.

Jim, you gave me my start in this business and continue to help me every day.

God Bless you, Jim.

Contents

About the Author

Keith M. Moore heads up FBN Securities Event-Driven group. Prior to joining FBN Securities, Keith served as Kellner DiLeo & Company's Co-Chief Investment Officer, Portfolio Manager of the KDC Merger Arbitrage Fund and Director of Risk Management. In addition to being the author of *Risk Arbitrage: An Investor's Guide*, he has authored the Mergers & Acquisitions chapter for *Corporate Finance*, published by the CFA Institute as well as a number of academic journal articles. Keith's arbitrage career spans research, trading and portfolio management at Neuberger & Berman (1975–1983 and 1989–1996), Donaldson Lufkin & Jenrette (1983–1989) and Jupiter Capital (1997–2006). A former Assistant Professor of economics and finance at St. John's University and Adjunct Professor at the University of Rhode Island and New York University, Keith has earned numerous academic awards and honors. He holds a B.S. and a Ph.D. from the University of Rhode Island and an MBA from New York University.

Risk Arbitrage, Second Edition

CHAPTER 1

Introduction

Most U.S. corporations are domiciled in the state of Delaware, so I travel there often from my home in New York to cover court cases that can greatly affect the price of securities involved in a merger. The job of the arbitrageur covering a court case is to attempt to analyze the case and estimate which side will prevail before any decision is rendered by the court and also to estimate how the security prices will move given the outcome of the case. Once these factors are determined, the goal is then to set up positions in the securities that should prove profitable should the expected outcome occur and prices react as expected. Many times, it is a difficult job to determine the needed estimates and perform the required analysis.

A few years ago, I traveled to Delaware, because a few months earlier, the Cooper Tire & Rubber Company had agreed to be acquired by Apollo Tyres Ltd. Each Cooper Tire shareholder was to receive $35 cash per share at the closing of the $2.5 billion merger. The merger closing was subject to Cooper Tire shareholder approval as well as various U.S. and foreign government approvals. The $35 price tag represented about a 43% premium over Cooper Tire's existing stock price. After the merger was announced, Cooper Tire's stock price traded up $9.26 per share, closing at $33.82 on the first day after the merger announcement. The $1.18 spread between the $35 merger price and the Cooper Tire stock price did not indicate any of the troubles that the deal and Cooper shareholders would face over the next five or six months.

Exhibit 1.1 shows the price behavior of Cooper Tire both before the deal was announced as well as after the terms of the merger were disclosed.

Shortly after the merger was negotiated and announced, trouble broke out at Cooper Tire's joint-venture in China. The facility in China was 65% owned by Cooper Tire and 35% owned by an entity named Chengshan Group (CCT). The controlling shareholder of the Chengshan Group was Che Hongzhi, and unbeknownst to Cooper Tire shareholders, including arbitrageurs, Che Hongzhi had been planning to acquire the remaining 65%

EXHIBIT 1.1 Cooper Tire Stock Price Chart
Source: Used with permission of Bloomberg Finance LP.

ownership of the unit from Cooper Tire. Once the merger was announced, Che Hongzhi proceeded to orchestrate a plan to try to derail the merger.

Only days after the merger announcement, labor unrest at the Chinese plant was initiated. Initially, there were verbal protests. By the end of June, the CCT labor union sent a threatening letter to Cooper Tire employees and the Company. Shortly thereafter, a labor strike occurred, and eventually, Che Hongzhi had the plant stop manufacturing tires under the Cooper name. More amazingly, Che also locked out all Cooper employees from the plant, refused to pay invoices for materials, and would not supply any financial information to its 65% owner. These actions, especially withholding financial data, became a key factor in whether the transaction would be completed.

After the merger was announced, problems at the Chinese joint-venture were not the only issues that Cooper and Apollo had to deal with. Cooper's domestic union, the United Steelworkers, filed grievances against Cooper, claiming the merger would be a transfer of control, which would trigger the need to negotiate a new labor contract. Ultimately, Cooper and Apollo agreed to arbitrate the USW claim; on September 13, 2013, the arbitrator issued an opinion indicating that a new labor contract would need to be negotiated in order for the parties to complete the merger.

The prospect of needing to negotiate a new labor contract complicated the merger process tremendously. Cooper's relationship with the USW had been strained for years and now the USW had an advantage heading into labor talks. In order to close the deal, Cooper needed a new contract and needed it quickly in order for Apollo to be able to complete the financing to pay for the merger.

As the Chinese joint-venture and USW events unfolded, Cooper became concerned that Apollo was developing "buyer's remorse." After negotiating mergers, in some cases, the buying party may develop second thoughts about its deal and may look for a way to get out from under the merger contract. Since Apollo was not advancing the USW contract talks at the speed that Cooper expected, concern for Apollo's desire to complete the deal grew. Ultimately, Cooper's board of directors decided the best way to protect the interests of Cooper and its shareholders was to bring a lawsuit seeking to force Apollo to complete the transaction. The legal action Cooper was seeking was "specific performance" where the Delaware Court was being asked to force Apollo to take all the steps to complete the transaction.

Cooper's lawsuit was filed on October 4, 2013, after Apollo was unable to come to an agreement with the USW and Cooper became concerned that since the merger pact with Apollo contained a "drop-dead" date of December 31, 2013, that would allow Apollo to walk away from the merger obligation. Time was critical to get the deal closed, and the lawsuit seeking specific performance was a possible path to the merger's completion from Cooper's point of view.

Cooper's move to file the suit added to the uncertainty already created by the problems with the Chinese joint-venture and the UAW contract dispute. News of the lawsuit began to surface in the markets late in the trading day on October 4. However, the full effect of the suit was not reflected in the Cooper stock price until trading began on the following trading day, Monday, October 7. As can be seen in Exhibit 1.2, Cooper's stock declined dramatically. At Monday's closing price of $25.72, the spread between the stock price and the proposed $35 takeover price was a huge $9.28 per Cooper share!

The lawsuit was filed in Delaware's Court of Chancery and was assigned to Vice Chancellor Sam Glasscock III. While I had traveled to Wilmington, Delaware, for several days of expert testimony before Vice Chancellor Glasscock on the case, the final hearing with closing arguments had been scheduled to be heard in Georgetown, Delaware, where Vice Chancellor Glasscock generally heard his assigned proceedings. So I shared a cab with several other arbitrageurs for an additional road trip to Georgetown.

Once in court, we all had to go through what have become standard court procedures. One of the more annoying procedures is forfeiting our cell phones to the court's guards. Unlike other members of the public, attorneys generally do not have to give up their phones since they are subject to court rules and can be disciplined for improper behavior. However, the system, like most, is not perfect. During the days of testimony in the Wilmington courthouse, a number of us in the court (who were observers to the testimony)

EXHIBIT 1.2 Cooper Tire Stock Price Reaction after Lawsuits
Source: Used with permission of Bloomberg Finance LP.

noticed that reports of the proceeding seemed to be seeping back to the financial markets through subtle price changes in Cooper's stock price prior to court-ordered breaks. Once a recess took place, all observers would try to get their phones returned in order to report on the recent developments in the courtroom.

After a day or so, it became clear that someone in attendance was not playing by the rules. Just before a courtroom session was supposed to reconvene, I heard a commotion a few rows away from me. As the confrontation continued, I realized that a representative of a hedge fund that owned shares in Cooper had witnessed another observer using his cell phone to communicate court developments to his office. His phone had not been commandeered because he was an attorney who was licensed to practice in Delaware and was on retainer to another hedge fund to report the proceedings of the trial. Ultimately, the violator was told if he touched his phone during the proceedings one more time, the party who noticed the behavior would immediately stand up and notify the Vice Chancellor of the violation. Needless to say, there didn't seem to be any more violations. Now everyone could concentrate on what the Vice Chancellor might ultimately decide in the case.

Once admitted to the court, there is usually a scramble for what are perceived to be the "choice" seats. I generally try to position myself at the end of a row to allow for easy exit in case I want to report back to the office on an important development in the proceedings. In Georgetown, I followed my normal habits by finding an end seat in the second row. If need be, I would leave the courtroom, retrieve my phone from the court guards, exit the building, and make the call. I had followed that procedure a number of times in the Wilmington hearings and was getting a mini-workout since the cell phones in Wilmington had to be housed in mini-lockers in a parking garage a building away from the courthouse.

However, in this final hearing in Georgetown, it was a more difficult decision to leave the proceeding to make a call for fear that I might miss something that could be even more important than the item I was reporting in the call. As in other cases, I tried to avoid this dilemma by partnering with a friend in the business. One of us would leave to make a call, and the other would take detailed notes and fill in the other partner upon his return to the courtroom. During the hours of testimony and arguments that day in the Georgetown Courthouse, we used the procedure numerous times to keep our respective offices up to speed.

During that day's proceedings, the Vice Chancellor directed both sides to address a number of issues including how the definitive merger agreement should be interpreted in regard to the financing commitment. Additionally, the Vice Chancellor also wanted the parties to discuss the requirements for a comfort letter and the likelihood that Cooper would be able to file its third-quarter earnings report on a timely basis. Before the Vice Chancellor could decide whether Cooper was entitled to specific performance, which would force Apollo to complete the merger, he had to decide the critical issues as to what level of effort Apollo was required to execute to solve the contract situation with the United Steel Workers.

All through the hearing, my main focus was on trying to determine how Vice Chancellor Glasscock would rule. I was using all the facts, my interpretation of the court filings, and the testimony in the case to help determine how the Vice Chancellor would rule. What was different in this case compared to many others I followed in my career was that until recently, my function consisted of managing the investment portfolio, and in doing so, the main function was deciding which situations were included in the portfolio. I was actually making all the buying and selling decisions. However, shortly before the Cooper/Apollo situation developed, I had changed functions in the business. I had moved to what is known as the "sell-side," where my job was to *advise* hedge funds and institutions as opposed to actually committing capital. I was analyzing the Cooper/Apollo hearings to advise my clients what I thought would happen and how they should set up their positions. All the other arbitrageurs, attorneys, and observers in the courtroom were trying to perform the same analysis for their firms or clients.

After several hours of testimony, at about 3:30 P.M., the Vice Chancellor called for a short recess and stated he would return with an initial ruling on the case. Everyone left the courtroom, reclaimed their cell phones, and called into their respective offices to report the situation and their opinion on the court's ruling. During the break, I was asked by several clients about my prediction of the outcome. Since I did not hear anything in the day's proceedings that caused me to change my prior opinion, I advised them that I believed the Vice Chancellor would rule against Cooper and would not force Apollo to complete the merger.

Almost everyone assumed that the court would not reconvene the proceeding for the ruling until after 4 P.M. when the financial markets closed. It is common in these cases for courts to wait for the markets to close before issuing a decision that could have a dramatic effect on securities prices. However, the Cooper case had not been typical in many ways, and it continued as the Vice Chancellor reconvened at 3:45 P.M. to read his oral decision and stated a full written decision would follow shortly.

Within minutes, he indicated he was ruling against Cooper's requests and was not forcing Apollo to complete the merger. Numerous court observers rushed out of the courtroom to reclaim their phones and call the result into their respective offices. As can be seen in Exhibit 1.3, Cooper's stock moved down substantially as holders of the stock rushed to sell, fearing the stock could fall even further. After trading as low as $22.34, Cooper's stock closed at $23.82 down $0.95 on the day.

After the excitement calmed down, it was an interesting sight just outside the Georgetown Courthouse, with many court observers continuing to talk on their cell phones to their offices. Many appeared happy, as they had anticipated the decision properly. However, others were clearly not happy

EXHIBIT 1.3 Cooper Tire Price Movements Two Days before Court Ruling and One Day after Ruling
Source: Used with permission of Bloomberg Finance LP.

campers. Presumably, they had expected Apollo to be forced to complete the $35 deal and learned why the process is called *risk* arbitrage.

At this point, my job was to call my clients to discuss the decision as well as how the saga might play out from this point. The question for arbitrageurs at this time became what might happen next in the Cooper saga. There were several possible outcomes. Cooper could appeal the Vice Chancellor's decision, walk away from the transaction, or possibly renegotiate the terms to compensate Apollo for the changed fundamentals in Cooper's business.

Anyone who owned shares of Cooper stock had seen their shares decline substantially from the levels reached when the merger was initially announced due to the developments with Cooper's Chinese-based joint venture and the United Steel Workers situation.

Arbitrage situations like the proposed Cooper Tire/Apollo Tyre deal create complex and potentially lucrative investment opportunities. This book describes the process of risk arbitrage investment, to help readers understand the critical elements in the analysis process, and to aid in the decision-making in risk arbitrage opportunities. The book describes what risk arbitrage entails and explores how it is done.

Chapters 1–3 provide a detailed description of the risk arbitrage process. Chapters 4–6 explore in depth the key elements of the risk arbitrage process. Chapter 7 melds the elements together to demonstrate how to make decisions on risk arbitrage opportunities. Chapters 8 and 9 discuss hostile takeovers and trading tactics. Chapter 10 discusses portfolio management in depth. Chapter 11 goes through a recent merger, which is a prime example of why the risk arbitrage business can be both exciting and profitable. Throughout the book, numerous real-life cases are examined. And the final section of the book offers information on and insight into the areas of trade execution, hedging, and portfolio management, which are critically important for an arbitrageur's success.

Like most things in life and the world of investing, conditions and strategies change over time. Since the original version of the book was published 17 years ago, the risk arbitrage business has changed substantially in a number of ways, including much lower spreads and expected returns as interest rates have declined to record-low levels. Additionally, due to regulatory changes most large institutions and banks can no longer commit capital to risk positions, leaving a void that has been filled by hedge funds and other investors.

In this version we attempt to address many of the changes in the risk arbitrage business and look to update the techniques needed to be a successful arbitrageur.

CHAPTER 2

What Is Risk Arbitrage?

Webster's New World Dictionary offers this definition of arbitrage:

> *A simultaneous purchase and sale in two separate markets in order to profit from a price difference existing between them.*

This definition accurately describes what is known as "classic" arbitrage, where the investor is purchasing and selling the same security in different markets.

An example would be: Rio Tinto PLC is an International Mining company that trades on both the London and New York Stock Exchanges.

- On a recent day, RIO traded at 2750 pence in London and traded at \$43.66 in New York.
- If an arbitrageur bought RIO in London and simultaneously sold RIO on the New York Stock Exchange, assuming that the proper currency hedges could be executed between British pounds and American dollars, a guaranteed profit could be locked in.
- The relevant calculations are as follows: 2750/100 = 27.50 British pounds.
- £27.50 GBP × \$1.58 (U.S./GBP conversion rate) = \$43.45 (U.S. dollar equivalent purchase price).
- Gross profit = \$43.66 (U.S. sales price) – \$43.45 (Purchase price in U.S. dollars) = \$0.21 profit per share.
- While the profit per share may seem small to some people, it would essentially be a riskless or guaranteed trade.

However, in *risk* arbitrage, profits are anything but guaranteed. *Webster's* goes on to describe *risk arbitrage* as follows:

> *A buying of a large number of shares in a corporation in anticipation of and with the expectation of making a profit from a merger or takeover.*

Risk Arbitrage: An Investor's Guide, Second Edition. Keith M. Moore.

Do you really have to buy a large number of shares to achieve risk arbitrage? Does risk arbitrage require the arbitrageur to anticipate the announcement of a merger or takeover? The *Webster's* definitions are helpful, but we need to add more depth if we are to understand the investment process of risk arbitrage.

It is always interesting, when reading financial publications, to see the misunderstandings that surround the process of risk arbitrage. An article in the *Wall Street Journal* or the *New York Times* might describe a transaction involving a merger of two companies and then include a misleading reference to risk arbitrage. For example:

> *Arbitrageurs realized large gains on the announcement of the merger between Company A and Company T. The price of Company T's stock rose $8 to $32 on the announcement that Company A will be purchasing the company for $35 per share.*

This quite typical comment leaves the reader with the impression that the arbitrageurs held shares of Company T prior to the announcement of the transaction and realized a large gain as a result. The newspaper has given a very good description of sheer speculation, but it has certainly missed the mark in describing the process of risk arbitrage. Institutional and individual investors generally benefit from the initial merger announcement. The announcement, however, generally marks the beginning of the process known as risk arbitrage.

Here is perhaps the best definition of risk arbitrage:

> *The risk arbitrage investment process is the investment in securities involved in and affected by mergers, tender offers, liquidations, spinoffs, and corporate reorganizations. The securities involved in the risk arbitrage process can be common stocks, preferred stocks, bonds, or options. Once a transaction is announced, arbitrageurs try to assemble as much information as possible to help estimate each transaction's risk, reward, and probability of occurrence. Annual reports, 10-K reports, quarterly reports, and reports generated by Wall Street analysts are gathered and evaluated by the arbitrageur as quickly as possible. As can be expected, much of this is done with the aid of computers and various online services.*

The arbitrageur sets out to analyze all aspects of the transaction. He or she seeks to make various estimates that will help evaluate when a monetary commitment should be made to a particular transaction. Generally, the arbitrageur focuses on three keys to each prospective transaction: return, risk, and the probability of the transaction's being completed. Armed with these estimates, the arbitrageur will determine which, if any, securities will be purchased or sold, and what strategies must be used to hedge a particular transaction.

Risk arbitrage is an exciting and challenging process. Stocks involved in these transactions may become volatile. If the deal works out, the arbitrageur may realize a large gain, depending on the arbitrageur's market position. On the other hand, if the transaction is called off, the securities may drop precipitously and the arbitrageur may suffer large losses. The intensity may be further heightened because these developments may occur very quickly. The arbitrageur comes to work each day not knowing what type of industry he or she will have to be working with, or what companies will be at the center of an analysis. An arbitrageur may spend a morning analyzing a domestic oil deal, and, by the end of the day, will need to present a complete analysis of a transaction involving computer hardware manufacturers.

In addition to the need to be a generalist (as opposed to a specialized industry analyst), the arbitrageur must be able to use various analytical tools. The most frequently used tool is financial analysis, but the arbitrageur must also be able to use various computer and legal skills. Many deals need specific legal analysis centering on antitrust or securities law. Frequently, the arbitrageur will consult with outside advisers on specific important issues related to a particular transaction. These advisers may be attorneys, accountants, or financial analysts. All analyses have one main emphasis: to predict whether an announced transaction will occur and, if so, to decide what securities position to take in order to profit from the transaction. Risk arbitrage is an event-driven investment process.

The arbitrage investment may involve various types of securities. Typically, the arbitrageur is investing in the common stocks of the companies involved in the merger or takeover transaction. If shareholders of the company being taken over are receiving shares of the acquiring company, the arbitrageur will also sell short an equivalent amount of the issuer's shares to hedge the market risk of the transaction.

For example, in December 2014, Spansion Incorporated (CODE) agreed to merge with Cypress Semiconductor (CY).

- CODE was a manufacturer of flash memory products, and the strategy of the proposed combination was to create a leading global provider of microcontrollers and specialized memory.
- Each CODE shareholder was to receive 2.457 shares of CY in exchange for their shares at the closing of the merger.
- In order to lock in a spread, in this case, the arbitrageur would buy shares of CODE and sell short 2.457 shares of CY for each share of CODE purchased.

- As long as the merger closed as planned on the proposed terms, which it did on March 13, 2015, the arbitrageur would have locked in a spread and earned the return upon closing. (This assumes that CODE traded at a discount to its implied value based on the exchange terms.)

The hedging process will be explained in depth in Chapter 10.

Common stock is not the only type of security involved in the arbitrageur's analysis and investment process. Convertible securities, bonds, and options will also be evaluated to determine whether they offer the arbitrageur an optimal choice of investment. Put and call options will frequently be evaluated once the arbitrageur has determined how to set up a position. The options may be used as a standalone strategy or combined with the purchase or sale of common stock to alter the risk/reward framework of the transaction.

In setting up the arbitrage position in the overall portfolio, the arbitrageur is generally trying to profit from the spread between the deal value or takeover price and the price of the securities that are subject to the transaction. The spread or discount from the deal value generally exists for two reasons:

1. The time value of money
2. A risk premium

Many transactions may be announced, but not all are completed. A termination of a proposed deal is generally accompanied by a drop in the target's security's price, which may cause the arbitrageur to suffer a loss in portfolio value. Therefore, the arbitrageur's overall portfolio management strategy must include various risk parameters and disciplines to ensure an ability to weather individual deal losses or overall general equity market moves over various investment cycles.

There have been a few exceptions, but returns earned in the risk arbitrage business tend to be unrelated to overall equity market returns. This could be an advantage for investors in periods when the stock market declines or has negligible returns. However, arbitrageurs are hard pressed to compete with equity returns in periods of dramatic bull markets such as we have experienced over the past 30 years. The reason lies in the fact that the arbitrageur is generally trying to earn small increments of return (spread) with a high degree of certainty. The arbitrageur invests in a particular transaction, typically holds it to the deal's completion, and then seeks to redeploy the capital involved in the transaction. By turning over the investment and earning the incremental returns over a forecasted period of time, the arbitrageur hopes to generate meaningful returns that are unrelated to overall equity returns. This low overall correlation to the equity market exists because the individual transaction's occurrence is generally not related to the direction of the equity market. The deal's return is more a function of the merging companies' plans and the passage of time.

In the past 30 years, however, there have been several periods in which arbitrage returns were related to the equity market. For instance, during the Crash of 1987, the Mini-Crash of 1989, and the Credit Crisis of 2008, many announced merger transactions were reevaluated by the acquiring companies' boards of directors. Whenever the transactions were then terminated, the arbitrage community suffered huge losses. The reevaluations were generally done because of the large decline in stock prices. The transactions had been structured in an earlier period, and the higher equity prices at that time had been used as a guideline to determine the price to be paid for a particular company. When stock prices declined dramatically, many board members felt they were overpaying for the assets they were trying to acquire.

Furthermore, in this earlier period, a tremendous number of transactions were being driven by entrepreneurs who were trying to buy companies as part of a plan to sell off their assets in a short period of time. Many of these buyers were highly leveraged, and their strategies depended on the stock market remaining healthy. When the market declined, their strategies were flawed, and the sources of their financing began to pull their financing commitments.

Barring these periods of market dislocation, risk arbitrage can provide investors with a profitable strategy to generate returns that will not be dependent on equity market moves.

TYPES OF TRANSACTIONS

Mergers

Mergers are the most common type of transaction that arbitrageurs analyze. Mergers may not always start out to be consensual transactions, but the structure of a merger transaction requires the involved parties to enter into an agreed-on transaction to combine their respective businesses.

Mergers are generally announced through a joint press release. Two forms of the initial announcement are possible. The two companies may announce what is known as an *agreement in principle* or they may enter into a *definitive agreement* to merge. Years ago, it was common for companies to enter into an agreement in principle and then proceed to do due diligence on each other's business. When the due diligence was completed to their satisfaction, the respective firms would have their attorneys draft a contract known as a definitive agreement. The boards of directors of the companies would then approve and execute the definitive agreement.

Today, companies rarely announce a merger with an agreement in principle. Most deals are announced when a definitive agreement is already in place. The merging firms try to perform their due diligence procedures in secrecy, and they make their public announcement after they have a definitive agreement. In fact, a deal announced today with only an agreement in principle should be a warning signal for arbitrageurs.

NOTES FROM THE FILE*

An agreement in principle may indicate that the companies felt pressure to release prematurely the news of a pending merger. A leak in the private negotiations may have occurred, and changes in the underlying stock prices of the two merging firms may have been the market's reaction. Rising prices in the target company's stock may serve as a warning to the companies that their negotiations were filtering into public domain.

For example, on April 28, 2015, Iron Mountain (IRM) and Recall Holdings (REC) announced an agreement in principle to merge.

- The agreement in principle was designed to provide each Recall share with 0.1722 shares of IRM upon the closing of the merger.
- However, the agreement in principle was subject to the companies performing due diligence and negotiating an acceptable definitive merger agreement.
- After the agreement in principle was announced, shares of IRM declined substantially.
- Due to the decline in IRM's price, the value of the 0.1722 IRM shares was no longer worth what the REC board thought.
- The REC board sought an improvement in the merger terms to compensate for the decline in IRM.
- After the due diligence process was completed, the companies entered into a definitive merger agreement on June 8, 2015, which provided that each REC shareholder would receive the original 0.1722 shares of IRM and would additionally receive $0.50 per share in cash to compensate them for the decline in IRM's stock price.

*"Notes from the File" are particular lessons the author has learned during his years in the risk arbitrage business.

- While REC's board was able to extract some additional compensation for shareholders, the result could have been much worse. IRM could have refused to increase the terms and as a result the agreement in principle would have most likely been dissolved.
- REC's stock price could have then declined to its $6.50 Australian Dollar price level, causing a substantial loss for those traders who had bought REC's stock on the initial deal announcement.
- Unlike the renegotiation in the REC/IRM case, most of the time problems in the due diligence process generally have an unfavorable result for the target company's shareholders. The likelihood of the transaction's taking place may not be affected, but if the companies have not completed their due diligence, there may be a significant additional risk that the companies may not come to an ultimate agreement. Therefore, compared to deals announced with definitive agreements, deals with only agreements in principle should be viewed as higher-risk transactions.

After a definitive agreement is negotiated, a registration statement has to be filed with the Securities and Exchange Commission (SEC). In a cash deal, the registration process is simple. If, however, the consideration to be received by the company being acquired is securities, the securities have to be registered with the SEC. This process has several steps:

1. The registration statement, which includes all the details of the securities being offered and the proposed transaction, must be filed.
2. The SEC generally reviews the documents and makes confidential comments to the issuing corporation.
3. After analyzing the comments and consulting with attorneys, the issuer responds to the comments by amending the registration statement as necessary.
4. After the issuer has answered all of the SEC's initial and subsequent comments and has made the required changes in the registration statement, the registration statement may be declared "effective." This does *not* mean that the SEC approves the securities. It merely means that the SEC believes that disclosure of the required information has been met.

When the registration statement has been declared effective, the document must be mailed to shareholders for their approval. If the merger is for cash or involves a small amount of the acquiring company's stock (less than 17.5%), only the shareholders of the company being acquired need to approve the transaction. If, however, more than 17.5% of the acquiring company's stock is being issued in the transaction, the New York Stock Exchange requires approval by both sets of shareholders before the transaction can become effective. The New York Stock Exchange does not allow companies to issue large amounts of stock without prior shareholder approval and still maintain their listings on the Exchange.

The shareholder vote required to approve any merger transaction is determined by the appropriate statute of the state in which the voting firms are organized. For instance, if the company being acquired is incorporated in the state of Delaware, the merger must be approved by more than a majority of those shares voting. When the required number of votes is received, the merger may be completed by filing the required forms with the states involved in the transaction. Arbitrageurs must diligently research each individual transaction in order to be in a position to predict the outcome of the announced merger transaction.

Before a merger can be completed, in addition to shareholder approvals, other required regulatory approvals must be in place. With domestic mergers, the deal has to receive approval under the Hart-Scott-Rodino (HSR) procedure where both parties must file material with both the Department of Justice and the Federal Trade Commission. The U.S. antitrust agencies have 30 days to review the material and may request additional information. Once the additional information requested by the agencies is fully provided, the HSR waiting period continues for an additional 20 days. After that time, should the agencies want to prevent the merger, they must seek an injunction in Federal Court.

In addition to needing HSR approval, transactions of U.S. companies by foreign entities may need to be reviewed by the Committee of Foreign Investments in the United States (CIFIUS). In general, a CIFIUS review is required where there is a question as to whether the transaction represents an issue of national security. These reviews will be discussed in a later chapter of the book.

In some regulated industries, other regulatory approvals must be obtained. For instance, mergers involving broadcasting companies require the approval of the Federal Communications Commission. Mergers between insurance companies may require the approval from individual state insurance departments. All these types of approvals must be looked at in depth by the arbitrageur.

As globalization has proliferated, additional approvals may be needed in some mergers. For instance, if the companies have significant assets in China, approval under the Ministry of Commerce of the People's Republic of China (MOFCOM) must first be obtained before the merger can be completed. Given that the MOFCOM procedure is not as defined as the

U.S. HSR format, it is a bit more difficult at times to predict the outcome and timing of a MOFCOM approval. The arbitrageur must take this into account in assessing both the ability to receive the Chinese approval as well as its effect on timing.

Tender Offers

A second type of transaction that arbitrageurs analyze is called a tender offer. Tender offers can be either friendly or hostile. The acquiring company is simply using a different structure to initiate the acquisition of another company. It is a two-step process.

To initiate a tender offer, an ad is placed in the *Wall Street Journal* and local newspapers to inform the target company's shareholders that there is a formal offer to buy their stock. This offer is made directly to the shareholders of the company being acquired and does not require a shareholder vote. The tender offer's consideration may be cash, securities, or a combination of the two. A cash tender offer can theoretically be executed in a relatively short period of time (approximately 20 business days). However, tender offers involving the issuance of securities to target company shareholders require a registration process similar to the one used for mergers. These offers that involve securities are also known as "exchange offers," which are covered in the next section of this chapter.

The prime reason for using a tender offer rather than a merger is speed. A cash tender offer allows the acquiring company to acquire a majority of the shares of the target company within a very short period of time. This also assumes that the proper waiting period under the Hart-Scott-Rodino (HSR) Act is fully complied with. The HSR Act, passed in 1976, requires companies involved in mergers and acquisitions to file certain information regarding their plans and their respective businesses with both the Justice Department and the Federal Trade Commission. The HSR Act requires the companies to adhere to various minimum waiting periods prior to closing their transactions. The HSR statute and waiting periods are discussed further in Chapter 4.

Given the development of effective defensive takeover tactics, it has become more difficult to close tender offers quickly. Various defenses and corporate governance changes have been allowing target companies to delay the possible transfer of control of the target. Additionally, the need for foreign approvals has also added other hurdles to get control of the target quickly through a tender.

When the acquiring company holds a majority of the target's shares through the tender offer, the companies follow the tender offer with SEC filings to complete the merger of the two firms. This process is known as the *second-step transaction*. In a second-step transaction, shares of the target company that were not tendered and purchased in the tender offer are eventually purchased through the merger process. Almost always, the target shareholders receive the same consideration paid under the tender offer in the second-step merger transaction.

One of the most important uses of the tender offer is in a contested takeover situation. Not all takeovers and mergers are friendly. Many times, when an acquiring company approaches a target company for negotiations, the negotiations may be refused or may be unsuccessful. To pressure the target company, the offering company may start a hostile tender offer. As with friendly tender offers, advertisements are placed in the *Wall Street Journal* and local newspapers, and the clock starts running on the offer. The target company must respond to the tender offer within a short period of time and must tell its shareholders what action its board of directors is recommending to shareholders. (The actual document that the target company must file with the SEC is called a "14-d-9." It must be filed with the SEC within 10 days of the commencement of the offer.)

The board of directors can recommend that the company's shareholders accept or reject the offer or wait for further recommendations. Many boards initially recommend that shareholders take no action and wait for further instructions. In hostile situations, the target company usually pursues various defenses to prevent a complete takeover, or it tries to find a "white knight"—a company that enters the bidding as the favored merger partner of the target company. The white knight may be a company that approaches the target company to help keep it from being taken over by the hostile bidder, or it may be a company that is solicited by the target company or the target's investment bankers. These situations are the stuff that arbitrageurs' dreams are made of.

NOTES FROM THE FILE

Whenever a hostile tender offer is announced, an arbitrageur should drop everything else and work on the hostile tender! Hostile tenders can develop quickly, and they frequently represent arbitrageurs' most attractive investment opportunities. Although over the past 20 years, target companies have been more successful in defending against and delaying the completion of hostile offers, profits from hostile tenders can still be quite large (especially when white knights enter the bidding), and the situations can develop very quickly. The arbitrageur usually has many days or weeks to analyze merger transactions. However, hostile tenders require immediate attention!

A white knight's entry into the bidding can touch off a bidding war. If the arbitrageur gets involved in the situation prior to the white knight's entry, the bidding war could provide the arbitrageur and his or her investors with significant profits. Furthermore, these profits may be realized over a very short period of time.

Hostile tender offers have had an interesting place in corporate takeover history, and their presence is predicted to continue in future years. However, developments over the past 25 years or so have made hostile offers more difficult to accomplish. While we will deal with these developments and their effect on hostile offers later in the book (primarily in Chapter 8), due to the growth of the "just-say-no" defense, where the board of the target company refuses to negotiate with the hostile bidder and utilizes defensive mechanisms such as a poison pill to prevent a deal, it has become much more difficult to succeed at a hostile takeover. As a result, the incidence of successful hostile approaches and takeovers has significantly declined, as shown in Exhibit 2.1.

As can be seen from Exhibit 2.2, the value of terminated hostile offers dwarfs the value of successful hostiles in all five years covered by the data.

When we examine the trend in the number of hostiles, we see that in all but one year (2011), more hostiles were terminated than the number that were successfully completed. Furthermore, the development of successful defense tactics seems to have tipped the scales in favor of the target companies being able to defend against hostile offers over the last five years.

Hostile tender offers may become friendly transactions. By topping a white knight's bid, or through an eventual accommodation or agreed-on transaction with the target company, a hostile situation may

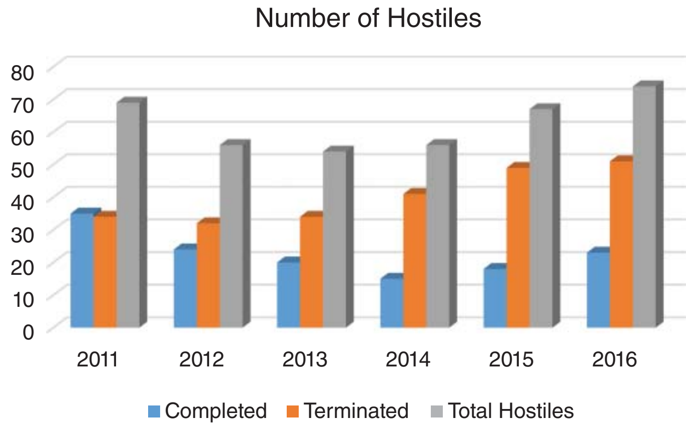


EXHIBIT 2.1 Number of Hostile Offers (2011–2016)
Source: Bloomberg Finance LP.

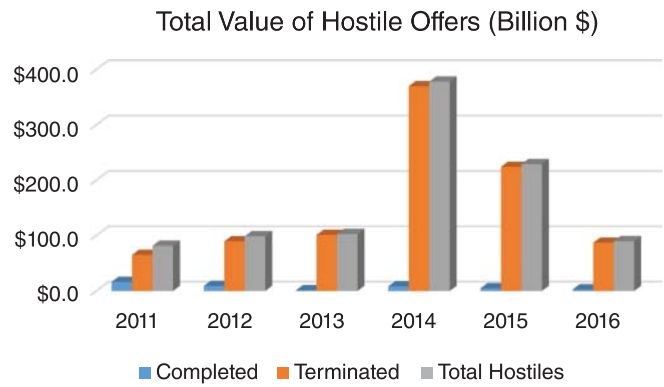


EXHIBIT 2.2 Value of Hostile Offers (2011–2016)
Source: Bloomberg Finance LP.

be transformed into a friendly transaction. Once it turns friendly, the transaction may continue in its tender offer form or it may actually change its structure—usually becoming a typical merger transaction.

Hostile bids are generally the takeover situations that receive the most coverage in the press. They are potentially the most lucrative situations analyzed by the arbitrage community.

Exchange Offers

Exchange offers are tender offers in which the consideration being offered has a non-cash element such as stocks or bonds. Because these securities must go through the registration process, an exchange offer may not be completed as quickly as its cash tender offer counterpart. All securities issued under the exchange offer must go through the same registration process that exists for mergers. However, because there is no required vote of shareholders of the target company, the exchange offer may theoretically be completed faster than a transaction structured as a statutory merger. During the time when the acquiring company is going through the registration process, the issuer is able to satisfy other requirements such as the HSR Act and any legal or regulatory hurdles.

Exchange offers may be friendly or hostile transactions. Like tender offers, exchange offers are made directly to the target company's shareholders.

The main advantage of using an exchange offer, as opposed to a statutory merger, is that a shareholder vote of the target company is not required. As with a tender offer, the acquiring company can obtain a majority stake in the target company without a stockholders' vote. An exchange offer is usually followed by a statutory merger as a second-step transaction. Because the issuer may already hold a large percentage of the target company's voting shares at this point, the vote is usually a foregone conclusion.

As in tender offers, the arbitrageur is generally purchasing securities that are subject to the exchange offer. These securities are usually common stock of the target company but may include debt securities of the target company.

Spinoffs

Spinoffs have become a lot more common transactions for risk arbitrageurs to evaluate and use as a potential opportunity. In a spinoff transaction, a company decides to split its businesses into separate units. Each new and separate unit may then be distributed to the current holders of the issuer's stock. As evidence of ownership, the issuer's holders receive additional shares of stock of the new company. Arbitrageurs will receive these new shares as long as they hold the parent company's stock on the record date of the spinoff.

Sometimes, however, the issuer distributes the shares directly to shareholders or sells the shares through a public offering to establish a market value for the new entity. At a later date, the issuer may distribute the remaining shares of the spun-off unit to shareholders, to complete the divestiture of the operation. Many U.S. corporations—even household-name companies—have recently decided to separate their businesses and use the spinoff tactic to effectuate the split.

For years, it was assumed that no matter how a company split up its businesses, the total value for shareholders would be the same. This assumption was based on the existing investment teachings in the field of finance. However, practical experience with spinoffs has called those theories into question. In most situations where companies have spun off businesses to their shareholders, the total value of all the securities held after the spinoff has exceeded pre-spinoff valuations. Analysts and academicians have suggested several reasons for this phenomenon.

By simplifying the corporate structure, spinoffs allow analysts on Wall Street to analyze the individual businesses in depth, as opposed to grouping them together as a whole. Many conglomerates have been able to create value for their shareholders by breaking up into several distinct companies and distributing the shares of these individual companies to their shareholders.

By simplifying the corporate structure, these spinoffs have also made it easier for Wall Street analysts to follow the company. Analysts may not have felt qualified to analyze the conglomerate, but additional research coverage can be created for the individually traded companies.

When a business is broken down into more understandable elements, it may become clear that some of the operations have growth and earnings characteristics that are quite different from those of the parent company.

These growth and earnings characteristics may cause Wall Street to put a higher valuation on these businesses, and investors may be willing to pay a premium price for them. Therefore, it could be in the parent's best interest to spin off these operations in order to create value for shareholders.

Risk arbitrageurs have found that their financial analysis skills can be readily applied to spinoff transactions. Because arbitrageurs frequently have to study and value securities that are to be received in arbitrage transactions but do not have a current trading market value, they are in a good position to be able to value a security created by a spinoff transaction.

Spinoff transactions do carry additional risk that the arbitrageur does not generally encounter in a merger or tender offer transaction. Spinoffs result in trading of a new security in the marketplace. As a result, initiating a position causes the arbitrageur to assume equity market risk. Because the security is new, the arbitrageur is unable to hedge the purchase that creates the new unit. For instance, the arbitrageur may estimate that the spinoff security is worth $10, given the existing marketplace when he or she buys the issuers' shares. However, spinoffs are also required to go through the registration process. Because this process commonly takes 60 to 90 days, the overall pricing framework of the equity market may change the valuations in the stock market. During this period of time, no security that represents the spinoff operation is being traded. Moves in the equity market may cause the arbitrageur's initial $10 estimate to be inaccurate. The arbitrageur may either accept this market risk or look to hedge off this risk through the use of futures or some other financial instrument that can be predicted to react like the new security. When the registration process is complete and the new security trades in the marketplace, the arbitrageur can look to unwind the artificial hedge and then sell off the security being spun off to shareholders. In either case, the spinoff transaction represents an interesting opportunity for arbitrageurs to create value in their portfolios.

With the development of exchange-traded funds (ETFs), arbitrageurs may frequently be able to hedge the market risk with an ETF. By finding an ETF that holds securities that are closely related to the security being spun off, a synthetic hedge may be created by shorting the ETF against the long position held in the spinoff. If the correlation between the ETF and the spinoff holds and the proper hedge ratio is used, much of the market risk may be eliminated.

Recapitalizations

Recapitalizations are similar to spinoff situations in that the arbitrageur is usually faced with valuing a security before it trades in the marketplace. With recapitalization transactions, shareholders of the issuing corporation are generally receiving securities or a combination of securities and cash. A typical transaction might be structured so that current shareholders receive a $15 cash dividend and a new share in the reorganized company. The arbitrageur must (1) try to estimate the value of the new shares and (2) determine the likelihood of the transaction's actually occurring. This valuation process is very similar to what financial analysts do at brokerage firms when they advise clients on their investments. The analysis involves looking at cash flows, earnings, price/earnings multiples, and the issuing firm's balance sheet and credit rating. After the arbitrageur arrives at the estimates of recapitalization values, the next step is to determine what potential problems could occur that would affect the likelihood of the transaction's occurring.

Many recapitalization transactions present attractive opportunities to the arbitrage community and the general investment community.

Activist Situations

Over the past 5 years or so, there has been a tremendous growth in attacks on corporations and the policies of their boards by shareholders who are seeking changes in corporate strategy to generate additional value for all shareholders. Typically, an activist is a rather new shareholder who has analyzed the target company's strategy, its assets, and its businesses. These activists generally identify underutilized assets or believe the target company is not pursuing the best strategy to create value for shareholders. The activist shareholder generally acquires a position, which can be large, and announces it believes that the board of directors of the target should alter the company's strategy. While the activist may initially contact the company privately, most activist situations become active with a public announcement.

Activist strategies generally include threats to propose a competing board of directors to carry out their specific plans to generate value and cause the price of the target to increase. The potential proxy fight can be at a regularly scheduled shareholder meeting or, sometimes, at a special meeting of target shareholders, should the target's bylaws allow for calling a special meeting.

After an activist goes "public" with its plan or complaint about the target's current strategy, a public relations battle generally ensues. Both sides usually hire investment bankers, attorneys specializing in proxy fights and control disputes, and in many cases, proxy solicitation firms. The target company generally makes its case for its current strategy and criticizes the dissident shareholder's plans. Frequently, the target claims that the activist is focusing on generating only short-term value at the expense of management's plans, which are designed to generate value over the long term.

Years ago, the odds favored management, as most institutional shareholders tended to side with the existing board of directors and were reluctant to support activists. However, over the past few years, the tide has changed. A number of firms, such as Institutional Shareholder Services (ISS), Glass-Lewis & Company, and Egan-Jones, have developed a following with their institutional clients that can have a significant effect on the outcome of an activist challenge. These proxy advisory firms generate reports analyzing the merits of both sides' claims and formulate a recommendation for shareholders, giving guidance on how shareholders should vote. Over the past 10 years, institutions have become more sensitive to how they vote shares as litigation challenging the traditional institutional support for current management has become more prevalent. This sensitivity has created a fertile environment for the proxy advisory firms to grow, and many institutional holders now rely on the proxy advisory firm's recommendations when casting their votes. Some institutional holders have even developed their own in-house proxy advisory departments, adding to the mix of trying to determine how the institutional vote will play out. Perhaps one of the most positive developments helping to improve the activist's chances of success has been the tendency for more and more institutions to be open to the changes proposed by activists. As a result, the success rate of activists has improved dramatically over the past few years.

Speculative Situations

Over the years, there has been a trend toward accelerated disclosure of corporate plans. Formerly, if two companies were considering a merger or if a company was considering selling out, negotiations were conducted in private. If an agreement was reached, a public announcement was made and the arbitrageur's investment process would commence. However, possibly due to an increased sensitivity to leaks in the marketplace, some companies actually disclose that they are in talks or discussions on possible corporate transactions that would affect their shares and the securities' value. An early disclosure of merger talks may significantly affect the prices of the underlying securities and could present an additional type of transaction for the arbitrageur to consider. However, investors must realize that these situations do *not* qualify as arbitrage. They are merely speculative transactions, and they are much more difficult to predict than actual arbitrage opportunities. The speculative situations are exciting and potentially lucrative, but they are too premature and contain too much uncertainty for most arbitrageurs to consider.

NOTES FROM THE FILE

Speculative situations are not true arbitrage. They are closer to gambling at a casino than any other situation an arbitrageur might consider for investment. Arbitrageurs should avoid these types of transactions! When target companies announce that they are putting themselves up for sale or are examining strategic options, the investment community and arbitrageurs alike attempt to predict whether the targets would receive a bid and what consideration might be offered for the individual companies. Since there is no structured set of terms in these situations, a much higher degree of risk is embedded in the situations. Arbitrageurs should be careful making commitments to these types of transactions and should limit these speculative positions in total to a small percentage of the overall portfolio.

Type of Transaction	Nature of Transaction	SEC Filing	Shareholder Vote	Typical Timing
Merger	Consensual	Proxy and/or registration statement	Target company and both target and acquiring company may be required	90–120 days (except mergers involving regulated industries)
Tender offers	Consensual or hostile	14-d-9	Not required	Friendly 30–45 days, unfriendly 60–365 days
Exchange offers	Consensual or hostile	Registration statement	May be required	Friendly 60–90 days, unfriendly 90–365 days
Spinoff	Friendly (consensual)	Proxy and registration statement	Usually required	90–180 days
Recapitalization	Friendly	Proxy and registration statement	Usually required	90–180 days
Activist situations	Hostile to current target board	Most involve registration of proxy documents	Vote may be required; however, sometimes the target responds with alternate plan or "gives in"	90–720 days depending on bylaws and whether board is staggered
Speculative situations	Either friendly or hostile	Registration may be required	May be required	90–180 days

EXHIBIT 2.3 Types of Arbitrage Transactions

Speculative situations are exciting and tempting to investors and arbitrageurs alike. It is relatively easy to formulate overly optimistic forecasts for speculative situations. Too much uncertainty exists in these transactions for arbitrageurs to get an analytical handle on them. Accurate predictions of value and of the possible outcomes are virtually impossible. If these situations are "played," they should be restricted to a quite low percentage (5 to 10% in the aggregate) of the overall portfolio.

Thus far, we have seen that many types of transactions can be considered for an arbitrage portfolio. Exhibit 2.3 summarizes the basic features of the numerous risk arbitrage opportunities. Each of these transactions requires a different type of analysis. Chapter 3 delves into how these various analyses are achieved.

CHAPTER 3

The Risk Arbitrage Industry

When I first became involved in risk arbitrage, in the 1970s, there were very few competitors. The business was characterized as being performed under a cloak of silence by a limited number of firms. Generally, the participants in the business operated as an arbitrage department within the auspices of a brokerage firm. When I first started, only 10 to 15 firms were involved in risk arbitrage.

Over time, however, the business developed and additional people began to participate in various ways. This additional participation came from two directions. Historically, brokerage firms began to establish arbitrage departments by hiring experienced arbitrage personnel who worked at other brokerage firms. The newly formed departments were generally centered in the capital markets areas of the firms. Exhibit 3.1 shows the structure and the typical line of reporting within a brokerage firm. However, since the Volker Rule was adopted after the Credit Crisis of 2008, very few firms have been allowed to commit capital to proprietary accounts.

The second form of participation developed during the 1970s and the trend has accelerated since the Volker Rule was adopted. Using a limited partnership format, some arbitrageurs formed their own firms and raised money from outside investors. These investors became limited partners and their capital was funneled into a limited partnership, where it was utilized to invest in risk arbitrage situations. The partnership was compensated based on the investment return generated for the limited partners. In the typical fee structure, an incentive fee was charged based on the return earned on the limited partnership's portfolio. This limited partnership form is illustrated in Exhibit 3.2.

In some cases, the fee was based on the incremental return over a minimal hurdle rate set in the limited partnership agreement. A typical fee arrangement in a limited partnership would have the manager receiving (1) a management fee based on assets under management and (2) an incentive fee based on investment returns generated to limited partners. These fees varied from arbitrage boutique to arbitrage boutique. In fact,

Risk Arbitrage: An Investor's Guide, Second Edition. Keith M. Moore.

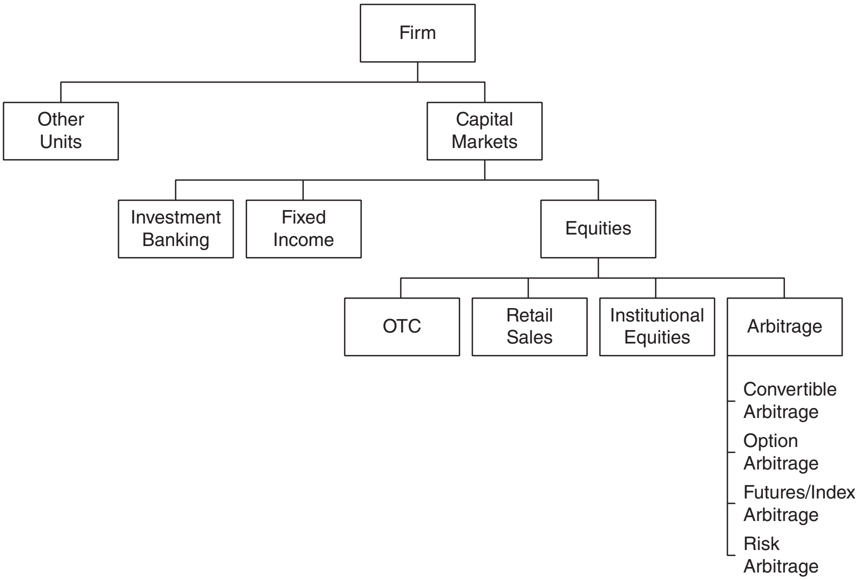


EXHIBIT 3.1 Typical Arbitrage Structure within a Brokerage Firm

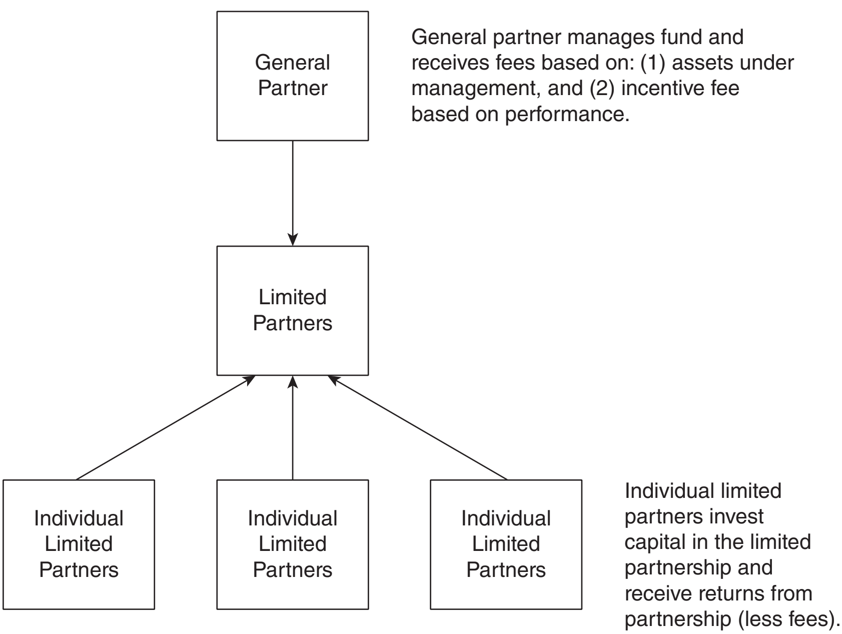


EXHIBIT 3.2 Structure of Limited Partnership

the incentive percentage ranged from 20% in some boutiques to more than 50% in others where the arbitrageur received over half the return and the limited partners received the balance. Today, the typical arbitrage boutique firm incorporates a fee structure of a 1% fee on assets plus a 20% incentive fee based on performance.

The development of the arbitrage boutiques changed the arbitrage business forever. The boutiques funneled additional investment capital into the arbitrage area. Previously, because only a small number of firms were participating with a limited capital base, much higher spreads and returns were possible. Raising the additional capital from outside investors created competition for participating in the transactions, which ultimately put pressure on deal spreads. Over time, as the capital in the industry increased dramatically, the spreads in the industry narrowed.

In addition to partnerships that specialize in arbitrage, other funds that employed a wider range of investment strategies have grown over the years. Many hedge funds that were set up in a format similar to the risk arbitrage boutique but were applying investors' money to various equity market strategies began to participate in the risk arbitrage business. This group of hedge funds became known as multi-strategy funds, a structure shown in Exhibit 3.3.

The participation in the various investment strategies employed by these firms is performed with the overall investment manager determining allocations to the individual strategies. The allocation to the risk arbitrage strategy generally depends on how attractive the multi-strategy manager

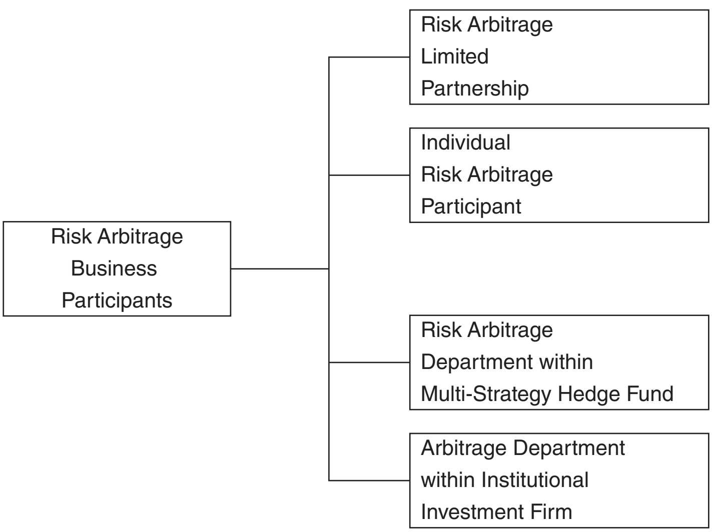


EXHIBIT 3.3 Risk Arbitrage

views the risk arbitrage business. When returns from the risk arbitrage strategy appear to be attractive, the investment manager initiates or adds capital to that particular strategy. Conversely, should the multi-strategy manager believe that the potential returns from the risk arbitrage investment strategy are no longer attractive as compared to the firm's other investment strategies, capital will be moved out of the risk arbitrage portfolio and reallocated to the other strategies.

The participation in the risk arbitrage strategy by multi-strategy firms has grown dramatically over the past 10 years. When multi-strategy firms increase the amount of capital being applied to the arbitrage business, the commitment tends to pressure risk arbitrage spreads and returns.

Pension funds have also become participants in the business over the past decade or so. Pension funds used to be sellers of target companies as they became subject to takeover attempts and mergers. Pension fund managers had been holding these securities as long-term investment vehicles. Once the arbitrage transactions were announced, pension managers usually cashed out. Arbitrageurs were generally the beneficiaries of these sales because they were able to purchase the target's securities at lower prices. Now that a number of pension funds have hired arbitrageurs to take over the investment decisions on securities subject to takeover attempts, the supply of stock upon the deal's announcement has dwindled, causing further pressure on spreads and returns.

Despite the pressure on spreads and returns, returns in the risk arbitrage business remain attractive to many types of investors. Spreads have declined, but attractive returns can still be realized, and these returns usually show a low correlation with overall equity market returns.

Spreads and returns from the risk arbitrage investment strategy can be cyclical in nature. Over the past 10 years or so, the general level of risk arbitrage spreads has compressed. In addition to a flow of capital into the strategy, the decline in the general level of interest rates has been a major factor on arbitrage spreads. With lower borrowing costs, the natural economic effect is to narrow arbitrage spreads.

As depicted in Exhibit 3.3, with the increased level of publicity and an explosion in deal volume, individual investors have also become participants in the arbitrage business. These investors have not had much impact on deal spreads, but they have contributed to the increased level of competition. Individual investors face a difficult task in competing with the professional arbitrageurs in the arbitrage business; the professionals usually have greater financial resources as well as more experience. Individuals, however, if they maintain discipline and perform solid analysis with these transactions, have historically been able to generate substantial returns. As a result, the risk arbitrage business offers an attractive alternative for individual investors seeking to supplement their investments in typical equity and debt market instruments. This book is designed to aid these investors in their use of risk arbitrage as an investment technique.

The risk arbitrage business exhibits an important characteristic that sets it apart from the general investment business: the degree of interaction among arbitrageurs. Even though they compete with one another every day in analyzing their information flows and assembling their portfolios, there is a high degree of cooperation among arbitrageurs.

It is quite common for an arbitrageur to interact with numerous other arbitrageurs who are involved in the marketplace every day. The cooperation among arbitrageurs usually depends on each individual arbitrageur's relationships. The more arbitrageurs know and respect one another, the closer their relationships and their sharing of information and ideas.

Because the universe of potential arbitrage transactions is usually quite large, each arbitrageur tends to realize that he or she can be knowledgeable about and analyze only so many transactions at any given time. Additionally, there is always room for a supplementary interpretation. As a result, it is common for an arbitrageur to consult with other arbitrageurs regarding their feelings toward an individual deal or a group of transactions, and their estimates of the potential outcomes. In this way, many arbitrageurs are actually collaborating on their research efforts! This is rarely done in other areas of equity or debt investments.

The relationships developed by arbitrageurs depend on the level of trust they establish with other arbitrageurs with whom they deal. Some arbitrageurs prefer to go it alone.

For example, at a luncheon with one arbitrageur who has been involved in the business for over 40 years, he mentioned to me that although he knows that other arbitrageurs consult with one another, he feels that he operates best on his own. The general reason for his lack of interest in cooperating with other arbitrageurs was that he would find it surprising if an arbitrageur were to tell him the whole truth regarding his or her feelings about a transaction. He thought the competing arbitrageur would hold back important information and not necessarily share it.

One might conclude that the veteran arbitrageur would keep information to himself, to profit from it, but I have always found that view too cynical. Over time, I have been able to develop relationships with a small group of arbitrageurs whom I trust greatly. These relationships were built gradually and have stood the test of time.

NOTES FROM THE FILE

Some of my most cherished friendships have been developed through meeting other arbitrageurs. I have met these people through various trips and functions that I have attended while covering various deals for the firms for which I have worked. There have been instances where I have spent a week or more in a courtroom, contending with these professionals. Later, we would have dinner and socialize together. These types of experiences have led to close relationships during my career. The friendships have been unexpected byproducts of doing risk arbitrage, and I am very fortunate to have had these experiences.

Developing these good relationships has added to the information flow and the analysis flow in my decision process. Experienced arbitrageurs select deals that they feel are worthwhile and avoid deals that they feel are too risky. Similarly, they develop relationships with people who can be trusted, and they minimize relationships with people who make them feel uncomfortable.

This process of consulting with other arbitrageurs on a daily and continual basis sets the arbitrage business apart from other investment businesses. Chapters 4–7 examine the key elements of the risk arbitrage business and how these elements are combined in the risk arbitrage decision process.

CHAPTER 4

Estimating the Return on a Risk Arbitrage Position

Investors are always keenly interested in what they can potentially earn on their investment. Arbitrageurs are no different. In fact, an analysis of an arbitrage transaction generally results in a more quantitative estimate of return than is achieved through a traditional analysis of a stock or bond position. Security analysts usually come up with a range of values for a given equity security. These estimates are generally the basis for their recommendation to buy, hold, or sell. Risk arbitrage analysis yields a more defined value of a security, based on the arbitrageur's estimate of "deal value"—the first step toward an estimate of return on a risk arbitrage position. This return becomes the initial key element in the arbitrageur's analysis framework.

SIMPLE DEALS

Some deals are simple transactions on which it is easy to calculate return. For instance, suppose Company A is purchasing Company T in a friendly cash tender offer. The tender-offer price is \$20. This means that the acquiring company, Company A, is paying \$20 for each share of stock of the target company, Company T. The deal price is \$20, and we will assume that the transaction will close in approximately one month (30 days).

If Company T's stock is trading at \$19.85 per share, we may calculate the return on the deal as follows:

$$ER_{UL} = GS/I;\ GS = DP - SP_t$$

where ER_{UL} = expected return (unleveraged)
GS = gross spread

DP = deal price
SP_t = target company's stock price
I = arbitrageur's investment in the transaction (in this case, $I = SP_t$)

Because the transaction is for cash and the only transaction the arbitrageur must enter into is the purchase of Company T's stock at $19.85 (no short sale is involved), the arbitrageur's investment is $19.85 per share. It is assumed that the arbitrageur purchases the shares for cash and is not utilizing any debt financing in the transaction. Substituting dollar amounts:

$$\begin{aligned} GS &= \$20 - \$19.85 \\ &= \$.15 \text{ per Company T share} \\ ER_{UL} &= \$.15/\$19.85 \\ &= 0.76\% \end{aligned}$$

As long as we expect the transaction to be completed on the announced terms, we must convert the unannualized expected return to an annualized expected return. Arbitrageurs will always use this annualized expected return to analyze arbitrage positions and to compare various arbitrage opportunities.

$$ER_{UL} = (GS/I) \times (365/P)$$

where ER_{UL} = expected return on an annualized basis
GS = gross spread
I = investment
P = estimated investment period
= estimated closing date – initial investment date

For our example, the expected annual return can be found as follows:

$$\begin{aligned} ER_{UL} &= (\$.15/\$19.85) \times (365/30) \\ &= 9.19\% \end{aligned}$$

If the transaction occurs on the expected terms within the expected time horizon, the arbitrageur expects to earn a 9.19% return on an annualized basis. The arbitrageur assumes that, at the closing of the deal, the proceeds will be reinvested in another risk arbitrage opportunity.

In the above example, it was assumed that the $20 deal price was the only form of proceeds received in the transaction. If the company paid a dividend during the period when the arbitrageur held the stock, the dividend would enhance the return the arbitrageur would earn. Similarly, if the security held by the arbitrageur was a bond, the interest received on the bond would have to be accounted for in the spread calculations.

For instance, if Company T in the prior example paid a $.05 dividend per share within the 30 days the arbitrageur held the stock, the spread would increase from $.15 to $.20 and the annualized return would increase from 9.2% to 12.3%. The equation would again be:

$$ER_{UL} = (NS/I) \times (365/P)$$

where NS = net spread (gross spread plus all other cash flows on investment during investment period P).

In our example, the expected return calculation using the net spread would be as follows:

$$\begin{aligned} NS &= GS + D_t \\ &= \$.15 + \$.05 \\ &= \$.20 \end{aligned}$$

where D_t = dividend paid by target company,

$$\begin{aligned} ER_{UL} &= (NS/I) \times (365/P) \\ &= (\$.20/\$19.85) \times (365/30) \\ &= 12.3\% \end{aligned}$$

If the security purchased in the arbitrage transaction is a bond, the interest earned would be added to the net spread.

Again, it should be emphasized that the annualized expected return is used by the arbitrage community to compare the deal's spread to (1) other opportunities available in the universe of arbitrage situations and (2) the arbitrageur's cost of capital. In this way, the arbitrageur's decision is no different than a typical capital budgeting decision made by a corporation's managers when they compare their cost of capital to the expected return on various investment projects. Logically, it may be assumed that an arbitrageur will not invest capital in a transaction for which the expected return is less than the required rate of return. In fact, the arbitrageur most likely will require a premium over the minimum expected return in order to compensate for the risk involved in the transaction.

STOCK-FOR-STOCK DEALS

In today's merger market, many of the transactions being announced in the marketplace are known as *stock-for-stock transactions:* Two companies announce their plan to merge, and the medium of exchange is shares of the acquiring company. The simplest form of a stock-for-stock merger is when the Acquiring Company agrees to pay a set dollar value to the Target in shares of the Acquiring Company.

For example, assume that shareholders of Target "M" were to receive \$21 in Acquiring Company "N" stock for each share of Target M held. Acquiring Company N would issue the stock based on a 10-day average price formula. Target Company M does not currently pay a cash dividend to shareholders. The deal was expected to close after a shareholder vote in 90 days. Because the merger consideration (deal price) was fixed at \$21, the spread calculation was similar to that of a cash transaction:

Target Company M common stock price = \$20.75

Acquiring Company N common stock price = \$50.00

$$
\begin{aligned}
GS &= (\$21 - \$20.75) \\
&= \$.25 \\
NS &= GS + D_t \\
&= \$.25 + \$0.00 \\
ER_{UL} &= (NS/I) \times (365/P) \\
&= (\$.25/\$20.75) \times (365/90) \\
&= 4.9\%
\end{aligned}
$$

Stock-for-Stock Deals Using a Fixed-Exchange Ratio

It should be noted that most stock-for-stock mergers are not done at a fixed-dollar value. Almost always, these transactions are structured with a fixed exchange ratio.

Unlike the fixed-dollar value deal described above, where the stock-for-stock value was a fixed amount of dollars, on July 28, 2014, Trulia Incorporated (TRLA) and Zillow Incorporated (Z) announced their plans to merge in a stock-for-stock transaction. Each stockholder of TRLA was to receive 0.444 shares of Z for each TRLA share held.

This transaction required a different type of calculation to determine investment return. The deal price was not fixed; it depended on both the stock exchange ratio and the acquiring company's stock price. With the exchange ratio fixed, the deal price would rise if the underlying stock price rose. Conversely, if the underlying stock price declined, the per-share consideration would decline.

On the first day of trading after the merger was announced, TRLA and Z were trading at \$60.53 and \$145.53, respectively. Given that the transaction was likely to receive close scrutiny from U.S. antitrust authorities, the merger was expected to take about 5 months or 150 days.

In the TRLA/Z deal, we would calculate the deal price (DP) as follows:

$$
\begin{aligned}
DP &= R \times SP_a \\
&= 0.444 \times \$145.53 \\
&= \$64.61
\end{aligned}
$$

where R = ratio of the acquiring company's shares to be received for each target company share

SP_a = the acquiring company's stock price

In the TRLA/Z merger, if the price of Z common stock declined from \$145.53 to \$100, the deal value declined from \$64.61(0.444 shares × \$145.53 per TRLA share) to \$44.40 (0.444 × \$100). If the arbitrageur did not hedge off the Z shares he or she expected to receive in the transaction, the spread of the deal would have declined in relation to the Z common stock price decline. If the price of Z shares rose instead, the deal value would also have been impacted. The deal value and spread would have increased as the price of the underlying stock increased. As it turns out, over the life of the TRLA/Z deal, Z's stock declined dramatically.

Using Short Sales to Lock-in a Deal Spread

At this point, it should be noted that, in stock-for-stock deals, arbitrageurs commonly utilize a hedging process that allows them to lock in a deal value and a spread so that these important values no longer depend on the acquiring company's stock price. In this hedging process, once the terms of the transaction become known and the arbitrageur decides to initiate a position, he or she hedges off the purchase of the target's common stock by selling short the underlying shares of the acquiring company's stock that are expected to be received in the transaction. The process of selling short is initiated when the arbitrageur has a broker or clearing firm borrow shares of the stock being sold short. An order is then placed to sell the shares "short."

If the order is executed, the arbitrageur is "short" the shares. If the price of the shares rises, the arbitrageur is losing money on a mark-to market basis. Conversely, if the underlying shares decline in value, the arbitrageur is making money on a mark-to-market basis. Ultimately, the arbitrageur will close out the short position either by purchasing the shares in the open market or by delivering shares of the acquiring company that are received after the consummation of the merger.

In our TRLA/Z example, it may be useful to go through the math and show how the arbitrageur's spread is locked in, no matter what the acquiring company's stock price does, if the arbitrageur uses the short-selling process. Previously, we calculated that if Z's stock price declined from \$145.53 to \$100, the deal price then dropped from \$64.61 to \$44.40. Had the arbitrageur sold 0.444 shares of Z short at \$145.53 when he or she bought a share of TRLA at \$60.53, the following spread would have been created:

$$
\begin{aligned}
DP &= R \times SP_a \\
&= 0.444 \times \$145.53 \\
&= \$64.61 \\
GS &= DP - SP_t \\
&= \$64.61 - \$60.53 \\
&= \$4.08
\end{aligned}
$$

If the Z price drops to \$100, even though the deal price drops \$20.21 per TRLA share, the arbitrageur's gross spread remains \$4.08 per share:

Long one share of TRLA at \$60.53:	
At deal closing, one share is worth 0.444 × \$100	
Loss on long position (\$44.40 – \$60.53)	\$–16.13
Short 0.444 shares of Z at \$145.53:	
At deal closing, 0.444 shares trade at \$100	
Gain on short position (\$145.53 – \$100) × 0.444 shares	\$+20.21
	\$ +4.08

On the other hand, had Z's stock price risen to \$160, the arbitrageur's gross spread would remain at \$4.08:

Long one share of TRLA at \$60.53:	
At deal closing, one share is worth .444 × \$160	
Gain on long position (\$71.04 – \$60.53)	\$+10.51
Short .444 shares of Z at \$145.53:	
At deal closing, 0.444 shares trade at \$160	
Loss on short position (\$145.53 – \$160) × 0.444 shares	\$ –6.42
	\$ 4.08

As long as the arbitrageur hedged off the long position by shorting the exact amount of underlying shares that would be received when the transaction was completed, the gross spread was fixed, regardless of how the acquiring company's stock moved.

When an arbitrageur utilizes the short-selling technique to lock in a spread, several additional cash flows are created that must be considered when calculating the net spread and net returns. If the shares of the acquiring company pay a dividend and this dividend is paid during the time the arbitrageur is short, the arbitrageur must pay the dividend to the person from whom the shares were borrowed. The dividend on the short share becomes an expense for the arbitrageur; as a result, this cash flow reduces the net spread the arbitrageur receives.

Additionally, the short sale of securities creates a credit balance for the arbitrageur. For example, if the arbitrageur sells 44.4 shares of Zillow (Z) short at \$145.53 per share, proceeds of \$6,461.53 (\$145.53 × 44.4) will be created in the arbitrageur's short account. Professional arbitrageurs (as well as many individual investors) are able to receive interest on these short proceeds. The interest rate received is less than the amount an individual brokerage firm charges for borrowings because additional fees are paid out in the process of borrowing the securities.

The creation of the short proceeds, which we will call the *short interest credit,* becomes an additional cash flow that must be accounted for in our return calculation.

The return on the TRLA/Z transaction can then be viewed as follows:

$$\begin{aligned} GS &= DP - SP_t \\ &= (\$145.53 \times 0.444) - \$60.53 \\ &= \$4.08 \\ NS &= GS + D_t - (D_a \times R) + SI \end{aligned}$$

where D_t = dividend on target company (We assume TRLA will pay a 0.02 dividend)
D_a = dividend on acquiring company (We assume Z will pay a \$0.04 dividend)
R = ratio of acquiring company's shares received and shorted
SI = short interest credit

$$SI = SIP \times IS;\ SIP = R \times SP_a$$
$$SIP = 0.444 \times \$145.53$$
$$= \$64.61$$
$$SI = \$64.61 \times 0.01^1 (150/365)$$
$$= \$.26601$$

where SIP = short proceeds
IS = interest received on short proceeds
= short interest rate × period of time short is outstanding

The net spread on the TRLA/Z deal is calculated as follows:

$$NS = GS + D_t - (D_a \times R) + SI$$
$$= \$4.08 + \$0.02 - (\$0.04 \times 0.444) + .266$$
$$= \$4.08 + \$0.02 - \$0.018 + 0.266$$
$$= \$4.35$$

We assume that the transaction will close in 150 days and the arbitrageur will receive 1% on the short proceeds. The next step is to calculate the arbitrageur's annualized return on investment:

$$ER_{UL} = (NS/I) \times (365/P)$$
$$= (\$4.35/\$60.53) \times (365/150)$$
$$= 17.5\%$$

This calculation also assumes that the arbitrageur has adequate margin available to enter into the short-sale transaction. If adequate margin does

[1]*Note:* 1% is the interest rate the arbitrageur receives on the short proceeds.

not currently exist in the arbitrageur's account, additional funds must be deposited, and this would change the return-on-investment calculation.

Later in the chapter, we will see that arbitrageurs generally utilize leverage in executing their trades. So far, we have assumed no leverage in our examples. When leverage is introduced, the return cash flows are affected, as are the return calculations.

COMPLEX STOCK MERGER TRANSACTIONS

Before we examine more complicated transactions, it may be useful to walk through an actual transaction that had various components of a spread calculation.

On October 13, 2014, Atlas Energy (ATLS) and Targa Resources Partners (TRGP) agreed to merge. In the merger, each share of ATLS was to receive \$9.12 in cash, 0.1809 shares of TRGP, and a pro-rata share of non-midstream assets that ATLS was going to distribute at the closing of the merger. According to the announced terms, each ATLS share was to receive \$9.12 in cash, 0.1809 shares of TRGP, and a pro-rata share of ATLS' distributed non-midstream assets. The divested assets were to be spun off to all ATLS' shareholders under the plan. ATLS was trading at \$37.25 per share while TRGP was at \$109.01.

In order to calculate the spread in the deal, arbitrageurs needed to estimate the value of the non-midstream assets. These assets included:

1. 100% general partner interest and incentive distribution rights in Atlas partners LP (an exploration and production company).
2. 80% general partnership interest and incentive distribution rights and an 8% limited partner interest in ATLS' E&P Subsidiary.
3. 16% general partner interest and a 12% limited partner interest in Lightfoot Capital Partners.
4. Net production of approximately 11.5 million cubic feet per day of natural gas from the Arkoma Basin.

Shortly after the merger was announced and arbitrageurs and financial analysts were able to model the assets that were being spun off, in general, the value of the spinoff was expected to be approximately \$10 per ATLS share. This valuation was subject to overall equity market moves as well as the trends in oil and gas investments.

Most arbitrageurs, at the time of the announcement, expected the merger would close within four months. The merger was subject to the approval of a majority of ATLS' limited partnership interests as well as a majority vote of TRGP shareholders. The merger also was conditioned on a related merger closing as well as approval under Hart-Scott and the distribution of the non-midstream assets.

The annualized return could be calculated as follows:

$$ER_{UL} = (NS/I) \times (365/P);\ NS = (C + (R \times SP_a) + NewCo + D_t) - SP_t$$

where C = cash portion of deal value (\$9.12)
SV = stock value of deal value
SP_a = \$109.01
R = .1809
$SV = R \times SP_a$
$= .1809 \times \$109.01 = \$19.71$
NewCo = spinoff asset value estimate (\$10.00)
D_t = dividend to be paid on ATLS stock during investment period (P)
= \$.52 (on 11/6/14) + \$.52 (on 2/6/15)
= \$1.04
D_a = dividend to be paid on TRGP stock during investment period (P)
= (\$.7975 (on 10/30/14) + \$.7975 (on 1/29/15)) * 0.1809
= \$0.29
P = investment period (assumes an analysis date of 10/13/14 and an expected closing date of 2/28/15)
= 92 days
SP_t = \$37.25

The calculation of the annualized return can be seen here:

CALCULATION OF RETURNS FOR ATLS/TRGP POSITION SETUP

ATLS Price	$37.25
TRGP Price	$109.01
Est. Days to Completion	92
Cash Terms	$19.12
Stock Terms	0.1809
Est. Warrant Value	$10.00
ATLS Long Dividend	$0.52
TRGP Short Dividend	$0.80

# Long Dividends	2
# Short Dividends	2
Sht int rate	1.00%
Calculation of Deal Value and Returns	
Cash Terms	$19.12
Stock Terms	$0.18
Est. Warrant Value	$10.00
Total Deal Value	**$38.84**
Less Target	$37.25
Gross Spread	$1.59
Plus Target Dividends	$1.04
Less Acquiring Co Dividends	$0.29
Short Int Credit	$0.05
Net Spread	**$2.39**
ROI	**6.42%**
Annualized ROI	**25.47%**

Assuming that the arbitrageur's estimates of warrant value, dividends, and closing date were correct, the arbitrageur expected to earn an annualized return of 25.5% on the ATLS deal. We introduced a form of consideration in addition to cash (the ATLS warrant). Many transactions require additional estimates to determine expected rates of return.

Collars on Stock-for-Stock Transactions

Many stock-for-stock deals have built-in safeguards, or "collars," that are designed to protect either the acquiring or the target company. Collars usually take one of two different forms.

If the stock bid is fixed in price (e.g., $20 worth of the acquiring company's stock), the acquiring company may set minimum and maximum exchange ratios to protect its shareholders against major moves in the acquiring company's stock price. The acquiring company may be concerned that after negotiating and announcing the agreement, its common stock price could drop significantly.

If the deal price is defined in terms of a fixed-dollar consideration of the acquiring company's stock, the actual exchange ratio is generally determined by a formula. A typical method would involve taking an average of the acquiring company's closing stock price (on the exchange on which it trades) for a specific number of days prior to the transaction's closing. If the acquiring company's stock declines dramatically, the divisor declines and more shares must be issued to give the target company's shareholders the set dollar amount of stock.

Example 1

Facts:

Deal price set at $20 in acquiring company's stock.

Acquiring company's stock trades at $40 when the deal is announced.

As the deal approaches consummation, acquiring company's stock price has declined to $20 per share.

The acquiring company thought it would be issuing approximately .5 shares of its stock to the target company, but, because of the price decline, the acquiring company must issue one share at the closing, to keep the deal value at $20.[2] Issuing twice as many shares of stock could very well change the economics of the transaction for the acquiring company and its shareholders.

With this type of collar, arbitrageurs must be careful of the actual minimum and maximum exchange ratios that the acquiring company stipulates—for two reasons. First, with most collar deals, the parties may have the right to terminate the transaction if the acquiring company's stock price exceeds the parameters of the collar. The target company usually has the right to walk away from the transaction if the acquiring company's stock price drops below the minimum price level stipulated in the agreement. The decline in the acquiring company's stock price, combined with a fixed exchange ratio, results in the target company's shareholders receiving less than the agreed-on deal price.

In Example 1, we can illustrate the point by assuming that in addition to setting the deal price at $20 in stock, the companies agreed that the acquiring company would not be obligated to issue more than .75 shares and not less than .25 shares. With that specific collar, if the acquiring company's stock price declined to $20, the new deal price would be only $15 ($20 × .75) instead of the original $20.

Example 1 also illustrates the second reason why arbitrageurs must pay close attention to collars. The deal price used to determine the return on the transaction may change if the price of the acquiring company's stock exceeds the stipulated collar range.

---

[2]Number of shares issued equals deal price divided by acquiring company's stock price ($20 ÷ 40 = .5).

A second type of collar usually comes about when the merging parties state a particular exchange ratio in the initial definitive agreement. To protect themselves, the parties may also set up a range over which the exchange ratio is valid. The parties usually stipulate a minimum and maximum range of stock prices over which the exchange ratio will hold. If the companies set a fixed exchange ratio of .75 share for the acquiring company's shares, the companies will commonly state that the transaction can be terminated if the acquiring company's stock price either exceeds an upper price level or declines below a minimum price level.

Example 2

Facts:

Fixed exchange ratio of .75 share.

Acquiring company's shares trade at $40 when deal is announced.

Maximum acquiring company stock price is $55.

Minimum acquiring company stock price is $35.

If the acquiring company's stock price exceeds $55, the acquiring company may feel that it is paying too high a price (in the aggregate) for the target company's shares. This could result in the acquiring company's backing out of the transaction. Conversely, if the acquiring company's stock price declines below the $35 limit, the target company and its shareholders may feel that they are not receiving enough consideration for their shares.

For instance, if the acquiring company's shares decline to $30 per share, the target company's shareholders would be receiving only $22.50 (.75 × $30) in value, as opposed to the originally expected $30 per share (.75 × $40). The arbitrageur in this case must substitute the minimum-dollar deal value instead of the fixed (.75 share) exchange ratio in the spread calculations.

In all transactions involving collars, the arbitrageur must carefully study and analyze the definitive agreement to determine how underlying stock price moves may affect the spread and, thus, the return on the transaction. How the arbitrageur actually hedges transactions that involve collars is covered in Chapter 10.

Actual Example of a Collar Deal

On July 26, 2014, Dollar Tree (DLTR) agreed to acquire Family Dollar (FDO). In the initial press release, the companies disclosed the merger was designed to provide each FDO shareholder with total consideration of

$74.50 per share in cash and stock. Each FDO share was to receive $59.60 in cash and DLTR shares with a total value of $14.90 per FDO share within a set collar. As long as DLTR was trading between $49.08 and $59.98, FDO shareholders would receive the number of DLTR shares between 0.2484 and 0.3636 that would be equal to $14.90 per FDO share. If DLTR was trading for more than $58.98 at the merger's closing, the stock portion received by FDO holders would be capped at 0.2484 DLTR shares. On the other hand, if DLTR's stock price was below $49.08, the maximum number of shares FDO holders would receive was 0.3636.

The collar on the price of DLTR shares effectively meant that if DLTR shares rose above $58.98, each FDO share would receive in excess of the designed $14.90 value in stock per share. Should DLTR's shares decline below $49.08 at closing, FDO holders were capped at receiving a maximum of 0.3636 shares, which would provide a value of less than $14.90 per FDO share.

As it worked out, the merger could not close for about a year and DLTR's shares were trading at $80.08 per share on the closing date of July 7, 2015. Because the DLTR shares were above the $58.98 top of the collar, FDO shareholders actually received $19.89 in DLTR stock as opposed to the $14.90 stock value originally contemplated by the merger agreement. FDO holders actually received a total value of $79.49 or $4.99 more than the merger was designed to provide.

Had DLTR's stock dropped, the result would have been much different. FDO holders would have realized less than the $74.50 if the DLTR stock traded below $49.08. From this example, it can be seen that a collar can be a two-edged sword.

PRORATED TRANSACTIONS

As mentioned earlier, many deals are more complicated than those we described as being cash or stock-for-stock arrangements. It is quite common to have merger transactions include a combination of cash and securities. These transactions require additional steps to calculate the deal value and the resulting spreads. Each piece must be valued separately, and the arbitrageur must take into account how much of each piece will be received upon consummation of the transaction. Usually, the acquiring company will limit how much of each piece of consideration can be received by each target company shareholder. This is necessary because when there are two different forms of consideration, one part may be worth more than the other, even if the transaction was designed to give equal weight to the individual pieces.

This problem can be best illustrated by an example from the mergers-and-acquisitions market. On October 9, 2014, AUXL and Endo

Pharmaceutical (ENDP) announced plans to merge. The merger was designed to provide each AUXL share with $33.25 in value in cash and stock subject to limitations. ENDP only wanted to pay AUXL shareholders a maximum of 50% in cash of the overall $33.25 deal value. To accomplish the objective, the companies used what is called an election process. As the merger was about to close, each AUXL shareholder would be able to elect one of three options:

1. *All cash*. In this case, each AUXL share would receive $33.25 in cash per share. This option would be limited to only 50% of the outstanding shares of AUXL.
2. *All stock*. Under this option, each electing shareholder would receive 0.488 shares of ENDP. As with the cash election, the stock election would be limited to 50% of the total number of AUXL outstanding shares.
3. *Mixed election*. The mixed election meant that each AUXL shareholder would receive $16.625 in cash plus 0.244 shares of ENDP shares.

Since the merger was estimated to take about five months to complete, AUXL shareholders, including arbitrageurs, were faced with a lot of uncertainty as to where ENDP shares would trade five months out. At the time of the announcement, ENDP was trading at $66.78 while AUXL traded at $32.44.

The gross spread calculation for the deal price (DP) was as follows:

$$DP = (p_1 \times C_1) + (p_2 \times C_2)$$

where p_1 = percentage of first type of consideration to be received
p_2 = percentage of second type of consideration to be received
C_1 = value of first type of consideration
C_2 = value of second type of consideration

In the AUXL/ENDP deal, we would apply the formula as follows:

$$\begin{aligned} DP &= (.50 \times \$33.25) + [.5 \times (.488 \times \$66.78)] \\ &= \$16.625 + \$16.29 \\ &= \$32.919 \end{aligned}$$

Neither AUXL nor ENDP paid dividends to shareholders.

The spread and return calculations would then be:

$$\begin{aligned}
GS &= DP - SP_t \\
&= \$32.919 - \$32.44 \\
&= \$.479 \\
NS &= GS + D_t - (D_a \times R \times p_2) + SI \\
&= \$.479 + (0.00) - [(0.0) \times .488 \times .5] \\
&\quad + \{[(.488 \times \$66.78) \times .5] \times .01 \times 150/365\} \\
&= \$.546
\end{aligned}$$

The calculation is clearer if we break it down into its individual elements:

$$\begin{aligned}
D_1 &= 0 \\
D_2 &= 0 \\
SI &= SIP \times IS
\end{aligned}$$

where SIP = short proceeds
= (.488 × \$66.68) × .5 (since we will short .488 share of ENDP on only 50% of the entire position)
= \$16.29
IS = .01
SI = \$16.29 × .01 × (150/365) (since we are assuming we receive 1% short interest credit for 150 days on the net short proceeds created). This 1% rate varies according to changes in the interest rate market.
= \$0.066

$$\begin{aligned}
NS &= GS + D_t - (D_a \times R \times p_2) + SI \\
&= \$.479 + \$0.0 - 0 + \$0.066 \\
&= \$.546
\end{aligned}$$

$$\begin{aligned}
\text{and} \quad ER_{UL} &= (NS/I) \times (365/P) \\
&= (\$.546/\$32.44) \times (365/150) \\
&= 4.1\%
\end{aligned}$$

It should be noted that the individual portions of consideration to be received were worth different amounts. With ENDP trading at \$66.78, the stock portion was worth \$32.59 per AUXL share, or \$.66 less than the cash consideration of \$33.25. AUXL shareholders would have preferred to receive \$33.25 in cash for all their shares, but that arrangement would have forced ENDP to pay cash for virtually all the AUXL shares.

Precisely for this reason, ENDP set a limit of 50% as the total number of shares that could receive cash. ENDP did not want to pay cash for more than 50% of AUXL's shares. Had ENDP's stock price risen dramatically prior to the consummation of the deal, an alternative problem would have occurred. In fact, over the next several months *after* the transaction was announced, ENDP's shares rose to the high 70s.

On December 30, 2014, a month before the deal closed, a much different spread calculation existed for the prices of the securities:

AUXL stock price: \$34.00
ENDP stock price: \$72.82

$$\begin{aligned} DP &= (.5 \times \$33.25) + [.5 \times (.488 \times \$72.82)] \\ &= \$16.625 + \$17.76 \\ &= \$34.39 \end{aligned}$$

(The deal price increased from \$32.919 to \$34.39 due to the rise in ENDP's share price from \$66.78 to \$72.82.)

$$\begin{aligned} GS &= DP - SP_t \\ &= \$34.39 - \$34.00 \\ &= \$0.393 \end{aligned}$$

$$NS = GS + D_t - (D_a \times R \times p_2) + SI$$

where D_t = \$0.0 (AUXL was still not paying dividends)
D_a = \$0.0 (No dividends were expected to be paid by ENDP)
SI = $(.488 \times \$72.82 \times .5) \times .01 \times 30/365$ (it is now December 30, 2014 , so there are only 30 days to the estimated closing date)
= \$0.015

$$\begin{aligned} NS &= \$0.393 + \$0.0 - (\$0.0) + \$0.015 \\ &= \$0.393 + \$0.0 - \$0.0 + \$0.015 \\ &= \$0.408 \end{aligned}$$

$$
\begin{aligned}
ER_{UL} &= (NS/I) \times (365/P) \\
&= (\$0.408/\$34.00) \times (365/30) \\
&= 14.6\%
\end{aligned}
$$

When ENDP's stock price rose from \$66.78 to \$72.82, holders of AUXL would much rather have received ENDP stock for *all* their AUXL shares. The deal value would then have been \$35.54 instead of the weighted deal price of \$32.915. This, however, would have caused ENDP to issue more shares than was planned. By setting a maximum ratio of 50%, ENDP eliminated the possibility of issuing too many shares.

At the time of closing, the target company's shareholders must fill out a form requesting the form of consideration that they would like to receive. After all these forms are submitted, the acquiring company and its advisers total up the number of shares requested and the amount of cash requested. If either of these totals exceeds the limits set in the definitive agreement, the amount of cash and securities to be received is prorated so as not to violate the limits of the transaction.

Arbitrageurs must be very careful to calculate the proration factors correctly, because they ultimately determine how much of each consideration will be received. Spreads and expected returns will be affected by these proration factors.

LEVERAGE

Until now, we have assumed that the arbitrageur uses only capital to invest in transactions. All our expected return calculations have assumed no use of leverage. This approach is fine for some investors, but most arbitrageurs utilize leverage in their operations.

The use of leverage affects the return that the arbitrageur receives in any transaction. Because this book is directed toward individual investors, we will assume that arbitrage investors utilize typical Regulation T leverage: Purchases are financed by putting up capital for 50% of the purchase and borrowing up to the remaining 50% from the arbitrageur's broker or clearing firm. Borrowing the remaining 50% of the purchase cost creates an additional expense because all brokerage firms charge investors for this privilege.

To calculate the cost of borrowing—also known as the *cost of carrying (COC) the position*—we will use the following formula:

$$
COC = [(N \times SP_t) \times MR \times i_d] \times (P/365)
$$

where N = number of shares purchased
MR = current Regulation T margin rate (at present 50%)
i_d = interest rate charged by broker on customer debit balance

Arbitrageurs may actually use additional leverage that may not be available to individual investors. If an arbitrageur is investing money in these transactions through an entity that is a registered broker/dealer, he or she is able to use broker/dealer financing, which can be far more aggressive than typical Regulation T leverage. Typically, the broker/dealer may be able to borrow up to 85% of the cost of the securities on the long side. However, because individuals do not have access to broker/dealer financing, we will assume that Regulation T leverage applies.

Example

To illustrate the use of leverage in arbitrage and the effects it has on expected return, we employ the original set of calculations at the beginning of the chapter. Company A is acquiring Company T for \$20 a share in cash. The \$20 cash tender offer was expected to be completed in 30 days. With Company T's stock trading at \$19.85, we can calculate a leveraged rate of return as follows:

$$ER_L = [(NS - COC)/I_L] \times (365/P)$$

where ER_L = expected leveraged return
NS = net spread
COC = cost of carry
I_L = investment (leveraged)
P = estimated investment period

To calculate the cost of carry, we use:

$$COC = [(N \times SP_t) \times MR \times i_d] \times (P/365)$$

where N = number of shares of target company purchased
SP_t = target company's stock price
MR = margin rate
i_d = interest cost on debit balance (interest on money borrowed)

We are assuming an interest cost on debit balances of 2%.

Substituting calculations, we have:

$$\begin{aligned}
COC &= [(1.0 \times \$19.85) \times .50 \times .02] \times (30/365) \\
&= (\$19.85 \times .50 \times .02) \times (30/365) \\
&= \$0.1985 \times .0821 \\
&= \$0.016
\end{aligned}$$

and

$$\begin{aligned}
I_L &= SP_t \times MR \\
&= \$19.85 \times .50 \\
&= \$9.925 \\
ER_L &= [(NS - COC)/I_L] \times (365/P) \\
&= [(\$0.15 - \$0.016)/\$9.925] \times (365/30) \\
&= (\$0.134/\$9.925) \times (365/30) \\
&= 16.4\%
\end{aligned}$$

In this case, the unleveraged annualized return of 9.19% became a leveraged annualized return of 16.4% by allowing the arbitrageur to finance the purchase of Company T's shares with 50% capital and 50% borrowings. As can be expected, the introduction of leverage will also cause the arbitrageur's losses to increase on a percentage basis.

Leveraged Returns on Stock-for-Stock Transactions

With stock-for-stock transactions, we must recognize that brokers require the investor/arbitrageur to have adequate capital for both the long position and the short position. The investor must put up capital equal to the long position times the current margin rate and the margin rate times the short proceeds in the account. Total investment when the arbitrageur sells short the proper ratio of the acquiring company's shares is therefore increased and must be accounted for in the return calculations.

Example

In this example, we assume that Company A is offering to acquire Company T by issuing 1.5 shares of Company A stock for each share of Company T.

Company T's stock price	\$29.25
Company A's stock price	\$20.00
Exchange ratio	1.5 shares
Dividends	Neither company pays a dividend
Estimated investment period	90 days
Interest on debit balance	2%
Interest on short proceeds	1%

The return on this stock-for-stock transaction on a leveraged basis would be calculated as follows:

$$\begin{aligned} ER_L &= [(NS - COC)/I_L] \times (365/P) \\ &= [(\$0.823 - \$.072)/\$29.625] \times (365/90) \\ &= (\$0.751/\$29.625) \times (365/90) \\ &= 10.2\% \end{aligned}$$

The values for the respective terms are arrived at as follows:

$$\begin{aligned} GS &= (\$20 \times 1.5) - \$29.25 \\ &= \$30 - \$29.25 \\ &= \$0.75 \end{aligned}$$

and

$$\begin{aligned} SI &= SIP \times IS \\ &= (\$20 \times 1.5) \times .01 \times (90/365) \\ &= \$.073 \\ NS &= GS + SI \\ &= \$0.75 + \$.073 \\ &= \$0.823 \end{aligned}$$

because

$$\begin{aligned} COC &= [(N \times SP_t) \times MR \times i_d] \times (P/365) \\ &= [(1 \times \$29.25) \times .50 \times .02] \times (90/365) \\ &= (\$.2925) \times (.2465) \\ &= \$.072 \end{aligned}$$

$$
\begin{aligned}
I_L &= (SP_t \times MR) + [(SP_a \times R) \times MR] \\
&= (\$29.25 \times .50) + [(\$20 \times 1.5) \times .50] \\
&= \$14.625 + \$15.00 \\
&= \$29.625
\end{aligned}
$$

The return is lowered significantly because of the requirement to put up 50% of the short side in addition to 50% of the long side (10.2% vs. 20.9%).

The investor must realize that although these stock-for-stock transactions represent attractive risk arbitrage opportunities, they will impact the amount of available capital.

SPREAD BEHAVIOR OVER TIME

One might expect that, in theory, the spread in a deal will steadily decline because of the time value of money and the passage of time. It might also be assumed that the passage of time will continually diminish the risk associated with the deal. In other words, as time goes on, it becomes more and more likely that the transaction will be completed. This simplified expected relationship is illustrated in Exhibit 4.1.

This relationship may generally fit a number of simple transactions in which no problems arise. However, some transactions do not exhibit a straight-line relationship to closing, and others develop variations because of supply-and-demand factors. Overall, almost all transactions have variations in spread in terms of dollars and percentage of expected return. Exhibit 4.2 depicts the expected net spread in dollars for a transaction that develops an unexpected antitrust problem months after the public announcement.

An actual case involving Lockheed-Martin Corporation's planned purchase of Northrop-Grumman Corporation is further explored in Chapter 5.

Arbitrageurs must continually monitor the universe of transactions they follow, and they must update their estimates of expected return over time. From this perspective, an arbitrageur's investment process is very dynamic.

Timing of transactions also must be continually monitored to maintain an accurate estimate of expected return.

TIMING OF RISK ARBITRAGE TRANSACTIONS

After determining the gross and net spreads on any given risk arbitrage transaction, the arbitrageur must accurately determine how long each transaction

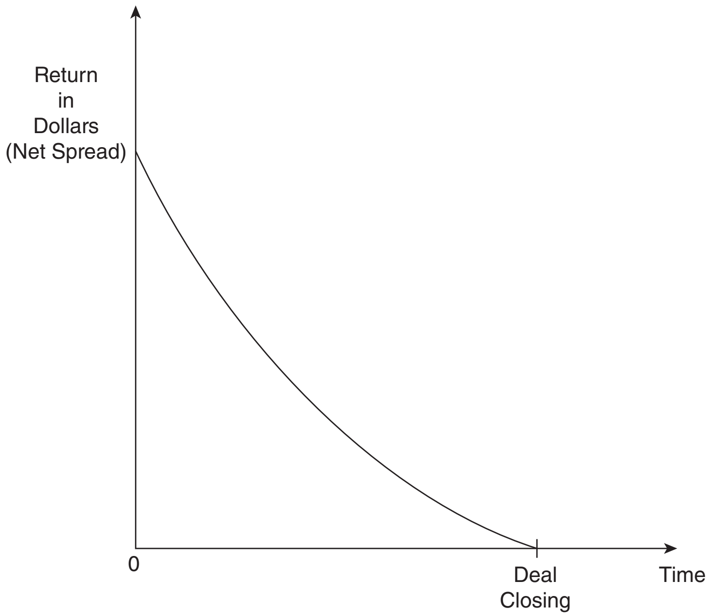


EXHIBIT 4.1 Simple Transaction with No Unexpected Developments

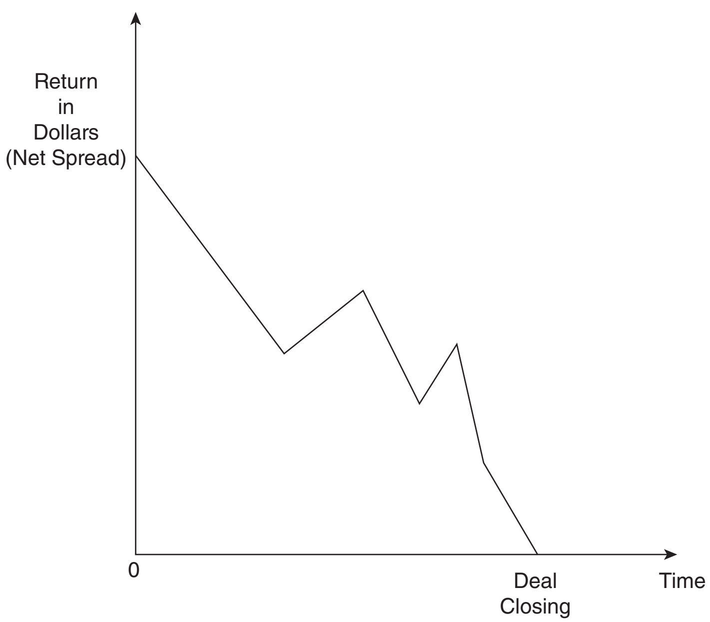


EXHIBIT 4.2 Complex Transaction—Antitrust Problem

will take to complete. This estimate of timing has a direct impact on the arbitrageur's expected rate of return.

For instance, in the simple cash tender-offer example, the expected return would drop dramatically if the arbitrageur's original 30-day investment period were lengthened to 60 days because an additional regulatory step needed to be completed prior to the transaction's closing. The expected return would be calculated as follows:

$$\begin{aligned} ER_{UL} &= (GS/I) \times (365/P) \\ &= (\$0.15/\$19.85) \times (365/60) \\ &= 4.6\% \end{aligned}$$

This expected return is exactly half of the expected return when the investment period was expected to be only 30 days:

$$\begin{aligned} ER_{UL} &= (\$0.15/\$19.85) \times (365/30) \\ &= 9.19\% \end{aligned}$$

In a simple unleveraged cash transaction, increasing the estimate of the investment period by a factor of two reduces the unleveraged expected return by half. If, however, we consider a leveraged transaction, varying the investment period estimate affects various aspects of the transaction.

For instance, in the AUXL/ENDP cash and stock-for-stock transaction, altering the investment period estimate would change various calculations that affect expected return. If we change the estimated investment period in this example from 150 to 180 days (this could happen because of regulatory delays), the spread and return calculations would change as follows:

$$\begin{aligned} GS &= DP - SP_t \\ &= \$32.919 - 32.44 \\ &= \$0.479 \\ NS &= GS + D_t - (D_a \times R \times p_2) + SI \\ &= \$0.475 + (0) - [(0) \times .0 \times .5] \\ &\quad + \{[(.488 \times \$66.68) \times .5] \times .01 \times 180/365\} \\ &= \$0.559 \end{aligned}$$

$D_t = \$.00$ per share (We do not expect any dividends now until closing)

$D_a = \$.00$

$SI = SIP \times IS$

where SIP = short proceeds
= $(.488 \times \$66.68) \times .5$ (We will short .488 share of ENDP on only 50% of the entire position.)
= \$16.29
SI = $\$16.29 \times .01 \times (180/365)$ (We are assuming we will receive 1% short interest credit for 180 days on the net short proceeds created.)
= \$0.08

$$\begin{aligned} NS &= GS + D_t - (D_a \times R \times p_2) + SI \\ &= \$0.475 + \$0 - \$0 + \$0.08 \\ &= \$0.559 \end{aligned}$$

Also

$$\begin{aligned} ER_{UL} &= (NS/I) \times (365/P) \\ &= (\$0.555/\$32.44) \times (365/180) \\ &= 3.5\% \end{aligned}$$

By lengthening the timing estimate from 150 to 180 days, the two dividend cash flows, the short interest credit, and the annualization factor are all affected. The net result is that the unleveraged expected return drops from 4.1% to 3.5%. Because this deal involves more complex calculations than were needed in our previous simple example, the decrease in annualized spread is not directly proportional to the lengthening of the timing estimate. We increased the investment period by 20% (30 days), but the annualized spread dropped only 14.6%.

It should be noted that instead of the merger closing on the original time estimate of five months, the deal actually closed in a little less than four months. Being able to accurately predict merger and tender offer closings is a very important element in the risk arbitrage decision process.

If either company had paid dividends, those dividend flows would have also potentially been affected and would have to be accounted for in the spread and return calculations.

Timing has a very important impact on the arbitrageur's rate of return calculations.

ESTIMATING TIMING IN MERGER TRANSACTIONS

Chapter 2 presented a general description of the steps that occur in the merger transaction process. The merging companies sometimes have an initial agreement in principle. They then enter into a process of due diligence that includes inspecting each other's books, records, and physical assets. This process can take anywhere from several weeks to several months.

As we pointed out earlier, in most of today's mergers, this process is completed prior to any public announcement. The first public announcement of a merger generally occurs after the two companies reach a definitive agreement.

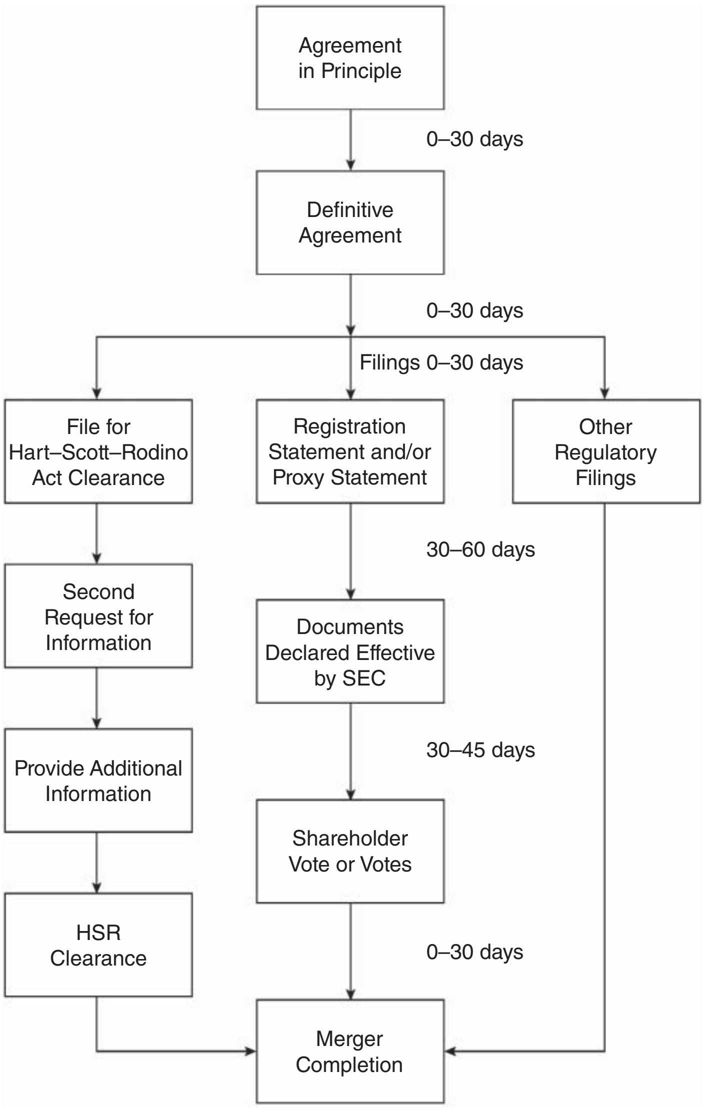


EXHIBIT 4.3 Merger Timing

When the definitive agreement has been executed, the lawyers for the respective firms work on any of the regulatory filings that are required under the law. If the merger involves a stock-for-stock exchange, a registration statement must be filed and declared effective by the Securities and Exchange Commission (SEC). If, however, the transaction involves only cash, a filing must be made with the SEC to allow the target company's shareholders to vote on the transaction. The companies must also file with both the Justice Department and the Federal Trade Commission (FTC) under the Hart-Scott-Rodino (HSR) Act to comply with the federal government's requirement for documentation and information on the transaction.

When the companies are deemed to be in compliance with their initial filings, the federal government has a 30-day period in which it may request additional information from the companies. After the companies provide the requested information to both the Department of Justice and the FTC, there is an additional 20-day waiting period. The companies must not close their transaction until the federal government either grants approval or decides to ask a federal court to halt the transaction because an antitrust violation has been revealed.

A request for additional information under the HSR Act tends to lengthen the time it takes for a transaction to close. During this waiting period, the companies may continue to perform any additional steps needed to complete the transaction. For instance, shareholders of either company may vote on the merger while they wait for the HSR Act waiting period to expire.

The entire timing process is illustrated in Exhibit 4.3. All mergers should be analyzed on a case-by-case basis. The arbitrageur should be cautious about assuming that any merger transaction will be completed within the 90 days typically estimated.

ESTIMATING TIMING IN TENDER OFFER TRANSACTIONS

The timing of a tender offer mostly depends on whether the transaction is friendly or hostile. Friendly tender offers that are endorsed by the target company's board of directors can be completed within a month, provided there are no regulatory or antitrust issues. Hostile takeovers can take significantly longer time periods to complete. There is no way to generalize the time it takes to complete a hostile tender offer, but it is not unusual to have a six-month battle, and battles that lasted more than a year have occurred in the recent past.

Like mergers, tender offers must comply with the Hart-Scott-Rodino Antitrust Act (HSR Act). When an acquiring company files the tender offer documents with the Securities and Exchange Commission, it will usually file simultaneously with both the Department of Justice and the Federal Trade Commission. For tender offers, the government waiting periods are different than for mergers. The initial waiting period during which the government may request additional information is only 20 days. If the government requests additional information, the companies cannot close the tender offer until 10 days after they have provided the government with the requested information.

Antitrust aspects of the tender offer, as well as other regulatory issues, may also affect the length of time it takes to complete a tender offer.

Exhibit 4.4 represents the individual steps needed to complete a tender offer.

Now that we have explored the calculation of spreads and the arbitrageur's estimates of expected returns, we can turn our attention to the risks involved in risk arbitrage transactions, discussed in Chapter 5.

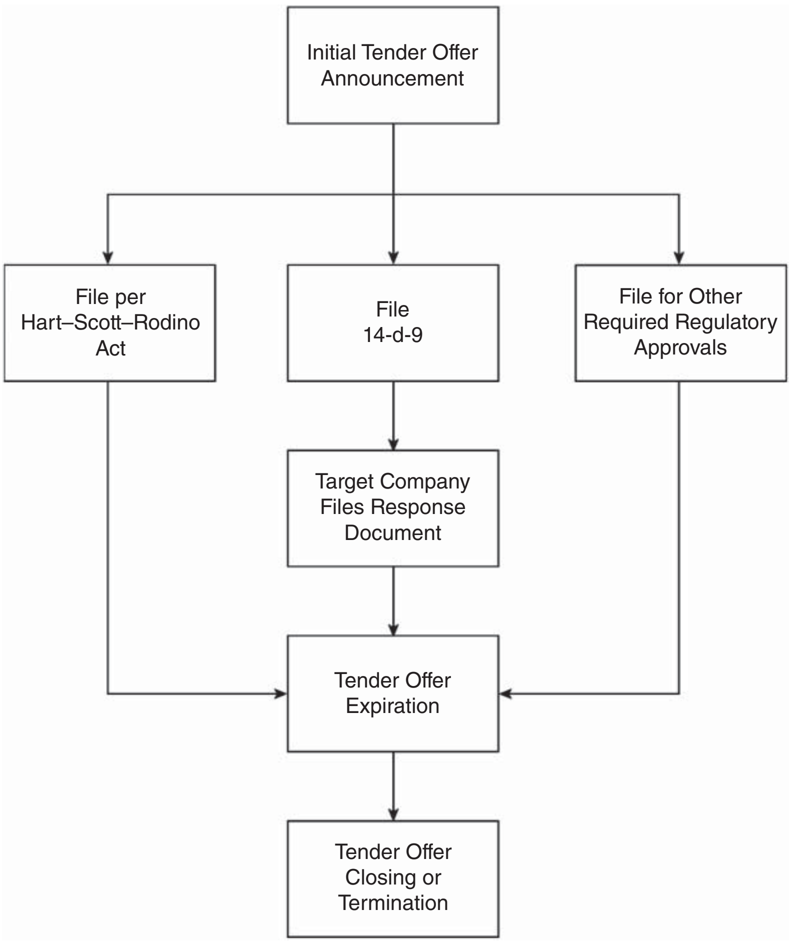


EXHIBIT 4.4 Tender Offer Timing

CHAPTER 5

Estimating the Risk of Arbitrage Transactions

In Chapter 1, I explained why the term *risk* is linked to arbitrage. In the Cooper Tire deal described in Chapter 1, arbitrageurs who owned Cooper Tire suffered large losses because the U.S. Federal Court allowed Apollo Tyre to walk away from the previously negotiated friendly merger. After Vice-Chancellor Glasscock issued his decision in the court, arbitrageurs who owned Cooper Tire shares rushed outside the Court to give instructions to sell their shares. The results were a sharp decline in the price of Cooper Tire and large losses of capital for all Cooper Tire shareholders. Arbitrageurs must estimate and continually monitor the risks they assume when they invest in any risk arbitrage transaction.

ASSESS THE PRICE HISTORY OF THE TARGET COMPANY

The risk estimation process begins with the initial announcement of the deal. Simultaneously with their initial estimate of return, arbitrageurs begin the process of determining what their losses might be if the transaction does not close as planned.

The initial step in analyzing a deal's risk is usually an examination of the trading history of the target company's securities. The arbitrageur generally asks the following questions:

- Where was the target company's stock (or other related securities subject to the takeover) trading prior to announcement of the transaction?
- Was there an information leak that generated insider trading prior to the announcement? Did the stock price rise several days or weeks prior to announcement of the transaction?

If the target company's stock moved up significantly prior to announcement of the deal, and no fundamental reason or explanation could be found

Risk Arbitrage: An Investor's Guide, Second Edition. Keith M. Moore.

in the general equity market activity, the price level that existed just prior to the announcement would not be a good initial guide for determining the arbitrageur's risk. A stock price jump may indicate a possible leak in the negotiations. The arbitrageur must then go back to the stock's trading price before any inside information was available. This price becomes the estimate for the initial downside price. If the negotiations break off within a short period of time, in the absence of any other information, the target company's stock may trade back down to this level.

Exhibits 5.1 and 5.2 illustrate downside estimates without and with inside information.

In Exhibit 5.1, no inside information was leaking into the marketplace, and therefore no jump in the price of the target company's stock occurred prior to the announcement of a merger deal. The downside estimate of the target company's stock is clear. The security was trading within a narrow band of prices prior to the announcement of the deal.

In contrast, Exhibit 5.2 tracks the stock price of a target company involved in a transaction where there was a leak in the negotiations. The price of the target company stock rose prior to the announcement of the deal, and significant volume was traded prior to the deal announcement. This pattern generally indicates that a leak in the negotiations occurred, and information filtered into the marketplace and forced price to rise.

Arbitrageurs always take into account the possibility of inside information leaks when they estimate a company's downside risk. Not taking into account the effects of inside information leaks could cause an understatement of the downside risk and could contribute to an erroneous analysis of the deal.

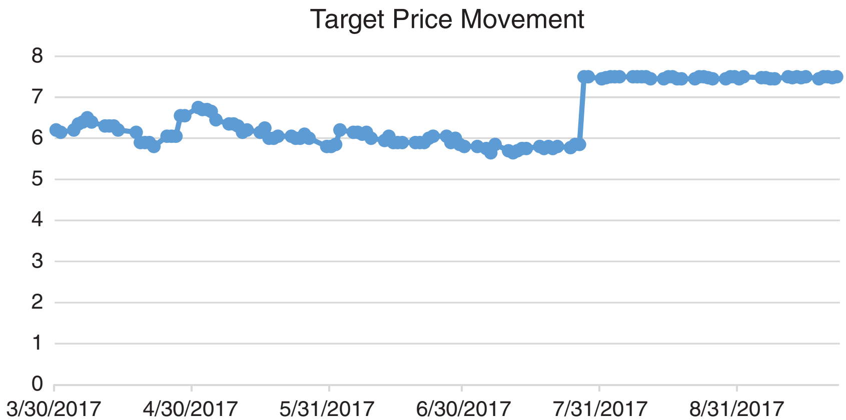


EXHIBIT 5.1 Downside Estimate—No Leaks of Information
Source: Bloomberg Finance LP.

EXHIBIT 5.2 Downside Estimate—Information Leaks during Negotiations
Source: Bloomberg Finance LP.

The arbitrageur's estimates of downside risks can be compared to a technical analyst's estimate of support levels. Technicians often estimate where securities will receive support on the downside.

While using the trading history of both the target company and the acquiring company prior to the merger announcement can be useful, there are several other methods that can yield more accurate estimates of risk. The other methods are as follows:

1. Adjusting our risk estimates that use prior trading history before that deal was announced with changes in an overall market index as well as a sensitivity factor such as the target and acquiring company's beta
2. Estimating changes in market values using a sample of comparable companies
3. Estimating risk by calculating an implied price using price-earnings ratios
4. Using fundamental ratios of a sample of comparable companies that would include measures such as Price/Earnings, Price/Cash flow, or Price/EBITDA

We will show how these techniques are used later in this chapter. First, however, we will start with the simplest technique of using historical price moves in the target and acquiring companies.

Additional factors must be considered when trying to determine the downside risk in any given transaction. If the transaction is terminated within a few weeks after it was announced, the arbitrageur usually does not have to worry about fundamental factors that would affect the target company's stock price.

If, however, a rather lengthy period of time passes between the deal's initial announcement and the arbitrageur's efforts to estimate risk or there are significant developments in the target or acquiring companies' industry sector, the arbitrageur must consider any fundamental changes that have occurred at the target company and judge whether they are good or bad. If the company's earnings outlook has improved, that would be a reason for potentially increasing the estimate of the downside price. However, if there has been deterioration in the fundamentals at the target company, the arbitrageur would have to consider lowering the estimate of the downside price. These considerations become more and more difficult as the length of time from the announcement of the deal increases.

If the target company's fundamentals have deteriorated since the initial transaction was announced, the arbitrageur is faced with the worst possible situation. Not only has the deal broken, causing losses on the arbitrageur's long position, but the original downside price estimate has almost surely become overstated, causing the arbitrageur's losses to exceed the prior estimates. Especially in today's capital markets, companies' common stocks can be severely affected by unfavorable fundamental developments.

Other factors also must be considered. When a transaction actually breaks apart, supply-and-demand factors come into play because the arbitrage community usually has a substantial position in the underlying security of the target company. Depending on the particular transaction, the arbitrage community could have a cumulative position of 20% to 40% of the target company's outstanding shares. Arbitrageurs are generally short-term investors who have no interest in taking any long-term investment positions, so they tend to work out of their positions by selling them into the marketplace at the earliest possible time. Some arbitrageurs operate under policies that require them to sell out positions in any securities that are not involved in active transactions. The result can be an oversupply of the target company's stock in the marketplace when the transaction initially terminates. The oversupply may cause the target company's stock to sell below its normal trading level for a number of days or weeks, or until the arbitrageurs work out of their arbitrage positions.

This type of situation is illustrated in Exhibit 5.3. Ultimately, the target company's security will trade at the level that the general investment community regards as its correct value. The typical investment valuation framework will then control the level at which the target company's stock trades.

The arbitrageur must consider why a transaction actually broke. If government intervention or a private suit caused something "out of the blue" to terminate the transaction, the adjustments needed in the initial estimate of downside risk may not be indicated.

If, however, the transaction terminates because of the underlying fundamentals of the target company's business, the arbitrageur's initial estimate

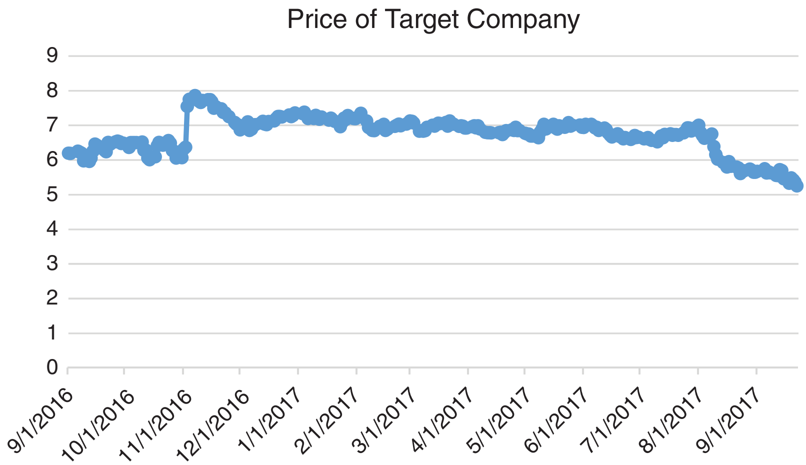


EXHIBIT 5.3 Target Company Stock Trading below Downside Price Estimate after Transaction Termination
Source: Bloomberg Finance LP.

of downside risk could be substantially understated. The price was determined in the marketplace when the investment community expected certain results from the target company. If the target company's fundamentals have declined, the odds are that the price of the underlying stock will also trade lower than expected.

Occasionally, when a deal breaks up, the effects may not be as bad as some arbitrageurs might expect. If a company terminates a transaction and the target company leaves the door open to other potential transactions, a premium will be assigned to the target company's underlying stock price because of the possibility that another transaction will take place. When the deal breaks up, instead of trading at the arbitrageur's downside estimate, the stock will trade at some price above that initial estimate.

Similarly, if the company announces, after terminating a transaction, that it has hired investment bankers to explore additional opportunities and potential transactions that can improve shareholder value, this announcement would also create a premium for the arbitrageur's downside risk estimate.

The actual calculation of downside risk can be determined by this formula:

$$DR = SP_t - TD$$

where DR = downside risk
SP_t = target company's current stock price
TD = arbitrageur's estimate of the target's downside price

In a stock-for-stock transaction, or a deal involving a security that the arbitrageur sells short in order to hedge the transaction, we must also estimate what can be lost on the short side of the transaction if the deal breaks up. In other words, unlike a one-sided deal, this hedging transaction creates a two-sided deal, and the arbitrageur potentially has risks on both the long side and the short side.

We find the risk on the short side by using the following formula:

$$UR = (AU - SP_a) \times R$$

where UR = upside risk
AU = arbitrageur's estimate of acquiring company's upside price
SP_a = acquiring company's current stock price
R = exchange ratio

This formula also assumes that the arbitrageur has fully hedged his or her position by selling short the exact number of the acquiring company's shares that will be received upon consummation of the transaction. Should the arbitrageur not be fully hedged, upside risk can be calculated using this formula:

$$UR = (AU - SP_a) \times (AS/TT)$$

where AS = number of acquiring company's shares sold short
TT = number of target company's shares owned

Both of the above formulas calculate upside risk in terms of the number of shares held in the target company's stock. This is important because when arbitrageurs calculate return, they want to have the proper comparative calculation for risk. If an arbitrageur believes a gain of $2.50 per share in net spread in the target company is possible, he or she also wants to know how much can be lost per target company share.

Example

At this point, an analysis of an actual merger may be useful to illustrate how the risk estimates are calculated. On August 6, 2014, Independent Bank Corp. (INDB) agreed to acquire Peoples Federal Savings Bank (PEOP) for a combination of cash and stock. PEOP shareholders could receive $21 for up to 40% of their shares and 0.5523 for up to 60% of their shares. Charts of Peoples Federal (PEOP) and Independent Bank (INDB) are shown in Exhibits 5.4 and 5.5, respectively.

As can be seen in Exhibit 5.4, Peoples Federal stock had been trading in the range of $18–18.25 per share prior to the deal's announcement.

EXHIBIT 5.4 Daily Price Chart of Peoples Federal Savings
Source: Used with permission of Bloomberg Finance LP.

EXHIBIT 5.5 Daily Price Chart of Independent Bank Composite Trading Record
Source: Used with permission of Bloomberg Finance LP.

Given this information, the arbitrageur might estimate the downside risk as follows:

$$\begin{aligned} DR &= SPt - TD \\ &= \$19.65 - \$18.25 \\ &= \$1.40 \end{aligned}$$

After examining the table on the price action of Independent Bank (Exhibit 5.5), the arbitrageur would calculate the upside risk as follows:

$$\begin{aligned} UR &= (AU - SPa) \times R \\ &= (\$36.31 - \$35.56) \times .33138 \\ &= -\$0.25 \text{ per INDB share} \end{aligned}$$

This estimate of upside risk would have been considered unusual in some ways. It means that if the deal were to break up, the arbitrageur would actually realize a gain on reversing his or her short position. Usually the arbitrageur would also incur a loss on the short in the acquiring company when reversing the position. Remember, if a deal actually breaks, the arbitrageur needs to both reverse his or her long position in the target and cover the short position in the acquiring company.

For many years, in a stock-for-stock transaction, it was common for the acquiring company's stock price to drop after a proposed merger was announced. It was assumed that when the transaction was terminated, the acquiring company's shares would most likely rise to their previous level, barring any additional information on the security.

In recent years, however, we have been witnessing a totally different price reaction in the acquiring company's shares. In today's merger market, in many instances, the shares of the acquiring company have increased in value after the transaction announcement, and sometimes the increase has been significantly large. This may be a result of the investment community's concluding that by combining the companies, their earnings outlook or their growth rate has improved; or, the investment community may be expecting additional benefits from the combination of the firms.

Whatever the reason, this situation can change the dynamics of a two-sided deal. Before, an upside risk would occur if the transaction was terminated and arbitrageurs sought to cover their short sales. Now, the acquiring company's shares may fall if the transaction is called off, because the investment community may roll back its viewpoint on the acquiring company's shares. The arbitrageurs had bought shares and increased the price of the acquiring company's shares based on some positive influence.

If the transaction is terminated, they will only purchase the securities of the acquiring company at the previous level—the price when no positive changes were expected.

If the acquiring company's share price increases after the announcement, the arbitrageur may actually be estimating a gain on the short side of the transaction if the deal breaks up. This estimated gain may partially or fully offset whatever loss the arbitrageur may sustain on the long side of the transaction. Exhibits 5.6 and 5.7 show the price action of the acquiring company's share price over a period of time that includes the announcement and its aftermath. In Exhibit 5.6, the acquiring company's stock declines after the merger announcement, but Exhibit 5.7 shows the price of the acquiring company's stock rising after the announcement. The investment community's optimism results in the acquiring company's stock price rising after the announcement.

We must remember that, in a stock-for-stock transaction, when figuring the estimates of risk (or gain, in some cases) for the short position, we must also incorporate the exchange ratio that we have used to set up the hedged position. For example, if we estimate that a stock that we shorted could go up by 2 points if the transaction broke up, our risk estimate on the short side would be 2 points × the number of shares that we have actually shorted. In other words, if the transaction called for shorting half a share of the acquiring company for each share of the target company's stock, our

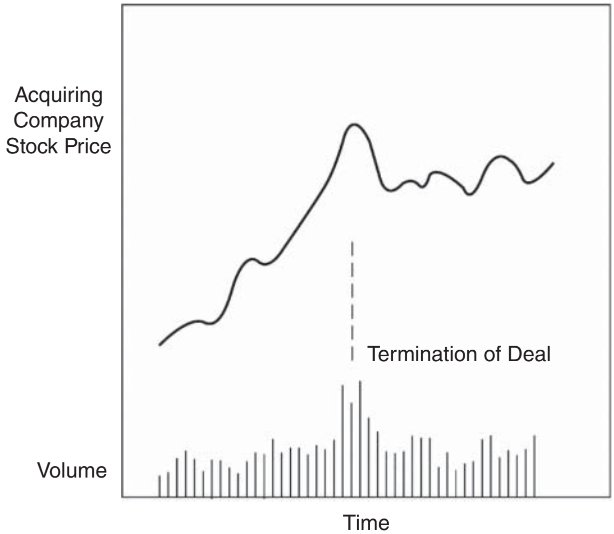


EXHIBIT 5.6 Acquiring Company's Stock Behavior after Deal Termination (Acquiring Company Stock Declines)

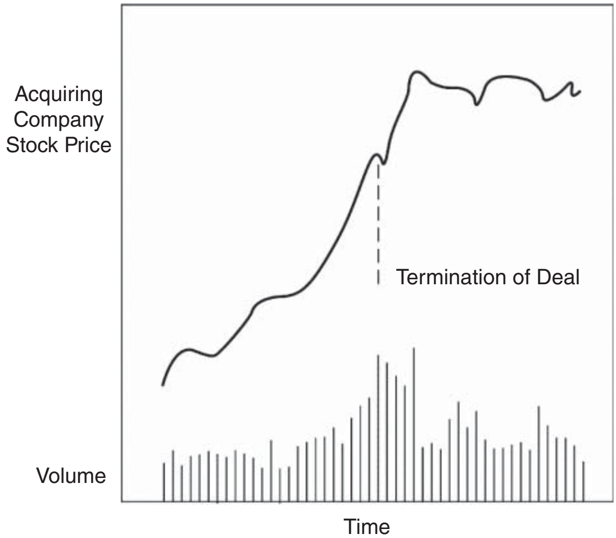


EXHIBIT 5.7 Acquiring Company's Stock Behavior after Deal Termination (Acquiring Company Stock Increases)

risk estimate on the short side would be the 2 points of upside risk × the .5 exchange ratio, or only $1.00 worth of upside risk.

ESTIMATING THE TOTAL RISK OF A TRANSACTION

When we have an estimate of risk on the long side and on the short side of a transaction, we refer to the concept of *total risk*. Total risk is simply the amount of long-side risk plus the amount of risk that we have on the short side of the transaction. The formula for total risk is:

$$TR = DR + UR$$

where TR = total risk
DR = downside risk
UR = upside risk

Total risk, along with other inputs, will be used by the arbitrageur in the decision process to determine whether he or she should take a position in any given arbitrage transaction. However, other considerations must be acknowledged when discussing risk in the transaction.

First, risk arbitrage is a dynamic process. We may initially calculate our risk estimates based on the day when the deal is announced, and these estimates may hold for a certain period of time. If, however, it takes a while for the transaction to close, it is advisable for an arbitrageur to continually reassess the risk estimates.

As mentioned earlier in the chapter, there are a number of methodologies that the arbitrageur can apply to obtain more accurate risk estimates in these cases.

The easiest way to update risk estimates over time is to adjust the initial estimates of risk (when the transaction was announced) for general moves in the equity market. This is usually done using technology and specially designed in-house programs. When a deal is announced, the arbitrageur inputs his or her estimates of risk as well as the date and an index—let's say the Standard & Poor's 500 Index—on the day the transaction is initiated. As time goes on, the arbitrageur will use a change in the S&P 500 Index (or some other market index) to measure a change in the overall equity market, and will apply it to the initial estimate of risk in the target company and the acquiring company. This activity can be shown by these formulas:

$$\mathrm{DR} = \left\{ \mathrm{SP_t} - \left[\mathrm{TD} \times \left(1 + \left(\frac{\mathrm{SNP_c}}{\mathrm{SNP_o}} - 1 \right) \right) \right] \right\}$$

and

$$\mathrm{UR} = \left\{ \mathrm{AU} \times \left[1 + \left(\frac{\mathrm{SNP_c}}{\mathrm{SNP_o}} - 1 \right) - \mathrm{SP_a} \right] \right\} \times \mathrm{R}$$

where DR = adjusted downside risk
UR = adjusted upside risk
$\mathrm{SNP_c}$ = current Standard & Poor's 500 Index
$\mathrm{SNP_o}$ = Standard & Poor's 500 Index when deal was announced

These formulas may also incorporate a "beta" or sensitivity measure for each individual security, to basically improve the arbitrageur's estimate of risk. If the arbitrageur is able to measure how sensitive each security is to general overall market moves, he or she may gain improved accuracy by utilizing this sensitivity measure. The formulas for incorporating sensitivity are:

$$\mathrm{DR} = \left\{ \mathrm{SP_t} - \left[\mathrm{TD} \times \left(1 + \left(\left(\frac{\mathrm{SNP_c}}{\mathrm{SNP_o}} - 1 \right) \times \mathrm{B_t} \right) \right) \right] \right\}$$

and

$$\mathrm{UR} = \left\{ \mathrm{AU} \times \left[\left(1 + \left(\frac{\mathrm{SNP_c}}{\mathrm{SNP_o}} - 1 \right) \times \mathrm{B_a} \right) - \mathrm{SP_a} \right] \right\} \times \mathrm{R}$$

where $\mathrm{B_t}$ = adjusted downside risk
$\mathrm{B_a}$ = adjusted upside risk

To illustrate the calculations for using the change in the Standard & Poor's 500 Index and their effect on the arbitrageur's estimates of upside and downside risk, we will assume the following:

Target Company	Factor	Acquiring Company
\$20	Current stock price	\$35
\$15	Downside price	—
—	Upside price	\$37
1.1	Beta	.9

We will also assume that because the deal was announced, the Standard & Poor's 500 Index increased from 2300 to 2413, and the acquiring company is issuing 1.2 shares for each target company share.

$$\mathrm{DR} = \left\{ \$20 - \left[\$15 \times \left(1 + \left(\frac{2413}{2300} - 1 \right) \times 1.1 \right) \right] \right\}$$

$$= (\$20 - \$15.81)$$

$$= \$4.19 \text{ (vs. original downside risk of \$5)}$$

$$\mathrm{UR} = \left\{ \$37 \times \left[1 + \left(\left(\frac{2413}{2300} - 1 \right) \times .9 \right) \right] - 35 \right\} \times 1.2$$

$$= [(\$37 \times 1.0442) - \$35] \times 1.2$$

$$= (\$38.63 - \$35) \times 1.2$$

$$= (-3.63) \times 1.2$$

$$= \$4.36 \text{ (vs. original upside risk of \$2.40)}$$

In many instances, it is advisable for the arbitrageur to take a fresh look at the underlying securities involved in a transaction. If a long period of time has elapsed since the deal was announced, it is generally advisable to look at the target company's and acquiring company's individual industries and be able to forecast what would happen to their underlying stock prices.

An arbitrageur does this by first assembling a list of securities of comparable companies within the target company's industry group that seem to compare well with the target company. The arbitrageur will also assemble a group of companies that compare well with the acquiring company and are within its industry group.

The next step is to look at what these comparative companies' stock prices have done during the period of time that is being analyzed in the deal. Arbitrageurs generally construct a table and go back to the initial date on which they estimated the upside and downside risk in the transaction. They assemble the prices of the comparative securities, and compare them (and the price changes) to the current-day prices of the same securities. In this way, arbitrageurs are able to construct their own index of comparative securities and arrive at a better estimate of the downside and upside risks.

Example

An example of the various methods to estimate downside risk can be seen by examining Mylan's (MYL) unsolicited bid for Perrigo (PRGO). After a number of months of trying to negotiate with PRGO to arrange a friendly merger, MYL, on April 29, 2015, offered to buy PRGO for $75 in cash and 2.3 MYL shares. The offer represented an increase over MYL's initial approach after PRGO resisted the offer and refused to negotiate.

After failing to convince PRGO's board to enter negotiations, MYL commenced a tender offer on September 14, 2015, using the same terms as previously offered. PRGO continued to reject the bid in an attempt to remain independent. The tender offer was subject to the tender of a minimum of 50% of PRGO's outstanding shares. As a result, the key issue became trying to determine whether the offer would attract the 50% minimum tender. The offer also needed approval under Hart-Scott-Rodino.

One of the reasons the transaction appealed to arbitrageurs was the wide spread between PRGO's stock price and the value of the MYL deal. There were a number of possible outcomes for the MYL tender offer. When there are multiple possible outcomes, arbitrageurs frequently use a decision matrix or decision tree to aid in their analysis of the deal. (The use of a decision matrix is detailed in Chapter 7.)

After evaluating the possible outcomes, we assume that in the PRGO/MYL deal as of the date of the analysis, which we are assuming was October 26, 2015, the spread was estimated to be $10.90 based on weighted probability outcomes.

The question then became: How much would the arbitrageur risk?

First, the arbitrageur needs to determine PRGO's unaffected stock price. We consider the unaffected stock price to be the level that the target was trading at prior to any incremental gain from the takeover offer. If there was any leak or report in the marketplace suggesting a possible merger or the company seeking a partner, the target's stock may have moved up on speculation of a higher price. In the case of PRGO, we need to study the price history to help determine the unaffected stock price, which will become our initial downside estimate (see Exhibit 5.8).

In the case of PRGO, we needed to go back before the initial takeover approach by MYL. The unaffected PRGO stock price appeared to be at $164.71 on April 7, 2015. Right after April 7, there were reports in the

EXHIBIT 5.8 PRGO Stock Prices
Source: Used with permission of Bloomberg Finance LP.

media suggesting a merger between PRGO and MYL might take place and both stocks moved significantly higher. This level will be our level on which we will start to calculate our risk estimates.

In the case of MYL, we will also go back to the stock price's history; see Exhibit 5.9. We are also going to use a price from April 7, 2014, as MYL's stock price moved up substantially on the reports of a possible

EXHIBIT 5.9 MYL Stock Prices
Source: Used with permission of Bloomberg Finance LP.

deal. MYL's stock closed at \$58.48 that day, so we will use that for MYL's unaffected stock price.

$$
\begin{aligned}
DR &= SP_t - TD \\
&= \$164.71 - \$154.27 \\
&= \$10.44 \\
UR &= (AU - SP_a) \times R \\
&= (\$58.48 - \$41.85) \times 2.3 \\
&= \$38.25 \\
TR &= DR + UR \\
&= -\$10.44 + \$38.25 \\
&= \$27.81
\end{aligned}
$$

While finding a negative downside risk is unusual, it can happen when there is a substantial upward market move after the deal is announced. This can happen more frequently when the time frame to complete the merger becomes lengthy. The "negative" downside means that if the deal were to be terminated, the target's stock price might actually go up.

USING OTHER METHODOLOGIES TO ASSESS THE RISK OF ARBITRAGE TRANSACTIONS

Many times, using the past trading history to find the unaffected stock price yields a pretty accurate estimate of both downside and upside risks. However, if a substantial period of time passes, the arbitrageur must continually update his or her estimates as general market and industry-specific conditions change.

In the PRGO/MYL deal, many months passed since the deal first started to transpire, so in order to have a more accurate measure of downside, upside, and total risk, the arbitrageur must use the other risk methodologies we outlined earlier in the chapter:

1. Adjusting our risk estimates that use prior trading history before that deal was announced with changes in an overall market index as well as a sensitivity factor such as the target and acquiring company's beta
2. Estimating changes in market values using a sample of comparable companies

3. Estimating risk calculating an implied price using price-earnings ratios
4. Using fundamental ratios of a sample of comparable companies that would include measures such as Price/Earnings, Price/Cash flow, or Price/EBITDA

The following sections describe each of these methodologies, except for calculations of implied price using P/E ratios, in more detail.

Using the Market-Adjusted Return Method to Assess Risk

We will first use the market-adjusted return method. To perform this analysis, we will use the movement in the S&P 500 Index from April 7, 2015 (the date of the unaffected stock prices of both PRGO and MYL), and the date we are determining our risk, which we are assuming is October 26, 2015.

To use this method, we need to calculate the change in the S&P Index from April 7 to October 26. We also need to adjust the S&P move for the sensitivity of both PRGO and MYL to moves in the Index. We generally use the beta of each security. It is also very important to use the betas that existed prior to the deal announcements. After the deal is announced, in the case of cash transactions, the target's stock tends to be quite stable as the stock's price trades generally close to the cash deal price. The effect of this is to depress the beta. In the case of stock deals, the target's beta starts to be linked to the acquiring company's beta and therefore tends to trend close to the acquiring company's beta.

To do the market-adjusted method, we are assuming the following values:

PRGO	Factor	MYL
$154.27	10/26/15 stock price	$41.85
1.1	Beta	.9

We are also using the following values for the S&P 500 Index:

S&P 500 Value on April 7, 2015: 2076

S&P 500 Value on October 26, 2015: 2066

Between April and October, the S&P 500 Index declined 10 points or 0.5%. We will use this in our market-adjusted risk calculation.

The necessary calculations are shown in Exhibit 5.10.

PRGO Market Adjusted Downside	
Using Market Adjusted Model:	
Unaffected Price Date	10/26/2015
SPX	2,066.00
S&P Index as of:	
7-Apr	2076.00
Change	–10.00
% Change in S&P 500	–0.48%
Original	
PRGO Beta	0.89
Market Adjusted	
Change in PRGO	–0.43%
PRGO 4/7/15	$164.71
Market Adjusted	
PRGO Value	
(Mkt Adj Downside)	**$164.00**

EXHIBIT 5.10 PRGO Market-Adjusted Downside Using Market-Adjusted Model

So the downside risk can be calculated as follows:

$$\begin{aligned} DR &= SP_t - TD \\ &= \$154.27 - \$164 \\ &= -\$9.73 \end{aligned}$$

We now need to examine an estimate of the upside risk on the short side in MYL. The market-adjusted value of MYL can be seen in Exhibit 5.11.

The upside risk in MYL can be calculated as follows:

$$\begin{aligned} UR &= (AU - SP_a) \times R \\ &= (\$58.23 - 41.85) \times 2.3 \\ &= \$16.38 \times 2.3 \\ &= \$37.67 \end{aligned}$$

Total risk in the PRGO/MYL can then be calculated as follows:

$$\begin{aligned} TR &= DR + UR \\ &= -\$9.73 + \$37.67 \\ &= \$27.94 \end{aligned}$$

MYL Market Adjusted Upside	
Using Market Adjusted Model:	
Unaffected Price Date	10/26/2015
SPX	2,066.00
S&P Index as of:	
7-Apr	2076.00
Change	–10.00
% Change in S&P 500	–0.48%
Original	
MYL Beta	0.89
Market Adjusted	
Change in MYL	–0.43%
MYL 4/7/15	$58.48
Market Adjusted	
MYL Value	
(Mkt Adj Upside)	**$58.23**

EXHIBIT 5.11 MYL Market-Adjusted Upside Using Market-Adjusted Model

The problem in this case is that using the change in the S&P 500 was not an accurate method. Almost all pharmaceutical stocks performed much worse than the S&P 500 from April 7 to October 26, 2015. Many questions had been raised by politicians regarding the pricing of pharmaceuticals, which led to a re-rating of almost every pharmaceutical stock.

Because of the re-rating, we need to turn to other methodologies to obtain a better estimate of downside, upside, and total risk in the PRGO/MYL deal.

Estimating Changes in Market Values Using a Sample of Comparable Companies

One of our alternative methods is to use a sample of comparable companies and their respective market moves during the applicable period. The first step in this method is to assemble a sample of companies that are similar to both PRGO and MYL.

In this case, PRGO had issued a proxy statement in its fight to stay independent from MYL and had compiled what it had considered to be a group of comparable companies. We decided to use a similar sample. However, since a number of companies in PRGO's original sample were involved themselves in M&A activity, we eliminated these securities to minimize the bias in stock moves from M&A activity.

PRGO and Comparative Company Statistics												
Compa-		YTD	Market Cap.	Div	PE Ratio		EV/Sales		EV/EBITDA			
rables	Last	% CHG	(millions)	Yield %	2015	2016	2015	2016	2015	2016		
ABBV	$51.87	−4.1	$103,902	3.22	12.1x	10.4x	5.6x	4.8x	12.6x	10.7x		
BMY	$64.55	−11.0	$109,356	2.27	34.2x	28.5x	6.5x	6.2x	26.9x	22.6x		
CELG	$123.65	7.7	$95,228	—	25.7x	20.9x	10.3x	8.5x	21.9x	16.2x		
MJN	$79.71	−17.1	$16,425	1.93	23.6x	22.4x	4.2x	4.2x	16.0x	15.8x		
MNK	$66.96	−32.8	$7,804	—	9.2x	8.5x	3.9x	3.5x	9.2x	8.2x		
REGN	$545.87	37.5	$58,709	—	43.6x	36.3x	14.0x	11.7x	35.4x	27.4x		
UTHR	$79.71	17.4	$6,938	—	10.3x	9.2x	4. lx	3.5x	7.9x	6.4x		
Mean		**2.80**	**$56,909**	**1.24**	**22.66**	**19.46**	**6.93**	**6.07**	**18.56**	**15.31**		
Median		**7.69**	**$58,709**	**0.97**	**23.55**	**20.87**	**5.55**	**4.85**	**16.00**	**15.79**		
PRGO	$154.27	−4.0	$22,585	0.32	19.9x	16.6x	5.3x	4.6x	17.8x	15.1x		

EXHIBIT 5.12 PRGO Comparable Company Analysis
Source: Bloomberg Finance LP.

From Exhibit 5.12, we have computed the mean and median of the P/E ratios, Enterprise Value to Sales, and Enterprise Value to EBITDA for the sample of comparable companies we have assembled for PRGO. The data for P/Es, EV/Sales, and EV/EBITDA were obtained from the Bloomberg database. We will use these calculations to make our estimates of PRGO's estimated downside price using the various methods.

Calculating PRGO's Implied Price Using P/E Method

In Exhibit 5.13, we use the data for the comparable companies and apply it to the estimate of PRGO's earnings per share.

Calculation of PRGO Implied Price – P/E Method		
	2015	**2016**
Estimated PRGO EPS	$7.76	$9.36
Assumed Multiple	20	18
Implied PRGO Price	**$155.20**	**$168.48**

EXHIBIT 5.13 Calculation of PRGO Implied Price Using the P/E Method

Using the price-to-earnings multiple method, we came up with an estimate of $155.20 and $168.48 per PRGO share. Most arbitrageurs use the one-year forward estimate for the multiple and as a result this method results in an estimate of $155.20 for PRGO should the transaction fail.

We now move on to estimating PRGO's downside using the Enterprise to Sales method.

Calculating PRGO's Implied Price Using EV/Sales Method

From our comparable company calculations, we have the mean and median EV/Sales estimates for the sample of 6.93× and 5.55× for 2015. To calculate what these multiples imply for PRGO, we now need to work backward from enterprise value to calculate the implied market capitalization of PRGO. (See Exhibit 5.14.)

You will notice that we have used multiples of PRGO sales of 5.3× and 4.5× sales, which are lower than the mean and median of our comparables sample. The estimation of both upside risk and downside risk is an art form as opposed to a science. It would be nice if we could just use formulas and spreadsheets to automatically calculate the estimates. Sometimes, however, adjustments have to be made. In this case, we knew that PRGO had historically traded at a lower multiple of EV to sales. As a result, we used a discounted multiple.

Using our assumed multiple for PRGO, it resulted in an implied price of $162.13 for one-year forward sales. As mentioned earlier, we chose to use the one-year as opposed to a two-year forward estimate of sales.

We now move on to calculate PRGO's implied price using the multiple of EV to EBITDA method.

Calculation of PRGO Implied Price – EV/Sales Method		
Estimated PRGO Sales (millions)	$5,397	$6,207
Assumed Multiple	5.3	4.5
Implied PRGO Enterprise Value	$28,604	$27,931.50
Plus: Cash	$507	$507
Less: Debt	$5,375	$5,375
Est. PRGO Market Capitalization	$23,736	$23,064
PRGO Shares Outstanding	146.4	146.4
Implied PRGO Price	**$162.13**	**$157.54**

EXHIBIT 5.14 Calculation of PRGO's Implied Price Using the EV/Sales Method

Calculating PRGO's Implied Price Using EV/EBITDA Method

From our comparable analysis table, we calculated the mean and median values for EV/EBITDA of 18.56× and 16.0× for the year 2015 for our sample.

In Exhibit 5.15, we again have to work backward from the EV calculated from using our assumed multiple in order to calculate our estimate of the implied price for PRGO. We again used a discounted multiple as compared to the mean and medians based on our research that PRGO has historically traded at a discounted multiple. (See Exhibit 5.16.)

Using our estimated multiple on the estimate of PRGO's 2015 EBITDA resulted in an implied price of $151.96 if the tender should fail.

Calculation of Assumed PRGO Enterprise Value – EBITDA Method		
	2015	**2016**
PRGO:(millions)		
EBITDA	$1,595	$1,874
Assumed EBITDA Multiple	17	15.5
Enterprise Value	**$27,115**	**$29,047**

EXHIBIT 5.15 Calculation of Assumed PRGO's Enterprise Value Using the EBITDA Method

Calculation of PRGO Implied Price – EBITDA Method		
(Millions)	**2015**	**2016**
Enterprise Value	$27,115	$29,047
Plus:Cash	$507	$507
Less Debt	$5,375	$5,375
Market Capitalization	**$22,247**	**$24,179**
Shares Outstanding	146.4	146.4
Implied Price per share	**$151.96**	**$165.16**

EXHIBIT 5.16 Calculation of PRGO's Implied Price Using the EBITDA Method

CONCLUSION

As can be seen from all the previous work, there are several methodologies to help the arbitrageur to estimate the target's downside risk. These same methods can also be used to estimate the implied price for the acquirer should the deal fail. We would use the same methods to compute what the implied price of MYL might be to determine the upside risk and, therefore, the total risk in the deal.

The question then becomes: Which of the estimates should be relied on to make an investment decision?

Exhibit 5.17 summarizes the results from all the methods.

Exhibit 5.17 shows that we have a range of $131.00 to $164 for the implied price for PRGO shares. It would be nice if the range were narrow and all estimates came in close to each other. However, rarely is that the case.

One way to determine a downside estimate would be to use an average of all the values, which turned out to be $157.98 in Exhibit 5.17. Again, it should be noted that the art-form nature of the methodologies gives the arbitrageur flexibility to emphasize one estimate over another. There is no hard-and-fast rule. We wanted to provide the reader with all the methodologies generally used in the industry.

Now that we have determined what we believe is the expected return and risk in the deal should the transaction not be completed, we must move on to another critical element of risk arbitrage—the probability that the transaction will be completed.

Summary of PRGO Estimated Downside Values	
Price Values per Share	
Market Adjusted	$164.00
Index-Based Value	$142.79
Peer/Comp-Based Value	$131.00
Multiple Values	
P/E Estimate Vaue	$155.20
EV/Sales Estimate	$162.13
EV/EBITDA	$151.96
MEAN VALUE	**$157.98**

EXHIBIT 5.17 Summary of PRGO Estimated Downside Values

CHAPTER 6

Estimating the Probability of a Transaction's Occurrence

It is very helpful for an arbitrageur to have estimates of both return and risk, but having these two elements does not give the arbitrageur a complete picture. The third and hardest element of the risk arbitrage decision process involves estimating the probability of a transaction's occurrence.

By taking several examples, an arbitrageur can estimate both return and risk on separate proposed transactions. As Exhibit 6.1 illustrates, each transaction has its own return and risk. The dollar amounts vary from deal to deal. If we look at the two columns that show return and risk estimates, we realize that it is very difficult for an arbitrageur to determine which deal, if any, is worth an investment. Is it wise to invest in Deal ABC and earn $1.00 per share, or does it make more sense to invest in Deal GHI for a spread of only $0.188 per share? The amount of dollars at risk in these deals is almost the same. Why invest capital to earn only $0.188 per share?

In Exhibit 6.2, we express return and risk in percentages. The return incorporates the required capital investment. Because percentage calculations incorporate the element of timing, they are usually more useful than return and risk expressed in terms of absolute dollars. We can see that the expected return on Deal GHI (9%) is greater than on Deal ABC (6%), even though the absolute dollar return on Deal GHI is dramatically less than on Deal ABC.

Comparing Exhibits 6.1 and 6.2 may offer the arbitrageur a better method for evaluating transactions, but further improvements can be added. Using either exhibit, we can see the difficulty in trying to choose among the deals. Something still seems to be missing.

Arbitrageurs are in the business of predicting outcomes. Their success is only partly determined by the returns they can generate by investing in transactions; it is also directly linked to their ability to estimate the probability of any particular deal's occurrence. As deals are completed, the arbitrageurs'

Risk Arbitrage: An Investor's Guide, Second Edition. Keith M. Moore.

Deal	Return ($)	Risk ($)
ABC	1.000	4.000
DEF	1.500	7.000
GHI	0.750	2.950
JKL	2.650	12.500

EXHIBIT 6.1 Risk and Return on Selected Deals (in terms of dollars)

Deal	Return (%)	Risk (%)
ABC	6	24
DEF	7	32
GHI	9	35
JKL	11	51

EXHIBIT 6.2 Risk and Return on Selected Deals (in terms of percentage)

returns improve. If, however, an arbitrageur owns a deal that breaks up, losses are sustained. This chapter explores methods for arbitrageurs to maximize their returns and minimize their losses.

GATHERING INFORMATION

In today's merger-and-acquisition marketplace, arbitrageurs have a tremendous amount of information available. Their job is to gather relevant information and analyze it. Exhibit 6.3 gives a partial listing of the information sources that arbitrageurs use when they analyze any given transaction. This listing is not all-inclusive. From time to time, arbitrageurs may need special information related to particular proposed transactions.

Today, like almost every business, the Internet and technology have had a profound impact on how risk arbitrage research is performed. Years ago, much of the research had to be physically obtained from a source, where today the arbitrageur obtains most of his or her information over the Internet. Additionally, the Bloomberg Service has become the staple for arbitrageurs as it houses a multitude of information that is utilized in arbitrage research and analysis.

Type of Information	Sources
Newspapers	Wall Street Journal
	New York Times
	Financial Times
	Globe & Mail
	New York Post
	Investors Daily
	American Banker
	USA Today
	Local Newspapers
Publications	Business Week
	Barron's
	Forbes
	Fortune
	Various Newsletters
Special Arbitrage Services	ArbJournal
	Deal Reporter
	CTFC
	PARR
General News Services	Bloomberg News
	Dow Jones News
	Reuters News
	Company Press Releases
	Company Conference Calls
Databases	Bloomberg
	SEC's EDGAR
	Fact Set
	Nexis
	Lexis
	Various Chart Services
Pricing Services	Bloomberg
	Reuters News
Financial Information	Annual Reports
	Quarterly Reports
	10-K Statements
	Street Research Reports
	Registration Statements
Legal Information	Antitrust Data
	Litigation Documents
	Definitive Merger Agreements
	Registration Statements
	Tender Offer Documents
Tax and Accounting Information	Transaction Details (from SEC filings)
	Details of Accounting Treatment

EXHIBIT 6.3 Sources of Arbitrage Information

As shown in Exhibit 6.3, the types of information that an arbitrageur studies are categorized as financial, legal, and tax and accounting information. Financial information generally consists of annual reports, quarterly reports, and 10-Ks, as well as reports done by analysts at brokerage firms on individual companies involved in transactions. The arbitrageur may also use reports prepared by analysts who have studied the industries in which these companies operate. These reports are secured either directly from the analyst's firm or from various data services on the Internet.

The listing of arbitrage information has changed substantially over the years under the influence of technology.

NOTES FROM THE FILE

For many years, arbitrageurs obtained SEC filings from services that physically obtained the documents from the SEC Reference Room. Once the Internet was developed, services were initiated that allowed people to download filings instantaneously. The development of these services also leveled the playing field for arbitrageurs and investors alike. Previously, under the physical delivery era, due to the nature of the distribution method, some arbitrageurs received documents prior to others. The leveling of the playing field allows everyone equal access and has also made the arbitrage business much more efficient and competitive.

The second type of information is generally legal information. Depending on the transaction and the companies involved, legal information may pertain either to the antitrust aspects of the two companies' combining or to regulatory issues. The arbitrageur also may have to gather tax and accounting information, such as how the transaction is structured and how the relevant government authorities will treat it. An important issue may be whether the parties require a tax ruling from the Internal Revenue Service (IRS) or whether they need only an opinion of their counsel as to the taxability of the transaction.

The flowchart in Exhibit 6.4 shows the process that the arbitrageur uses in assembling and analyzing information. The sequence of steps in the process affords the arbitrageur the information needed to make an intelligent decision on what securities should be purchased or sold in the respective portfolios.

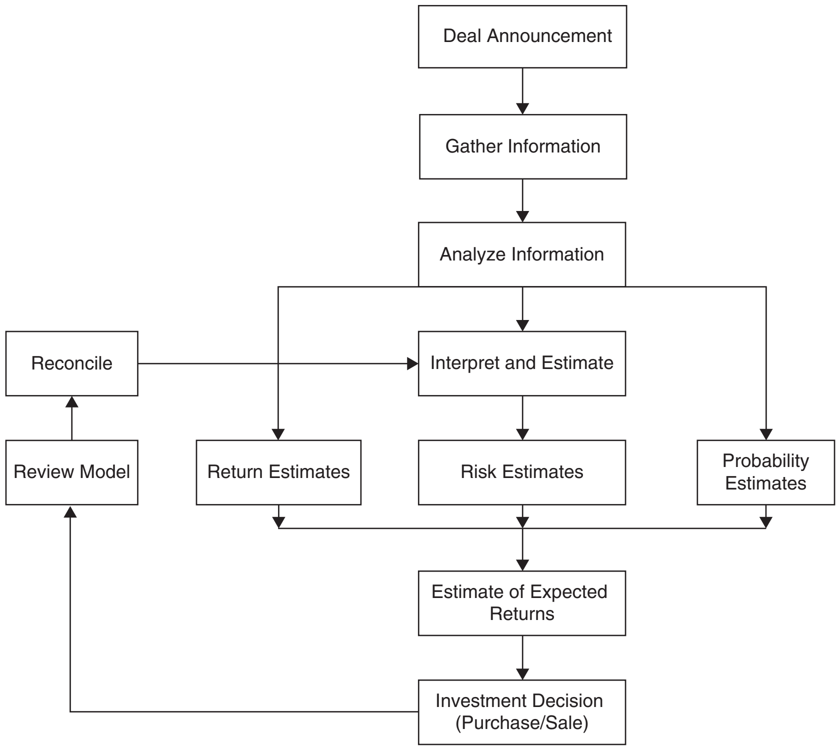


EXHIBIT 6.4 Analyzing and Assembling Information

CONDUCTING INITIAL RESEARCH

To determine the probability of a deal's occurrence, an arbitrageur must utilize all available information when formulating an estimate. The estimating process generally starts when the transaction is first announced. The announcement of a new deal generally appears first in a press release that is carried by a number of news services. Press releases of mergers are generally released on the hour or half-hour starting early in the trading day. Usually, coverage of the transaction is covered the next day in newspapers such as the *Wall Street Journal*.

Initially, the arbitrageur is most interested in getting a copy of the official press release in which the two companies announced their proposed transaction. This press release is important because it is the unedited version of what the companies are planning to do. Usually, the press release details the particular terms of the transaction as well as some background information that the arbitrageur may find helpful.

Press releases can be obtained from several services but are also released on the Bloomberg Service. Press releases are normally edited by the news agencies that receive them. The agencies choose what they want to report, and they often leave out certain aspects of the original press release. An account in the *Wall Street Journal* or other newspapers of a proposed arbitrage transaction may not have the level of detail available in the original press release. Other newspapers, such as the *Financial Times* and the *Globe & Mail*, also carry articles on recently disclosed mergers and may cover the particular transaction in more depth.

After a deal is announced, the arbitrageur quickly tries to determine whether the two companies are planning a conference call in which they will announce their plans and generally address the Wall Street community. Telephone calls should be placed to the respective company executives as soon as possible after the transaction is announced. Analysts and shareholders alike are usually allowed to ask questions regarding transactions; however, on many calls the participants are screened and only industry analysts are allowed to ask questions. Arbitrageurs are generally screened out by the merging parties' investment bankers.

A conference call or a meeting with analysts can give helpful insight about the background of the participants and the logic behind the transaction. Arbitrageurs generally attentively listen to the call, to obtain information that will be helpful in their decision process. Typical questions address the timing and legal aspects of the transaction, so the conference call becomes an important source of information for the arbitrageur. Arbitrageurs listen closely to the call as well as the questions and answers. Some of the important questions that arbitrageurs focus on are as follows:

- What sales process was carried out by the target company?
- Are there any special or unusual conditions in the definitive merger agreement?
- What regulatory approvals are necessary (especially involving antitrust and foreign approvals)?
- Does the transaction need MOFCOM or CFIUS approvals?
- Which shareholder approvals are needed?
- What is the required vote by shareholders (majority of outstanding or majority of voting)?
- What is the estimated timing of the transaction?
- Details on the financing.

During the period of time when the deal is outstanding, the arbitrageur may call either company and speak directly to officials who can supply particular information. Arbitrageurs usually speak with the investor relations manager or the treasurer of the corporation, or, in rare cases, with the president, chairman of the board, or members of the board of directors. In years past, it was a common practice for arbitrageurs to also contact the respective companies' advisers, including the investment bankers and the companies' legal counsel.

The ability of arbitrageurs to obtain answers to many of their questions has been significantly altered since the SEC's adoption of Regulation FD (Full Disclosure). Under this rule, all relevant information must be broadly disclosed to the public. Any significant disclosure must be released publicly, not just to a select few on a call or in a personal conversation. As a result, arbitrageurs frequently have to read between the lines when hearing a corporate executive's response.

GATHERING FINANCIAL INFORMATION ON THE PROPOSED TRANSACTION

After a deal is announced, the arbitrageur tries to gather information on the transaction as quickly as possible. As previously stated, the first step may be to get copies of the companies' annual reports, quarterly reports, and 10-Ks describing their financial condition.

The arbitrageur will also try to assemble any relevant research generated by brokerage firms on the two companies and the industries in which they compete. This process has been facilitated in recent years through the use of online databases and services. An arbitrageur who subscribes to such a service that catalogs research reports written by security analysts at various brokerage firms can access reports that have recently been generated by Wall Street analysts. These services have simplified a process that, years ago, required many hours of researching the analysts who had written reports on the various companies.

In addition to understanding the individual companies, the arbitrageur wants to gain insight into the industries in which each company operates, and to learn the logic behind the transaction. A transaction that makes good business sense not only is a good choice for a portfolio, but it holds more promise that the transaction will be completed.

In the recent merger wave, a high percentage of the announced transactions have been based on solid business logic. Usually, one company purchases another company within the same industry to gain market share or geographic diversification.

In the latest business and merger cycle, which started after the 2008 Credit Crisis, much of the M&A activity has been spurred by the need for external growth in both revenues and earnings. After the recession, companies adopted comprehensive cost-cutting programs that improved profit margins significantly. Once these programs ran their course, companies found, given the slow level of economic growth in the recovery phase, external growth was the only outlet left to increase earnings. As a result, M&A activity surged.

The continued extreme level of interest rates also provided the funds to accelerate acquisitions. Acquiring assets generating profits allowed companies to provide immediate accretion to the acquiring company's bottom line. The accretion then led, in many cases, to an increase in the acquiring company's stock price, which also became fuel for further acquisition activity.

Generally, when mergers are structured around good business sense, there is a higher probability that these transactions would be completed. The completion rate is very important to an arbitrageur; it helps to determine his or her ultimate profitability.

It is important for the arbitrageur to analyze the individual parties and personalities involved in a transaction. The companies involved may have a past history of doing deals or initiating various types of transactions. If one or both of the companies has a history of completing similar transactions, the historical success rate will help the arbitrageur to predict whether the present transaction will become final.

For instance, if the acquiring company has a history of announcing deals but completing only a low percentage of them, the arbitrageur would be forewarned to assign a lower probability to a current announced transaction. On the other hand, if the acquiring company has completed numerous similar transactions, it is highly likely that the current transaction will also close.

Besides researching the individual parties, the arbitrageur will examine the structure of the announced transaction—for example:

- What type of deal is it, and what is the transaction's precise structure?
- Is it a merger in which one company is taking over the other, or is it an amalgamation?
- Is the acquisition dilutive or accretive?
- How leveraged will the acquiring company be after the merger?

Questions like these are relevant when the arbitrageur must determine the likely outcome of a transaction.

It is also helpful if the arbitrageur understands exactly what has to be done in order to complete the transaction. Knowing the actual steps that need to be completed allows the arbitrageur to anticipate and complete each step in turn.

When a deal is based only on an agreement in principle (which today is extremely rare), further due diligence is necessary before the companies can arrive at a definitive agreement. The need for additional due diligence may cause the arbitrageur to assign a lower probability to an ongoing transaction.

As a general rule, the more legal work and due diligence performed by the companies, the higher the likelihood that the transaction will be completed. However, if the companies still have much work to be done—such as examining each other's books, records, and facilities—there is a greater possibility that something could turn up that would upset the proposed transaction. Thus, the quantity of due diligence still needed in a transaction has a significant effect on the arbitrageur's estimate of probability.

Once the companies reach a definitive agreement, the agreement is filed with the SEC in an 8-K statement. It is a critical analytical step for arbitrageurs to read the definitive merger agreement. Some of the key areas of interest are as follows:

- Needed regulatory approvals
- Breakup fees
- Key conditions
- Needed shareholder approvals
- Existence of voting agreements
- Commitment to possible divestitures to solve antitrust issues

Regarding financial information, in addition to examining the annual reports, quarterly reports, and 10-Ks issued by the companies, it is very important for the arbitrageur to read and analyze all the registration statements and tender offer documents that are related to the announced transaction. The information they contain will be very helpful to the arbitrageur's process of estimating the probability of the outcome.

Appendix A shows how an arbitrageur actually evaluates these registration and tender offer documents. The "Points" interspersed in Appendix A call attention to information and responses that are extremely important when an arbitrageur is trying to determine whether a transaction will take place.

When they analyze the financial information included in all the above reports, arbitrageurs are particularly interested to know:

- What price is being paid for the target company?
- Is it a friendly merger or a tender offer? (Hostile transactions are discussed in Chapter 8.)
- How does the price relate to the company's earnings per share, cash flow, and other measures that the investment banking community generally refers to in a transaction?

Valuation is a critical element for the acquiring company and arbitrageurs alike. If, in the eyes of the Wall Street community, the acquiring company is paying a high price as compared to other similar transactions, there is a higher likelihood that the transaction will not take place. An arbitrageur always hopes to determine that a transaction's price is within an acceptable range of values, thereby giving the Wall Street community a reason to support the transaction. Generally, the arbitrageur compares the various valuation metrics that the acquiring company is paying to recent transactions in the same or similar industry.

The key valuation metrics are generally as follows:

- Price to earnings
- Price to cash flow
- Price to book value
- Enterprise value to EBITDA (earnings before interest, taxes, depreciation, and amortization)
- Enterprise value to revenues

Arbitrageurs are also interested in determining whether there will be any dilution to the acquiring company. In today's equity market, dilution becomes a very important aspect of arbitrage transactions. Very few shareholders are interested in having their company acquire another company when the result will be a dilution of earnings. If dilution occurs, the acquiring company's stock will come under a great deal of selling pressure in the marketplace. If the acquiring company encounters a steep price decline in response to dilution resulting from a merger transaction, this factor would cause the arbitrageur to lower his or her estimate of the probability that this particular transaction will occur.

Another aspect that the arbitrageur must analyze is how the particular transaction is being financed. If the deal is a cash transaction, the arbitrageur will be quite interested in determining the sources of the acquiring company's required capital. Is it being borrowed from banks? Is it coming out of cash on hand? Or is there an unidentified source of the financing? Perhaps more important, what is the status of any required financing?

If firm agreements are already in place for the borrowing of the required amount of money, the arbitrageur has an opportunity to assign a much higher probability to the deal's taking place. Alternatively, if the acquiring company is still negotiating to borrow the required amount of money to complete the transaction, there is a higher degree of risk that the transaction will not occur.

The registration statements and tender offer documents always contain a section on financing, and arbitrageurs refer to this section immediately upon receiving the documents. The financing and the degree of security of the financing are extremely important to the arbitrageur and his or her probability estimates.

The final step in analyzing the financials of the respective companies is to determine how the shares of the companies involved in the transaction are owned. The arbitrageur tries to determine how much stock is owned by the management team and by the entire board of directors. If management or the board owns a significant amount of stock, this can be an important key in determining whether the transaction is likely to occur. If this is a friendly transaction, most of the stock will clearly be voted in favor of it.

Institutional ownership is also important. The arbitrageur always wants to determine how much of the target company's or the acquiring company's stock is held by the institutions on Wall Street. These institutions can have a major say in whether a transaction will take place. Many of these institutions have been known to communicate with one another. Furthermore, there are organizations that analyze transactions and make recommendations as to how the institutions should vote. Arbitrageurs always try to anticipate how these organizations and institutions will vote.

The arbitrageur must find out how many votes are needed to approve a particular transaction. It is important to know whether a simple majority of the outstanding shares is enough to approve the transaction or whether a majority of the voting shares is needed.

The difference can be very important. In some agreements, a percentage greater than a majority is needed. The required vote can be found in the company's charter and bylaws. In general, the higher the percentage needed, the harder it may be for the companies to get sufficient votes. As we have discussed previously, if the transaction is a cash transaction and is structured as a merger, usually only the shareholders of the target company need to approve the transaction. The position of the target company's ownership then will help the arbitrageur determine the likelihood of the transaction's taking place.

If, however, this is a stock-for-stock transaction in which the acquiring company is issuing so many shares that its own shareholders, as well as the target company's shareholders, are required to vote, the arbitrageur must also estimate the likelihood of the acquiring company's shareholders approving the transaction. The arbitrageur analyzes how the acquiring company's shares are held in order to estimate the probability that the acquiring company's shareholders will approve the transaction.

If there is one particular control shareholder, that shareholder is also a key item for the arbitrageur to analyze. Control shareholders may or may not indicate ahead of time whether they support a given transaction. If they have not announced their intention to support the transaction, it is the arbitrageur's job to determine whether these shareholders are likely to vote in favor, or, in the case of a tender offer, whether they are likely to tender their shares under the tender offer.

There are many additional financial factors that the arbitrageur must consider from time to time, but those discussed here are most common to any given transaction. All the financial information is analyzed so that the arbitrageur may formulate an estimate of the probability that the transaction will occur. Financial characteristics frequently have a big influence on the possible outcomes of any given transaction. The better the information and analysis, the better the estimate of probability for the arbitrageur's decision process.

GATHERING LEGAL INFORMATION ON THE PROPOSED TRANSACTION

Next, the arbitrageur must assemble and analyze the legal aspects of the transaction. If the companies are involved in any type of litigation or if certain legal liabilities are disclosed in the notes to the financial statements, the arbitrageur must try to determine whether the transaction could be in danger if litigation came to a conclusion or verdict that would be detrimental to either of the companies.

Usually, the arbitrageur will need to refer to the definitive merger agreement, the tender offer documents, or the additional documents and disclosures in the registration statements, to determine whether favorable resolution of the litigation is a condition that the companies will require in order to close the deal.

Another aspect of legal analysis usually involves antitrust theory. When a transaction is announced, the arbitrageur, as we stated earlier, always tries to learn about the industries in which each company operates. He or she is particularly interested in whether the two companies are actual competitors in the marketplace. If the two companies compete with one another, this is known in antitrust theory as a "horizontal merger." Horizontal mergers are frequently examined closely by both the Federal Trade Commission and the Justice Department under the previously discussed Hart-Scott-Rodino (HSR) Act. (We will discuss "vertical mergers" at the end of this chapter.)

In a horizontal merger, the arbitrageur will often try to determine what percentage of the particular market each company holds. This is the key element of antitrust analysis. The analysis starts by first determining the relevant product market, that is: What actual product market will the government utilize in trying to determine whether the two companies' combined market share will be unacceptable according to the federal antitrust laws?

This relevant market determination is rarely easy. Sometimes, the government defines a narrow market in much broader terms. Antitrust analysis must also include any potential substitutes for the related goods and services being studied. If there are no (or very few) substitutes, the market shares within the narrow product market will be the basis for any legal antitrust determination.

After the arbitrageur determines the relevant product market, he or she must also ascertain where that product market exists geographically:

- Is it a regional market?
- Is it a national market within the United States?
- Or, as we have seen more frequently in today's advanced world economy, is it a worldwide market?

Depending on the answers to these questions, the arbitrageur tries to determine the sales of that particular product market within the defined geographic market. The arbitrageur attempts to determine:

- Who are all the individual competitors?
- What are their relevant sizes within the marketplace?

In the most ideal case, the arbitrageur would determine, in dollars of sales, how much each company sold in the relevant product market, and would then determine each company's respective share of the market.

For example, if an arbitrageur found that there were only five competitors in the relevant product market, the market shares would be calculated as shown in Exhibit 6.5.

The market shares were calculated by dividing each company's sales by the total industry sales.

If Company A and Company C are planning to merge, the two companies would have a combined market share of 42.7% (24.4% plus 18.3%). Exhibit 6.6 shows the pre-merger and post-merger market shares.

The combined market shares, plus the fact that only three other competitors are left in the market, would alert the arbitrageur to the likely possibility that either the Department of Justice or the Federal Trade Commission has serious concerns regarding the proposed combination.

Competitor	Sales ($ million)	Market Share (%)
Company A	$20	24.4%
Company B	40	48.8
Company C	15	18.3
Company D	5	6.1
Company E	2	2.4
Total industry sales	$82	100.0%

EXHIBIT 6.5 Competitors' Market Shares

Competitor	Pre-merger Market Share	Post-merger Market Share
Company A (+ C)	24.4%	42.7%
Company B	48.8	48.8
Company C	18.3	0.0
Company D	6.1	6.1
Company E	2.4	2.4
Total	100.0%	100.0%

EXHIBIT 6.6 Competitors' Pre-merger and Post-merger Market Shares

The arbitrageur would most likely retain the services of private antitrust attorneys who would study the transaction and render an opinion as to whether the government might challenge the transactions.

The antitrust analysis process is usually very difficult. It is quite common for arbitrageurs to retain outside counsel as consultants to help them perform this analysis. The attorneys generally have knowledge from prior lawsuits or from relationships with clients within the industries, and they try to construct accurate tables that indicate market shares.

Arbitrageurs may have to incur expensive fees to get this type of advice. An arbitrageur who pays outside attorneys is also seeking their opinion as to whether the government may challenge a particular transaction and, if so, whether the government might prevail in any proceeding before a federal or state court. In many cases, the government will actually file a motion requesting a court to issue what is called a "preliminary injunction," which is intended to prevent the merger of two companies. The government makes this request when it believes an antitrust violation is indicated. The accompanying complaint contains the reasons for seeking the preliminary injunction. The arbitrageur needs to obtain all the documents filed by the government and the respective parties. These documents will be critically analyzed so that the attorneys and the arbitrageur can gauge the likelihood of the government's success.

When a case is heard by a judge, it is common for an arbitrageur or the retained attorneys—or sometimes, both—to attend hearings before the court or the relevant commission from which the government is requesting a preliminary injunction. These proceedings can offer tremendous opportunities if the arbitrageur is able to predict accurately the outcome of the hearings and therefore the disposition of the transaction.

NOTES FROM THE FILE

Over the years, I have found that the most successful strategy in cases of litigation has been to personally attend all hearings on any matter, when the government or a private party is seeking an injunction against a particular transaction. I have had the best success when my outside counsel attended these hearings with me. Having our two independent opinions, plus the opportunity to consult with one another, has been the most successful approach that I have employed.

Because I am not an attorney, I need interpretation and understanding of the many technical issues that affect the litigation process. The attorneys I retain are very familiar with these technicalities and are able to explain them to me. They are also in the best position to judge which side may have the better argument. I try to use my experience and common sense in formulating my own estimate of the outcome of the case before the judge or panel of judges rules. I continually consult with my attorneys and compare their opinion with mine. Historically, when we have been in agreement on the estimate of the outcome, we have rarely been wrong. This process greatly improves the chances of making money on the transaction.

I also find that, at the hearings, my viewpoint as an arbitrageur is invaluable. I know how other arbitrageurs will react to various information and developments at these proceedings. Frequently, trading opportunities surface and I am able to take advantage of them. For instance, if the judge appears to ask insightful and challenging questions of the government's attorneys in a case brought by the Federal Trade Commission or the Justice Department, arbitrageurs may feel that the odds are improved for the injunction request to be denied. They may then look to increase their position in the deal, and the stock of the target company may rise. The only way for me to spot these opportunities is to attend the hearings.

In all these cases, my attorneys and I are focused on trying to predict the decision of the judge or panel of judges prior to its issuance. I then try to set up a position in the securities in order to profit from the ultimate decision.

A court may issue or deny an injunction request from the government, but frequently it is not the court of final determination. The companies involved in the deal, or the government, may request an additional review by a court of appeals. A court proceeding at the appeals level becomes even more critical to the arbitrageur's difficult process of estimating the probability that the deal will be completed. Again, the arbitrageur and the outside counsel will attend the hearings before the Court of Appeals, to improve their chances of predicting the final outcome.

EXAMPLE

At this point, it may be helpful to review how the appeals process works. We will examine an actual case. Years ago, Empire Gas, a large liquefied petroleum (LP) and gas company, was attempting to take over Pargas Incorporated, a smaller liquefied gas company. Even though the merger plans were hatched years ago, the case is extremely relevant, as it is frequently referenced in more recent court decisions. It was a hostile takeover, and Pargas was doing everything in its power to prevent it.

The attorneys retained by Pargas had filed for and were granted a preliminary injunction against Empire's tender offer in the Federal District Court in Maryland, on the grounds that the proposed merger could tend to create a monopoly in the LP/gas business in various regional markets. Empire's attorneys had then filed an appeal requesting that the U.S. District Court of Appeals for the Fourth Circuit vacate the lower court's decision so that the Empire tender offer could proceed.

Many arbitrageurs owned Pargas common stock. They were gambling that a three-judge panel would side with Empire Gas. The Empire tender offer was at a share price of $18.50 and Pargas's stock was trading at $16 per share, so the arbitrageurs were hoping to gain the spread between the two prices as profit.

Everything depended on the outcome of the proceeding before the Court of Appeals. Attorneys for Pargas were on their side of the courtroom, seated around a large conference table, and the Empire Gas attorneys sat around their corresponding table on the other side of the podium. The two groups took turns sending representatives to the lectern to present their technical and sophisticated legal arguments to the panel of three judges. As each speaker began a delivery, a green light became visible on the podium. At a certain timed interval during each argument, the light turned amber. The attorneys then spoke much faster, trying to get in every possible word before the light turned red and the judges cut off any unconcluded arguments. Hearings at a Court of Appeals are usually strictly timed to give each side an equal advantage.

After both sides progressed through the traffic-like cycle of lights and verbal arguments, the three-judge panel dismissed all parties and took the case under advisement. Meanwhile, on the floor of the New York Stock

Exchange, Pargas common stock was trading at prices that represented a significant discount to the Empire Gas bid. The arbitrageurs had the task of figuring out—before the decision was handed down—what the Court of Appeals would decide.

If the Court found for Pargas and upheld the preliminary injunction, Empire Gas would be thwarted and Pargas's stock would fall. If the judges decided to reverse the lower court's decision, the Empire offer would be allowed to proceed. The price of Pargas's stock would soar to the tender offer price or might even trade right through the current $18.50 price if investors and arbitrageurs were counting on Pargas to try to negotiate a friendly deal at a higher price. This situation could create a bidding war if Pargas found a white knight.

Unfortunately for arbitrageurs who owned shares of Pargas, the Court of Appeals affirmed the lower court's decision; later, Pargas's stock declined to $12 per share, and Empire Gas withdrew its offer.

VERTICAL MERGERS

Thus far, we have discussed only the horizontal type of acquisition, in which the companies are actually competing with one another by selling the same product or service. Another type of merger, known as a "vertical merger," involves a situation where the acquiring company seeks to take over a supplier of materials or services that are needed for a particular product or good that is marketed by the acquiring company.

Transactions that aim to vertically integrate operations are much more infrequently challenged by the government. However, an arbitrageur must still respond to the possibility of such a suit. At times, the federal government has taken a deeper interest in this type of transaction—perhaps in response to the current political environment. Historically, when the country has had a Democratic administration in power, interest in antitrust enforcement has been heightened.

The government, usually represented by the Justice Department or the Federal Trade Commission, uses its own staff to analyze arbitrage transactions. Generally, when the analysis is completed, the staff recommends to either the full FTC or the Justice Department an opinion on whether the transaction should be challenged. In the analysis, the government's legal staff incorporates certain legal techniques, mirroring the arbitrageur's efforts to determine market shares.

The government staff, however, has the advantage of access to large amounts of nonpublic information. Under the Hart-Scott-Rodino Act, the government may request, from the companies and other competitors in the marketplace, information to which the arbitrageur does not have access.

Given this information, plus a computation of market shares, the government staff may frequently calculate what are known as "Herfindahl Indices." The Herfindahl Index (HI) has been developed, during recent years, to help the government determine which transactions should be challenged.

Usually, in a Herfindahl analysis, market shares are first individually determined for each of the competitors within the industry. These market shares are then squared mathematically. This process is done two ways: on a pre-merger and a post-merger basis. The Herfindahl Index for the entire relevant product market is then added up. If the calculations of the combined total index (pre-merger and post-merger) change by a certain amount, the government follows preset guidelines for whether it will challenge a transaction. Herfindahl calculations can best be explained with an example. Exhibits 6.7 and 6.8 show the hypothetical market shares of all the individual competitors in the market for refrigerators and freezers, respectively.

Exhibits 6.7 and 6.8 show the calculations for a proposed combination of Company F with Company G. The arbitrageur and antitrust attorneys could have constructed these tabulations by obtaining information from industry reports or industry publications. In either case, market shares and Herfindahl Index (HI) numbers are shown both pre-merger and post-merger.

Exhibit 6.7 shows that the combination of the two companies results in a market share of 12% in the market for refrigerators and a post-merger HI of 144. The total HI increased from 1,830 to 1,902. The government considers any market with a Herfindahl Index greater than 1,800 to be a concentrated market. Guidelines issued by the government indicate that the agencies involved are unlikely to challenge a merger in a concentrated market

Company	Current Market Share	Pre-merger HI	Post-merger Market Share	Post-merger HHI
Company A	30%	900	30%	900
Company B	22	484	22	484
Company C	14	196	14	196
Company D	11	121	11	121
Company E	7	49	7	49
Company F	6	36	12 (F + G)	144
Company G	6	36	0	0
Company H	2	4	2	4
Company I	2	4	2	4
Total	100%	1,830	100%	1,902

EXHIBIT 6.7 Market for Refrigerators

Company	Current Market Share	Pre-merger HI	Post-merger Market Share	Post-merger HHI
Company F	25%	625	30% (F + G)	1,225
Company B	24	576	24	576
Company E	17	289	17	289
Company D	15	225	15	225
Company G	10	100		
Company H	5	25	5	25
Company I	4	16	4	16
Total	100%	1,856	100%	2,356

EXHIBIT 6.8 Market for Freezers

if the increase in the HI is less than 50. We have seen that, after the merger, the HI in the refrigerator market increased by 72 (1,902 less 1,830). This could indicate that the government would challenge the proposed transaction. However, because of other factors, the government agency may find that the merger does not significantly lessen competition. This is a case where input from experienced antitrust counsel is invaluable. This deal represents a tough call for the arbitrageur.

In the freezer market (shown in Exhibit 6.8), the arbitrageur's calculation indicates a much more dangerous situation. The Herfindahl Index increased 500 points, from 1,856 to 2,356. The arbitrageur should be quite wary of taking a position in this merger because there is a high likelihood that the government will challenge the transaction.

There are other legal aspects that the arbitrageur must consider. If the companies involved in the transactions are in a regulated industry, it is the arbitrageur's job to determine what approvals are needed and what is the likelihood of getting them. Timing, and the individual steps needed in the process, can be important for the arbitrageur.

Usually, the industries that request regulatory approvals include insurance companies, banks, gaming-type companies, utilities, and telephone or telecommunications firms. In some industries, a specific governmental body must approve the transaction prior to its completion. The arbitrageur will try to identify the relevant governing body and will follow the transaction to gauge its chances of success. Frequently, analysis will center on:

- What past cases have passed before that regulatory agency
- What transactions have been approved, and why
- What transactions have been disapproved, and why

Regulatory approvals generally lengthen the time it takes to complete a transaction. The individual merits of a deal may add more time to the approval process. For instance, bank deals typically take five to nine months to complete. Each deal must be analyzed, on a deal-by-deal basis, to estimate the timing and the likelihood of the outcome.

This legal analysis can be a very difficult part of the arbitrageur's job. Some arbitrageurs are also attorneys and have prior experience in the field. Over time, arbitrageurs with no legal background educate themselves on the specific legal aspects and possible outcomes of any given transaction. As mentioned before, it is common to employ outside counsel to advise the arbitrageur and to help in determining the probability that a transaction will be completed.

Recently, the estimation of the probability that the announced transaction will be completed has gotten more complicated due to additional regulatory approvals that have been put into place. The arbitrageur must pay particularly close attention to the following approvals:

1. Committee on Foreign Investment in the United States (CFIUS)
2. European Union approval
3. Ministry of Commerce of the People's Republic of China (MOFCOM)

All three possible approvals can have a major effect on both the timing of the closing of the transaction as well as the likelihood that all approvals will be obtained.

Committee on Foreign Investment in the United States (CFIUS)

CFIUS is made up of a number of U.S. agencies that are authorized to review purchases of U.S. businesses by foreign persons. The review process centers on whether the purchase will raise national security concerns. While there are specific time frames that govern the CFIUS process, the problem for arbitrageurs and the overall investing public is that the process is not transparent. The secrecy creates an unusual risk in trying to forecast whether a proposed transaction by a foreign buyer will receive CFIUS approval.

After an application is accepted by CFIUS, it has an initial 30-day review period. CFIUS may choose to extend the review by 45 days under a subsequent investigation. Additionally, the Committee may refer the transaction to the President of the United States, who then has an additional 15 days to make a decision whether to approve or block the planned deal.

Since CFIUS was put in place in 2007, only a few transactions have actually been blocked; recently, however, the risk of a CFIUS block has appeared to increase as a number of transactions have had to refile their applications numerous times. Perhaps the hardest part of predicting the outcome of the

CFIUS review is that the national security risk may not be obvious from the outside. The issue for the Committee may be in only one sector of the U.S. company's business or with a product that may not have even been disclosed or discussed in public documents, such as the target company's 10-K.

When an arbitrageur is analyzing a merger involving a purchase by a foreign entity, he or she must do a much more thorough analysis by products to try to determine any possible national security concern. Overall, it would be a sound business practice to add a "CFIUS cushion" that would increase the possible risk for a potential deal block by the Committee. This means that the arbitrageur, in general, would be looking for a higher possible rate of return from these transactions.

The European Commission

The entity that oversees antitrust issues in Europe is the European Commission. In general, the commission has a month to conduct its initial investigation after it has received formal notification of a merger. Within a period of 25 to 30 days, the Commission renders a decision. If it does not approve the transaction after the initial period, it may initiate a detailed investigation, known as a Phase II investigation. In a Phase II process, the investigation can last up to four months as the Commission studies the merger and its potential competitive effects.

In making its decisions, the European Commission utilizes similar analysis tools as its U.S. counterparts. One of the major antitrust tools is the Herfindahl-Hirschman Index (HHI). Generally, the Commission will initiate an investigation when the HHI is between 1,000 and 2,000 and the merger would result in an increase in the HHI of 250 or more points. The Commission may also investigate a deal if the HHI exceeds 2,000 points and the combination would result in an increase of 150 points or more.

Arbitrageurs must be disciplined to study the anticompetitive effects of any merger analyzed by the European Commission. In general, the analysis is very similar to the type of analysis arbitrageurs initiate with merging U.S. entities. The timing of mergers reviewed by the European Commission can be elongated depending on the EC's view of the merger and possible mitigating solutions that may be proposed by the parties.

MOFCOM

China's Ministry of Commerce generally oversees the regulation of competitive mergers in China. Under China's guidelines, the acquisition of a target company that has a minimum revenue level must be reviewed by MOFCOM. If the merging parties have a combined level of revenue exceeding about $1.5 billion, there is a necessary review.

The review process comprises various phases of review. In Phase 1, the Ministry reviews the transaction for up to 30 days after initial notification of the transaction. Depending on the Ministry's viewpoint as to the severity of the issues, the transaction could be analyzed under Phase II (90 days) or Phase III (another 60 days). As a result, a full MOFCOM review can take up to 180 days. Additionally, as with the U.S. HSR rules, the parties may pull their MOFCOM application and refile it at a later date.

If a transaction falls under MOFCOM's license to review, it has generally been the regulatory process that tends to determine the ultimate timing of the proposed transaction. As a result, if the arbitrageur believes after his or her initial deal analysis that the proposed merger needs MOFCOM approval, the timing estimate must reflect the chance of a lengthy time before the deal may be completed.

* * *

The development of these additional regulatory reviews described earlier creates additional complexities for the arbitrageur in estimating both the expected timing to completion as well as the probability of a regulatory issue that could prevent the deal from closing.

GATHERING TAX AND ACCOUNTING INFORMATION OF A PROPOSED TRANSACTION

Another area that requires the arbitrageur's concern at times is the tax and accounting aspect of a given transaction. It is very important to determine whether a transaction will be treated by the companies on a "pooling-of-interest basis" or as a "purchase." If the companies are planning to use the pooling-of-interest method of accounting and a problem develops, the transaction may be canceled. The arbitrageur will draw on his or her own personal knowledge, as well as accountants' or attorneys' opinions, to help determine whether the structure of the transaction represents an impediment, thereby reducing the likelihood that the transaction will go through.

Tax aspects of the transaction may also be important. If the transaction is designed to be tax-free, specific rules must be followed to accomplish that objective. The firms may require an official tax ruling by the Internal Revenue Service, which can take four to seven months.

Alternatively, the companies may elect to proceed with the transaction after receiving an opinion of counsel that the transaction will be treated as being tax-free. If the companies count on tax-free treatment and inform shareholders that there will be a tax-free exchange of shares, a later problem in receiving the required tax ruling, or an adverse opinion of counsel, can cause the transaction to be canceled. The arbitrageur must closely examine each transaction's structure as well as its individual merits and aspects.

CONCLUSION

By gathering all the types of information described in this chapter, the arbitrageur is trying to gauge the best estimate and the true probability of a transaction's occurrence. This information-gathering and analysis process is highly subjective, and it is very difficult to determine a precise probability estimate for any given transaction.

For these reasons, the estimate of probability is the hardest element to determine in the risk arbitrage decision process. It is a factor that is not conducive to mathematical modeling. Subjective estimates are constantly required, and the arbitrageur can only devote a best effort to trying to determine what these estimates will be. The estimation of probabilities is much more an art than a science. No system has been developed to assemble all this information in a mathematical model or in mathematical algorithms that will generate an objective estimate of probability of occurrence. The arbitrageur can only analyze all available information and submit his or her best estimate of probability.

After the arbitrageur estimates the probability that any given transaction will succeed, he or she can input this information into the decision process, along with the completed estimates of expected return and risk. When the arbitrageur considers the elements, he or she tries to determine which securities to purchase for the portfolio.

In the next chapter, we will examine how the arbitrageur combines the three elements of return, risk, and probability in the decision process, and we will show how the arbitrageur chooses securities for the arbitrage portfolio.

CHAPTER 7

The Risk Arbitrage Decision Process

Now that we've explored how the arbitrageur estimates the possible returns and risks, and the probability of any particular transaction's occurring, we will use these estimates to form a decision framework for the arbitrage investment process.

In Chapter 6, we saw that the arbitrageur had estimates of return and risk on four separate deals (see Exhibits 6.1 and 6.2). The probabilities of those deals, expressed as percentages, are shown in Exhibits 7.1 and 7.2.

We can now use the three estimates in each deal to calculate the risk-adjusted expected return on each transaction, as follows:

$$\text{RAR} = \frac{(\text{P}_1 \times \text{EP}) + (\text{P}_2 \times \text{EL})}{\text{I}} \times \frac{365}{\text{P}}$$

where RAR = risk-adjusted return
P_1 = probability of deal closing
EP = expected profit (net spread)
P_2 = probability of deal's breaking up = $1 - \text{P}_1$
EL = expected loss (total risk)
I = total investment
P = estimated investment period

All the returns we have used in the previous calculations are unleveraged returns. If we were to assume the arbitrageur utilizes leverage, these returns would be affected accordingly.

We are assuming that any of these given transactions have only two possible outcomes (see Exhibit 7.3):

1. Completion of the deal
2. Breakup of the deal

Deal	Return ($)	Risk ($)	Probability (%)
ABC	1.000	4.000	85
DEF	1.500	7.000	90
GHI	0.750	2.950	80
JKL	2.650	12.500	70

EXHIBIT 7.1 Risk Arbitrage: Returns, Risks, and Probability (in dollars)

Deal	Return (%)	Risk (%)	Probability (%)
ABC	6	24	85
DEF	7	32	90
GHI	9	35	80
JKL	11	51	70

EXHIBIT 7.2 Risk Arbitrage: Returns, Risks, and Probability (in percentages)

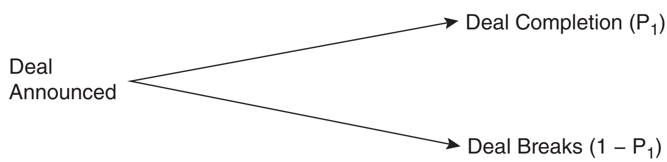


EXHIBIT 7.3 Possible Outcomes and Probability

When we have the probability estimate of the deal's occurring, we can easily calculate the probability of the deal's breaking up.

$$
\begin{aligned}
RAR_{DEAL\ ABC} &= \left[\frac{(.85 \times \$1.00) + [.15 \times (-\$4.00)]}{16.66}\right] \times \frac{365}{100} \\
&= \frac{(\$0.85 - \$.60)}{16.66} \times \frac{365}{100} \\
&= \frac{\$0.25}{16.66} \times \frac{365}{100} \\
&= 5.4\%
\end{aligned}
$$

In a later section of this chapter, we will discuss other types of transactions in which the arbitrageur estimates the probability of various outcomes.

These situations may typically include hostile takeovers and similar challenges for which the arbitrageur will frequently use a "decision tree" in calculating the risk-adjusted return.

In our simplified decision model, we must have estimates for the amount the arbitrageur expects to earn if the deal closes, the amount that will be lost if the transaction is called off, and the probability that the deal will actually occur. If the arbitrageur estimates an 85% probability of occurrence, the probability of cancellation is then only 15% (see Exhibit 7.3, Deal ABC). Using the estimates in Exhibit 7.3, we would calculate each risk-adjusted return (RAR) to be as follows:

$$
\begin{aligned}
RAR_{DEAL\ DEF} &= \left[\frac{(.9 \times \$1.50) + [.1 \times -7.00)]}{21.42}\right] \times \frac{365}{90} \\
&= \frac{(\$1.35 - \$.70)}{21.42} \times \frac{365}{90} \\
&= \frac{\$0.65}{21.42} \times \frac{365}{90} \\
&= 12.3\%
\end{aligned}
$$

$$
\begin{aligned}
RAR_{DEAL\ GHI} &= \left[\frac{(.8 \times \$0.75) + [.2 \times (-\$2.95)]}{8.33}\right] \times \frac{365}{20} \\
&= \frac{(\$0.60 - \$.59)}{8.33} \times \frac{365}{20} \\
&= \frac{\$0.01}{8.33} \times \frac{365}{20} \\
&= 2.2\%
\end{aligned}
$$

$$
\begin{aligned}
RAR_{DEAL\ JKL} &= \left[\frac{(.7 \times \$2.65) + [.3 \times (-\$12.50)]}{24.09}\right] \times \frac{365}{76} \\
&= \frac{(\$1.85 - \$3.75)}{24.09} \times \frac{365}{76} \\
&= \frac{-\$1.895}{24.09} \times \frac{365}{76} \\
&= -37.7\%
\end{aligned}
$$

If the arbitrageur's estimates are accurate, investing in Deal DEF makes more sense than investing in Deal ABC. As shown in Exhibit 7.4, Deal DEF's risk-adjusted return is 12.3%, or 6.9% higher than Deal ABC's return. Deal GHI also has a positive unleveraged risk-adjusted return of 2.2% but it is not very significant. This contrasts greatly with Deal JKL, which has a negative expected risk-adjusted return. This negative return suggests that, according to the arbitrageur's estimates of probability, this transaction is actually expected to lose money if the arbitrageur invests in it.

Deal	Return (in $)	Risk (in $)	Probability (in %)	Risk-Adjusted Return (in %)
ABC	1.000	4.000	85	5.4
DEF	1.500	7.000	90	12.3
GHI	0.750	2.950	80	2.2
JKL	2.650	12.500	70	–37.7

EXHIBIT 7.4 Risk Arbitrage Decision Matrix

The use of risk-adjusted returns gives the arbitrageur the ability to rank the investment alternatives. Many arbitrageurs, however, do not go the full route of calculating risk-adjusted returns. Instead, they base their investment decision on information in the form of, say, Exhibit 7.1. Using this information, and relying on their experience, they select their investment alternatives and assemble their portfolios. They rely on a "gut feeling" rather than the use of probability to quantify risk-adjusted returns.

Some arbitrageurs choose not to go the full route of calculating risk-adjusted returns because these returns can be dramatically affected by the subjective probabilities assigned by the arbitrageur. We can illustrate this effect by varying the probability estimates for one of the earlier examples.

In Deal ABC, if we were to change the arbitrageur's estimate of probability from 85% to 82%, and then from 85% to 90%, we could calculate what the risk-adjusted return would be in all three cases. Here are the calculations:

$$
\begin{aligned}
RAR_{DEAL\ ABC\ 82\%} &= \left[\frac{(.82 \times \$1.00) + [.18 \times (-\$4.00)]}{16.66}\right] \times \frac{365}{100} \\
&= \frac{(\$0.82 - \$.72)}{16.66} \times \frac{365}{100} \\
&= \frac{\$0.10}{16.66} \times \frac{365}{100} \\
&= 2.2\% \\
\text{RAR} &= 2.2\%
\end{aligned}
$$

$$
\begin{aligned}
RAR_{DEAL\ ABC\ 90\%} &= \left[\frac{(.9 \times \$1.00) + [.1 \times -\$4.00)]}{16.66}\right] \times \frac{365}{100} \\
&= \frac{(\$0.90 - \$.40)}{16.66} \times \frac{365}{100} \\
&= \frac{\$0.50}{16.66} \times \frac{365}{100} \\
&= 10.9\% \\
\text{RAR} &= 10.9
\end{aligned}
$$

We can see that by varying the probability estimate, the risk-adjusted return changes dramatically. As we decrease the estimate from 85% to 82%, the risk-adjusted return drops from 5.4% to 2.2%. However, when we increase the probability estimate from 85% to 90%, indicating more optimism that the transaction will take place, our risk-adjusted return increases from 5.4% to 10.9%. When the unleveraged risk-adjusted return is 10.9%, the arbitrageur may very well want to invest part of the available capital in this transaction. If, however, the proper probability estimate is 82%, the arbitrageur would certainly find this transaction less attractive. Thus, we can see that the probability estimates can have a profound effect on the risk-adjusted return and the arbitrageur's decision process.

It may be difficult to quantify the estimates, but an arbitrageur armed with the risk-adjusted return calculation will find it much easier to compare investment alternatives. The risk-adjusted return calculation takes into account all the important aspects of the risk arbitrage decision process and melds them into one calculation.

DYNAMIC ASPECT OF RISK ARBITRAGE ANALYSIS

The risk arbitrage decision process is dynamic. The arbitrageur may analyze each deal when it is announced, and may calculate risks, rewards, and probability, but the job of the arbitrageur does not end there. As each day passes, information and conditions change.

The arbitrageur must continually reassess his or her estimates of risk, reward, and probability to reflect the changes in the marketplace. When any of these elements is affected, the entire picture may change from the perspective of the arbitrageur. A deal that initially seemed quite promising may become unattractive if the arbitrageur must adjust the probability estimates to account for some adverse legal or regulatory development that may cause the transaction to fail. Conversely, a deal that seemed unattractive when it was initially announced may develop into a very attractive investment, and the arbitrageur may become more and more comfortable with the likelihood of the deal's being completed.

EXAMPLE

On June 15, 2014, Covidien and Medtronic agreed to merge in a cash and stock transaction. Each share of COV was to receive $35.19 in cash and 0.956 shares of MDT. After the merger was announced, COV and MDT were taking all the necessary steps to complete the merger. Both sets of shareholders were due to meet to approve the merger in early 2015.

On November 24, 2014, COV filed its 10-K with the SEC. In the "Legal Proceedings" section of the 10-K the following disclosure was made:

> *On September 2, 2014, the U.S. Department of Health and Human Services, Office of Inspector General, issued a subpoena requesting production of documents relating to certain of our peripheral vascular products. We are complying as required with the terms of the subpoena.*

This disclosure was discovered by a number of arbitrageurs who were following the deal. The questions then became: Would the subpoena cause an issue with the merger? Would MDT reconsider its plans to acquire COV?

Arbitrageurs have experienced a number of situations where a government investigation ultimately caused issues for planned mergers. In most cases, very little information regarding the issue is publicly disclosed. The COV/MDT situation was one of those instances.

Since the subpoena seemed to be examining only a small part of COV's business, most arbitrageurs came to the conclusion that the investigation would not cause an issue for the merger, and the price of COV, as can be seen in Exhibit 7.5, was not affected.

While this situation did not cause arbitrageurs to reevaluate their predictions regarding the COV/MDT merger, each case must be evaluated on its own merits. Arbitrageurs must always be willing to take an unbiased look at a change in the developments that can affect the possibility of a merger failing and be prepared to alter prior projections of probabilities, risks, and returns.

EXHIBIT 7.5 Covidien Stock Price
Used with permission of Bloomberg Finance LP.

EVEN-MONEY PROBABILITY—A TOOL FOR RISK ARBITRAGE DECISION MAKING

As mentioned in Chapter 6, many arbitrageurs find it difficult to estimate a precise probability for a deal's outcome. They rely on their experience instead of quantifying the probability to get a risk-adjusted return.

One way to utilize the risk-adjusted return framework so that it assists the arbitrageur in estimating probability is to work backward from the market inputs. The arbitrageur can use his or her estimates of return and risk, along with the market values of the securities, to calculate a probability estimate that would make the deal an even-money proposition.

Using market prices, we can work backward and find a probability that would make the expected rate of return zero. If the probability of the deal's occurring is greater than this even-money probability, the expected return would turn positive. Conversely, if the arbitrageur's estimate of the probability of the deal's closing is less than the even-money probability, the expected risk-adjusted return would become negative.

Some arbitrageurs may find it useful to calculate this probability and use it as a basis for comparison with their own estimates and those of others in the marketplace. In other words, for arbitrageurs who find it difficult to quantify the probability estimate, using market prices to infer probabilities may be an aid. If market prices infer a breakeven probability of 90%, the arbitrageur must reflect on this question: "Do I think the probability of this deal's closing is greater or less than the 90%?" This process may spur the arbitrageur to improve his or her decision process.

EVEN-MONEY PROBABILITY FORMULA

The even-money probability may be calculated as follows:

$$(P_E \times EP) + (P_2 \times EL) = 0$$

so:

$$P_E = [(-EL)/(EP - EL)]$$

where P_E = even-money probability
= probability of the deal's occurring
EP = expected profit (not spread) if the deal closes
P_2 = probability of the deal's breaking up
$= 1 - P_E$
EL = expected loss if the deal breaks up

Using Deal ABC from Exhibit 7.1, ER = \$1.00 and EL = –\$4.00, so we have:

$$(P_E \times \$1.00) + (P_2 \times -\$4.00) = 0$$

where

$$\begin{aligned}
P_E &= [(-EL)/(EP - EL)] \\
P_E &= [(-1 \times -\$4.00)/(\$1.00 - (-\$4.00))] \\
&= \$4.00/(\$1.00 + \$4.00) \\
&= \$4.00/\$5.00 \\
&= .80 \\
&= 80\% \\
P_2 &= 1 - P_E \\
&= 1 - .80 \\
&= .20 \\
P_2 &= 20\%
\end{aligned}$$

CALCULATING COMPLEX RISK-ADJUSTED RETURNS

Thus far, in calculating risk-adjusted return, we have used a model that assumes only two possible outcomes: (1) the deal is completed or (2) the deal breaks up. Many deals cannot be adequately analyzed by using this simplified model. More specifically, a particular group of transactions can have more than two possible outcomes. A hostile takeover is the prime example of an arbitrage transaction that frequently has more than two possible deal outcomes. Hostile takeovers are explored in depth in Chapter 8. Here, we will examine the possibility of having more than two potential outcomes.

Assume that Company B is trading at \$35 per share, and Company A has made a hostile cash tender offer for Company B at a price of \$45 per share. We can foresee four possible outcomes:

1. Company A could ultimately buy Company B for \$45 per share.
2. Company B could defend against Company A's offer. If Company B ultimately succeeds in fending off Company A, Company B's shares could return to their pre-deal level of \$30 per share.
3. Company Z, coming forward as a "white knight" to save Company B from Company A, could buy Company B for \$50 per share.

4. Company B could do a recapitalization to fight off Company A's hostile offer. Assume that shareholders of Company B would receive total consideration of $42 per share in the recapitalization.

Our simple model for calculating risk-adjusted return in cases such as this can be expanded. The general formula for *multiple potential outcomes* is as follows:

$$\mathrm{RAR} = \left[\frac{(P_1 \times R_1) + (P_2 \times R_2) + \ldots (P_i \times R_i)}{I}\right] \times \frac{365}{P}$$

$$= \sum \frac{(P_i \times R_i)}{I}$$

As shown in Exhibit 7.6, the arbitrageur must estimate the probability of each of the possible outcomes.

By weighting each possible outcome according to the arbitrageur's estimate of probability, we get an expected rate of return on this deal of 17.7%.

To make the process even more accurate, we could use each possible outcome's annualized expected return instead of the unannualized percentage of return. This approach will take into account different timing elements for each potential outcome.

Exhibit 7.7 shows that the probability weighted estimated return is 49.8%. This would be a very attractive deal for any arbitrageur. The 49.8% was derived by weighting each potential outcome in terms of its probable annualized rate of return.

Possible Outcomes	**Outcome in Terms of Price of Company B***	**Expected Return (R_i)**	**Estimate of Probability (P_i)**	**$R_i \times P_i$**
1. Successful hostile tender offer	$45	18.4%	25%	4.6%
2. Deal breaks up	30	−21.1	10	−2.1
3. White knight wins	50	31.5	40	12.6
4. Recapitalization effected by Company B	42	10.5	25	2.6
			100%	17.7%

*Company B's common stock was trading at $38 per share in the marketplace.

EXHIBIT 7.6 Probability Estimates

Possible Outcomes	Expected Time Hostile (days)	Unannualized Expected Return (R_I)	Annualized Expected Return	Estimate of Probability	$P_I \times R_I$
1. Successful hostile tender offer	120	18.4	55.9	25%	13.9%
2. Deal breaks up	150	–21.1	–51.3	10	–5.1
3. White knight wins	130	31.5	88.4	40	35.4
4. Recapitalization effected by Company B	170	10.5	22.5	25	5.6
				100%	49.8%

EXHIBIT 7.7 Probability Weighted Estimated Returns

The outcome matrices shown in Exhibits 7.6 and 7.7 can be very useful in the risk arbitrage decision process. By using this method, the arbitrageur has the flexibility needed to adapt a decision model to any possible deal structure. Through the calculation of risk-adjusted return, which utilizes the arbitrageur's estimates of return, risk, and probability, the arbitrageur is able to make informed decisions in a dynamic marketplace.

CHAPTER 8

Hostile Takeovers

Hostile (or contested) takeovers are among the most exciting arbitrage transactions. They are also the most challenging and, potentially, the most profitable, but an arbitrageur who makes a wrong call in a contested takeover can lose a great deal of money. Contested takeovers have brought great publicity and media attention to the risk arbitrage business. Specialty publications usually pick up on any contested takeover and write numerous stories regarding the transactions involved. In this chapter, I often refer to them as *contested,* in order to differentiate them from *uncontested* takeovers, although the term *hostile* is more often used.

Contested takeovers also have a critical time factor from the arbitrageur's point of view. When mergers are announced, the arbitrageur does not need to drop everything and analyze the brand-new merger transaction. Mergers generally tend to take three to five months to complete, and it is not necessary for the arbitrageur to complete an analysis on the very first day. Contested takeovers, however, are a different situation. Developments tend to occur more quickly than in mergers. It is imperative that the arbitrageur drop everything else when a new contested takeover is announced. He or she must try to analyze everything possible about this transaction.

While developments may occur quickly in contested takeovers, it does not mean that contested takeovers are completed quickly. In fact, since courts, both state and federal, have issued rulings over the years that have provided target company boards with more effective takeover defenses, it has become very difficult to successfully complete a hostile takeover at all. If successful, it is not unusual for a hostile bid to take eight months to a year to complete, assuming that the bidder is even successful.

DIFFERENCES BETWEEN CONTESTED AND UNCONTESTED TAKEOVERS

What makes contested takeovers different from other transactions? They are unnegotiated; that is, the acquiring company has set its price, but the amount has not been mutually agreed to by the acquiring company and the target company. In mergers, two companies come out with either an agreement in principle or a definitive agreement; the two companies agree to the consideration being offered. In contested takeovers, the initial takeover price *can* be fair, but most likely it is not. The initial price is usually the price at which the acquiring company has started its bidding. In most hostile takeover attempts, the bidders won't make their best bid initially. Why? They want the opportunity to sweeten their bid as a way of getting the target company's board of directors to approve the transaction. In fact, most arbitrageurs assume that acquiring companies have reserved 5% to 10% of their initial bid price as the sweetener that will get them a friendly transaction.

Hostile takeovers can begin with either a cash tender offer or a less formal offer known as a "bear-hug." The tender offer is announced in a press release and advertisements are placed in the *Wall Street Journal*, the *New York Times*, or local newspapers to inform the target company's shareholders of the impending offer.

Some hostile takeovers take the form of an exchange offer. Instead of cash, the acquiring company is offering securities or a combination of cash and securities. The securities must go through the registration process with the SEC and can take a number of months before the offer is actually effective. In the meantime, the acquiring company usually tries to advance the bid with the target's board of directors and in legal forums depending on what legal issues need to be resolved.

Bear-hugs are less formal than tender offers. In a bear-hug, the acquiring company generally approaches the target's board privately with an offer. If the target board either rejects or ignores the private offer, the acquiring company may "go public" with the offer. This means that the acquiring company issues a press release to the news services detailing the offer that was made privately. The press release also usually indicates that the acquirer hopes the target board will reconsider and enter into merger negotiations. The public release of the details is generally intended to put pressure on the target board and also inform target company shareholders so they, too, might exert pressure on the board to initiate merger talks.

The offshoot of these types of transactions is that the acquiring company actually makes an offer public but does not formally launch a tender or exchange offer. They make the offer through press releases and directly to the company. The decision on whether the offer is made directly to shareholders depends on how the offer is handled. Lately, because of various takeover defenses, a few offers have stayed in a non-formal format for many months prior to the acquiring company's making a bid.

An acquiring company would always like to get the target company to agree to the takeover at the initial price, but many other things can happen in these transactions. The target company could search for and find a "white knight"—a company that will come to its aid by outbidding the acquiring company's initial offer. The white knight is usually a suitor of choice for the target company—a sought-after protector against being taken over by an undesirable entity.

The target company could also do some type of recapitalization or reorganization. This may involve buying back stock, at a premium, from its shareholders. The target company could also bargain with the acquiring company and come to some resolution—usually, a higher takeover price. Or, the target company could fight the hostile takeover, and this is what the arbitrageur worries about. If a target company fights, the arbitrageur must make a determination:

- Is the fight's only purpose to stall for time until a white knight is found or a better deal is negotiated?
- Is the target company sincere?
- Does it simply want to remain independent and not sell out to anyone?

TAKEOVER DEFENSES

In hostile takeovers, the target company's defenses become a very important aspect of the arbitrageur's analysis. Initially, when the bid is made public, the arbitrageur must analyze a separate set of potential defensive strategies.

Staggering the Tenure of the Board of Directors

The first situation that the arbitrageur looks at is how the target company's board of directors is structured. Many companies today have what are called "staggered boards of directors." The companies put directors on the board with a period of time attached to their tenure. Instead of electing all board members in the same year, companies may stagger the terms of their directors so that only a portion of the board is put up for reelection each year. For a board consisting of 12 members, usually only three of the members would be elected each year. Election of the entire board would be spread over a four-year period.

Staggered boards are utilized to discourage outsiders or hostile bidders from believing that they can get control of a board over a short period of time. For example, it would take at least two years, electing three members a year, to gain control of a 12-member board.

If a target company does not have a staggered board, it will be viewed as being vulnerable to a hostile takeover attempt. If an arbitrageur finds that a target company does not have a staggered board, the company, initially at least, will be regarded as not easily able to defend successfully against a hostile takeover. As a result, the arbitrageur much prefers to be involved in hostile offers where the target company does not have a staggered board.

Recently, there has been a significant push from institutional shareholders for companies to improve corporate governance procedures. One of the offshoots from this trend has been that many corporations have been reversing their adoption of staggered boards and are reverting back to putting up the entire slate of directors at the company's annual meeting. This trend has taken away a very significant takeover defense as it becomes much easier and quicker for an acquirer or activist investor to either threaten to take control of the entire board or actually get control of the board.

Diluting Shares via Poison Pills

Another widespread takeover defense is the use of what is called a "poison pill." Many years ago, poison pills were designed by attorneys and instituted by the boards of directors of corporations to give them an additional defense against hostile takeover attempts.

This is how a poison pill may work. Someone, or some entity, purchases a certain percentage (the threshold percentage varies from company to company but can be as low as 10% of the target's outstanding shares) of the outstanding securities of a target company. The poison pill gives shareholders the right to purchase additional shares at a significant discount to the trading price in the marketplace. Usually the triggering entity is precluded from participating in the process of buying the additional shares.

By threatening to issue the shares, the target company's board is trying to discourage any assumption that someone could actually take over the company without prior board approval. If the board does not approve the transaction and the acquiring company gains the percentage of shares that triggers the poison pill, significant dilution would occur. In almost all such plans, the majority holder that triggers the pill is not able to participate in the discounted stock purchases that follow.

Poison pills have been challenged legally over the years. For a period of time, several of these pills were found to be unconstitutional. The attorneys then went back to the drafting table, read the court decisions, and essentially recrafted their remedy so that the court decisions would not hold up use of the new pills. They essentially corrected the defects that the courts had found in the prior version.

Recently, there have been very few successful challenges of poison pills instituted by target companies' boards. In the end, it is usually up to the board of directors of the target company to decide whether they are going to "pull the pill" prior to the tender offer's closing. The board generally has the right to rescind the pill so that the dilution will not take place.

Poison pills, however, are almost always mentioned as a significant incentive for an acquiring company to bring its hostile takeover attempt to a close. The pill must be resolved, one way or another, prior to the acquiring company's purchasing shares.

There have been many legal proceedings brought by the acquiring companies to force the target to redeem the poison pill. In almost every recent case, the courts have been reluctant to force rescission and instead rely on the board of the target to make an informed judgment about whether it is in the shareholders' interests to leave the pill in place. In our first example later in this chapter, we will discuss a famous case involving litigation over a poison pill.

So far, our discussion about poison pills has been about pills issued by corporations domiciled in the United States. The laws governing poison pills issued by Canadian corporations are much different.

In general, Canadian target companies are allowed to shield themselves from hostile takeover attempts by using poison pills. However, in Canada, the pill's shield can only be in place for a limited amount of time. Eventually, usually within 180 days, the target company must lift the pill and allow shareholders to make their own decisions about a potential takeover. The expiration of the pill then gives the target company a finite period of time to develop an effective defense or seek an alternative for shareholders.

A good example occurred in December 2015, when Suncor initiated an unwanted tender offer for Canadian Oil Sands. Canadian Oil Sands fought the offer for many months, but once the pill was about to expire, Canadian Oil Sands negotiated a higher offer from Imperial after finding no other attractive opportunities for Canadian Oil Sands shareholders.

Using Defenses Based on Bylaws

The set of corporate bylaws is very important to the arbitrageur during hostile takeover attempts. The arbitrageur should analyze the bylaws very carefully. For example, does a shareholder have the right to call a special meeting of shareholders to elect an entire slate of directors? This right would give a tremendous advantage to an acquiring company making a hostile bid. The target company's board would be at a distinct disadvantage. When faced with a threat to have the entire board unseated, most boards of directors are forced to evaluate the sale of the company in order to provide a higher value for shareholders.

It should be noted that there are specific rules regarding nominating competing board candidates. Usually there is a one-month period to nominate directors. The period generally starts three or four months before the anniversary of the prior year's annual meeting. These rules must be strictly adhered to in order to carry out a successful proxy fight for control of the target's board of directors.

Other types of bylaws must also be examined by the arbitrageur because they apply to various aspects of the way the corporation is governed. It is important for the arbitrageur to get a copy of the bylaws and to read them carefully and analyze their important aspects.

Defending via Private Lawsuits

Lawsuits are the primary defense that most target companies erect in order to avoid a hostile takeover attempt. Antitrust issues are the primary focus of both the arbitrageur and the target companies. If an antitrust issue exists, the target company will do everything in its power to utilize it as a defense against a hostile takeover attempt.

The arbitrageur must analyze the transaction in an effort to identify the business overlaps between the two companies. If the two companies sell or manufacture the same product, or operate in the same business segments, there is a danger in employing this defense. The arbitrageur must then also estimate the chances that this defense will be successful.

When an antitrust issue is involved, the one difference in hostile takeovers, as compared with friendly transactions, is that the nature of the litigation is different. When an agreed-to transaction gets involved in an antitrust litigation, the Justice Department or the Federal Trade Commission is usually trying to block the companies' transaction. In hostile takeover attempts, however, the target company can hire the best legal counsel that money can buy. Private attorneys often square off against private attorneys for the acquiring company, and few costs are spared.

In other types of antitrust cases, the government pursues its argument via government employees, and, in my experience, they are either new to actual litigation or, for their own reasons, they may choose to remain employed by the Federal Trade Commission or the Justice Department. Usually, new lawyers get jobs with these agencies to gain experience. After sufficient training and performance, they are commonly snapped up by private law firms. In numerous cases, the two sides have seemed unfairly endowed. Private attorneys representing the companies have endless assets at their disposal; the government attorneys, in comparison, have limited resources. Hostile takeovers summon attorneys who meet on a level playing field.

Arbitrageurs are mostly concerned with horizontal transactions in which the two companies actually compete against one another in the marketplace:

- Will the judge enter a preliminary injunction against the transaction on antitrust grounds?
- Is there a potential solution to the competition problem?

The acquiring company may be willing to divest itself of a certain amount of the competing operation in order to complete the transaction. Some judges are open to suggested settlements that will avoid the need to enter a preliminary injunction against the transaction. This trend has also been noticed in antitrust enforcement. The Justice Department and the Federal Trade Commission have moved toward trying to settle potential antitrust problems in conference with the parties prior to going into the hearing phase of the case.

Other violations that must be analyzed by the arbitrageur include vertical types of transactions, and potential competition arguments. Neither of these has had a high probability of success in the courts. All antitrust issues must be examined in depth to determine the likelihood of the transaction's being blocked. The arbitrageur must anticipate any troublesome aspects of the transaction as part of estimating the probability that a takeover will eventually occur.

Using State Takeover Laws as a Defense

Historically, takeover laws have been instituted by the individual states as a means of attracting target companies to incorporate (or to remain incorporated) within their borders. Generally, takeover laws are drafted to give the target company's board of directors the ability to defend against hostile takeover attempts. Each state's laws generally incorporate some common issues, but there are also proprietary twists on how target companies can defend themselves.

When these laws were initially instituted, many challenges were brought by acquiring companies seeking to declare the laws unconstitutional. A number of state courts held that various aspects of the state takeover laws were unconstitutional. Just as the attorneys redrafted poison pills so as to escape legally contesting them, legal practitioners have been able to counsel the states on ways to redraft their takeover laws to make them acceptable to the court system. Some original laws, held to be constitutional, are still in existence today.

Since many corporations are domiciled in Delaware, Delaware state law comes into play quite frequently in takeover battles. The Delaware Chancery Court is very experienced and well respected for its handling of the legal issues in merger cases. Since many corporations are governed by Delaware law, arbitrageurs frequently find themselves following cases in the Delaware Chancery Court.

There are some states such as Ohio and Pennsylvania that have stricter takeover laws that make it more difficult to complete a hostile offer for corporations that are governed by those state laws. The arbitrageur must examine the relevant laws of the state in which the target company is incorporated. (Usually, this state's takeover law is invoked in any takeover attempt.) The arbitrageur must determine whether any particular clauses might cause the probability estimate to be lowered. In other words: Will the law give the target company the ability to defend against a takeover? Usually, the success of a takeover attempt is not determined solely by state laws. Other valid takeover defenses have contributed to acquiring companies' not being able to succeed with their offer.

OTHER TYPES OF DEFENSES

Target companies may employ additional defensive strategies to block a hostile takeover attempt. Among the typical defenses companies use are: sell a block of stock or securities to a friendly party, or sell a segment of the business. These defenses are designed to make the target company less attractive to the hostile bidder.

A sale of stock, if it represents a significant percentage of the outstanding shares of the target company during the pendency of a hostile takeover attempt, is generally closely scrutinized by the courts. If a target company, at this stage, attempts to sell a significant number of shares to another company to block a takeover, it may trigger the requirement that its shareholders approve the issuance of the new shares.

In these cases, it may be difficult to secure shareholder approval for the sale. In general, under New York Stock Exchange rules, the proposed issuance of approximately 20% of the target's existing outstanding shares will trigger a vote. Additionally, if a vote is not required, when the acquiring company brings a legal action to block the share sale, it is generally highly unlikely that the sale would hold up in court.

In the past, some companies have also tried to sell parts of their business or one of the most attractive assets that the acquiring company is interested in. Undoubtedly, this type of transaction would also be challenged in court by the acquiring company. Usually, I have found it very unlikely that such a sale would succeed.

One defense tactic that has succeeded on a number of occasions as an effective takeover defense is the target companies' decision to buy back a significant amount of their own stock from current shareholders. They usually do this in conjunction with some type of recapitalization or reorganization attempt. A number of companies have used this strategy successfully.

Regulatory Defenses

The arbitrageur must also determine whether any regulatory defenses are built into any given transaction. If the target company or the acquiring company is involved in a business that is regulated by the U.S. Department of Transportation, a gambling commission, or the Interstate Commerce Commission, the arbitrageur also must analyze whether approval by these agencies is required for any particular transactions.

If the target company is an insurance company, the arbitrageur must look to each individual state in which the company operates and determine whether approval will be granted by each regulatory commission. Some states such as California have at times become aggressive in deciding whether to grant insurance approvals.

If the business involves television or radio licenses, approval by the Federal Communications Commission (FCC) will probably be needed to complete the transaction. What makes the FCC decision different from antitrust decisions is that the standard of FCC approval of a merger is generally whether the merger is in the "public interest." The public interest standard gives FCC commissioners wide latitude in deciding whether to grant mergers approval.

Sometimes, regulatory defenses can be defused if the acquiring company offers to put any questioned assets or operations in a trust overseen by an administrator. The trust would be holding the assets and the administrator would most likely sell or divest these assets or operations over a period of time. This type of arrangement frequently prevents use of the regulatory defense by the target company.

The "Just-Say-No" Defense

A defense that has been successfully utilized by several target companies has been what is known as the "Just-say-No" defense. Time-Life and Warner Communications successfully employed this defense to fend off a hostile takeover attempt by Paramount Communications in 1989. The Paramount Communications bid for Time-Life became a landmark case in the takeover business.

Much later, additional cases, including the attempted hostile acquisition of Airgas by Air Products (discussed later in this chapter), further developed the case law and the ability of target companies to use the Just-Say-No defense.

Time-Life had an agreement to merge with Warner Communications. Months after this agreement was announced, Paramount made an unfriendly cash tender offer for Time-Life. Until this time, there were very few, if any, instances where a target company's board could just ignore an outstanding bid at a big premium to the current stock price and still remain independent.

Time-Life, however, was in the process of a merger with Warner, so it proposed to the Delaware court that it should be allowed to proceed with its own previously announced transaction rather than pursue a transaction with Paramount Communications. The two companies convinced the judge at the Delaware Court of Chancery that because they had a defined business plan that made eminent sense for their shareholders over the long term, they should be able to proceed with their plan and not be taken over by Paramount. This defense became known as "Just-Say-No."

A number of companies have since utilized the same defense or have tried to employ it in defending against hostile takeover attempts. Later in this chapter, we will look at another case that used the Just-Say-No defense.

Responses to contested takeover attempts are not necessarily negative for the target company's shareholders. Until now, all the defenses that we have discussed in this chapter were generally employed to prevent a transaction from occurring. When this happens, the target company's stock usually declines. Many shareholders would prefer to have the target company's board of directors pursue some of the available options.

Defenses Against Activist Investors

With the growth in activist investing, many U.S. companies, including large companies, find themselves under attack from activists. These activists may be seeking the sale of the company or possibly a reorganization to create value for the target's shareholders. The reorganization could involve splitting the company into various units or the sale of some operations. The target company, when faced with an activist attack, is in a very similar situation to the target facing a hostile takeover attempt.

The target in an activist attack usually adopts an initial defense of trying to convince its shareholders to support current management. Activists generally propose a competing slate of directors to carry out their plan to create additional shareholder value. If it appears that the activist has a good chance of winning board seats in a proxy fight, the target company may initiate a cost-cutting initiative and may even attempt some of the strategies that the activist suggests in its value-creating plan. Many activist situations are defused by the target company offering board seats to the activist shareholder to short-circuit a full fight for the board.

On occasion, the target's defense becomes selling a unit or even the entire company to avoid activist control.

Recapitalization

One optional strategy is a recapitalization of the company. In a recapitalization, the target company may repurchase a significant number of shares at a premium compared to where the shares were selling prior to the contested takeover attempt. These buybacks can take several forms, including an "own" company tender offer or a modified Dutch auction.

In the Dutch auction, the target company generally specifies a specific dollar amount of shares to be purchased within a specific price range. Shareholders then specify at what price they will sell their shares under the offer. At the offer's expiration, the target company then determines the lowest price at which it is able to acquire the desired number of shares.

Often, management will then alter its business strategy to focus the operations, cut costs, or somehow generate a higher rate of return for current shareholders. Recapitalization programs have sometimes allowed target companies to fend off a hostile bid—usually, by driving the price of the stock up so that the hostile takeover attempt becomes unattractive. Recapitalizations can give shareholders of a target company (and arbitrageurs who own the stock) financial benefits by instituting the plan, but they are usually the weakest positive responses that a target company's board can implement.

Sometimes, a target company will look to financial institutions to help it determine whether it could enter into a leveraged transaction or leveraged buyout. The target company borrows capital from these financial institutions and pays out significant cash—and sometimes securities—to its shareholders.

Leveraged buyouts initially became quite popular in the 1980s and were frequently utilized by companies to fend off hostile takeover attempts. Since then, we have seen a flurry of leveraged buyouts in a number of M&A cycles. The cycles generally occur when various factors are present. The most important factors include periods where stock prices are trading at relatively low valuation multiples and where credit is readily available from capital markets.

The rationale that is generally employed for these transactions is: If the hostile bidder is going to banks or institutions to borrow cash for the hostile bid to buy the target company, and the target company has adequate assets to support borrowing, management sometimes feels that the target's shareholders and management would be better off if the company borrowed against its assets and paid the money out to shareholders. This type of transaction can also benefit shareholders; they may be able to receive a premium over the stock's trading price prior to the hostile bid.

This type of defense, however, has become less utilized in recent years, probably because of the overall valuations given to equity securities in the marketplace. It has not been easy for corporations to execute a leveraged buyout in the face of these increased stock valuations. In recent M&A cycles, when overall stock prices trade at high relative valuation metrics, leveraged buyout firms are also generally at a disadvantage to strategic buyers in that strategic buyers generally have an ability to find more cost savings and synergies as compared to leveraged-buyout buyers.

As we stated in earlier chapters, many of today's transactions are being carried out using an equity security or stock as a medium of exchange to accomplish the takeover. As stock prices tend to trade at relative high valuation multiples it becomes easier to structure all-stock or partial stock mergers. Current conditions may not be very conducive to utilizing the leveraged buyout defense, but, at some point in the future, it is likely to return as a possible method of defense against hostile takeover attempts.

Sale of the Target Company

Over the past few merger-and-acquisition cycles, when targets are subject to an unwanted takeover attempt, the target's board may elect to initiate a "strategic review" process. In this process, the target hires an investment banker to help evaluate various opportunities that could generate value for target holders over a short-term or longer-term investment horizon. The scope of alternatives can range from continuing the current corporate strategy to looking for a merger partner. The process could even include the target pursuing an acquisition of its own.

The strategic process can last up to four or five months and rarely are updates given until the process is fully complete and the board adopts a plan. In the meantime, the target stock may trade with significant volatility as shareholders and arbitrageurs attempt to predict the strategic review's ultimate outcome.

Arbitrageurs and shareholders alike look for a target company to defend itself against a hostile bid with a strategy that will yield the highest possible rate of return on their investment. The available strategies could include the target company's putting itself up for sale and seeking to have other companies bid for the stock. The search for bidders is usually done secretly; for example, it is not disclosed publicly until after the process has come to a resolution.

The target company generally hires an investment banker at first notice of a hostile bid. If the target company decides to seek other buyers, the investment banker will coordinate the process and search for firms that represent a sensible alliance *and* would be interested in making a bid. This defense by a target company is generally known as "seeking a white knight."

The white knight's role is to save a target company from an unwanted hostile takeover. The white knight strategy may be the most profitable alternative and is therefore the one that arbitrageurs hope the target company will pursue. By seeking other bids, it creates competition for the hostile bidder's effort to purchase the target company.

Often, a bidding war results; two or more companies may bid against each other for the right to purchase the target company. When that happens, the target company's board is generally able to maximize the value realized for the shareholders. (We will examine one of these transactions in depth later in this chapter.)

Predicting the Outcomes of Various Defensive Strategies

The arbitrageur's job in hostile takeover attempts is to try to determine which, if any, of the defensive strategies the target company's board may employ successfully. To formulate correct estimates, an arbitrageur utilizes his or her experience in the field as well as input on the current transaction and any reliable advice received from outside advisers. Increasingly, the arbitrageur relies on the target company's board to do "the right thing."

The board has to balance two concepts:

1. The fairness of a transaction to shareholders, or what makes the most sense
2. Ways of fighting the hostile takeover attempt so that shareholders will receive the best value

The board may look at value as being short-term or long-term. Many boards today are looking to maximize long-term value for their shareholders—or at least that is what they state when faced with a hostile takeover attempt. If the board believes that the company's long-term value is far in excess of any short-term value that can be created through a hostile takeover attempt, it may elect to use some of the previously mentioned defenses, especially Just-Say-No, to try to beat back the hostile offer. On the other hand, if the board balances the outcomes and decides that the outstanding bid makes sense for shareholders to receive, the board may choose to negotiate and sell the company.

In years past, it was a foregone conclusion that a target company under attack for a hostile takeover would be sold. Today, with the numerous defenses that can be utilized, the outcome is not always that clear. In fact, recently, it has become much more difficult for hostile bidders to succeed.

Two new aspects of hostile takeover attempts must be considered. One is the previously mentioned Just-Say-No defense, which, on a number of occasions, has allowed target companies to avoid hostile takeovers. As a result of this avoidance, arbitrageurs and all shareholders of the target company have sustained losses on their holdings.

The second new aspect is that the time frame in which these transactions may be completed has lengthened dramatically. Staggered boards, state takeover laws, and specialized defenses have been key factors. Many times, if a target company's board is devoted to defending against a hostile bid, the hostile bidder may actually have to wait several years to overturn the target's defenses. The danger in this is that many things may change over that length of time. The hostile bidder may even change its decision to pursue the takeover.

In trying to determine the likelihood that a hostile bid will succeed, the arbitrageur analyzes numerous aspects of the target company's business and structure. The initial question the arbitrageur must ask is: "What are the likely defenses that the target company can employ?" If there is a clear overlap in business operations, the arbitrageur knows that he or she will have to determine how great that overlap is and whether it might create an antitrust problem for the hostile bidder. The arbitrageur must determine, after figuring out what defenses are possible, whether these defenses will hold up in court. If a defense either stalls the transaction for a long period of time or becomes a potential stumbling block, this transaction can be a very dangerous one for the arbitrage community.

The arbitrageur must scrutinize the target company's board of directors. How many are inside directors and how many are from outside the company? Inside, or management, directors will tend to fight hostile takeover attempts more readily than outside directors will. If management or inside directors dominate the board, the company is much more likely to try to defend against any hostile takeover attempts.

The arbitrageur must also look at how the target company's outstanding common stock is held. If management and the board own a significant amount of stock, the arbitrageur knows that a defense pursued by the board is more likely to succeed. If, however, management and the board own a negligible amount of stock, their holdings will have no influence on the outcome of the transactions.

If institutions own a high percentage of the outstanding shares of the target company, they could very well become the determining factor in how the target company's board responds to a hostile takeover attempt. If the board is concerned about falling into disfavor with these institutional holders if they successfully defend against a hostile takeover attempt, the board may very well pursue some of the positive options that will generate short-term economic gain for their current shareholder base.

Perhaps the best way to examine the outcome of hostile takeovers is to look at some of these transactions in depth.

A HOSTILE TAKEOVER CASE: AIRGAS/AIR PRODUCTS

The case we have chosen to examine is Air Products' (APD) attempt to buy Airgas (ARG) through a hostile tender offer. While it is an old case, it is a seminal example that has influenced many other cases. Combined with Paramount Communications' attempt to take over Time-Warner, the two cases have encouraged many target companies to utilize the Just-Say-No defense.

On February 5, 2010, APD made public an offer to acquire ARG for \$60 in cash per share in a bear-hug offer. APD had made the offer to the ARG board of directors and was rejected.

To put more pressure on the ARG board, APD issued a press release describing the offer hoping ARG shareholders might try to get the ARG board to negotiate. In its press release, APD left open the possibility that if the ARG board continued to resist, APD might bring its offer directly to ARG shareholders. ARG, for its part, followed the APD press release with a press release of its own advising shareholders to take no action and confirmed that the board had rejected the $60 offer as "grossly inadequate."

It was at this point that arbitrageurs would start to analyze the situation and decide whether to participate by buying shares of ARG. Arbitrageurs began looking at the two companies' businesses to understand the logic of the proposed transaction as well as any possible defenses that ARG could employ. It was also at this point that arbitrageurs would undertake their initial analysis of ARG's possible value as well as the level of antitrust risk.

Both ARG and APD were involved in the gas business:

- ARG produced a number of gases, including nitrogen, oxygen, argon, hydrogen, and helium as well as a number of welding gases.
- APD also produced oxygen, nitrogen, hydrogen, helium, and argon.

As a result, there were several product market overlaps. However, the companies differed in the type of clients they sold to as well as their distribution methods. ARG's customers tended to be on the small side as opposed to APD customers, who tended to be large entities. ARG tended to use packaged gas distribution while APD's products generally were delivered in bulk via tankers or pipelines. While there were differences in the two companies' businesses, arbitrageurs generally felt that the overlaps would cause some antitrust issues.

As arbitrageurs studied the ARG by-laws, they learned that ARG had a staggered board of directors. Three directors were elected annually for three-year terms, for a total of nine directors. ARG also had in place a poison-pill rights plan that provided protection from any unwanted takeover attempt that was not supported by the ARG board.

Given the defenses that ARG had at its disposal, arbitrageurs attempted to figure out whether APD had a possible path to control ARG, given the pushback by the ARG board. The ARG bylaws also provided for:

1. Two-thirds vote of shareholders to remove any ARG director without cause.
2. A total of 33% of ARG shareholders could call a special meeting of shareholders to replace directors.

So, if necessary, APD could go the proxy fight route, soliciting support from 33% of ARG shareholders to authorize a special meeting of shareholders. At that point, APD could try to add enough of its own directors to attempt to control the ARG board.

APD initiated a formal tender offer on February 11, 2010, which was due to expire on April 9, 2010. Due to the many difficult legal issues and hurdles, the tender would end up being extended many times. The key issue in determining the chances of success for the tender was the effectiveness of ARG's takeover defenses.

APD sued ARG in Delaware Chancery Court for breaching its fiduciary obligations to shareholders. APD also indicated it would initiate a proxy fight to nominate directors to the ARG board.

It didn't take long for the ARG board to reject the tender offer, stating that the offer was "grossly inadequate." The board also suggested that there could be antitrust issues. As the companies jostled through press releases, time elapsed. In May, APD finally gave formal notice of a proxy solicitation. APD was seeking ARG shareholder support to elect three directors to the ARG board. While success in getting three directors would not give APD board control, it was also planning to get shareholder support to move up the next year's annual meeting to mid-January 2011. That would allow them to propose another three directors, which would give them half the board. The upcoming proxy fight became the beginning of a possible path for APD to proceed with the takeover of ARG. However, it would be a long, uphill road.

In the meantime, APD worked on possible solutions to business overlaps in order to avoid any antitrust issues with the FTC.

To increase its chances of securing ARG shareholder support, APD raised its tender offer price to $63.50 on July 8, 2010, and asked ARG shareholders to tender even though due to ARG's defenses, APD would not be able to actually buy any shares yet under the tender. APD thought that if a substantial number of shares were actually tendered under the offer, it would put pressure on the ARG board to negotiate with APD.

ARG set an annual meeting date of September 15 to elect three new directors and again rejected the APD offer. About a month later, APD announced it had come to an agreement with the FTC to settle antitrust issues. APD agreed to make several divestitures. As a result of this development, antitrust was no longer a possible defense for ARG. The composition of the ARG board and the upcoming proxy fight became key for a possible APD successful takeover of ARG.

Meanwhile, ARG's stock continued to trade over the $63.50 tender value on speculation that either APD would again raise its offer or ARG might find a white knight.

Just prior to ARG's shareholder meeting, APD again raised its offer. The $65.50 offer was summarily rejected only one day later. Hostile bidders frequently raise their offers just prior to a shareholder vote to gain as much support as possible from the target's shareholders heading into a key vote.

APD's strategy was successful in getting enough votes to elect its three director nominees. However, APD received less than the required 67% vote to move up the 2011 meeting. The 67% threshold would also become part of the APD litigation. Hearings in the case were held in the Delaware Chancery Court in October on APD's challenge of ARG's poison pill as well as the 67% threshold to move up the 2011 meeting to elect another three directors.

On October 11, 2010, Chancellor William Chandler ruled that APD's attempt to move up the ARG 2011 annual meeting was valid, and APD prevailed in this initial court ruling. Chandler, however, did not rule on the validity of ARG's poison pill at this point.

ARG announced it would appeal the court ruling and shortly after also indicated that it would be willing to enter merger negotiations if APD was willing to pay more than $70 per share. The ARG board was looking for an offer at the $78 price level. APD declined to raise its offer at that point, and the case continued in the appeals court.

On November 23, 2010, the Delaware Court of Appeals reversed Chandler's ruling on the theory that holding the annual meeting in January would be illegally shortening the term of three directors. ARG's stock reacted negatively as shareholders were now again worried that APD's takeover battle would fail. ARG's stock declined to the $62 level.

Exhibit 8.1 shows ARG's stock price moves.

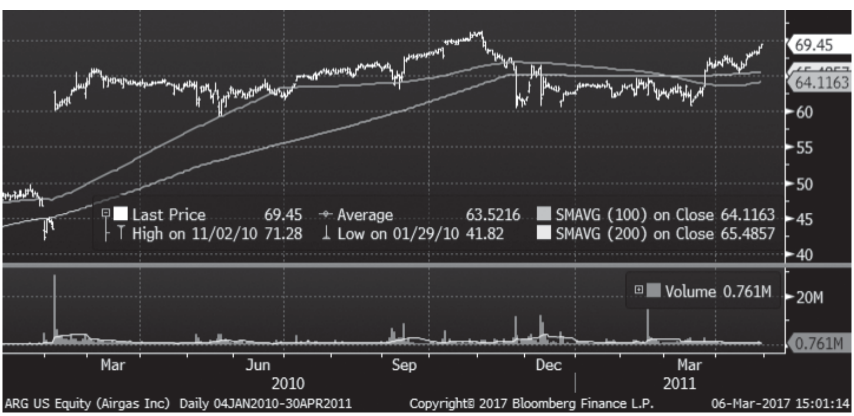


EXHIBIT 8.1 ARG Stock Prices
Source: Used with permission of Bloomberg Finance LP.

At this point, it appeared that APD's only path to a successful takeover was through price. If APD could offer a high-enough price, maybe the ARG board would cave and give up its defense.

APD tried that route on December 9, 2010, by raising its offer to the $70 price level. In its press release announcing the raised price, APD claimed $70 was its "best and final" offer for ARG. Unlike in Europe, under UK takeover laws, the "best and final" description is not legally binding in the United States. Despite saying it was its "best" offer, APD could legally raise it later. In the UK, this strategy would not be allowed.

In addition to raising the offer, APD received support from several ARG shareholders who urged the ARG board to enter into merger negotiations. Unfortunately, these shareholders were also arbitrage hedge funds. Had the suggestion been made by long-term institutional holders, the suggestion might have carried a lot more weight. Unfortunately for APD and ARG shareholders, the ARG board continued to resist and rejected the $70 offer just before Christmas.

Meanwhile, Chancellor Chandler set a hearing to determine the legality of ARG's poison pill for January 25. The hearing was held and final arguments continued on February 8. The key question Chancellor Chandler was evaluating was who should determine whether ARG should be sold—shareholders or the ARG board?

Eight days later, Chandler answered the question in favor of ARG. Although he ruled for ARG, he attempted to qualify when a target company board can resist a takeover using the poison pill and the Just-Say-No defense. Judge Chandler set two conditions for a target board to continue to resist an unwanted offer:

1. The target board must be acting in good faith and after a reasonable investigation and on advice of outside advisers.
2. The target board would also find that the hostile offer poses a legitimate threat to the corporate enterprise.

After this ruling, APD withdrew its offer for ARG, admitting defeat and stating it would move on. ARG's stocked dropped immediately to the $62.35 level, and arbitrageurs and ARG shareholders suffered sizeable losses.

As stated earlier in the book, hostile offers can provide either a great profit opportunity or a chance to sustain significant losses. ARG's takeover defenses were too strong for APD to prevail. The staggered board along with the poison pill were too much for APD to overcome and resulted in a large loss in value in ARG's share price. This type of transaction shows why the arbitrageur must perform analysis that accurately indicates to him or her what will be the final outcome of the transaction.

Appendix B includes Vice Chancellor Chandler's decision.

NOTES FROM THE FILE

The ARG/APD case was one where ultimately the target board's resistance proved to be the right move for target shareholders. ARG's business strategy continued to work and its stock price eventually rose higher than even the ARG board indicated it wanted in the APD saga. Remember that the ARG board indicated it was willing to sell for $78. Ultimately, ARG finally agreed to sell—at a much higher price and to a different bidder.

On May 23, 2016, Air Liquide acquired Airgas for $143 in cash per share. ARG's board resistance finally paid off for ARG shareholders. It took more than five years, but the Just-Say-No defense resulted in generating a much higher value for shareholders.

USE OF DECISION TREES

In contested takeover situations, there are numerous potential outcomes. In friendly negotiated transactions, the deal is usually either completed or it breaks up for some reason. A two-outcome model does not usually work well in cases of contested takeovers. We therefore have to employ a more sophisticated method for estimating the likely outcomes of a transaction and the risk-adjusted return that will be realized.

Arbitrageurs identify all the potential outcomes of any hostile takeover transaction. After analyzing these potential outcomes, they try to determine two things:

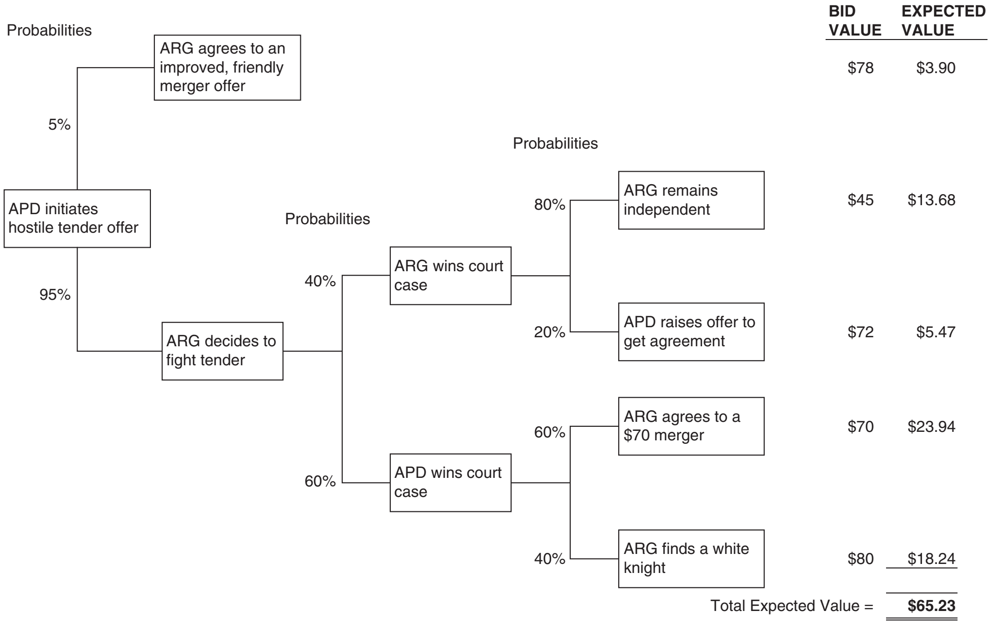
1. The probability that a particular outcome will occur
2. An estimate of what would happen to the target company's stock if a particular outcome occurs

By having both the probability estimate and the estimate of what would happen to the target company's stock price, the arbitrageur is able to form a decision tree and apply the probabilities to the individual outcomes to determine the expected price of the target company in the transaction.

EXAMPLE

To illustrate a more complex application of the use of decision trees, we use the Airgas/Air Products (ARG/APD) attempted takeover case from earlier in the chapter.

EXHIBIT 8.2 ARG Decision Tree



Once APD made its initial hostile approach, the arbitrageur was faced with the decision whether he or she should buy ARG. Since there were many possible outcomes, each having its own probability and potential payoff, the arbitrageur could have used a complex decision tree to determine the weighted expected return.

Exhibit 8.2 shows how the arbitrageur could have designed the possible outcomes, the probability of each outcome, and the value of each potential outcome. The estimated probabilities are then applied to the relevant outcome to come up with the individual expected values. The expected values are then summed to come out with the aggregate estimated expected value.

By completing the analysis, we can see that the arbitrageur had an estimated weighted expected value for ARG of $68.46. As we learned from the history of the ARG/APD saga earlier in this chapter, ARG lost the court case and withdrew its offer. ARG's stock initially dropped to $62.35 on February 16, 2011.

While the resulting trading price of ARG was different from the arbitrageur's $68.46 estimate in the decision tree, the decision tree provided a very important basis for the arbitrageur to participate and for the potential to make money on the transaction.

ESTIMATING VALUE IN CONTESTED TAKEOVER ATTEMPTS

Because the price is agreed on in negotiated transactions, arbitrageurs have been able to calculate estimated returns based on the announced terms of such transactions. In hostile deals, however, the arbitrageur's job is more difficult. In addition to figuring out the target company's potential defenses and the likelihood of those defenses being successful, the arbitrageur must also try to determine the takeover price if the defenses do not work and the company is taken over. The price is influenced by the businesses that the target company has, the prices that have been paid recently in the company's particular industry, and the demand for the company's businesses among available buyers. The price is also influenced by whether a white knight is involved in the transaction.

To arrive at potential prices that could be paid in transactions, the arbitrageur has to estimate what a fair takeover value would be, and what value could be generated through a leveraged buyout or a recapitalization. This process requires the arbitrageur to spend a great deal of time with the financials of the target company. He or she must be able to analyze the financial statement and predict earnings and cash flows (or use other analysts' predictions) going into the future. Usually, an arbitrageur will take as many recent transactions as can be considered comparable to the subject transaction, and will determine the likely deal price and how it is related to the target company's earnings, cash flow, and asset values.

In hostile offer and activist situations, once there are reports that the target company could come under attack, the arbitrageur is faced with a decision whether to participate by buying the target company's stock. Unlike friendly deals where there is a negotiated deal price or deal terms, hostile and activist situations do not provide the market with a specific takeover price. As a result, the arbitrageur must estimate what he or she believes the ultimate takeover price could be.

Arbitrageurs utilize various methods to estimate takeover prices. While techniques vary depending upon the industry of the target company, the primary methods involve the following:

1. Analyzing comparable companies
2. Analyzing comparable transactions
3. Analyzing discounted cash flow

These three analyses are very similar to the analysis that the target company's financial advisers perform when assisting the target to negotiate the best value for shareholders as well as to provide a recommendation to the target company board of directors and target shareholders on the adequacy of the ultimate deal terms. One of the biggest differences between the analysis performed by arbitrageurs and the investment bankers is that unlike the bankers, the arbitrageurs do not have access to the private financial projections of the target. The private financial projections are provided to the investment bankers. Arbitrageurs must use their financial analysis and forecasting skills to generate enough projections to perform a similar analysis.

The following sections take a closer look at each type of analysis.

Analyzing Comparable Companies

In this type of analysis, the arbitrageur assembles a sample of what he or she considers to be public companies that are similar to the target. It may mean the comparables are the competitors of the target or they have similar or related operations to the target's individual operating business segments.

There are various ways that arbitrageurs assemble this sample. For those who have subscriptions to Bloomberg, the Bloomberg system provides a peer-group comparison under a specialized function. Google Finance as well as Yahoo Finance also may be sources of companies that may be comparable to the target company. Sometimes, when the target is involved in more than one industry sector, several groups of comparable samples need to be compiled.

For example, Whole Foods Market (WFM) was a unique innovator in the grocery industry bringing healthy food choices to consumers. While the company thrived for a number of years, as happens to many successful companies, WFM came under attack from copycat retailers. As a result of the increased competition, WFM's profit margins and income were pressured and eventually WFM's stock price began to underperform the overall equity market and its peers.

On April 10, 2017, JANA Partners, a well-known activist investor, filed a 13-D with the SEC indicating it had acquired an 8.8% position in WFM. JANA indicated it wished to engage in discussions with WFM's management and board of directors, and it was assumed by the investing public that the disclosure meant that JANA would ultimately look to have WFM seek a merger partner.

As a result, event-driven investors and arbitrageurs brought their attention to WFM and began the process of determining whether to buy WFM shares in anticipation of a possible merger. The first step would be to try to determine what WFM might be worth in a merger transaction. Most investors and arbitrageurs decided, as in most unstructured takeover situations like hostile offers and activist situations, to use methods described earlier to determine an estimated takeover price for WFM shares.

In the case of Whole Foods Market (WFM), as in most takeover valuing cases, the assembly of a proper peer group is not an exact science. While there were quite a few publicly traded supermarket operators, WFM was pretty unique in that due to its concentration on "healthy" foods, its historic growth rate and individual financial performance metrics were generally superior to the other comparables. Exhibit 8.3 lists the comparable companies that could have been used in the valuation analysis.

Possible Peer	Market Capitalization (millions)
Publix	Private Company
Kroger	$20,642
Sprouts Farmers Market	$2,888
Weis Markets	$1,304
SUPERVALU Inc	$864
Ingles Markets	$687
Village Supermarkets	$360
Natural Grocers	$196

EXHIBIT 8.3 List of Comparable Companies for Whole Foods Market (WFM)

While various possible peers can be determined, the analyst must narrow the choices to get the companies that best match the target company. With the WFM analysis, most analysts would eliminate some of the possible companies based on discrepancies in market capitalizations and/or their individual profitability measures. For instance, if a grocery company was operating at a loss, it would most likely not provide useful valuation information and would be eliminated from the sample.

Once one decides on the proper set of comparables, he or she then assembles the individual data needed to calculate various valuation statistics. These statistics generally include:

- Price/Earnings ratios (P/E)
- Enterprise Value to Earnings before Interest, Taxes, and Depreciation (EV/EBITDA)
- Price to Book Value (P/BV)
- Price to Free Cash Flow (P/FCF)

Depending on the particular industry and its characteristics, other pricing metrics may also be utilized.

In the case of WFM, one could have computed the comparative statistics shown in Exhibit 8.4.

Usually the arbitrageur will not be satisfied using the mean of the peer sample for valuation purposes. Outliers, on both the high side and low side, can skew the individual calculations used to value the target company. Using the median in the sample statistics lessens the impact of outliers. In our previous analysis, we included both the mean and the median. The sample included SUPERVALU, which was a company that was having difficulties generating profitable returns and was heavily leveraged. As a result, both valuation estimates might be unduly influenced by SUPERVALU's metrics.

Once the multiples for the comparable companies are determined and the means and medians are determined, the arbitrageur then applies what multiple he or she believes is a relevant measure to the target's, WFM's, relevant performance metric.

In other words, in the above case, WFM's 2017 earnings per share (EPS) was expected to be \$1.28 per share. If one used the median for the peer group of 13.6 times earnings, the estimated value before a takeover premium would be \$17.40 (\$1.28 × 13.6 = \$17.40).

Since the \$17.40 valuation would be based on trading values, not takeover value, the next step would be for the arbitrageur to estimate a takeover premium level. As mentioned earlier, valuation estimation is an art rather than a science. Determining the proper takeover premium an acquirer might pay for a target, in this case WFM, is a daunting task. Arbitrageurs and investment bankers usually look to past transactions to

EXHIBIT 8.4 Whole Foods and Comparative Company Statistics

Whole Foods and Comparative Company Statistics								
	Market Cap.	**Enterprise**	**PE Ratio**		**EV/EBITDA**		**Price/BV**	**Price/FCF**
	(millions)	**Value (mill)**	**2017**	**2018**	**2017**	**2018**	**2017**	**2017**
COMPARABLE COMPANY ANALYSIS								
Ingles Markets	$687.80	1558.6	16.1×	15.0x	8.3x	7.9x	1.5x	32.2x
Kroger	$20,642.90	34409.9	11.1×	10.7x	5.9x	5.8x	3.1x	36.6x
Sprouts Farmers	$2,888.70	3260.9	23.1×	20.3x	11.1x	10.6x	4.4x	42.2x
Supervalu	$864.67	2014.7	9.8×	10.5x	4.4x	4.5x	2.3x	4.8x
Mean Multiples	$776.2	$1,786.7	13.0×	12.8x	6.4x	**6.2x**	**1.9x**	**18.5x**
Median Multiples	$1,876.69	$2,637.80	13.6×	2.9x	7.1x	**6.9x**	**2.7x**	**34.4x**
Assumed Takeover Premium:								
ESTIMATED WFM TAKEOVER VALUE BASED ON MEAN MULTIPLES								
Estimated Price based on P/E			$21.55	$22.38				
Estimated Price based on EV/EBITDA					31.73	32.21		
Estimated Price based on EV/FCF							24.22	
Estimated Price based on EV/Book Value								28.86
ESTIMATED WFM TAKEOVER VALUE BASED ON MEDIAN MULTIPLES								
Estimated Price based on P/E			$22.63	$22.55				
Estimated Price based on EV/EBITDA					$35.48	$35.59		
Estimated Price based on EV/FCF							$34.78	
Estimated Price based on EV/Book Value								$53.66

estimate the takeover premium. In this case, given the unique characteristics of WFM, we decided to use a 30% takeover premium.

Assuming the 30% estimate, we then apply it to the WFM estimated price from the comparable sample:

$$(1 + \text{take over premium}) \times \$17.40 = \$22.63$$

Had we assumed a 40% premium, we would have estimated a \$24.36 takeout value ((1 + .4) × \$17.40). Thus it is obvious how the estimation process is an art form.

Because most arbitrageurs might determine that the inclusion of SUPERVALU in the sample might have influenced the valuation estimates to the downside, it is common to eliminate various comparables to get the best set of peer companies.

Exhibit 8.5 offers similar calculations after dropping SUPERVALU from the sample.

After eliminating SUPERVALU, all the takeover valuation estimated increased. Despite the change there still was a huge range of values from a low of \$26.33 to a high of \$57.10 using the median values. This is a common outcome and the arbitrageur then needs to add to the analysis to help estimate his or her final takeover valuation.

Analyzing Comparable Transactions

The second type of analysis used to determine a possible takeover value is the comparable transactions approach. In this analysis, the arbitrageur assembles a sample of transactions that he or she believes are similar to the possible transaction under consideration. Emphasis is normally given to the most recent transactions as market conditions change and those changes frequently affect the multiples paid for the target company.

With WFM, we have put together a list of some past transactions that appear to be good comparables. We then do similar calculations that were described in the trading comparables approach shown earlier. Using the sample, Exhibit 8.6 shows the various takeover value estimates.

Estimating takeover values from comparable transactions frequently uses multiples of:

- EBITDA
- EPS
- FCF
- Total Assets
- Revenues
- Book Value

EXHIBIT 8.5 Whole Foods and Comparative Company Statistics (SUPERVALU Eliminated)

Whole Foods and Comparative Company Statistics								
	Market Cap. (millions)	**Enterprise Value (mill)**	**PE Ratio 2017**	**2018**	**EV/EBITDA 2017**	**2018**	**Price/BV 2017**	**Price/FCF 2017**
COMPARABLE COMPANY ANALYSIS								
Ingles Markets	$687.80	1558.6	16.1×	15.0x	8.3x	7.9x	1.5x	32.2x
Kroger	$20,642.90	34409.9	11.1×	10.7x	5.9x	5.8x	3.1x	36.6x
Sprouts Farmers	$2,888.70	3260.9	23.1×	20.3x	11.1x	10.6x	4.4x	42.2x
Mean Multiples	$1,788	$2,410	19.6×	17.7x	9.7x	**9.3x**	**2.9x**	**37.2x**
Median Multiples	$2,889	$3,261	16.1×	15.0x	8.3x	**7.9x**	**3.1x**	**36.6x**
Assumed Takeover Premium:		30.0%						
ESTIMATED WFM TAKEOVER VALUE BASED ON MEAN MULTIPLES—SMALLER SAMPLE								
Estimated Price based on P/E			$32.61	$30.98				
Estimated Price based on EV/EBITDA					48.47	48.06		
Estimated Price based on EV/FCF							37.75	
Estimated Price based on EV/Book Value								58.03
ESTIMATED WFM TAKEOVER VALUE BASED ON MEDIAN MULTIPLES—SMALLER SAMPLE								
Estimated Price based on P/E			$26.79	$26.33				
Estimated Price based on EV/EBITDA					$41.47	$41.05		
Estimated Price based on EV/FCF							$39.94	
Estimated Price based on EV/Book Value								$57.10

EXHIBIT 8.6 Whole Foods and Comparable Transaction Statistics

Whole Foods and Comparable Transaction Statistics

	Announce Date	Transactional Value (mill)	TV/EBITDA Current Yr	TV/NI Current Yr	TV/CF Current Yr	TV/Total Assets Current Yr	TV/Revenues Current Yr	TV/BookValue Current Yr
COMPARABLE TRANSACTIONS ANALYSIS								
Delhaize/Koninkliijke	6/24/2015	$11,473	10.1x	245.0x	NA	1.0x	0.6x	1.7x
Fresh Market/ Apollo	3/14/2016	$1,334	7.5x	20.5x	27.4x	2.3x	0.7x	3.7x
Harris Teeter/Kroger	7/9/2013	$2,461	7.3x	22.3x	98.9x	1.2x	0.5x	2.3x
Safeway/Albertsons	3/6/2014	$7,903	5.0x	2.4x	17.5x	0.5x	0.2x	1.4x
Sav A Lot/Supervalu	10/17/2016	$1,365	7.7x	20.4x	29.0x	1.4x	0.3x	2.3x
Mean Multiples		$6,419	7.5x	62.1x	43.2x	1.3x	**0.5x**	**2.3x**
Median Multiples		$2,461	7.4x	20.5x	28.2x	1.3x	**0.4x**	**2.3x**
ESTIMATED WFM TAKEOVER VALUE BASED ON COMPARABLE TRANSACTIONS—BASED ON MEANS								
Estimated Price based on EBITDA			$29.38					
Estimated Price based on EPS (NI)				$82.00				
Estimated Price based on EV/FCF					$28.49			
Estimated Price based on EV/Total Assets						$25.95		
Estimated Price based on EV/Revenues							$22.94	
Estimated Price based on EV/Book Value								$75.78
ESTIMATED WFM TAKEOVER VALUE BASED ON COMPARABLE TRANSACTIONS—BASED ON MEDIANS								
Estimated Price based on EBITDA			$28.91					
Estimated Price based on EPS (NI)				$26.99				
Estimated Price based on EV/FCF					$18.59			
Estimated Price based on EV/Total Assets						$26.65		
Estimated Price based on EV/Revenues							$20.52	
Estimated Price based on EV/Book Value								$76.42

In some cases, other financial metrics specific to a particular industry may also be utilized in the process.

As can be seen from Exhibit 8.6, we again have a wide range of possible takeover values. Using comparable transactions, we have a range of $18.59 to $76.42. While the range of estimates is huge, four of the estimates using EBITDA, EPS, Total Assets, and Revenues delivered values in the $20s.

One particular problem the arbitrageurs encountered in this analysis is that none of the comparable companies or comparable transactions were great comparisons to WFM. WFM was a unique company that would be expected to receive a premium valuation in a takeover despite what the comparable company and comparable transaction analyses indicated.

Analyzing Discounted Cash Value

The third type of analysis that some arbitrageurs may use to estimate takeover values is a discounted cash flow (DCF) model. Like traditional DCF models, the analyst must estimate various financial values:

- Individual yearly cash flows for a period of time
- A terminal value for the target that would include a multiple of the ending year's cash flow
- The relevant discount rate

The discount rate would then be applied to each cash flow and the sum of all the cash flows would be the estimate of the target's takeover value.

We have rarely used this type of analysis when estimating takeover value. There are so many assumptions that need to be made that we believe the chance for errors is highly significant. Estimating earnings or cash flow for one of two years in the future is a daunting exercise. Going out 10 to 20 years is a very risky set of estimates. The potential for error is then magnified when the final year's cash flow is used to determine a terminal value.

The process is described by all corporate finance and investment texts so we will refer readers to check the details of performing this type of analysis in those books.

To illustrate the potential problems using the DCF method of estimating takeover values, we show WFM's financial advisers' estimates disclosed in the WFM proxy material here:

> ***Discounted Cash Flow Analysis***
>
> *Evercore performed a discounted cash flow analysis, which is designed to estimate the value of a company by calculating the present value of estimated future cash flows of the company. Evercore calculated a range of equity values per share of Whole Foods Market based on a discounted cash flow analysis for the fiscal*

years 2017 through 2022. In preparing its analysis, Evercore relied on the Whole Foods Market Projections; in addition, for purposes of calculating terminal year cash flow, Evercore derived, and the Company confirmed the reasonableness of deriving, fiscal year 2022 EBITDA of $2,058 million and normalized unlevered free cash flow of $845 million by increasing 2021 revenues by the same percentage as the percentage revenue growth from 2020 to 2021 and holding operating margins constant at 2021 levels (together with the Whole Foods Market Projections, the "Management Estimates"). For comparative purposes, Evercore also performed a discounted cash flow analysis based upon publicly available equity research analysts' reports that provided projections through fiscal year 2021 and were published after May 10, 2017, and as to which Evercore similarly derived fiscal year 2022 EBITDA of $1,556 million and normalized unlevered free cash flow of $516 million ("Public Equity Analysts' Estimates").

In arriving at the estimated equity values per share of Company common stock, Evercore estimated a range of terminal values in 2022 by applying to Whole Foods Market's fiscal year 2022 estimated EBITDA, a multiple of Enterprise Value to EBITDA of 7.0x to 9.5x and by applying a perpetuity growth rate of 2.5% to 3.5%. Evercore then discounted Whole Foods Market's projected, unlevered free cash flows, included in the Management Estimates and the Public Equity Analysts' Estimates and the estimated terminal value for each scenario, in each case, to a present value using discount rates ranging from 7.0% to 9.0%. The discount rates were based on Evercore's judgment of the estimated range of Whole Foods Market's weighted average cost of capital established by considering market and size risk premiums, a U.S. Treasury bond risk-free rate, historical beta and cost of debt. Evercore calculated unlevered free cash flow by first deriving net operating profit after tax by subtracting depreciation and amortization from EBITDA and assuming a 39.0% tax rate, then adjusting the result by adding back depreciation and amortization, subtracting capital expenditures and adjusting for changes in net working capital. Based on the foregoing analysis, the discounted cash flow analysis yielded the implied value ranges for Company common stock on a fully diluted basis as set forth below:

Scenario	**Implied Value Range per Share (Terminal Multiple)**
Management Estimates	$37.11 to $51.22
Public Equity Analysts' Estimates	$28.50 to $39.55

Scenario	Implied Value Range per Share (Perpetuity Growth Rate)
Management Estimates	$36.05 to $65.01
Public Equity Analysts' Estimates	$23.17 to $41.80

Source: WFM Proxy dated July 21, 2017.

As can be seen from the financial adviser's DCF calculations, the estimates were also wide despite the fact that the adviser had access to management internal estimates.

The estimates of WFM's value based on comparable company and comparable transactions that were included in the WFM July 21, 2017, proxy are included in Appendix C.

Summary of WFM Situation and Valuation Estimates

The activist approach to WFM did, in fact, cause WFM to consider the sale of the company. A number of offers were fielded from several bidders. On June 1, 2017, Amazon offered to acquire WFM for $42 per share. WFM ultimately agreed and the merger closed on August 28, 2017.

The $42 takeover value was substantially higher than most of the values one could have estimated from the three generally accepted methods of estimating a takeover price. In many cases, the estimates would prove a lot more accurate to the ultimate takeover price and would usually have a narrower range. WFM was simply a difficult case given its unique characteristics and market position. This case does show how difficult the estimation process can be.

RISK ASSESSMENT

As in all other risk arbitrage transactions, the analyst or arbitrageur must analyze how much he or she risks by investing in a transaction. The arbitrageur must also estimate what can be lost in hostile takeover attempts, which, compared with friendly transactions, may cause the ultimate risk level to be adjusted.

Sometimes, when a hostile takeover attempt does not go through and the price of the target company declines, the stock may not decline to the level at which it was traded prior to the deal's being announced. A premium sometimes develops; the stock of the target company may trade for a long period of time *above* its preannouncement level.

The reason is that the target company's stock was trading at a low level when there was no public knowledge of a takeover situation. Once a takeover attempt is made, many shareholders feel that a transaction could occur in the future, and the investment community now knows that someone was willing to pay a premium for the stock. As a result, a takeover premium may be included in the amount new shareholders will pay for owning a share of the stock. The shareholders may feel that the hostile bidder may return and make an additional bid for the company, or they may expect that, ultimately, the target company will do something for its own shareholders to improve the value of the shares.

Initially, however, after a hostile transaction is defeated, the target company's stock declines. It may fall lower than the arbitrageur expects, simply because of supply and demand. If the transaction was outstanding for a long period of time and the arbitrage community established large positions in the marketplace, many arbitrageurs will be forced to sell—almost regardless of price—when the deal breaks up. If many positions were held and have to be sold, logic does not always prevail and prices may temporarily decline to bargain levels. This happens frequently in these types of transaction. Ultimately, the stock usually finds some equilibrium in trading—either close to the arbitrageur's estimate or somewhat above it, because of the aforementioned premium assigned to broken transactions.

SUMMARY

Hostile takeover transactions clearly represent a challenging and potentially lucrative opportunity for arbitrageurs. These types of transactions require the arbitrageur to engage in detailed analysis that involves many disciplines. Because these transactions can represent a large portion of an arbitrageur's profit over any given year, they should always be analyzed carefully.

CHAPTER 9

Trading Tactics

When an arbitrageur takes a position in a particular arbitrage transaction, he or she must decide how to execute that decision and how to implement it with an overall portfolio strategy. In this chapter, we will explore the execution of trades and the tactics that arbitrageurs use to set up and unwind positions.

DETERMINING POSITION SIZE

An arbitrageur must initially determine a maximum position size in any given transaction. The maximum size will relate to either the overall equity capital that the arbitrageur is utilizing, or the risk in the individual position as it relates to this overall equity capital. Chapter 10 explores in depth the method by which arbitrageurs should limit their position size.

At this point, however, if we assume that the arbitrageur has determined the maximum position size—for example, either 10% of the overall buying power in the portfolio, or a maximum loss of 2.5–5% of the portfolio's capital—the arbitrageur knows the dollar amount of that maximum position. This amount is considered by the arbitrageur to be a maximum or full position size. Rarely is a full position put on at one time. An arbitrageur will usually determine, when he or she is initially making hedges, whether to start by taking out ¼ of a position, ½ of a position, ¾ of a position, or a full position.

NOTES FROM THE FILE

I have always found it very helpful to view the positions previously described: ¼, ½, ¾, or full. I happen to feel very strongly that a position should be held. For instance, in a contested takeover attempt

(*Continued*)

where I believe that developments will occur very quickly, I may very well take a full position as soon as feasible. However, in most deals, I (and other arbitrageurs) tend to work into the positions gradually by first setting up a small position and then gradually increasing it as I monitor the spreads.

EXECUTION OF TRANSACTIONS

Cash transactions that are set up by arbitrageurs are somewhat simpler than the complex transactions in which arbitrageurs have to short stock. In cash transactions, the arbitrageurs know the takeout price and the resulting spread, so they can calculate, with relative ease, what the returns would be at any given stock level.

Generally, an arbitrageur executes a trade by putting in a bid with a broker or trading system at a level that provides an adequate return on the capital. These bids are generally given in *limit orders* (i.e., the arbitrageur limits the price at which he or she is willing to buy the stock). For instance, if the bid is a \$20 cash tender offer, the arbitrageur may give the broker an order such as, "Buy 20,000 shares at \$181.50 or better."

This contrasts with the use of market orders. Market orders, such as "Buy 20,000 XYZ at the market," are utilized when the arbitrageur wants to own the securities without being sensitive to the price of execution. A market order is executed at the lowest level at which securities are offered on an exchange. Many arbitrage transactions offer arbitrageurs significant annualized *rates* of return, but they realize relatively small absolute dollar returns. Therefore, the use of limit orders can be a very important way to control the actual spread in any given transaction. As the absolute dollar spread gets smaller, the importance of utilizing limit orders grows proportionally.

Compared to cash transactions, stock-for-stock deals and complex transactions that involve the issuance of securities require much more intricacy in the execution of the orders and in setting up the position. Assume that securities are being used as a method of exchange in a transaction. To hedge the transaction, the arbitrageur must be shorting the anticipated securities to be received upon closing. The need to sell short can significantly restrict the arbitrageur's ability to set up a position.

Setting up a two-sided position that requires a short sale can be accomplished in a couple of ways. For years, professional arbitrageurs have given out their two-sided setups to executing brokers, who then use their trading desks to set up the trade. The arbitrageur gives the broker the order to buy the target and sell short the security to be received in the deal (usually the acquiring company's shares) with a spread limit.

For instance, if the target is Company ABC and target shareholders are receiving 2.0 shares of Company XYZ for each share of Company ABC, the arbitrageur might give the broker an order to set 50,000 shares of a target at a spread of $2. This means if the gross spread between the value received in stock less the price of the target is $2 or better, the broker will execute the trades for the arbitrageur (Long 50,000 Short 100,000). The arbitrageur only gets the execution of the trade if the broker is able to get both sides of the trade-off at the required limit. See Exhibit 9.1.

Today, there are other alternatives to execute two-sided trades for the arbitrageur. There are a number of computerized trading programs designed to be able to execute the setup without the use of an outside broker. These systems are able to monitor the relationship between the target's stock price and the short-side of the trade. Once the specified limit is reached, as with $2 in our prior example, both the buy and the short sale will be executed in the market by the system. While these systems are available to professional arbitrageurs, they also come with a cost.

Individuals who are attempting to invest in arbitrage transactions generally do not have access to the systems that execute the two-sided trades simultaneously. It is possible that with a certain amount of capital, individuals can open an account with a brokerage firm that may make such systems available to the individual investor. If not, the investor may then need to execute the two sides of a stock-for-stock deal independently. This adds to the risk of the trade and may result in the investor realizing a different spread than hoped.

Example of a Two-Sided Trade and Order	
ABC/XYZ Deal Terms	
1 ABC = 2.0 XYZ shares	
Target Company	**Stock Price**
Company ABC	$128.00
Acquiring Company	
Company XYZ	$65.00
Deal Value	
($65 × 2.0)	$130.00
Less: Target Price	$128.00
Gross Spread	**$2.00**

EXHIBIT 9.1 Example of a Two-Sided Setup

If the individual decides to attempt the two-sided execution, he or she must decide which side of the trade should be executed first. Either way, the arbitrageur must make a call on which position to establish first. Because each security is traded separately, it is very difficult to execute what would be known as a "paired transaction."

Computerized trading systems have dramatically changed the execution of trades, especially trades of over-the-counter securities. Instead of having to execute trades through the dealer market and NASDAQ, an arbitrageur can execute trades within the same systems that execute trades for listed securities. In addition to making trade execution easier, the cost of executions has also decreased dramatically.

Since the last version of this book was published, there have been numerous changes in how stocks are traded. Short sales used to have to be executed on what is known as an "uptick." This rule made it more difficult to execute two-sided trades. Today, except in certain instances, short sales no longer need an uptick.

Another major change in trading has been going from fractional price differences to "pennies." Since most stocks are now traded in $0.01 increments, traders have altered some of their tactics in setting up orders. Instead of putting in orders at round increments, many traders use penny increments to differentiate their orders.

For instance, instead of bidding $20 for the target company's stock, the trader may indicate the order with a $19.99 or $19.98 limit, hoping to get a more favorable execution. While many academics believe moving to the decimal trading system has lowered the cost of executing trades, liquidity has also been affected. The arbitrageur must now gauge the best way to execute his or her trades by altering both the order size entered as well as the precise limits used for each execution.

For an individual practicing the trade of risk arbitrage, it is incumbent to establish relationships and accounts at firms where trades may be executed quickly and reasonably. The choices for individuals vary. One of the highest-growth areas for the execution of trades that need to be done is on the Internet. Many brokers have set up systems by which individuals may enter trades via the Internet and receive executions on a timely basis. This method has also significantly decreased the cost of executing these trades. Years ago, individual investors paid relatively large commissions to establish positions. These commissions inhibited the rates of return that could otherwise have been realized by individuals in the arbitrage business. Today, readily available services allow individuals to execute trades at very low prices.

Individual investors in the arbitrage business should carefully screen potential Internet-based brokers to determine whether they can properly service their accounts. Execution at fast speed and low cost is the most preferred option. The investor should also check out various other aspects of the relationship that can become quite important—including these:

- What are the broker's charges on debit balances?
- Can an individual investor receive credit for cash balances and the execution of short sales?

This business has been changing dramatically over very short periods of time, and the services the various brokers offer must be continually monitored.

Assuming that a relationship is established with an Internet-based firm, the execution of orders is similar to the procedure described earlier. Limit orders are generally used to establish positions that control the rates of return that will be realized by the arbitrageur.

NOTES FROM THE FILE

Prior to entering a short order, the arbitrageur must make sure that the broker can borrow the security. The ability to locate the security to be shorted in the marketplace may be a determining factor for participation in any given transaction. Transactions in which the short side may be difficult to borrow usually carry greater-than-normal spreads, and this feature may entice many people to set up these positions.

However, I have found that, over time, this can be a dangerous situation. If a security becomes tough to borrow and the arbitrageur is short, the arbitrageur may receive what is called a "buy-in notice" from the broker. In effect, the broker is forcing the arbitrageur to cover his or her short position. Generally, buy-ins do not occur for just one customer at one brokerage firm. They tend to spread throughout the Street. As a result, a "short squeeze" may develop; many people who have short positions will have to go out and cover their shorts. To do so and still remain hedged, they will have to sell out their long positions. As a result, the spreads in these types of situations may widen dramatically, and any widening of spreads results in losses for the arbitrageur.

It simply does not pay to enter these types of transactions. It is much safer for arbitrageurs to focus their attention on deals based on securities that are readily available for borrowing and therefore will not subject them to these buy-in practices.

Sometimes individual arbitrageurs utilize traditional brokerage firms to get access to other services such as the firm's equity research. These services generally come at a higher cost than the Internet-based brokers. Only the arbitrageur can determine whether the tradeoff of the cost of execution is justified by the services that are received. Undoubtedly, lower commissions improve the arbitrageur's return on any given execution. However, the arbitrageur cannot lose sight of the overall package of services received from any broker. The arbitrageur needs fast, efficient, and effective service at a low cost. Whether an arbitrageur takes an initial position of ¼, ½, ¾, or a full position, he or she must continually monitor the position after it is set up. Initially, an arbitrageur is usually executing ¼ of the full position.

Increases in the position are accomplished in several ways. One reason to increase the position would be to react to a widening in the spread in the transaction. Suppose that there is no additional information that would cause the arbitrageur to adjust either the estimates of return and risk or the probability of the transaction's closing. The widening of the spread may then make it more attractive for the arbitrageur to make an additional trade in the securities to increase his or her position.

A second way in which the arbitrageur may increase the position is to introduce new information into the decision process. When new information comes into the marketplace, whether through a press release, a new analysis, or some type of legal development, the arbitrageur may certainly want to adjust his or her position.

EXAMPLE: BASS PRO SHOPS' ACQUISITION OF CABELA'S

On October 3, 2016, Cabela's (CAB) agreed to be acquired by Bass Pro Shops in a complicated transaction. While Bass Pro Shop had agreed to buy all the CAB retail stores in the transaction, CAB also had a banking operation. Since Bass Pro was not interested in becoming a bank, it had structured the transaction so it could buy the CAB retail stores and simultaneously sell off the CAB bank operations to Capital One.

After the deal was first announced, CAB traded pretty consistently at a \$3.25 to \$4.00 or 6% discount to the \$65.50 takeover price. Many arbitrageurs initiated positions in CAB by buying CAB stock. Capital One filed the required documents and notifications with the Federal Reserve Board. Once the Federal Reserve granted the proposed transfer, the parties planned to close the merger. Exhibit 9.2 shows CAB prices before and after the announcement of the deal.

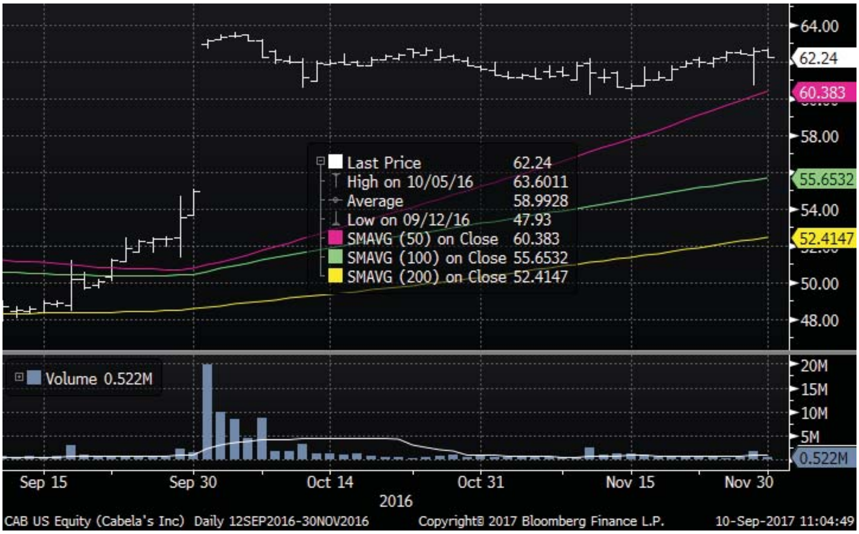


EXHIBIT 9.2 CAB Prices before and after the Deal Announcement
Source: Used with permission of Bloomberg Finance LP.

Many times, deals do not progress smoothly to completion. CAB was such a deal. The first sign of an issue came on December 29, 2016, when CAB revealed it had received a second request under Hart-Scott antitrust procedures. CAB and Bass Pro Shop both operate similar-type stores and the FTC wanted additional information before it cleared the transaction.

After this news, CAB's stock dropped to the $58 level and the gross spread moved out to the $7.50 level, as shown in Exhibit 9.3. Arbitrageurs were now sitting on some large unrealized losses. Most arbitrageurs and experts believed that any antitrust objections could be overcome. The two companies competed with many different sports retailers. Still, it was possible that some store divestitures might be required.

The only problem was that the Federal Reserve had a problem with Capital One making an acquisition. In January 2017, it became clear that due to a prior issue that Capital One had at the Fed, the Federal Reserve was not in favor of cooperating with the merger plans. As soon as this news was released, CAB's stock declined. The spread widened to $10 as opposed to the $4 level where most arbitrageurs had set up initial positions, as shown in Exhibit 9.4.

On April 17, 2017, CAB and Bass Pro Shops announced they had reconfigured the merger plans. Synovus (SNV) was now going to be the purchaser

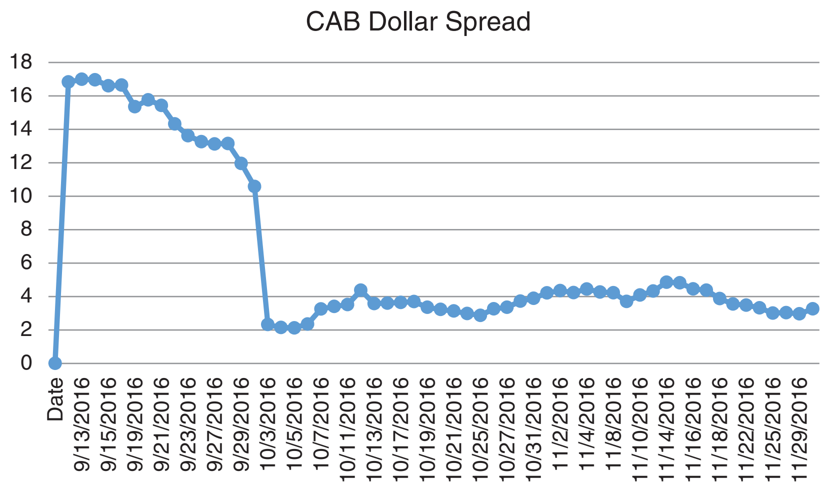


EXHIBIT 9.3 CAB Dollar Spread after the Deal Announcement
Source: Bloomberg Finance LP.

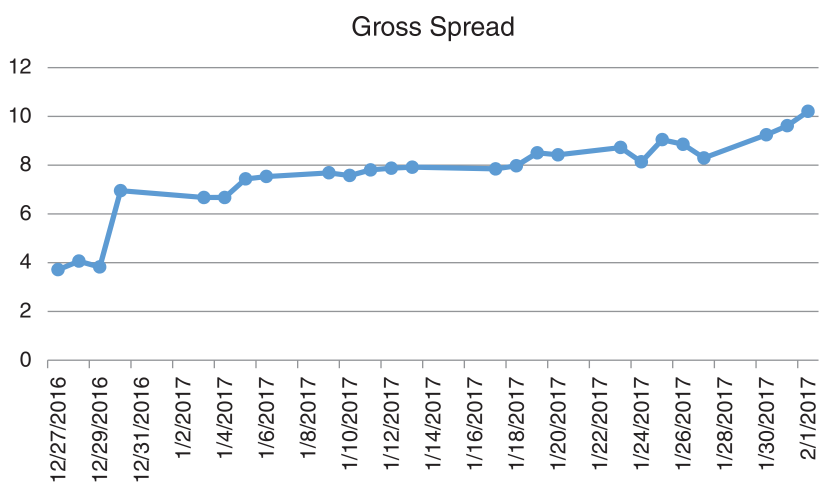


EXHIBIT 9.4 CAB's Gross Spread after FRB Problem Disclosed
Source: Bloomberg Finance LP.

of the CAB banking assets, and would, upon the merger closing, sell the bank's credit card assets to Capital One. The parties believed SNV would be able to secure the required Federal Reserve approval that Capital One was unable to complete.

The only other complication for CAB shareholders and arbitrageurs at that time was that in the negotiating process, Bass Pro also lowered the acquisition price by $4. Instead of paying CAB shareholders $65.50 per share, Bass Pro was now going to pay $61.50 per share.

When the news was announced, CAB traded up to $57 in the market. While it would have traded substantially higher had Bass Pro not recut the deal, arbitrageurs who added to positions made back some of their paper losses on their original positions and had new unrealized profits on the positions that were added after the Federal Reserve problem surfaced. (See Exhibit 9.5.)

While the CAB deal would later have another of the additionally challenging developments that would require trading decisions, at this point arbitrageurs who kept their original positions and those who added were better off making those trading decisions.

It should be noted at this point that while most of the time an arbitrageur's decisions are centered on sound fundamental, financial, and legal analyses, there are times when emotions come into play. In the case of CAB, the problematic developments came at inopportune times. For instance, the disclosure of a possible antitrust issue came in the last trading days of the year. Most arbitrageurs run their funds on a calendar basis. Many CAB holders who sold positions may have simply been trying to limit any further losses at year-end as opposed to normal arbitrage decision-making process.

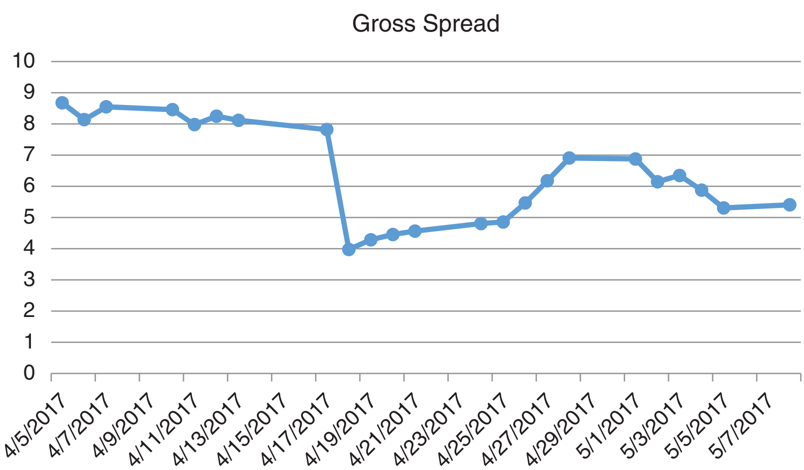


EXHIBIT 9.5 CAB Spread after the Merger Terms Were Recut
Source: Bloomberg Finance LP.

NOTES FROM THE FILE

There are times in the arbitrage business when developments in a deal may cause the spread to widen dramatically. This usually happens when an unforeseen event occurs (e.g., a government agency may seek a preliminary injunction). At these times, the arbitrageur may be sustaining large losses on an unrealized basis. These losses can be quite painful. Sometimes, the pain gets so great that the arbitrageur may feel that he or she should “go to church” to pray for a better development. I have always found that when I get an urge to pray for a position, it is a signal that I should have sold it already!

While monitoring the markets in the individual securities and the spreads, the arbitrageur may find trading opportunities by liquidating positions. Some arbitrageurs emphasize the trading aspect of the business. They employ skilled traders who monitor the spreads in the transactions on a minute-to-minute basis. As shown in the CAB example, if the spread widens, they look to set up a position or increase a position already held in the portfolio. As the spread narrows, they tend to unwind positions. These types of arbitrageurs look to make money by trading the variations in the spreads in the marketplace.

NOTES FROM THE FILE

I have always found that trading can augment an investment’s returns, but in the risk arbitrage business, I believe that, over time, the main source of profit for the arbitrageur comes from good fundamental research. Concentrating one’s efforts on analysis of the situation generally yields the best opportunity to make money. This may mean that the arbitrageur set up his or her positions too early from a trading point of view, but the spreads improved as time went on. However, I have found that the overall picture and the overall analysis of the outcome of the deal under study are usually the most important determinants of an arbitrageur’s success.

In monitoring the spreads of the transactions, the arbitrageur may determine that because of the parameters chosen and his or her analysis of risk, return, and probability, a spread has declined to such a level that a position presently held in the portfolio should be unwound.

The compensation received may not support the risk or the probability of the deal's breaking up, or the capital involved may be better employed by reinvesting the proceeds of the sale in other deals that have more attractive returns and attributes.

Sometimes, an arbitrageur does hold the established positions until the absolute closing of the transaction. In a cash transaction, the arbitrageur might receive cash proceeds in his or her account in exchange for stock. In a two-sided arbitrage situation, if the arbitrageur holds the positions until closing, the long position will turn into the securities that are the medium of exchange. These securities are then generally exchanged against the already established short position, thereby canceling out both the long and short positions.

No single generalization can predict or dictate whether the arbitrageur holds a position to its ultimate conclusion or unwinds the position prior to the deal's closing. Market forces and the arbitrageur's view on the position at any particular time and spread level will reveal to the arbitrageur the best method of operation.

TIMING OF EXECUTIONS

As stated elsewhere in this book, cash tender offers and contested hostile takeovers require the arbitrageur's immediate attention. While hostile tenders now generally take a long time to either complete successfully or fail, these transactions typically have fast-moving developments, so the arbitrageur must be prepared to implement a trading strategy to take advantage of them.

In contrast, mergers tend to be outstanding from 3 to 12 months. Because mergers and securities involved in mergers will be trading in the marketplace for these lengthy periods of time, it is less important for the arbitrageur to complete an analysis promptly.

USING COMPUTERS TO AID TRADING TACTICS

Many arbitrageurs utilize technology to help them trade in arbitrage transactions. Most commonly, a personal computer is used to track the returns and risks in any given arbitrage situation. Many arbitrageurs, when a deal is initially announced, input their estimates of deal price, return, and estimated risk into a custom-designed database. Depending on the computer system's level of sophistication, these estimates may be revised automatically by overall market movements or may be individually adjusted by the arbitrageur over time. However, all current databases are designed to give the arbitrageur up-to-the-minute input as to each deal's estimated return and risk. This information allows the arbitrageur to monitor the spreads in the marketplace.

Exhibit 9.6 shows a typical use of computers to monitor spreads and spread changes. Each arbitrageur customizes the basic system to improve its decision-making assistance.

Computers can be employed to monitor spreads in a number of ways. Most systems can focus on monitoring spread and spread changes. Exhibit 9.7 shows a typical printout of the spread change monitor.

The spread change screen can also have a feature to sort by different types of transactions. For instance, if the arbitrageur is looking to add to his or her strategic transaction, a sort on strategics would be triggered. Exhibit 9.8 shows a sample of spread changes in strategic deals.

As another alternative, a similar sort can be done to feature leveraged buyout transactions, as shown in Exhibit 9.9.

Arbitrageurs may also be able to sort the outstanding transactions based on spread size or changes in spread. For many years, I have used systems that print out a listing of deals in which the spread has narrowed or widened by a certain specified percentage. I stipulate the percentage that is to be used as a threshold and the system gives me a listing of these securities. The dollar spread or percentage spread of transactions may change by, say, greater than $.025 or 10% per day or over a three-to-five-day period.

Most arbitrageurs may know, just from watching the prices of particular securities, that the spread has changed over that time period. But this method gives the arbitrageur a method to focus on these transactions and to display their status if needed. The change filter can be easily changed to suit each individual arbitrageur's preferences.

If spreads have widened, the arbitrageur may have an opportunity to establish or increase his or her position. If a spread has widened and the arbitrageur reevaluates the earlier analysis of the position (which should always be done), some new piece of information may surface. When the securities on this listing show a decline in spread, the arbitrageur may decide to rebalance the portfolio by selling the positions with the narrowed spreads and investing the money in deals that have a greater expected return.

If the arbitrageur has created a full database of transactions, along with their estimated risks and returns, the risk estimates can be used to generate a listing of attractive opportunities. As mentioned previously, the system I employ estimates the initial risk in any given transaction and adjusts the risk for moves in the equity market. This process continually generates an adjusted risk on both the downside and the upside. If a transaction remains in the marketplace for many days, weeks, or months, the movement in the overall markets may have a significant or even a dramatic effect on the initial estimates of the downside and upside. The system can be easily instructed to generate a risk report that would show the original risk estimates as well as the adjusted estimates for an entire array of transactions. Exhibit 9.10 shows a sample of an Adjusted Risk Report.

EXHIBIT 9.6 Monitoring Spreads and Spread Changes

Arbitrage Deal Universe

Today's Date **9/6/2017**

Deal Universe Screen

Target Co. Name	Target Symbol	Target Price	Acq Co. Symbol	Acq. Co. Price	Cash Terms	Stock Terms	Est. Close Date	Deal Type	Deal Nature	Gross $ Spread	5 Day Gross $ Sp. Chg.
ALERE INC	ALR	49.68	ABT	51.17	51	0	10/15/2017	Cash	Strategic	1.32	−1.39
CRBARD INC	BCR	320.04	BDX	199.15	222.93	0.5077	10/30/2017	Mixed	Strategic	4.00	−0.97
BROCADE COMMUNCATIONS INC	BRCD	12.4	AVGO	253	12.75	0	10/30/2017	Cash	Strategic	0.35	−0.10
CABELA'S INC	CAB	53.75	NOTICKAR	0	61.5	0	10/3/2017	Cash	Strategic	7.75	0.73
GENWORTH FINANCIAL INC	GNW	3.52	NOTICKAR	0	5.43	0	11/30/2017	Cash	Strategic	1.91	−0.10
LATTICE SEMCONDUCTOR CORP	LSCC	5.67	NOTICKAR	0	8.3	0	2/15/2017	Cash	LBO	2.63	0.02
LEVEL 3 COMMUNCATIONS INC	LVLT	54.85	CTL	20.06	26.5	1.4286	9/15/2017	Mixed	Strategic	0.31	−0.80
MONEY GRAM INTERNATIONAL INC	MGI	15.68	NOTICKAR	0	18	0	9/30/2017	Cash	Strategic	2.32	0.08
MONSANTO CO	MON	117.21	BAYN	127.88	128	0	11/30/2017	Cash	Strategic	10.79	−0.46
MONOGRAM RESIDENTIAL TRUST INC	MORE	11.98	NOTICKAR	0	12	0	9/25/2017	Cash	Strategic	0.02	−0.01
CLUP CORP HOLDINGS INC	MYCC	17	APO	29.46	17.12	0	10/15/2017	Cash	LBO	0.12	0.05
PARWAY INC	PKY	22.96	NOTICKAR	0	22.95	0	10/30/2017	Cash	LBO	−0.01	−0.08
RICE ENERGY INC	RICE	27.41	EQT	62.61	5.3	0.37	10/30/2017	Mixed	Strategic	1.06	−0.12
STAPLES INC	SPLS	10.22	NOTICKAR	0	10.13	0	10/30/2017	Cash	LBO	−0.09	0.00
TRIBUNE MEDIA CO-A	TRCO	40.37	SBGI	30.35	35	0.23	1/31/2017	Mixed	Strategic	1.61	−0.29
VWR CORP	VWR	33.11	NOTICKAR	0	33.25	0	10/30/2017	Cash	LBO	0.14	−0.03

EXHIBIT 9.7 Spread Change Screen

Spread Change Screen									
Sep-06-2017	**SPX Index**	**2463.92**							
	All Deals				**All**				
Target	**Acquiror**	**Gross Spread ($)**	**Gross Spread Change 1 Day**	**Gross Spread Change 2 Day**	**Gross Spread Change 5 Day**	**Net $ Spread Change 1 Day**	**Net $ Spread Change 2 Day**	**Net $ Spread Change 5 Day**	
ALR	ABT	$ 1.32	−0.22	−0.46	−1.39	$ (0.22)	$ (0.46)	$ (1.39)	
ATW	ESV	$ 0.20	−0.03	0.04	−0.35	$ (0.04)	$ 0.03	$ (0.36)	
BCR	BDX	$ 4.00	0.62	−0.35	−0.97	$ 0.51	$ (0.46)	$ (1.08)	
BKMU	ASB	$ (0.00)	−0.09	−0.16	−0.12	$ (0.09)	$ (0.15)	$ (0.11)	
BRCD	AVGO	$ 0.35	−0.02	−0.05	−0.10	$ (0.02)	$ (0.05)	$ (0.10)	
CAB	NOTICKER	$ 7.75	−0.05	−0.26	0.73	$ (0.05)	$ (0.26)	$ 0.73	
FOR	DHI	$ 0.55	0.00	0.00	−0.10	$ —	$ —	$ (0.10)	
GNW	NOTICKER	$ 1.91	−0.09	−0.09	−0.10	$ (0.09)	$ (0.09)	$ (0.10)	
HSNI	QVCA	$ 0.04	0.24	0.22	0.07	$ 0.24	$ 0.22	$ 0.07	
LSCC	NOTICKER	$ 2.63	−0.02	−0.02	0.02	$ (0.02)	$ (0.02)	$ 0.02	
LVLT	CTL	$ 0.31	0.07	−0.75	−0.80	$ 0.07	$ (0.75)	$ (0.80)	
MGI	NOTICKER	$ 2.32	0.08	0.13	0.08	$ 0.08	$ 0.13	$ 0.08	
MYCC	APO	$ 0.12	0.00	−0.05	0.05	$ —	$ (0.05)	$ 0.05	
NXPI	QCOM	$ (2.90)	0.06	−0.50	−0.67	$ 0.06	$ (0.50)	$ (0.67)	
PKY	NOTICKER	$ (0.01)	0.00	0.01	−0.08	$ 4.00	$ 4.01	$ 3.92	
RICE	EQT	$ 1.06	0.05	0.00	−0.12	$ 0.05	$ (0.00)	$ (0.12)	
STRP	VZ	$ 5.80	0.31	0.80	1.76	$ 0.31	$ 0.80	$ 1.76	
TWX	T	6.32	−0.08	0.16	0.24	$ 0.32	$ 0.56	$ 0.64	

EXHIBIT 9.8 Spread Changes in Strategic Deals

Spread Changes in Strategic Deals Screen										
Spread Changes Screen										
Date:	Sep-06-2017	SPX Index	2463.92							
Select Deal Type		All Deals			All					
Strategy	Target	Acquiror	Gross Spread ($)	Gross Spread Change 1 Day	Gross Spread Change 2 Day	Gross Spread Change 5 Day	Net $ Spread Change 1 Day	Net $ Spread Change 2 Day	Net $ Spread Change 5 Day	
ALR	ALR	ABT	$ 1.32	–0.22	–0.46	–1.39	$ (0.22)	$ (0.46)	$ (1.39)	
ATW	ATW	ESV	$ 0.20	–0.03	0.04	–0.35	$ (0.04)	$ 0.03	$ (0.36)	
BCR	BCR	BDX	$ 4.00	0.62	–0.35	–0.97	$ 0.51	$ (0.46)	$ (1.08)	
BKMU	BKMU	ASB	$ (0.00)	–0.09	–0.16	–0.12	$ (0.09)	$ (0.15)	$ (0.11)	
BRCD	BRCD	AVGO	$ 0.35	–0.02	–0.05	–0.10	$ (0.02)	$ (0.05)	$ (0.10)	
F0R2	FOR	DHI	$ 0.55	0.00	0.00	–0.10	$ —	$ —	$ (0.10)	
HSNI	HSNI	QVCA	$ 0.04	0.24	0.22	0.07	$ 0.24	$ 0.22	$ 0.07	
LVLT	LVLT	CTL	$ 0.31	0.07	–0.75	–0.80	$ 0.07	$ (0.75)	$ (0.80)	
MYCC	MYCC	APO	$ 0.12	0.00	–0.05	0.05	$ —	$ (0.05)	$ 0.05	
NXPI	NXPI	QCOM	$ (2.90)	0.06	–0.50	–0.67	$ 0.06	$ (0.50)	$ (0.67)	
RICE	RICE	EQT	$ 1.06	0.05	0.00	–0.12	$ 0.05	$ (0.00)	$ (0.12)	
STRP2	STRP	VZ	$ 5.80	0.31	0.80	1.76	$ 0.31	$ 0.80	$ 1.76	
TWX	TWX	T	6.32	–0.08	0.16	0.24	$ 0.32	$ 0.56	$ 0.64	

EXHIBIT 9.9 Spread Changes in Leveraged Buyouts

Spread Changes in Leveraged Buyouts Screen

Spread Changes Screen

Date: Sep-06-2017 **SPX Index** 2463.92

Select Deal Type **All Deals** **All**

Strategy	Target	Acquiror	Gross Spread ($)	Gross Spread Change 1 Day	Gross Spread Change 2 Day	Gross Spread Change 5 Day	Net $ Spread Change 1 Day	Net $ Spread Change 2 Day	Net $ Spread Change 5 Day
CAB	CAB	NOTICKER	$ 7.75	−0.05	−0.26	0.73	$ (0.05)	$ (0.26)	$ 0.73
GNW	GNW	NOTICKER	$ 1.91	−0.09	−0.09	−0.10	$ (0.09)	$ (0.09)	$ (0.10)
LSCC	LSCC	NOTICKER	$ 2.63	−0.02	−0.02	0.02	$ (0.02)	$ (0.02)	$ 0.02
MGI	MGI	NOTICKER	$ 2.32	0.08	0.13	0.08	$ 0.08	$ 0.13	$ 0.08
MYCC	MYCC	APO	$ 0.12	0.00	−0.05	0.05	$ —	$ (0.05)	$ 0.05
PKY	PKY	NOTICKER	$ (0.01)	0.00	0.01	−0.08	$ 4.00	$ 4.01	$ 3.92

EXHIBIT 9.10 Adjusted Risk Screen

Adjusted Risk View Screen												
Select Deal Type		All Deals			All							
Deal	Target Symbol	Downside Risk in $	Mkt Adj. Downside Risk in $	Upside Risk in $	Mkt Adj. Upside Risk in $	Total $ Risk	Mkt Adj. Total $ Risk	Gross $ Spread	Risk to Reward Ratio	Even $ Probability	Estimated Closing Date
ALR	ALR	13.56	6.86	0.00	0.00	13.56	6.86	2.44	2.81	73.76%	8/31/2017
BCR	BCR	57.52	54.37	0.08	3.01	57.56	55.90	9.29	6.01	85.74%	10/30/2017
BRCD	BRCD	3.90	2.52	0.00	0.00	3.90	2.52	0.11	23.97	95.99%	5/31/2017
CAB	CAB	10.22	6.96	0.00	0.00	10.22	6.96	8.78	0.79	44.21%	11/30/2017
DDC	DDC	0.99	0.95	0.00	0.00	0.99	0.95	0.76	1.25	55.59%	10/30/2017
FCFP	FCFP	1.15	0.95	0.75	1.80	1.45	1.67	0.08	19.60	95.15%	10/30/2017
FCH	FCH	0.31	0.13	1.08	1.30	0.97	0.92	0.89	1.03	50.73%	10/31/2017
FOR	FOR	0.65	0.07	0.00	0.00	0.65	0.07	0.10	0.74	42.68%	7/31/2017
GNW	GNW	0.37	−0.39	0.00	0.00	0.37	−0.39	1.81	−0.22	−27.54%	6/30/2017
LSCC	LSCC	0.56	−0.74	0.00	0.00	0.56	−0.74	1.35	−0.55	−120.95%	2/15/2017
LVLT	LVLT	14.79	8.92	3.15	6.80	19.29	18.63	2.57	7.26	87.89%	9/15/2017
MGI	MGI	3.05	2.88	0.00	0.00	3.05	2.88	−1.85	−1.56	279.20%	11/30/2017
MON	MON	26.12	14.31	0.00	0.00	26.12	14.31	11.88	1.20	54.64%	11/30/2017
NXPI	NXPI	25.16	12.46	0.00	0.00	25.16	12.46	1.84	6.77	87.13%	8/31/2017
RAD	RAD	−0.37	−1.05	0.00	0.00	−0.37	−1.05	2.87	−0.37	−57.65%	4/30/2017
RAI	RAI	20.72	16.72	47.46	62.16	45.68	49.41	0.35	141.16	99.30%	8/30/2017
STRP	STRP	144.44	143.41	0.00	0.00	144.44	143.41	−83.81	−1.71	240.62%	2/28/2018
TWX	TWX	17.89	10.17	0.00	0.00	17.89	10.17	9.61	1.06	51.42%	11/30/2017

EXHIBIT 9.11 Individual Deal Screen
Source: Bloomberg Finance LP.

INDIVIDUAL DEAL VIEW SCREEN

Select Deal from Here

Deal(Strategy):	**TWX**						
Target Symbol:	**TWX**	**Acquiror:**	**T**				
Target Position:	75,000	**Acquiror Position:**		**Equiv Pos:**	0	**Net Pos:**	0
Type Deal:	Mixed Merger	**Nature**	Strategic	0 **US/Foreign**	US	**Deal Term**	$53.75 in cash plus $53.75 in T stock

TERMS:	**Curr. Adj.**			**Curr. Adj.**
Cash	$107.50		**Deal Value(Per Sh)**	$ 107.50
Stock	0.000		**Deal Size(mill$)**	$ 82,990.00

							Spread Change				**Current Spread**
								1 Day	**2 Day**	**5 Day**	
Target Price	$100.86	**Acq Price:**	$ 37.50	**Ann. Date:**	10/24/2016						
Target Cost	$ 97.26	**Acq Cost:**		**Est Closing Date:**	11/30/2017						
Target Dividend:	$ -	**Acq Dividend:**	$ -	**Days:**	85		**Gross $**	0.36	0.74	0.52	6.64
Target Div Date:	-	**Acq Div Date:**	-	**Carry per share:**	$ 0.23		**Net Lev $**	0.76	1.14	0.92	6.81
Long rate:	2.00%	**Short Rate:**	0.000%	**Rebate per Share:**	$ -		**Net Lev %**	0.06	0.10	0.08	57.97%
Downside:	$ 80.00	**Upside:**	$ 39.25	**Even$Probability**	62%						
Adj Downside	$90.018	**Adj Upside**	$ 43.69	**Est. Probability**	90%						

RETURN	**$**	**%(Ann.)**	**RISK (Per Share) Unadj. $**		**Adj. $**	**POSITION PROFILE**	**$**
Gross Spread	$ 6.64		**Downside Risk**	$ 20.86	$ 10.84	**Potential Loss(Mkt Adj)**	-813,149
Net Spread(Unlev.)	$ 7.04	29.98%	**Upside Risk**	$ -	$ -	**Potential Gain**	528,188
Net Spread(Lev)	$ 6.81	57.97%	**Total Risk**	$ 20.86	$ 10.84	**$ in Long Position**	7,294,500
Risk Adj Net Spread		42.94%	**Risk Reward**	3.142	1.633	**$ in Short Position**	0
MARKET Moves	**$**	**%**	**CAPITAL**	$ 50.43			
Target Dnside Chg	$(10.02)	-12.52%	**Loss as % Capital**	0.00%			
Acq Co Upside Chg	$ 4.44	-11.30%	**MktVal % Port MV**	#DIV/0!			
S&P 500 Chg	$326.96	-15.27%	**%Full Pos (Capital)**	0.00%			
			% Full Pos (MV)	#DIV/0!			

LIMITS (Shares)	**25%**	**50%**	**75%**	**100%**
$ at Risk	21,572.39	43,144.77	64,717.16	86,289.55
% Long Market Value	0.00	0.00	0.00	0.00
13-D Position(Mil)	38.60			

COMMENTS:	collar 37.411 (1.437)-41.349(1.3), needes TWX sh, 18% T issue, needs DOJ, FCC

Very infrequently, an arbitrageur may be able to find a transaction that has a negative adjusted risk estimate. This can occur if the market has moved so significantly that, if this transaction now breaks up, given the level of the stock price in any particular transaction, the adjusted estimates would indicate that the target company's stock should rise. Exhibit 9.10 shows an example where the RAD deal has a market-adjusted total risk of $1.05. This was due to the equity market moving up significantly since the deal was originally announced.

These estimates may not be extremely accurate, and they have to be continually reviewed by the arbitrageur using some of the methods mentioned in Chapter 5 (especially constructing a peer group and its performance since the deal was announced). Still, they give the arbitrageur a tool for improving his or her analysis of trading techniques.

Of course, the computer systems can also be designed to show calculations of risk and reward and other parameters on each individual deal followed. Exhibit 9.11 is an example of an individual deal view screen.

Each arbitrageur will customize the output to concentrate on the view and factors he or she wishes to see.

TRADING TRANSACTIONS WITH COLLARS

Technology and financial theory can also be blended to analyze and trade mergers that incorporate collars in the deal structure. When a collar is structured around the acquiring company's stock price, the spread calculation becomes more complicated.

For example, if Company A has agreed to merge with Company B for $50 in Company B's stock with Company B's stock trading at $25, usually the exchange ratio would be determined by dividing the deal value ($50) by the Company B stock price ($25). The resulting exchange ratio would be 2.0 shares of Company B for each share of Company A. If the collar was set at $2 each side of Company B's price, the lower and upper collar ranges would then be $23 and $27. If Company B's stock was trading below $23, each share of Company A would then get 2.174 shares of Company A and 1.852 if Company B's stock traded above the $27 upper collar limit.

Calculating the deal value and the method to hedge collar transactions, like the previous one, is a more complicated exercise. It may seem in the previous case that $50 should be used as the deal value. However, since that deal value changes if Company B's stock trades above or below the outside collar ranges, the deal value will differ from $50. What is actually happening is the holder of Company A stock is long a call and short a put in addition to being entitled to the deal price.

The call has a strike price of the upper collar limit ($27) and the put has a strike price with the lower collar limit ($23). The deal value can be calculated as follows:

$$\begin{aligned}\text{Deal value} = \text{Structured price} &+ \text{Call value on upside (above collar)}\\ &- \text{Put value (below collar)}\end{aligned}$$

The trader must take several other calculations in mind:

- Value of the call
- Value of the put
- Number of calls per share of target
- Number of puts per share of target

Perhaps the best way to fully describe the analysis and trade setup is to take a real-life example.

EXAMPLE: MERGER OF ROCKWELL COLLINS AND B/E AEROSPACE

On October 23, 2016, Rockwell Collins (COL) and B/E Aerospace (BEAV) announced they entered into a definitive agreement to merge for $6.4 billion in cash and stock. BEAV shareholders were due to receive a total of $62 in value per share, comprising $34.10 in cash and $27.90 in COL stock, subject to a 7.5% collar. The exact calculation of the terms and collar was described (in the press release announcing the agreement to merge) as follows:

> *Under the terms of the agreement, B/E Aerospace shareholders will receive $34.10 per share in cash and a number of Rockwell Collins shares of common stock equal to $27.90, with such number of shares of Rockwell Collins common stock determined based on the volume weighted average closing price of Rockwell Collins common stock for the 20 trading days ending on the day prior to closing (provided that this volume weighted average price is no less than $77.41 and no greater than $89.97 per share). If the volume weighted average price of Rockwell Collins common stock during this period is above $89.97, the stock portion of the consideration will be fixed at 0.3101 shares of Rockwell Collins common stock for each share of B/E Aerospace, and if it is below $77.41 per share, the stock portion of the consideration will be fixed at 0.3604 shares of Rockwell Collins common stock for each share of B/E Aerospace.*

Under the terms, the lower level of the collar was \$77.41 and the high end of the collar was \$89.97. So, each shareholder of BEAV, under the terms of the merger agreement, was long a call on 0.3101 shares of COL struck at \$89.97 and short 0.3604 shares of COL struck at \$77.41.

Before the arbitrageur can calculate the gross spread, he or she must first value both puts and calls that are embedded in the terms of the merger.

Since the collar limits rarely match up with the exact strike prices of the publicly traded options on the acquiring company, the arbitrageur must perform a theoretical option valuation on both options. Most arbitrageurs are subscribers of Bloomberg and use its systems in the arbitrage decision process. The Bloomberg has specialized functions that allow users to calculate the theoretical value of an option. There are many other programs and systems that can also be used, other than Bloomberg, to calculate option values. Most systems calculate values that are very close to one another.

Regardless of the system utilized, the arbitrageur must determine various inputs in order to get the proper valuations. They usually are as follows:

- The precise strike price of the call. (In our COL example, this is \$89.97.)
- The strike price of the put option. (In our COL example, this is \$77.41.)
- The expected expiration of the option, which would be the expected closing of the transaction (133 days).
- The expected volatility of the acquiring company (31%).
- Any expected dividends on the acquiring company prior to the deal closing.
- Expected borrowing costs.

Once these inputs are determined, they are entered into the option valuation model. After the systems determine the specific option values, there is still an additional step. The number of shares that both the puts and calls are associated with must also be taken into account to determine the option value per the acquiring company (COL) share held. These calculations are shown in Exhibit 9.12.

You should note that there is a negative value for the put option. This is because the holder of COL, while long a call that adds value, is also short the put. Being short creates a potential loss in value should the price of COL close below the lower collar limit. As a result, this is accounted for as a negative in calculating the actual spread in BEAV/COL.

Using the previous estimates, we can now calculate the option-adjusted gross deal spread (see Exhibit 9.13).

In the case above, because COL was trading close to the top of the collar (\$87.77 vs. \$89.97) the call collar option was more valuable than the put. Had COL traded closer to the lower collar limit, the option-adjusted spread could have been less than our case.

Stock	**Price**
BEAV	$59.29
COL	$87.73
Call Value	
Upper Collar Strike	$89.97
Call Value (from model)	$5.59
Number of Shares per Option	0.3101
Total Call Value	$1.73
Put Value	
Lower Collar Strike	$77.41
Put Value (from model)	–$2.23
Number of Shares per Option	0.3604
Total Put Value	–$0.80

EXHIBIT 9.12 Calculation of the Option Values per Share in BEAV/COL

Beav/Col Deal Value Adjusted for Options	
Calculation of Deal Value	
Cash	$34.10
Stock	$27.90
Sub-total	$62.00
Plus Call Value	$1.73
Less Put Value	–$0.80
Adjusted Deal Value	$62.93
Less CTL Stock Price	$59.29
Option-Adjusted Gross Spread	**$3.64**
Unadjusted Gross Spread (With No Option Value Adjustments)	**$2.71**

EXHIBIT 9.13 Calculation of the Option-Adjusted Gross Spread

HEDGING THE COLLAR OPTIONS

The actual hedging of the collar options is never straightforward. Rarely do the collar strike prices match up precisely with the put and call strike prices that are available and trade in the marketplace.

In the case of BEAV/COL, the 90 strike price would work out close to the option collar strike of $89.97, so the COL 90 strike call is a very close proxy as far as the strike goes. On the other side of the trade, the put strike presents more of a problem. With the lower collar put strike being $77.41, unless COL had a $77.50 strike on listed options, the arbitrageur would have to choose between the 80 or 75 strike series.

In any case, in order to set up a "hedged" BEAV position, the arbitrageur would:

- Buy BEAV.
- Sell 0.3101 COL 90 strike call for each 1.0 share of BEAV purchased.
- Buy 0.3604 COL puts for each 1.0 share of BEAV purchased.

The actual ratio of the number of puts purchased against each BEAV share owned would be a subjective choice for the arbitrageur. There are many financial models and programs that can be used to create a synthetic hedge on the collar options that would be the equivalent to the actual collar ratios and strikes. However, that technique is beyond the scope of this book.

SUMMARY

Trading tactics can be an important aspect of doing risk arbitrage. The arbitrageur must be extremely disciplined and creative in utilizing his or her trading acumen. The actual methods of trading in arbitrage-related securities can dramatically influence the rate of return.

CHAPTER 10

Portfolio Management

One of the keys to both consistency and longevity in the risk arbitrage business is the trait of discipline. Over time, the concept of risk management has grown in importance in both financial institutions as well as hedge funds. Given the nature of risk arbitrage, risk management is a critical element to successfully managing risk arbitrage portfolios.

The failure of many hedge funds and large losses incurred by many investment and commercial banks has elevated the need for the risk management profession. At this stage, for hedge funds to be able to raise additional capital, risk management procedures and staffing must be in place and the proper risk management disciplines must pass inspection in potential investor due diligence examinations.

In applying risk management techniques to risk arbitrage portfolios, I have found that there was no standard packaged software available to adequately perform the risk management function. One of the primary reasons is the nature of risk arbitrage returns. Once a deal is announced, the target company's securities have different characteristics than they possessed prior to the deal announcement. Post–deal announcement, the security returns are basically binary in nature for tender offers and mergers. If the transaction is completed successfully, the portfolio manager earns the deal spread. On the other hand, if the deal is canceled, there generally is a large drop in the security's price, which results in a large loss. Therefore, the returns are centered in the tails of the return distribution, unlike non-deal securities.

Modern portfolio management theories (such as the Markowitz mean-variance framework) generally make several assumptions that are critical to the usefulness of the theories. One of the key assumptions is that security returns are normally or log-normally distributed. These mean-variance techniques as well as value-at-risk (VAR) applications share the same normal distribution assumptions.

Since the distributions of risk arbitrage returns are anything but normal, risk management systems must be customized to take into account the special return characteristics.

Risk Arbitrage: An Investor's Guide, Second Edition. Keith M. Moore.

To develop a successful risk management system for risk arbitrage portfolios, we start by addressing position limits and portfolio diversification.

POSITION LIMITS AND PORTFOLIO DIVERSIFICATION

The first step in analyzing a risk arbitrage portfolio is the determination of what securities and deals are included in the portfolio. The arbitrageur uses estimates of risk, reward, and probabilities to select which deals and transactions should be included in the portfolio.

Once the individual transactions are identified, the next step in the process is for the arbitrageur to decide the relative weighting of each position. The key element then becomes each position's size as compared to the overall portfolio value.

SETTING INDIVIDUAL POSITION LIMITS

In the overall risk analysis of the event-driven portfolio, one of the most critical elements is the position limits set on the individual positions. There is not a universal way in which event-driven portfolio managers set maximum position sizes. Some set the limit based on a percentage of overall portfolio market value while others set the limit in terms of a maximum allowable loss percentage. As an alternative, maximum position size can also be set in terms of maximum loss in dollars.

Over most of my career, my firms tended to set individual position limits based on a percentage of the overall portfolio. Generally, I was limited to holding a maximum of 10% of the market value of the portfolio in any one given position. The effect of this was to force diversification. To be under the constraint, at least 10 positions needed to be held in the portfolio, and since 10% holdings were relatively rare, the portfolio held significantly more than 20 positions as a result.

Although the logic of the 10% rule seems to make sense on the surface, I believed it was not an adequate way to control risk. Picture two different holdings in the portfolio, as shown in Exhibit 10.1.

While both positions depicted in Exhibit 10.1 represent 10% of the market value of the entire portfolio, the deal-break risk in the position in Company B represents a loss of 1.6% of the portfolio, compared to 7.6% for Company A. The risk of loss in Company B is only 21.1% of Company A's risk.

Why the difference? The key lies in the fact that the total risk in the second position was only $4 as compared to $38 for the first. Despite owning twice as many shares, the risk in a deal break was significantly less.

EXHIBIT 10.1 Example of Two Deals with 10% Positions

Target Company	Acquiring Company	Target Price	Acquiror Price	Cash Terms	Stock Terms	Deal Value	Downside Risk	Upside Risk	Total Risk per Share	Long Position	Short Position	Deal Break Risk in Terms of $'s	Deal Break Risk as % Overall Portfolio
Company A	Company Y	$50.00	$35.00	$51.00	$0.00	$51.00	$38.00	$0.00	$38.00	200000	0	$7,600,000.00	7.60%
Company B	Company Z	$25.00	$40.00	$5.50	$0.50	$25.50	$22.00	$42.00	$4.00	400000	200000	$1,600,000.00	1.60%

Over the years, I came to believe that there must be a better way to control risk in risk arbitrage portfolios. It seemed to be that investors would be much better off if position limits were set based on the possible loss amount or percentage of capital that could be lost on any given deal.

Years ago, I pursued a doctorate in finance. In such programs, the key task is to perform detailed academic studies of various theories. In my plan of study, I decided to explore extensive research on portfolio allocation rules. I had some definite views on the optimal ways to set position limits, and they weren't the rules I had operated under as a portfolio manager.

In my research, I tested the traditional portfolio limit theory (say maximum of 10% of the portfolio) in addition to two other possibilities:

1. Limiting the potential loss in any individual position to a specified percentage of the value of the total portfolio
2. Using both a maximum percentage of the portfolio value *and* a maximum percentage loss on each position

With a large sample size and Monte-Carlo simulations, it was clear that limiting the amount that could actually be lost on each position was superior to limiting positions to a maximum percentage of total portfolio value. Using choice #2 above proved to limit risk even more effectively. What was surprising was that, while reducing risk usually comes with a reduction of return, both alternative theories not only reduced risk but also showed a slight increase in portfolio returns. As a result, we would recommend that portfolio managers determine both a maximum dollar and percentage they will risk in any deal along with a maximum limit as a percentage of the portfolio's market value.

The actual limits may be determined according to the arbitrageur's sensitivity to risk and loss. A conservative arbitrageur may set a relatively low limit of exposure. An arbitrageur who is willing to accept more aggressive risk profiles would set the percentage accordingly.

Most arbitrageurs use computers to track each position and its relative risk, to ensure that the prescribed position limits are holding firm. It is very important to maintain the position limits that are set. Because of the nature of the business, an arbitrageur can easily get caught up in the action in the marketplace and may be tempted to get overly aggressive.

In risk arbitrage, individual positions held in a portfolio are generally uncorrelated with each other. The completion of most deals depends on factors that are usually unique to that particular transaction. As a result, correlation among positions tends to be quite low.

The exceptions to low correlation occur in a couple of different situations:

1. When the portfolio has a concentration of a type of deal that could have its deal-closing success rate affected by a common factor
2. By a large overall decline in the equity market over a short period of time

Over the last few market cycles, we have seen both exceptions occur. We have seen deal spreads widen almost across the board with several large equity market moves since the Crash of 1987, including the Credit Crisis of 2007/2008 and the Flash Crash.

In the case of highly leveraged transactions, we have also seen a number of times when changes in banking or credit rules or the threat of new legislation caused all deal spreads involved in leveraged transactions to widen despite being in different industries and geographical areas.

One analysis that can be effective in determining sensitivity to overall equity market movements or significant developments relating to the overall equity market is sensitivity analysis.

SENSITIVITY ANALYSIS

Given the nature recently of the U.S. equity markets to experience relatively sharp downturns, most risk management systems incorporate procedures to estimate how sensitive portfolios are to a general market decline. One of the typical sensitivity tests estimates what would happen to the individual securities held in the portfolio if the overall market (S&P 500 Index) were to decline by a certain percentage. In a number of firms, the key percentage decline is focused on a 5% downward move in the overall equity market. Generally, to perform this calculation, the individual security's beta is applied to the 5% market move. See Exhibit 10.2.The only problem with the calculation in Exhibit 10.2 is that, as mentioned earlier, securities involved in mergers do not behave the same way as they did before structuring a merger.

Since the return distribution for securities involved in mergers and tender offers changes after the announcement, the abovementioned procedure must be modified to generate a more accurate estimate. The methodology we use is to alter the beta of each individual security held in the portfolio. The individual beta of each security held in the risk arbitrage portfolio depends on the type of deal the security is involved in. Generally, the individual betas decline as the securities are now less sensitive to equity market

Target Company × Stock Price	TSP	$48
Target Company × Beta	B	1.3
Downward Change in S&P 500 Index	SPCHG	5%
Unadjusted Target Company × Stock Price	ADJSP	$45.60
Target Company Stock Price Using Beta	MKTADJ SP	$44.88

EXHIBIT 10.2 Calculation of Target Market-Adjusted Stock Price Using Beta

moves as there is a definitive outcome for each deal, assuming the deal is completed as planned.

Cash tender offers usually have the lowest sensitivity and therefore beta after the deal is announced. The cash tender price has a stabilizing influence on the target company's price, and since tenders are usually completed in a short period of time, they tend to have a low sensitivity to market moves as a lower target price tends to generate high annualized rates of return.

Cash mergers tend to have the next-lowest sensitivity to overall market moves. This attribute can be attributed to the fixed deal price. While a large overall market decline (such as incurred in October 1987 and the Credit Crisis 2007/2008) can result in a higher incidence of deal cancellations, cash deals are usually resistant to overall market moves and generally have a more consistent closing rate in the face of equity volatility as compared to other types of transactions.

The next level of deals by market sensitivity tends to be stock mergers and mixed mergers that have a stock exchange element. Since the deal value, and hence deal spread, vary with the acquiring company's stock price, the spreads in these types of transactions tend to be more volatile in periods of overall equity market declines. Additionally, because the deal value varies depending on the level of the acquiring company's stock price, in periods of sharp market declines it becomes more likely that the target company's board of directors may reconsider the agreed-upon deal if the acquirer's stock price declines precipitously. A lower deal price can sometimes cause second thoughts as to whether the deal terms are fair to the target company's shareholders. All these factors contribute to a tendency of having a greater sensitivity to overall equity market moves as compared to cash deals.

Hostile transactions, by their nature, are riskier than agreed-to cash and stock transactions. The higher level of deal completion uncertainty results in these types of transactions being more sensitive to overall equity market moves. Target companies that are seeking bids generally fall into a similar classification. As the equity market declines, portfolio managers tend to hold the positions that are perceived as the most secure (i.e., cash and stock deals) and tend to sell the riskiest transactions first. The drop in success rate of hostiles after market declines tends to reinforce the concept that hostile deals have should have a higher sensitivity to market declines.

While most deals held in risk arbitrage portfolios tend to act independently of one another, leveraged buyouts are the exception. While a portfolio could have minimal individual commitments to a number of leveraged buyout transactions, should fears develop in the market regarding a negative change in overall credit conditions, leveraged transaction returns tend to be highly correlated. As a result, in these periods, all leveraged buyouts tend to move down together. Sometimes the reason for a higher level of risk is not triggered by an equity or credit market decline. Any type of legislation, rule change, or banking regulatory changes (such as increasing capital on leveraged transactions) can result in an overall decline in leveraged deal prices. Instead of acting independently, leveraged deals can essentially be grouped as a single transaction. These deals have the highest sensitivity to general market declines.

After historically testing sensitivities to overall equity market moves, we have found the following sensitivities to more accurately reflect actual moves by type of deal, as shown in Exhibit 10.3.

Utilizing these sensitivities and applying them to actual portfolios generates a more accurate estimate of how a risk arbitrage portfolio may react to an overall 5% decline in the stock market. As can be seen from Exhibit 10.4, the expected decline in portfolio value is significantly less using the adjusted betas as opposed to using historical betas.

The estimated decline in the overall portfolio assuming a 5% decline in the S&P 500 using estimated deal market sensitivities was $1,840.293 or a 1.41% portfolio loss as opposed to the estimated $7,485,387 or 5.73%

Type Deal Sensitivities

Type Deal	Estimated Sensitivity to Equity Changes
Cash Tenders	15.000%
Cash Mergers	20.000%
Stock Mergers	25.000%
Mixed Mergers	22.500%
Leveraged Buyouts	60.000%
Acquiring Companies	Pre-announcement Beta
Target Has Only Offer	110.000%
Target for Sale	120.000%

EXHIBIT 10.3 Type Deal Market Sensitivity Estimates

EXHIBIT 10.4 Estimated Portfolio Losses for a 5% Overall Market Decline

			Using Original Betas		Using Estimates of Market Sensitivities	
Target Company	Acquiring Company	Type Deal	Downside Risk Market Move −5%	Total % of Total Portfolio	Downside Risk Market Move −5%	Total % of Total Portfolio
ALR	ABT	Strategic	−$206,886	−0.16%	−$50,460	−0.04%
ATW	ESV	Strategic	−$188,214	−0.14%	−$25,434	−0.02%
BCR	BDX	Strategic	−$210,080	−0.16%	−$71,618	−0.05%
BRCD	AVGO	Strategic	−$541,178	−0.41%	−$275,175	−0.21%
CAB	NOTICKER	LBO	−$227,106	−0.17%	−$184,140	−0.14%
CPN	NOTICKER	LBO	−$291,088	−0.22%	−$154,560	−0.12%
HSNI	QVCA	Strategic	−$333,572	−0.26%	−$81,758	−0.06%
HUN	CLN	Strategic	−$689,735	−0.53%	−$105,788	−0.08%
KITE	GILD	Strategic	−$480,310	−0.37%	−$53,766	−0.04%
LDR	FTV	Strategic	−$508,875	−0.39%	−$50,888	−0.04%
MGI	NOTICKER	LBO	−$241,491	−0.18%	−$104,996	−0.08%
MON	BAYN	Strategic	−$354,167	−0.27%	−$89,662	−0.07%
NXPI	QCOM	Strategic	−$595,615	−0.46%	−$72,050	−0.06%
NXTM	FRE	Strategic	−$166,012	−0.13%	−$27,440	−0.02%
OA	NOC	Strategic	−$340,003	−0.26%	−$66,020	−0.05%
RIC	AGI	Strategic	−$154,854	−0.12%	−$61,450	−0.05%
RICE	EQT	Strategic	−$366,812	−0.28%	−$63,979	−0.05%
STRP2	VZ	Strategic	−$634,007	−0.49%	−$112,413	−0.09%
TRCO	SBGI	Strategic	−$639,735	−0.49%	−$102,085	−0.08%
TWX	T	Strategic	−$315,649	−0.24%	−$86,611	−0.07%
Totals			**−$7,485,387**	**−5.73%**	**−$1,840,293**	**−1.41%**
Total Value of Portfolio =			**$130,654,560**			

using historical betas. The decline in relation to the S&P 500 5% decline can be a result of higher underlying betas measured by pre-deal announcement activity. Since we have lived through several substantial overall market declines over the past five years, we have had the opportunity to test our estimates comparing the actual cumulative portfolio declines as compared to our estimates. In most cases, the estimates have proven to be reasonably accurate.

Discipline is one of the most important traits of successful risk arbitrageurs. Risk arbitrage inevitably has dramatic turns. A downturn in the prices and securities held in a portfolio can be very damaging. Only by maintaining a disciplined approach to the position limits set for the portfolio will the arbitrageur be able to effectively contain risk.

NOTES FROM THE FILE

Lack of discipline has been the primary cause of arbitrageurs' exiting the business. I have seen several arbitrageurs blow up because they took outsized positions and outlandish risks. Arbitrageurs who have been able to operate continuously and generate favorable long-term performance records have almost always been the most disciplined arbitrageurs in the community.

PORTFOLIO DEAL-BREAK RISK

The next area we concentrate on in the area of risk management focuses on how much capital is at risk on any given deal, given a withdrawal or cancellation of the transaction. We also look at the overall degree of capital that could be lost if all transactions were canceled. While this clearly is an exaggeration of possibilities, increases of large equity market declines over short periods of time, we have witnessed higher deal cancellation rates. Given the generally increased level of volatility in today's equity market, the exercise provides the manager with a way to judge the overall level of risk. The calculation of the overall level of capital risk in the portfolio also provides some indication as to how risky the individual positions can be. Scanning the list of individual capital risk estimates shows how concentrated the portfolio risks are over the spectrum of deals.

Exhibit 10.5 shows that the position in STRP represents the largest individual risk in the portfolio. Approximately 3.44% of the value in the portfolio could be lost if the STRP deal is terminated. Of course, all these calculations are based on the individual estimates of where the target and

Target Company	Acquiring Company	Type Deal	Total Target Market Value	Total Deal Break Risk	Deal Break Risk as % of Portfolio
ALR	ABT	Strategic	$5,046,000	−$1,546,000	−1.18%
ATW	ESV	Strategic	$2,034,750	$881,250	0.67%
BCR	BDX	Strategic	$6,366,060	−$1,448,307	−1.11%
BRCD	AVGO	Strategic	$9,172,500	−$2,610,000	−2.00%
CAB	NOTICKER	LBO	$6,138,000	−$1,888,000	−1.45%
CPN	NOTICKER	LBO	$5,152,000	−$1,652,000	−1.26%
HSNI	QVCA	Strategic	$6,540,625	−$582,881	−0.45%
HUN	CLN	Strategic	$8,463,000	−$1,872,081	−1.43%
KITE	GILD	Strategic	$7,168,800	−$2,368,800	−1.81%
LDR	FTV	Strategic	$6,785,000	−$1,085,000	−0.83%
MGI	NOTICKER	LBO	$3,499,875	−$1,474,875	−1.13%
MON	BAYN	Strategic	$8,966,250	−$2,216,250	−1.70%
NXPI	QCOM	Strategic	$9,606,700	−$2,551,700	−1.95%
NXTM	FRE	Strategic	$2,744,000	−$444,000	−0.34%
OA	NOC	Strategic	$6,602,000	−$1,102,000	−0.84%
RIC	AGI	Strategic	$4,916,000	$252,291	0.19%
RICE	EQT	Strategic	$5,687,000	−$2,068,966	−1.58%
STRP2	VZ	Strategic	$8,993,000	−$4,493,000	−3.44%
TRCO	SBGI	Strategic	$9,074,250	−$1,284,300	−0.98%
TWX	T	Strategic	$7,698,750	−$1,698,750	−1.30%
Total			**$130,654,560**	**−$31,253,369**	**−23.92%**

EXHIBIT 10.5 Total Portfolio Deal-Break Risk

acquiring company's stocks will trade should the deal be canceled. (The methodology for these calculations was described in Chapter 4.)

Totaling up the individual deal-break risks shows that in our simplified portfolio, there is a total risk embedded to the extent that if all deals did not go through, the portfolio would suffer a loss of approximately 23.92%. While the assumption that all deals are canceled is farfetched, the exercise does give the portfolio manager an overview of the riskiness of the portfolio at any point in time. It should be noted that all the calculations in this chapter should be real-time, although in practice, risk analysis is generally performed on a weekly basis.

ADDITIONAL METHODS TO LIMIT RISK

In addition to the methodology already covered, there are other ways to view the risk arbitrage portfolio to help manage risk. One of the most obvious disciplines is to break down the portfolio according to deal type. Exhibit 10.6 shows a typical example.

	Number of Deals	% of Deals	Long Market Value	% of Portfolio	Posssible Gain	Possible Total Loss
Tender Offers	3	15.00%	$23,560,500	18.03%	–$285,500	–$6,005,500
Cash Mergers	5	25.00%	$32,530,750	24.90%	$6,448,750	–$7,918,250
Stock Mergers	5	25.00%	$30,947,375	23.69%	$768,979	–$5,814,421
Mixed Mergers	4	20.00%	$28,826,060	22.06%	$818,793	–$6,500,323
Total Mergers	14	70.00%	$92,304,185	70.65%	$8,036,523	–$20,232,994
Leveraged Buyouts	3	15.00%	$14,789,875	11.32%	$747,625	–$5,014,875
Total	**20**	**100.00%**	**$130,654,560**	**100.00%**	**$8,498,648**	**–$31,253,369**

EXHIBIT 10.6 Risk Arbitrage Portfolio: Analysis by Deal Type

Each transaction has a particular risk profile. Hostile or contested takeover transactions (as noted earlier) are historically volatile. They can be great opportunities, but they can also generate huge losses for arbitrageurs. Arbitrageurs who have a high percentage of hostile transactions in their portfolios must be prepared, financially and emotionally, to deal with an inordinate amount of risk.

FRIENDLY TRANSACTIONS

Compared to contested takeovers, friendly transactions, in general, should have less volatility, higher probabilities of completion, and relatively more certain rates of return. (The exceptions, of course, are transactions that involve antitrust questions or other regulatory issues.) However, some friendly transactions may have a larger risk in terms of absolute dollars.

Friendly cash transactions can usually be viewed as secure, as long as the financing is definitive in nature. Stock-for-stock transactions can contain an element of equity risk. If a stock-for-stock transaction contains a collar, the arbitrageur must monitor the collar and how it relates to the underlying security prices. Portfolios that contain a high percentage of stock-for-stock deals with collars may be subject to a higher risk level than those that contain a high degree of cash transactions.

Leveraged Buyouts

In general, leveraged transactions are highly sensitive to the overall economy, economic factors, interest rate changes, and earnings of the underlying companies.

NOTES FROM THE FILE

Actual experience has shown me that arbitrageurs should monitor their involvement in leveraged buyouts as they relate to the overall portfolio. Most leveraged buyouts are clearly friendly transactions, but there can be factors that affect all these types of transactions.

Several years ago, legislation was proposed that would have limited the loans that banks and institutions could make to finance what were described as highly leveraged transactions (HLTs). When this legislation was proposed, even though an arbitrageur may have been abiding by portfolio diversification limits, the entire portfolio and a group of leveraged buyouts held as security would have tended to constitute one entity because all these transactions were potentially going to be affected by the proposed legislation.

This is why it is very important for an arbitrageur to examine how much of his or her portfolio is invested in any given type of transaction. With leveraged buyouts in hand, an arbitrageur might have mistakenly thought that he or she had adequate diversification.

Arbitrageurs must be careful to avoid any overconcentration in any given area or group of deals that might react in a related fashion.

RECAPS, SPINOFFS, TARGETS FOR SALE, AND SITUATIONS WHERE THE TARGETS HAVE RECEIVED AN OFFER

Recapitalizations and spinoffs generally have an element of equity risk associated with them. The arbitrageur may choose to hedge or not to hedge this risk. If an arbitrageur breaks down his or her portfolio to determine the overall amount of capital committed to this equity-risk area, he or she may very well find it advantageous to set up a hedge against the equity risk. The arbitrageur may use futures, options, a combination of futures and options, or securities that are related to securities being issued in these transactions to help hedge the equity risk in this portion of the portfolio.

Targets that have put themselves up for sale along with targets that have received an informal unsolicited offer tend to have a high degree of risk. In both cases, the target company's stock generally rallies quite a bit after the situations become publicly known. If there is a problem such as an overall large equity market decline, securities involved in these situations are generally subject to large downside risks.

Arbitrageurs should generate a tabulation of their portfolio on a regular basis to monitor the diversification achieved through the various types of deals. Exhibit 10.6 can serve as a model.

GROUPING BY CASH FLOW

Another type of grouping that can prove helpful to the arbitrageur is based on an estimated investment time horizon. By going through the portfolio and grouping the individual positions according to their expected closing dates, one can generate a compilation similar to Exhibit 10.7.

This type of portfolio breakdown enables the arbitrageur to see two things:

1. How much of the portfolio will be turning over as the deals close
2. How sensitive the portfolio may be to overall economic factors

If a relatively high percentage of the portfolio is dedicated to transactions that are due to close within the next one to three months, the portfolio and the individual positions will most likely *not* be heavily influenced by factors such as earnings and interest rates.

If, however, only a small percentage of the portfolio is due to close over the next few months and a relatively high percentage is not expected to close for five or six (or more) months, the portfolio contains too much risk in relation to overall economic factors. The risk of having the economy or interest rates go against these positions is much greater in this type of portfolio. Furthermore, the arbitrageur will have to be concentrating more

Estimated Time to Estimated Closing	Number of Deals	% of Deals	Long Market Value	% of Long Market Value	Est. Potential Gain
One Month	9	45.00%	$51,653,610	39.53%	$1,261,824
Two Months	5	25.00%	$37,972,700	29.06%	$652,054
Three Months	1	5.00%	$8,463,000	6.48%	$540,469
Four Months	2	10.00%	$11,818,250	9.05%	$536,800
Five Months	1	5.00%	$8,993,000	6.88%	$207,000
Six Months	0	0.00%	0	0.00%	$0
Over Six Months	2	10.00%	$11,754,000	9.00%	$308,500
Total	**20**	**100.00%**	**$130,654,560**	**100.00%**	**$3,506,648**

EXHIBIT 10.7 Deal Completion Analysis

on earnings estimates and fundamentals of the companies involved in these transactions. The arbitrageur must then become a fundamental securities analyst and economist in order to effectively monitor his or her portfolio.

Acquiring and using skills as a fundamental securities analyst may not be bad if the arbitrageur has been compensated for the additional risk and is aware of and comfortable with the possible outcomes. However, without generating a tabulation such as Exhibit 10.7, it will be easy to lose sight of the overall exposure by concentrating on the individual transactions.

As it turns out in the example portfolio shown in Exhibit 10.7, 69% of the portfolio is due to complete within two months and more than 55% of the expected gains are expected to be realized in that two-month time frame. As a result of this portfolio's composition, it appears that there is a minimal amount of fundamental risk embedded in the portfolio, as all except 16% of the positions are expected to close within four months.

This type of breakdown can have an additional benefit to the portfolio manager. Since 69% of the positions are expected to be coming "off the sheets," the portfolio manager should be concentrating additional efforts to identify other positions to add to the portfolio, to provide proper diversification and upside potential.

PORTFOLIO ANALYSIS BY SPREAD

Arbitrageurs use computers to monitor individual transactions and their estimated annual returns. Exhibit 10.8 shows an example of how individual deals can be monitored by their spread. Using a computer-generated analysis such as this gives the arbitrageur the ability to analyze many potential investments quickly. This tool helps the arbitrageur deal with rapid changes occurring in the marketplace and aids in the monitoring of the arbitrageur's portfolio.

The next logical step for the arbitrageur is to utilize a computer to monitor the spread characteristics of the overall portfolio. By using the annualized spread to group the individual transactions held in the portfolio, the arbitrageur may get a valuable look at the portfolio's total sensitivity to risk. Exhibit 10.8 shows a typical breakdown of a portfolio by annualized spread.

Like the breakdown by type of deal, this portfolio breakdown gives the arbitrageur insight into the amount of risk contained in his or her portfolio. If the arbitrageur is attracted primarily to transactions with large spreads, the odds are that the portfolio will contain a high degree of risk. Deals have high rates of return for when they have:

- A large dollar risk associated with the transaction
- A low estimate of the probability of the transaction's closing
- Both of the above

EXHIBIT 10.8 Spread Monitor
Source: Bloomberg Finance LP.

DEAL VIEW SCREEN							Print
Select Deal from Here							
Deal(Strategy):	COL						
Target Symbol:	COL	Acquiror:	UTX				
Target Position:		Acquiror Position:		Equiv Pos:	0	Net Pos:	0
Type Deal:	Mixed Merger	Nature	Strategic	0 US/Foreign	US	Deal Terms:	$140 merger cash/stock
						Deal Status	

TERMS:	Curr. Adj.		Curr. Adj.
Cash	$ 140.00	Deal Value(Per Sh):	$ 140.00
Stock	0.000	Deal Size(mill$)	$ 18,228.00

							Spread Change			Current
							1 Day	2 Day	5 Day	Spread
Target Price	$ 131.41	Acq Price:	$ 113.62	Ann. Date:	9/5/2017					
Target Cost		Acq Cost:		Est Closing Date:	5/31/2018					
Target Dividend:	$ -	Acq Dividend:	$ -	Days:	258	Gross $	-0.06	-0.20	-0.46	8.59
Target Div Date:	-	Acq Div Date:	-	Carry per share:	$ 0.93	Net Lev $	0.93	0.79	0.53	8.65
Long rate:	2.00%	Short Rate:	0.000%	Rebate per Share	$ -	Net Lev %	0.02	0.02	0.01	18.63%
Downside:	$ 110.00	Upside:	$ 120.00	Even$Probability	70%					
Adj Downside	$ 110.969	Adj Upside	$ 121.12	Est. Probability	94%					

RETURN	$	%(Ann.)	RISK (Per Share)	Unadj. $	Adj. $	POSITION PROFILE	$
Gross Spread	$ 8.59		Downside Risk	$ 21.41	$ 20.44	Potential Loss(Mkt Adj)	0
Net Spread(Unlev.)	$ 9.58	10.31%	Upside Risk	$ -	$ -	Potential Gain	0
Net Spread(Lev)	$ 8.65	18.63%	Total Risk	$ 21.41	$ 20.44	$ in Long Position	0
Risk Adj Net Spread		14.87%	Risk Reward	2.492	2.380	$ in Short Position	0
MARKET Moves	$	%	CAPITAL	$ 65.71			
Target Dnside Chg	$ (0.97)	-0.88%	Loss as % Capital	0.00%			
Acq Co Upside Chg	$ 1.12	-0.93%	MktVal % Port MV	#DIV/0!			
S&P 500 Chg	$ 21.38	-0.86%	%Full Pos (Capital)	0.00%			
			% Full Pos (MV)	#DIV/0!			

LIMITS (Shares)	25%	50%	75%	100%
$ at Risk	21,018.22	42,036.43	63,054.65	84,072.86
% Long Market Value	0.00	0.00	0.00	0.00
13-D Position(Mil)	6.51			

COMMENTS:	w/ 7.5% collar, nned SH + regs, $93.33 cash/$46.67 stock

Spread Range (annualized)	Total Positions in $'s	% of Portfolio
Premium (Negaive Spread)	$27,848,325	21.31%
0–5%	$6,138,000	4.70%
6–10%	$27,915,800	21.37%
11–15%	$6,366,060	4.87%
16–20%	$9,074,250	6.95%
21–30%	$12,744,750	9.75%
Over 30%	$40,567,375	31.05%
Totals	**$130,654,560**	**100.00%**

EXHIBIT 10.9 Portfolio Breakdown by Annualized Spread

The portfolio breakdown in Exhibit 10.9 indicates that there is substantial risk embedded in the portfolio. The arbitrageur has 21% of the portfolio invested in positions with negative spreads and more than 30% in deals with annualized estimated returns higher than 30%.

NOTES FROM THE FILE

Early in my career, when I was trying to engage in risk arbitrage with relatively low amounts of capital, I found myself making good decisions for the portfolio I was running for the firm. Yet my personal performance in my undercapitalized portfolio lagged the firm's portfolio significantly. By analyzing the types of transaction I was setting up in my personal portfolio, I realized I was concentrating on two types of transactions: (1) high relative expected returns and (2) contested takeovers.

Both of these, while potentially rewarding, also generally contained either higher amounts of dollar risk or lower probability of success. By altering the types of transactions held in my portfolio, it was much easier to mirror the performance of an arbitrage portfolio that had strict disciplines.

Calculations on portfolios, such as those shown in Exhibit 10.5, can be a valuable tool when an arbitrageur is assessing the overall risk in a portfolio.

OVERBIDS

Due to the nature of hostile and unsolicited takeovers, the initial price is unilaterally set by the acquirer, in contrast to friendly transactions where the merger terms are negotiated. Since the hostile transaction's proposed price is rarely at a level where the target company is sold, if a transaction actually closes, the target company's stock frequently trades at a premium to the proposed takeout price.

Even in some friendly transactions, it is not uncommon to see the target trade at a premium. This is especially the case when a company negotiates to be purchased by a private equity firm. In many of these cases, the event-driven community (for a variety of reasons) can believe that the target is being sold at too low a valuation and believe another bidder may surface, topping the original takeover price.

The tendency for targets to trade at premiums to the agreed-to price is especially high when the merger agreement includes a "go-shop" clause. While the length of the go-shop period varies, it provides the target's board along with its advisers an opportunity to search for a superior bid for the stated period of time. During the go-shop period, the breakup fee for the original acquirer is generally set at a reduced level. After the expiration of the go-shop period, the breakup fee generally increases.

In addition to hostile transactions, leveraged buyouts, and situations including go-shop provisions, there are friendly strategic mergers that may result in the target trading at a premium if traders and portfolio managers believe there is a potential for a higher bid.

The number and frequency of deals that trade at a premium to the announced transactions varies over time and depends on the individual facts and valuation beliefs at any given time. Additionally, there are periods where expectations for additional bids are unusually high. In these periods, for whatever reason, the market seems more open to the concept of paying a premium for optionality that another bidder for the target might surface.

In any risk management system, we believe it is extremely helpful to be able to monitor the overbid risk for each individual situation held in the portfolio as well as a total as it relates to the overall portfolio. In our portfolio management systems, we incorporate a specific calculation that shows the dollar commitment to each individual overbid and its respective percentage of the overall portfolio. Additionally, the system totals all the overbid metrics to give an overview of the portfolio's commitment to the overbids. A large total commitment (i.e., a high percentage) of the overall portfolio indicates that in order to be profitable, a substantial percentage of the overbid situations will have to be resolved at improved terms. Otherwise, even if the deals are complete, the securities will suffer mark-to-market losses as they trade down to levels that provide a real rate of return against the deal terms.

Deals Representing Overbids	Negative Spread in $ (Total Position)	Market Value	% of Overbids
HSNI/QVCA	−$73,502	$6,540,625	23.49%
LDR/FTV	−$60,000	$6,785,000	24.36%
NXPI/QCOM	−$256,700	$9,606,700	34.50%
RIC/AGI	−$28,746	$4,916,000	17.65%
Totals	**−$418,948**	**$27,848,325**	**100.00%**

EXHIBIT 10.10 Breakdown of Portfolio by Overbids

The portfolio manager must be extremely careful when committing a high percentage of the overall portfolio to overbids during periods of low overall deal spreads. In these periods, the markdowns in overbids, should the improved terms not be realized, will be difficult to offset by future deals that eventually close.

In the sample portfolio shown in Exhibit 10.9, we saw that 21% of the portfolio's market value is committed to overbid situations. Exhibit 10.10 shows the breakdown, including the four specific portfolio positions that were trading above the deal price. NXPI/QCOM represents the largest individual overbid risk and represents 34% of all the overbid positions in the portfolio. The amount shown in the overbid column (the Negative Spread) is the potential markdown to the announced deal terms that the arbitrageur would absorb if no positive development occurs (like a competing bid). If the markdown occurs prior to the closing (which usually happens when the arbitrage community loses faith in a competing or improved bid), the markdown is usually greater since the target stock may decline to a level that provides an adequate discount to the announced terms. It generally is a helpful exercise to monitor the overall overbid risk should a period be experienced where overbids are merely a result of overly optimistic expectations.

Whether examining overbid risks or deal-break risks, we also find it helpful to compare these individual risks to our estimates of expected returns. Having a large deal-break risk or overbid risk that does not show a large expected return does not represent a long-term successful strategy in the event-driven business. This is especially the case during periods of low deal spreads.

HEDGING

The arbitrageur must be very careful to set up the proper hedges in transactions that involve stock-for-stock exchanges. As previously noted in several chapters of this book, it is important for arbitrageurs to maintain the discipline of setting up fully hedged positions. Any arbitrageur who does not fully hedge a position is taking a viewpoint on the market. Most likely, his or her profitability will be determined by the direction in which the market for that security moves. On the other hand, if a full hedge is set up for an individual transaction, the arbitrageur's profit will be determined by his or her ability to accurately predict the outcome.

Stock-for-stock transactions that involve collars must be analyzed carefully, and the short side of the position must take into account the individual collar for each particular deal. Over time, as the acquiring company's share price changes, the arbitrageur may have to make adjustments so as to maintain a fully hedged position.

MELDING A POSITION SHEET WITH A RISK ARBITRAGE ANALYSIS

Exhibit 10.11 shows a typical position sheet for an arbitrageur's portfolio. A position sheet should be generated to show each individual position, and it should indicate the following five items:

1. Cost basis per share
2. Market price per share
3. Total market value in dollars
4. Percentage of the overall portfolio in terms of market value
5. Percentage of buying power (relating commitment to total capital in portfolio)

The arbitrageur can utilize this position sheet when decisions on the portfolio must be made. It may also help in determining which positions warrant additional purchases and which positions should be unwound.

A typical output sheet from a trading system that is maintained to monitor the database of outstanding deals was shown earlier (in Exhibit 9.6). This output sheet showed the estimated spreads as well as spread changes for each transaction. The system may also be set up to generate a view of the individual positions in the portfolio, the relative size of each position, as well as other important information that the arbitrageur may wish to monitor.

Exhibit 10.12 shows a printout that melds the position sheet and the deal database. The arbitrageur can view each individual position as it relates to the overall portfolio. The printout is an important tool in monitoring the potential returns and risks in the portfolio. This type of report can be used to generate data that show how much overall potential return is in the portfolio and what the overall risk may be. These returns and risks can then be related so as to give the arbitrageur a relative upside–downside analysis.

EXHIBIT 10.11 Position Sheet for a Risk Arbitrage Account
Source: Bloomberg Finance LP.

Target Position	Target Symbol	Acq. Co Symbol	Target Cost Per Share	Current Price/Share	Total Purchase Cost	Current Market Value	Unrealized Gain - Target	Percent of Positions	Percent of Total Capital
100,000	ALR	ABT	$47.87	$50.46	$4,787,000	$5,046,000	$259,000	3.86%	2.88%
250,000	ATW	ESV	$8.24	$8.14	$2,060,000	$2,034,750	−$25,250	1.56%	1.16%
20,000	BCR	BDX	$315.00	$318.30	$6,300,000	$6,366,060	$66,060	4.87%	3.64%
750,000	BRCD	AVGO	$12.18	$12.23	$9,135,000	$9,172,500	$37,500	7.02%	5.24%
100,000	CAB	NOTICKER	$62.00	$61.38	$6,200,000	$6,138,000	−$62,000	4.70%	3.51%
350,000	CPN	NOTICKER	$14.75	$14.72	$5,162,500	$5,152,000	−$10,500	3.94%	2.94%
175,000	HSNI	QVCA	$36.03	$37.38	$6,305,250	$6,540,625	$235,375	5.01%	3.74%
300,000	HUN	CLN	$27.65	$28.21	$8,295,000	$8,463,000	$168,000	6.48%	4.84%
40,000	KITE	GILD	$179.25	$179.22	$7,170,000	$7,168,800	−$1,200	5.49%	4.10%
100,000	LDR	FTV	$67.82	$67.85	$6,782,000	$6,785,000	$3,000	5.19%	3.88%
225,000	MGI	NOTICKER	$16.90	$15.56	$3,802,500	$3,499,875	−$302,625	2.68%	2.00%
75,000	MON	BAYN	$118.21	$119.55	$8,865,750	$8,966,250	$100,500	6.86%	5.12%
85,000	NXPI	QCOM	$109.60	$113.02	$9,316,000	$9,606,700	$290,700	7.35%	5.49%
100,000	NXTM	FRE	$28.00	$27.44	$2,800,000	$2,744,000	−$56,000	2.10%	1.57%
50,000	OA	NOC	$132.24	$132.04	$6,612,000	$6,602,000	−$10,000	5.05%	3.77%
400,000	RIC	AGI	$12.15	$12.29	$4,860,000	$4,916,000	$56,000	3.76%	2.81%
200,000	RICE	EQT	$27.24	$28.44	$5,448,000	$5,687,000	$239,000	4.35%	3.25%
50,000	STRP2	VZ	$168.00	$179.86	$8,400,000	$8,993,000	$593,000	6.88%	5.14%
225,000	TRCO	SBGI	$41.24	$40.33	$9,279,000	$9,074,250	−$204,750	6.95%	5.19%
75,000	TWX	T	$92.78	$102.65	$6,958,500	$7,698,750	$740,250	5.89%	4.40%
Totals						**$130,654,560**		**100.00%**	**74.66%**
Maximum Portfolio Size =			**$175,000,000**						

EXHIBIT 10.12 Combined Position Sheet and Deal Database for a Risk Arbitrage Account: Current Risk Analysis
Source: Bloomberg Finance LP.

Target Position	Target Symbol	Acq. Co Symbol	Target Cost per Share	Current Price/ Share	Current Market Value	Percent of Positions	Percent of Total Capital	Gross Spread per Share	Potential Profit	Potential Loss	Potential Loss as a % of Market Value	Potential Loss as a % of Buying Power
100,000	ALR	ABT	$47.87	$50.46	$5,046,000	3.86%	2.88%	$0.54	$54,000	–$1,546,000	–1.18%	–0.88%
250,000	ATW	ESV	$8.24	$8.14	$2,034,750	1.56%	1.16%	$0.20	$49,250	$881,250	0.67%	0.50%
20,000	BCR	BDX	$315.00	$318.30	$6,366,060	4.87%	3.64%	$2.66	$53,277	–$1,448,307	–1.11%	–0.83%
750,000	BRCD	AVGO	$12.18	$12.23	$9,172,500	7.02%	5.24%	$0.52	$390,000	–$2,610,000	–2.00%	–1.49%
100,000	CAB	NOTICKER	$62.00	$61.38	$6,138,000	4.70%	3.51%	$0.12	$12,000	–$1,888,000	–1.45%	–1.08%
350,000	CPN	NOTICKER	$14.75	$14.72	$5,152,000	3.94%	2.94%	$0.53	$185,500	–$1,652,000	–1.26%	–0.94%
175,000	HSNI	QVCA	$36.03	$37.38	$6,540,625	5.01%	3.74%	$0.01	$1,006	–$582,881	–0.45%	–0.33%
300,000	HUN	CLN	$27.65	$28.21	$8,463,000	6.48%	4.84%	$1.80	$540,469	–$1,872,081	–1.43%	–1.07%
40,000	KITE	GILD	$179.25	$179.22	$7,168,800	5.49%	4.10%	$0.78	$31,200	–$2,368,800	–1.81%	–1.35%
100,000	LDR	FTV	$67.82	$67.85	$6,785,000	5.19%	3.88%	–$0.60	–$60,000	–$1,085,000	–0.83%	–0.62%
225,000	MGI	NOTICKER	$16.90	$15.56	$3,499,875	2.68%	2.00%	$2.45	$550,125	–$1,474,875	–1.13%	–0.84%
75,000	MON	BAYN	$118.21	$119.55	$8,966,250	6.86%	5.12%	$8.45	$633,750	–$2,216,250	–1.70%	–1.27%
85,000	NXPI	QCOM	$109.60	$113.02	$9,606,700	7.35%	5.49%	–$3.02	–$256,700	–$2,551,700	–1.95%	–1.46%
100,000	NXTM	FRE	$28.00	$27.44	$2,744,000	2.10%	1.57%	$2.56	$256,000	–$444,000	–0.34%	–0.25%
50,000	OA	NOC	$132.24	$132.04	$6,602,000	5.05%	3.77%	$2.46	$123,000	–$1,102,000	–0.84%	–0.63%
400,000	RIC	AGI	$12.15	$12.29	$4,916,000	3.76%	2.81%	–$0.07	–$28,746	$252,291	0.19%	0.14%
200,000	RICE	EQT	$27.24	$28.44	$5,687,000	4.35%	3.25%	$0.60	$120,966	–$2,068,966	–1.58%	–1.18%
50,000	STRP2	VZ	$168.00	$179.86	$8,993,000	6.88%	5.14%	$4.14	$207,000	–$4,493,000	–3.44%	–2.57%
225,000	TRCO	SBGI	$41.24	$40.33	$9,074,250	6.95%	5.19%	$1.25	$280,800	–$1,284,300	–0.98%	–0.73%
75,000	TWX	T	$92.78	$102.65	$7,698,750	5.89%	4.40%	$4.85	$363,750	–$1,698,750	–1.30%	–0.97%
Totals					**$130,654,560**	**100.00%**	**74.66%**		**$3,506,648**	**–$31,253,369**	**–23.92%**	**–17.86%**
Maximum Portfolio Size =			**$175,000,000**									

This type of report must almost always be custom-generated by the arbitrageur. Whether the arbitrageur manages an arbitrage portfolio for a firm or maintains an account at a brokerage firm, the arbitrageur generally is only able to obtain a typical position report from offers. It is advisable for the arbitrageur to be able to massage this position report so as to include the factors shown in Exhibit 10.12. Programs can then be written for and applied to the position sheet so as to generate a report like the one shown in Exhibit 10.12.

From Exhibit 10.12, we can see that while the portfolio has a potential built-in profit of \$3.5 million, the maximum loss from deal breaks is \$31.3 million. The maximum potential loss amounts to 24% of the long market value. The importance of this report cannot be overestimated. It gives the arbitrageur an important tool for monitoring the overall risk arbitrage portfolio.

OTHER RISK CONTAINMENT MEASURES

The arbitrageur may wish to utilize other types of hedges to contain the risk in his or her overall portfolio. For example, the arbitrageur may find that the portfolio contains a degree of equity risk originating from reorganizations, recapitalizations, or spinoffs in which the arbitrageur is to receive, upon completion of the transaction, a security that is not currently traded in the marketplace. Being unable to hedge the risk of this security's value at some future date, the arbitrageur may decide to set up a hedge that would simulate the performance of the security (or securities) expected to be received.

In setting up the hedge, either stock index futures or options could be utilized. If it is possible to find a security that trades in similar fashion to the security expected to be received, the arbitrageur could substitute a short sale of this security for the use of options or futures.

To develop this type of hedge, the arbitrageur will have to analyze the market movements of the tool being used to create the artificial hedge. The arbitrageur may run a correlation analysis to determine whether the security under study will properly hedge the risk in this position. Such an analysis can be very helpful in setting up the hedge.

FUTURES

After the arbitrageur analyzes the portfolio and identifies where the elements of risk are, he or she may decide to utilize futures to hedge individual or overall risks. If the portfolio contains a degree of equity risk, the arbitrageur may look to the S&P 500 futures contracts for help in hedging this equity risk.

The most difficult aspect of this hedge is determining the proper amount of futures to be sold. The arbitrageur will use correlation analysis to aid in determining which—and how many—futures contracts should be used. Computer models and simulations will be enlisted to determine how much of the contracts should be sold as a hedge.

If the arbitrageur also finds interest rate risk in the portfolio, interest rate futures may offer a method of reducing that risk. Interest rate futures may come into play when the arbitrageur expects to receive securities upon completion of transactions whose value is directly related to interest rates. By performing a sensitivity and correlation analysis of the expected security, and comparing it to securities that are available to hedge these types of transactions, the arbitrageur tries to decide which instrument should be utilized for the hedge.

Some arbitrageurs may become quite creative in setting up these types of hedges. I once took a large position in a closed-end fund that was converting to open-end status. The transaction was very similar to a cash merger. After the shareholders approved the transaction and all regulatory approvals were received, the closed-end fund, which tended to trade at a discount to its net asset value, was to be converted to an open-end fund. When the fund became open-ended, the position could be liquidated by redeeming the shares at the open-end fund. The redemption process would allow the arbitrageur to receive proceeds and therefore to profit from the difference between the net asset value and the open-end value.

The fund that I was trading held Japanese securities, so the transaction had various risks associated with it. In a typical closed-end fund, the net asset value of the portfolio is related to the securities held in that portfolio. These securities were related to the equity market in Japan. By analyzing the relationship between the movement in the Japan Fund's net asset value and the movement in the Nikkei futures, I was able to establish a hedge position: I shorted a certain amount of Nikkei futures against my long position in the Japan Fund. This hedge offset a very high percentage of my equity risk in the Japan Fund holding.

The arbitrageur must be continually looking for and analyzing these types of creative hedges. However, the arbitrageur should be very careful to compare the cost of any given hedge versus the potential return in the individual position. It may be wise not to enter into any complex transactions that do not yield an adequate net return on the arbitrageur's capital. A cost is always associated with setting a hedge. The arbitrageur must realize that if the cost of setting up the hedge, when matched against the estimate of expected return, does not yield an adequate return, it is best to look for an entirely different opportunity.

OPTION HEDGING

The arbitrageur has at his or her disposal the ability to hedge individual or overall portfolio positions by utilizing:

- Options on various indexes such as the OEX contract, or
- Options on individual securities

If the portfolio has a degree of equity risk embedded in it because of holding positions such as spinoffs or recapitalizations, the arbitrageur may find that OEX options are an effective way to hedge this equity risk. The analysis of this hedge would be similar to the analysis described earlier.

The arbitrageur may also be able to utilize puts and calls on the securities held in his or her portfolio if they are traded in the marketplace. The use of puts and calls in conjunction with setting up an arbitrage transaction may allow the arbitrageur an altered risk–reward profile in any given transaction.

One of the most utilized option strategies used by arbitrageurs is the "buy-write" strategy. As gross spreads have compressed in recent years, this is one method in which arbitrageurs can increase the possible realized rate of return.

By using a buy-write—a technique of selling calls against a long stock position—the arbitrageur may establish a hedge that he or she can profit from if the underlying stock price rises. The remainder of this chapter details how, as an alternative to shorting a security involved in a transaction, an arbitrageur could alter a risk–reward profile by utilizing the buy-write or put purchase strategies.

A Buy-Write Example

Date:	September 17, 2017	
Deal:	QUALCOMM (QCOM) agreed to buy NXP Semiconductors (NXPI) on 9/30/16 for $120 cash per share through a tender offer. The merger required numerous regulatory approvals. In the meantime, with the extended period of time it was taking to close the deal, both the overall equity market and semiconductor stock rallied substantially. Arbitrageurs came to believe that for QCOM to get the required 80% of NXOI's shares tendered, the offer would have to be raised.	
	NXPI stock price:	$112.66
	NXPI (November 110 calls):	$ 4.50

The merger is expected to take 60 days. If the deal breaks up, NXPI's stock is expected to trade at $100 per share level.

As an alternative to buying 100 shares of NXPI shares, the arbitrageur could execute a buy-write: Buy 100 shares of NXPI stock and sell one November 110 call contract.

Strategy 1

- Buy: 100 shares of NXPI stock @ $112.66 per share.

$$\begin{aligned}\text{Gross spread} &= \$110 - \$112.66 \\ &= -\$2.66 \\ \text{Downside risk} &= \$112.66 - 100.00 \\ &= \$12.66 \text{ per share}\end{aligned}$$

Strategy 2

- Buy: 100 shares of NXPI stock @ $112.66 per share.
- Sell: One November 110 call on NXPI stock @ $4.50.

If, at the end of November, the shares of NXPI are trading in excess of $110.00, the call will be exercised and the arbitrageur will have the following position:

Exercise (Sales) price	= $110.00
Plus: Premium received	+4.50
Sales proceeds	= $114.50
Less: Cost	−112.66
Gross profit	= $ 1.84

$$\begin{aligned}ER_{UL} &= \frac{\$1.84}{(\$112.66 - \$4.50)^{*}} \times \frac{365}{63^{\dagger}} \\ &= 9.85\% \text{ (annualized)} \\ \text{Downside risk} &= (112.66 - \$100) - \$4.50 \\ &= \$8.16\end{aligned}$$

---

*The arbitrageur receives the $4.50 premium at the same time he or she purchases Company T shares, so the net outlay is only $108.16.

†We are assuming that, at the expiration of the call, it is exercised, and this occurs only 63 days after the call was sold.

These calculations assume that there is no price increase in the tender offer and if the deal breaks, NXPI will trade at $100.

Using the buy-write strategy, instead of setting up the deal at a negative spread ($110 tender price – $122.66 purchase price), the arbitrageur is able to set up a possible 9.8% annualized return if the tender offer is completed and cuts his or her downside risk by $4.50 (call premium realized).

Using buy-writes, while the strategy can enhance returns, the arbitrageur also gives up possible upside in the situation. If QCOM decided to raise the tender offer price to $120 per share in order to obtain enough shares of NXPI to control the company, the arbitrageur would have given up substantial upside.

If the tender offer price closed at the $120 level, under Strategy 1, the arbitrageur would have realized a profit per share of $7.34 ($120 – $112.66). With the buy-write, regardless of how high the offer might be raised, the most the arbitrageur would make is $1.84. So, the arbitrageur would have given up $5.50 in upside in return for less risk and an altered return profile.

The arbitrageur may also utilize puts to help limit the risk for any given position in the overall portfolio. Some portfolio transactions contain a high degree of absolute risk. By purchasing a put against the stock held in the position, the arbitrageur is able to limit the downside risk if the transaction fails to close. The next example utilizes puts to limit the risk in a proposed transaction.

A Put Example

Date: May 1, 2017

Deal: Company XYZ is buying Company ABC through a merger. Company ABC's shareholders are to receive $52 in cash for each share of Company ABC stock. Arbitrageurs assumed that if the deal was terminated, ABC would trade at the $43 level.

Company ABC October 50 put price: $1.15

Put Strategy

- Buy: 100 shares of Company ABC stock @ $49.95.
- Buy: One Company ABC October 50 put @ $1.15.

Company ABC had agreed to be bought for $52 in cash per share. If the merger closes as expected, the arbitrageur's gross return is as follows.

If the deal was completed, the arbitrageur's return would be:

$$\text{Deal return} = (\$52 - \$49.95 - \$1.15)$$
$$= \$0.90 \text{ per share}$$

Assuming the deal was completed in 35 days, the annualized return would be:

$$ER_{UL} = \frac{\$0.90}{(\$49.95 + \$1.15^{*})} \frac{365}{35^{\dagger}}$$
$$18.3\% \text{ (annualized)}$$

$$\text{Downside risk} = (51.10 - 50) - \$50.00 \text{ (put strike price)}$$
$$= \$1.10$$

If the deal was completed and the arbitrageur had not bought the put for downside protection, the arbitrageur's return would be:

$$\text{Deal return} = (\$52 - \$49.95)$$
$$= \$2.05 \text{ per share}$$

Assuming the deal was completed in 35 days, the annualized return would be:

$$ER_{UL} = \frac{\$2.05}{(\$49.95)} \frac{365}{35^{\ddagger}}$$
$$= 42.7\% \text{ (annualized)}$$

$$\text{Downside risk} = (\$49.95) - \$43.00$$
$$= \$6.95$$

Instead of risking $6.95 per short (not buying the put), the arbitrageur's maximum risk is reduced to $1.10. By giving up a portion of the return, the arbitrageur has been able to reduce the risk. As a trade-off, using the put

*The arbitrageur receives the $1.15 premium at the same time he or she purchases Company ABC shares, so the net outlay is only $51.10.

†We are assuming that, at the expiration of the call, it is exercised, and this occurs only 35 days after the call was sold.

‡We are assuming that, at the expiration of the call, it is exercised, and this occurs only 35 days after the call was sold.

strategy yielded a potential annualized return of 18% as opposed to 42% if the put was not purchased and the deal closed.

Arbitrageurs should utilize any tool available to help contain risk in the portfolio. They must also continually review and try to improve all the tools utilized to carry out this objective. Active containment of risk can be an important aspect of arbitrageurs' long-term and short-term performance records.

CHAPTER 11

The Exciting World of Risk Arbitrage

Over the course of the previous 10 chapters we have examined in depth the various elements of risk arbitrage, as well as methods for trading and monitoring the risk arbitrage portfolio.

The three elements of risk arbitrage—return, risk, and probability—have been demonstrated. The estimates are highly subjective, and they are based on the arbitrageur's ability to forecast many variables. In our opinion, the arbitrageur's analysis of these variables and of the transactions cannot be summarized via a computer model or a mathematical algorithm.

To pull together these three elements, let's examine a recent deal that incorporated many of the various elements.

The takeover battle for Straight Path Communications (STRP) included several offers for the company by both AT&T (T) and Verizon (VZ). Although VZ ultimately prevailed, securing a definitive merger agreement with STRP, there were several developments that the arbitrageur had to consider when deciding whether to own STRP.

The trigger to the takeover battle was not obvious to either STRP shareholders or arbitrageurs. On January 11, 2017, STRP entered into a settlement and consent decree with the Federal Communications Commission (FCC). The FCC had been at odds with STRP for many months. The FCC had delivered a letter of inquiry in September 2016 asking for detailed information on various spectrum licenses held by STRP.

The FCC settlement required STRP to pay a civil penalty of $15 million and to surrender 196 of its 39 GHz spectrum licenses. The FCC also required STRP to submit an application for the sale of its remaining 39 GHz and 28 GHz spectrum licenses by January 11, 2018. STRP also needed to commit to remit 20% of the sale proceeds to the U.S. Treasury as an additional civil penalty.

STRP had been created in 2013 through a spinoff from IDT, which had bought U.S. airwave licenses and other assets from Windstar Communications in 2001. Howard Jonas, the CEO and major shareholder of STRP, had a vision that the STRP licenses would ultimately become very valuable to cellular service providers. Not all of Wall Street agreed with Mr. Jonas, and many analysts believed the licenses had very limited value. Prior to the FCC settlement, SPRP stock price was trading at the \$31 to \$33 price level. After the settlement was disclosed, STRP jumped \$10 to the \$42 price level (see Exhibit 11.1).

While shareholders and analysts alike became more optimistic about STRP's future prospects after the settlement, what was not generally known was that STRP was faced with the challenging task of figuring out how to finance the FCC fines. From disclosures that were later made in SEC filings, the STRP board had already been exploring its merger options prior to the FCC settlement. (The eventual proxy filing is included in Appendix D, showing the additional steps taken by the board that were not previously publicly disclosed.) Once the settlement was signed, the sales process was accelerated as the STRP board must have concluded it was the best option to pay the settlement and maximize value for STRP shareholders, including Howard Jonas.

EXHIBIT 11.1 STRP Stock Prices
Source: Used with permission of Bloomberg Finance LP.

NOTES FROM THE FILE

Filings made at the SEC in mergers (such as proxy statements and 14-d-9s) frequently give a much fuller picture on the process undertaken by target companies. These details provide information that would give shareholders and arbitrageurs a much-improved ability to estimate both the probability of success as well as estimates of the ultimate takeover value of the target company's stock.

The price of STRP prior to and shortly after the FCC settlement are shown in Exhibit 11.1; the event timeline is shown in Exhibit 11.2. The spreads of the individual merger agreements are shown later in the chapter.

THE EVENT TIMELINE: THE STRP/T/VZ DEAL

EVENT 1

January 11, 2017

The STRP board approved the settlement and consent decree with the FCC. Under the consent decree, STRP agreed to:

1. Pay civil penalty of $15 million.
2. Surrender 196 of its licenses in the 39 GHz spectrum brand.
3. Submit an application for the sale of remaining 39 GHz and 28 GHz licenses by January 11, 2018, and remit 20% of the proceeds of the sale to the U.S. Treasury.

EVENT 2

April 10, 2017

STRP and T announced that they had signed a definitive merger agreement for T to acquire STRP for $95.63 per share in an all-stock merger. The stock consideration will be based on a variable number of T shares at the merger's closing to ensure a value of $95.63 per share.

EXHIBIT 11.2 STRP Event Sequence—From Public Documents and Press Releases

EVENT 3

April 13, 2017

STRP filed an 8-K that included the definitive merger agreement as well as some summary information. The 8-K included "Item 8.01. Other Events." In that section, it was disclosed that four days after the companies agreed to merge, STRP and its financial adviser received a letter from a third party that indicated it still had an interest in bidding for STRP. The section is supplied ahead and the entire 8-K can be found in Appendix E.

Item 8.01. Other Events.

On April 13, 2017, the Company and Evercore Group LLC, the Company's financial adviser, received a letter from a third party that had been bidding to acquire the Company before the Company entered into the Merger Agreement. The letter indicated that such third party continues to be interested in a transaction with the Company and that it currently is "evaluating a topping bid that it believes would be more favorable to your shareholders than your current transaction." There can be no assurances that any such offer will be received or, if received, that the board will determine that such offer constitutes a Superior Proposal within the meaning of the Merger Agreement. In any event, the Company's rights and obligations with respect to any such offer will be governed by the Merger Agreement.

EVENT 4

April 17, 2017

Bloomberg News carried a story indicating that Verizon (VZ) was considering making a counteroffer for STRP.

EVENT 5

April 25, 2017

STRP announced it had received an unsolicited offer from a multinational telecommunications company for $104.64 per share. The consideration offered was to be paid completely with the bidder's common stock. The board determined that the unsolicited off constituted a "Superior Offer" under the definitive merger agreement with T.

EXHIBIT 11.2 (*Continued*)

EVENT 6

May 3, 2017

STRP disclosed that its board had determined that it had received an offer from a "Multi-National Telecommunications Company" for $135.96 per STRP share. The consideration was to be paid in the acquiring company's stock. The STRP board determined that the offer constitutes a "Superior Offer" under the definitive agreement with T.

EVENT 7

May 8, 2017

STRP announced that its board had determined a revised offer from a multinational telecommunications company for $184 in value per share had been determined to be a "Superior Offer" under the definitive merger agreement with T. The merger consideration was again to be paid 100% with the bidder's common stock.

STRP notified T of its classification that the $184 offer is "superior" and confirmed that T had three business days to negotiate an amendment to its merger agreement with STRP.

EVENT 8

MAY 11, 2017

STRP issued a press release announcing it was signing a definitive merger agreement under which VZ will acquire STRP for $184 per share in an all-stock transaction.

The press release also indicated that T had decided not to make any additional bids for STRP or propose any amendments to the merger pact. It was disclosed that VZ was the bidder and STRP entered into a definitive merger agreement with VZ. The agreement with T was terminated. Howard Jonas, STRP's majority shareholder, entered into a voting agreement to support the merger.

EXHIBIT 11.2 (*Continued*)

THE STRP/T/VZ ADVENTURE

On April 10, 2017 (Event 1), STRP and T issued a press release disclosing that the companies had entered into a definitive agreement in which each STRP share would receive $95.63 in T stock. Prior to the agreement, STRP had been trading at the $36 level. The terms provided STRP shareholders with a 165% premium. That size premium and considering that STRP had traded at the $36 level before the deal announcement caused arbitrageurs to consider the downside risk to be quite substantial. As an offset to the nominal downside risk, generally mergers where T is the acquirer are considered to have high probabilities of closing.

After the announcement, STRP traded at $91.64 up over $55 on the day.

If the arbitrageur decided to put on a position, he or she would buy STRP shares. While the ultimate merger consideration would be T stock, there was no set ratio of T shares per STRP share. Instead, the STRP board had negotiated that T would take the risk of T's stock moving during the pendency of the deal. STRP shareholders would receive $95.63 in value in T shares no matter where T traded at when the deal closed.

Had an arbitrageur set up a position in STRP on the initial announcement date, April 10, 2017, he or she would have had the following position:

Date: April 10, 2017

Long position: Bought 100 shares of STRP @ $91.64

Gross spread = $95.63–$91.64

= $3.99

By purchasing 100 shares of STRP at $91.64, the arbitrageur created a spread of $3.99. If the deal were to take a year to close, the arbitrageur would have been expecting an annualized unleveraged gross return of 4.3%.

While a 4% return isn't exactly huge, over the past 10 years with interest rates trading at close to historically low levels, that return would be comparable to the universe of similar deals and would have been considered relatively attractive. However, the arbitrageur had no preparation for the additional bidding that would take place.

Only a week after the STRP/T merger agreement was disclosed, an article in the media appeared, indicating that VZ was considering making a competing bid for STRP. The disclosures in the STRP proxy statement would later indicate that both T and VZ, along with other entities, had made numerous bids before the $95.63 stock deal with T was disclosed.

As a result of the article, STRP shares jumped over $20 to $112.49 on April 17, 2017. At that point, STRP was trading at a $16.86 premium over the T takeover value. Arbitrageurs were speculating that VZ would make a competing bid, which could trigger a bidding war for control of STRP and its now-valuable spectrum licenses.

The arbitrageur at that point would have had a profit of $20.85 on a mark-to-market basis on his or her position in STRP—not bad for holding a stock for a week! Here are the details:

Date: April 10, 2017	**Cost Basis**	**4/14/17 Market Value per Share**	**Total Market Value**	**Profit or Loss**
Long position: Bought 100 shares of STRP	$9164.00	$112.49	$11,249.00	$2085.00
		Net mark-to-market gain		$2085.00

STRP continued to trade at between $109 and $114 until April 25, 2017. On that day, STRP announced it had received an unsolicited offer from a "multinational telecommunications company" for $104.64 per STRP share. The press release did not mention VZ by name, but most arbitrageurs assumed it was VZ. Although the VZ offer was below the STRP trading level over the past week, it triggered dreams of a bidding war between two corporate giants for control of STRP and its spectrum.

After the news of the competing bid, STRP's stock price jumped over $18 per share to the $128.96 level. Right away, the stock went to a $24.32 premium over VZ's offer as arbitrageurs received confirmation of a bidding war and expected T to return with a better offer.

Date: April 10, 2017	**Cost Basis**	**4/25/17 Market Value per Share**	**Total Market Value**	**Profit or Loss**
Long position: Bought 100 shares of STRP	$9164.00	$128.96	$12,896.00	$3732.00
		Net mark-to-market gain		$3732.00

At this point, after only 15 days of owning STRP, the arbitrageur would have a $3,732 profit on each 100 shares purchased, or a 41% return on initial investment.

The question then becomes, should the arbitrageur take his or her profit or let the position ride hoping for the bidding war to continue? It is not an easy decision, but as long as it seemed likely that it was still a competitive situation, it usually makes sense to hold the position.

The major factor that caused the competitive bids was scarcity. While many investors didn't recognize the value STRP's spectrum licenses represented to the major cellular companies, it turns out that the spectrum was going to be a critical element in developing the next generation of 5G cellular systems. As it turns out, there was no other company that possessed the same inventory of these types of licenses. Scarcity frequently causes bidders to compete at price levels that were never anticipated. We have seen the scarcity factor drive targets to extremely high levels, such as the bidding war for 3COM in 2010 that was won by Hewlett-Packard.

For a week, STRP continued to trade significantly higher than the VZ offer without any word regarding T's intentions.

NOTES FROM THE FILE

Over time, I have found that when a situation involves multiple bidders, arbitrageurs can usually make significant returns. The arbitrageur must guard against overpaying for the target company's stock, but these situations represent extremely attractive opportunities for realizing large potential gains.

When arbitrageurs come across a case of multiple bidders, they should usually go into an aggressive mode, as long as they believe that they are not paying too high a premium. Arbitrageurs would probably desire full positions in these types of transactions.

On May 3, the much-awaited news came, and the next shoe dropped, but it wasn't what was expected. Traders expected T to make an improved offer. Instead, STRP disclosed that while it didn't disclose anything regarding T's offer, it had received another offer from the "multinational telecommunications company" for $135.96.

STRP's stock jumped $29.38 per share on the news and right away traded at a $19.24 premium to the new $135.96 offer. There was no indication as to what T had been doing behind the scenes, but the assumption was it was continuing to bid and that forced the competing offer to be raised. Usually, it would be disclosed that the target had received an improved bid, but in this case, there was very little disclosure. Later, once the background of the merger was disclosed in the STRP proxy material, arbitrageurs would learn that there were numerous offers and improvements in T's offer. (The details are shown in the STRP proxy statement, which is included in Appendix D.)

NOTES FROM THE FILE

One of the safest deals to get involved with is a deal that has had its terms revised. This means it has been evaluated at least twice by the involved parties. Historically, these types of transactions have had a very high probability of closing.

Again, arbitrageurs were faced with a decision—stick with STRP or take a huge profit?

Date: April 10, 2017	Cost Basis	5/3/17 Market Value per Share	Total Market Value	Profit or Loss
Long position: Bought 100 shares of STRP	$9164.00	$155.20	$15,520.00	$6,356.00
		Net mark-to-market gain		$6,356

The unrealized profit represented a return of 69% for those who purchased STRP shares on the first day of the announcement. Given that STRP had not disclosed any further details on T and VZ had again made a higher offer, it seemed logical that T could still be involved in the process.

STRP traded up almost another $10 a day after the VZ $135.96 offer.

After the weekend, on May 8, 2017, STRP announced that the unnamed bidder had again raised its offer. The STRP board determined that the new $184 offer was a “Superior Offer” under the definitive agreement with T. Again, there was no mention of a new T offer.

The STRP stock then traded up to $214, peaking at a closing price of $230.68 on May 9, 2017. On the day before the next major event (Event 8), May 9, STRP closed at $223.79 as arbitrageurs continued to speculate that T would make a counter-offer to top the VZ $184 offer.

Unfortunately, disappointment followed after the weekend when STRP disclosed that the STRP board had entered into a definitive merger agreement with VZ for VZ to acquire STRP for $184 in stock per STRP share. The release also indicated that T had decided not to make any additional offers for STRP and had backed out of the sales process.

Arbitrageurs who continued to hold the STRP shares heading into the May 11 announcement had rolled the dice on a higher T offer. Unfortunately, the bidding ended with the VZ $184 offer. STRP’s stock declined $45.68 on

May 11, trading against the $184 final offer level. The STRP closing price on May 11 represented a $5.89 discount to the VZ offer. On an annualized basis, that trading level would represent a 3.3% annualized return, assuming a one-year holding period.

Unfortunately for arbitrageurs, a good portion of their unrealized gains disappeared.

Date: April 10, 2017	Cost Basis	5/11/17 Market Value per Share	Total Market Value	Profit or Loss
Long position: Bought 100 shares of STRP	$9164.00	$178.11	$17811.0	$8,647.00
		Net mark-to-market gain		$8,647

The profit of $8,647 on each 100 shares of STRP initiated after the original T announcement would represent a 105.3% unannualized return. On an annualized basis, assuming the 32-day holding period, the annualized return came to more than 1000%! While arbitrageurs left a lot of money (profits) on the table, it was one of the most profitable bidding wars in history.

Exhibit 11.3 shows the stock price moves.

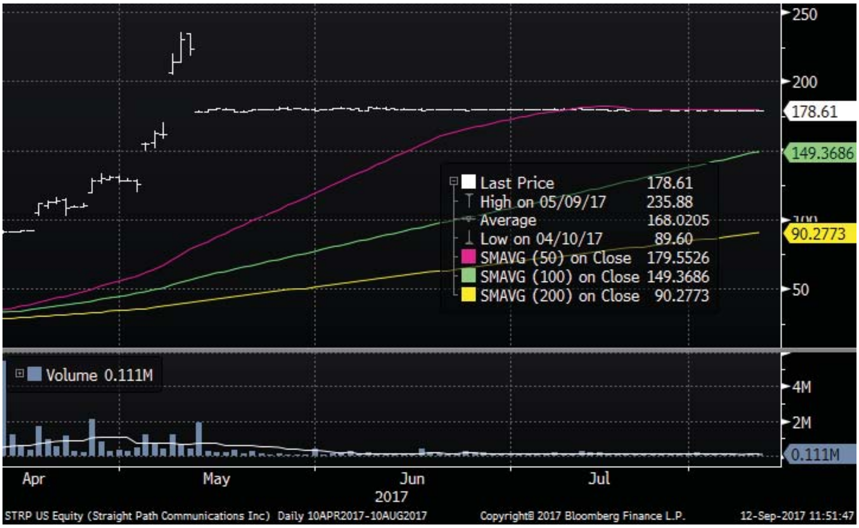


EXHIBIT 11.3 Prices of STRP after the Merger Announcements
Source: Used with permission of Bloomberg Finance LP.

NOTES FROM THE FILE

When arbitrageurs participate in bidding wars, it is common that some of the unrealized profits will be erased after one bidder drops out. Assuming that the target is trading over the last publicized offer price, the eventual withdrawal of the losing bidder results in the target's stock retracing some of the gains. That is a small price to pay for holding the target company's stock in a bidding war.

Note: As of the writing of this chapter, the STRP/VZ deal was still outstanding, awaiting the merger's closing. Maybe the developments are not yet complete.

THE AFTERMATH OF THE STRP/T/VZ TAKEOVER BATTLE

The STRP proxy was filed on June 4, 2017. As with all proxies that ask shareholders to vote on a proposed merger, the proxy includes a detailed background section that reveals many details of the merger negotiation process. In this case, the background section was very revealing. The main developments that were not previously disclosed are shown in Exhibit 11.4.

It would have been very helpful for arbitrageurs and STRP shareholders to have had this information throughout the bidding process. However, selective dissemination of negotiating details is common in takeover situations. Usually, the full results are not disclosed until the target files either the preliminary proxy material or a 14-d-9, if the merger is structured as a tender offer.

Perhaps the most incredible disclosure was that arbitrageurs were not the only party counting on T to make another offer. The STRP board took the chance that T would continue to bid and turned down a VZ offer of $196 or $12 over the ending offer.

The STRP board played poker on its belief that T wasn't done. The board lost, and STRP shareholders left $142 million on the table!

Perhaps the most interesting development in the proxy was that the STRP board made the same assumptions that arbitrageurs made when VZ made its two-tier offer that could have resulted in STRP holders receiving an additional $12 per share. Unfortunately, the STRP board gambled and lost.

Appendix D provides the entire background section from the STRP proxy, highlighting the most important elements that an arbitrageur would focus on when making his or her investment decisions.

* * *

UNDISCLOSED DEVELOPMENT 1

Fall 2016

STRP engaged in discussions with various parties who expressed interest in the acquisition of STRP's spectrum assets.

UNDISCLOSED DEVELOPMENT 2

November 11, 2016

AT&T offered to acquire STRP for $43.90 per share.

UNDISCLOSED DEVELOPMENT 3

March 1, 2017

STRP's investment banker received several offers for STRP, including:

1. Bidder F—$24.99
2. Bidder C—$34.28
3. AT&T—$35.44
4. VZ—$32.18

UNDISCLOSED DEVELOPMENT 4

March 30, 2017

STRP received revised indications of interest by a number of bidders:

1. T—$52.44
2. Bidder B—$48
3. VZ—$45.26

UNDISCLOSED DEVELOPMENT 5

April 6, 2017

T offered $57.00.

VZ offered $61.57.

UNDISCLOSED DEVELOPMENT 6

April 7, 2017

Bidder B made "best and final" offer of $57.50. T offered $71.81.

VZ bids $75.50.

EXHIBIT 11.4 Undisclosed Developments in the STRP Bidding War

UNDISCLOSED DEVELOPMENT 7

April 8, 2017

T makes revised proposal to pay $83.72.

UNDISCLOSED DEVELOPMENT 8

April 9, 2017

Howard Jonas indicated he favored the T deal despite VZ having offered more consideration. His rationale was that he believed the T offer would receive the required regulatory approvals on a more expedited basis than VZ's offer.

UNDISCLOSED DEVELOPMENT 9

April 20, 2017

VZ offered $104.64.

UNDISCLOSED DEVELOPMENT 10

April 23. 2017

Howard Jonas indicated he now would support the VZ offer.

UNDISCLOSED DEVELOPMENT 11

May 1, 2017

T made two new offers for STRP:

1. $108.64 or
2. $120.78, conditioned on the STRP board and Howard Jonas agreeing not to entertain any further VZ merger proposals.

VZ later that day offered $135.96 in value.

UNDISCLOSED DEVELOPMENT 12

May 5, 2017

T offered $138.89.

UNDISCLOSED DEVELOPMENT 13

May 7, 2017

Offered two proposals to acquire STRP:

1. $184 in value or
2. $196 if STRP allowed VZ the opportunity to discuss with T a transaction that would result in the sale of STRP, after which both VZ and T would own STRP assets.

EXHIBIT 11.4 (*Continued*)

Later that day, the STRP board decided that the VZ proposals would end the competitive bidding process and the board believed T would either match the $184 offer or offer a higher value.

UNDISCLOSED DEVELOPMENT 14

May 10, 2017

T dropped out and the STRP board bluff was called.

EXHIBIT 11.4 (*Continued*)

The twists and turns exhibited in the STRP/T/VZ deal illustrate how there can be many possible outcomes to a proposed transaction. The arbitrageur requires special skills to predict the likelihood of any outcome. Over the course of this book, I hope I have clarified that the practice of risk arbitrage, while being extremely exciting, is an art rather than a science.

APPENDIX A

Tender Offer Document

Offer to Purchase for Cash
All Outstanding Shares of Common Stock
(Including the Associated Preferred Stock Purchase Rights)
of
Airgas, Inc.
at
$60.00 Net per Share
by
Air Products Distribution, Inc.
A Wholly Owned Subsidiary of
Air Products and Chemicals, Inc.

THE OFFER AND WITHDRAWAL RIGHTS EXPIRE AT 12:00 MIDNIGHT, NEW YORK CITY TIME, ON FRIDAY, APRIL 9, 2010, UNLESS THE OFFER IS EXTENDED.

AIR PRODUCTS DISTRIBUTION, INC., A DELAWARE CORPORATION (THE "PURCHASER") WHICH IS A WHOLLY OWNED SUBSIDIARY OF AIR PRODUCTS AND CHEMICALS, INC., A DELAWARE CORPORATION ("AIR PRODUCTS"), IS OFFERING TO PURCHASE ALL OUTSTANDING SHARES OF COMMON STOCK, PAR VALUE $0.01 PER SHARE (TOGETHER WITH THE ASSOCIATED PREFERRED STOCK PURCHASE RIGHTS, THE "SHARES"), OF AIRGAS, INC. ("AIRGAS") THAT ARE NOT ALREADY OWNED BY AIR PRODUCTS AND ITS SUBSIDIARIES AT A PRICE OF $60.00 PER SHARE, NET TO THE SELLER IN CASH, WITHOUT INTEREST AND LESS ANY REQUIRED WITHHOLDING TAXES, UPON THE TERMS AND SUBJECT TO THE CONDITIONS SET FORTH IN THIS OFFER TO PURCHASE AND THE RELATED LETTER OF TRANSMITTAL

This document produced using http://courts.delaware.gov/opinions/download.aspx?ID=150850.

THAT ACCOMPANIES THIS OFFER TO PURCHASE (THE "LETTER OF TRANSMITTAL").

THE OFFER (AS DEFINED IN THE OFFER TO PURCHASE) IS CONDITIONED UPON, AMONG OTHER THINGS, (I) THERE BEING VALIDLY TENDERED AND NOT WITHDRAWN BEFORE THE EXPIRATION OF THE OFFER A NUMBER OF SHARES WHICH, TOGETHER WITH THE SHARES THEN OWNED BY AIR PRODUCTS AND ITS SUBSIDIARIES (INCLUDING THE PURCHASER), REPRESENTS AT LEAST A MAJORITY OF THE TOTAL NUMBER OF SHARES OUTSTANDING ON A FULLY DILUTED BASIS, (II) AIRGAS'S BOARD OF DIRECTORS REDEEMING THE ASSOCIATED PREFERRED STOCK PURCHASE RIGHTS OR THE PURCHASER BEING SATISFIED, IN ITS SOLE DISCRETION, THAT THE RIGHTS HAVE BEEN INVALIDATED OR ARE OTHERWISE INAPPLICABLE TO THE OFFER AND THE MERGER OF AIRGAS AND THE PURCHASER (OR ONE OF ITS OR AIR PRODUCTS' SUBSIDIARIES) AS DESCRIBED HEREIN (THE "PROPOSED MERGER"), (III) AIRGAS'S BOARD OF DIRECTORS HAVING APPROVED THE OFFER AND THE PROPOSED MERGER UNDER SECTION 203 OF THE DELAWARE GENERAL CORPORATION LAW (THE "DGCL") OR THE PURCHASER BEING SATISFIED, IN ITS SOLE DISCRETION, THAT SECTION 203 OF THE DGCL IS INAPPLICABLE TO THE OFFER AND THE PROPOSED MERGER, (IV) AIRGAS'S BOARD OF DIRECTORS HAVING APPROVED THE OFFER AND THE PROPOSED MERGER UNDER ARTICLE 6 OF AIRGAS'S AMENDED AND RESTATED CERTIFICATE OF INCORPORATION (THE "AIRGAS CERTIFICATE") OR THE PURCHASER BEING SATISFIED, IN ITS SOLE DISCRETION, THAT ARTICLE 6 OF THE AIRGAS CERTIFICATE IS INAPPLICABLE TO THE OFFER AND THE PROPOSED MERGER, (V) THE WAITING PERIOD UNDER THE HART-SCOTT-RODINO ANTITRUST IMPROVEMENTS ACT OF 1976, AS AMENDED, APPLICABLE TO THE PURCHASE OF SHARES UNDER THIS OFFER, HAVING EXPIRED OR BEEN TERMINATED AS DESCRIBED HEREIN AND (VI) AIRGAS NOT HAVING ENTERED INTO OR EFFECTUATED ANY AGREEMENT OR TRANSACTION WITH ANY PERSON OR ENTITY HAVING THE EFFECT OF IMPAIRING THE PURCHASER'S OR AIR PRODUCTS' ABILITY TO ACQUIRE AIRGAS OR OTHERWISE DIMINISHING THE EXPECTED VALUE TO AIR PRODUCTS OF THE ACQUISITION OF AIRGAS.

THE OFFER IS NOT CONDITIONED ON THE PURCHASER OBTAINING FINANCING.

AIR PRODUCTS AND THE PURCHASER ARE SEEKING TO NEGOTIATE A BUSINESS COMBINATION WITH AIRGAS. SUBJECT TO APPLICABLE LAW, AIR PRODUCTS AND THE PURCHASER RESERVE THE RIGHT TO AMEND THE OFFER (INCLUDING AMENDING

THE NUMBER OF SHARES TO BE PURCHASED, THE OFFER PRICE AND THE CONSIDERATION TO BE OFFERED IN THE PROPOSED MERGER), INCLUDING UPON ENTERING INTO A MERGER AGREEMENT WITH AIRGAS, OR TO NEGOTIATE A MERGER AGREEMENT WITH AIRGAS NOT INVOLVING A TENDER OFFER PURSUANT TO WHICH THE PURCHASER WOULD TERMINATE THE OFFER AND THE SHARES WOULD, UPON CONSUMMATION OF SUCH MERGER, BE CONVERTED INTO THE CONSIDERATION NEGOTIATED BY AIR PRODUCTS, THE PURCHASER AND AIRGAS.

NEITHER THIS OFFER TO PURCHASE NOR THE OFFER CONSTITUTES A SOLICITATION OF PROXIES IN CONNECTION WITH THE PROXY SOLICITATION (AS DEFINED IN THE OFFER TO PURCHASE) OR OTHERWISE. ANY SUCH SOLICITATION (INCLUDING THE PROXY SOLICITATION) WILL BE MADE ONLY PURSUANT TO SEPARATE PROXY SOLICITATION MATERIALS COMPLYING WITH THE REQUIREMENTS OF THE RULES AND REGULATIONS OF THE SECURITIES AND EXCHANGE COMMISSION.

This transaction has not been approved or disapproved by the Securities and Exchange Commission or any state securities commission, nor has the Securities and Exchange Commission or any state securities commission passed upon the fairness or merits of this transaction or upon the accuracy or adequacy of the information contained in this document. Any representation to the contrary is a criminal offense.

THIS OFFER TO PURCHASE AND THE RELATED LETTER OF TRANSMITTAL CONTAIN IMPORTANT INFORMATION, AND YOU SHOULD CAREFULLY READ BOTH IN THEIR ENTIRETY BEFORE MAKING A DECISION WITH RESPECT TO THE OFFER.

The Dealer Manager for the Offer is:

J.P.Morgan

February 11, 2010

POINT 1: The most important thing to note in tender offers is the proper tender offer deadlines. Page one of all tender offers discloses the time and date on which the offer expires. The arbitrageur must tender the shares by this date. Otherwise, he or she risks receiving a drastically reduced price on the investment. Also, on this cover page, there is usually a summary of the major contingencies and conditions

(*Continued*)

of the deal. This section tells the price being paid per share as well as how many shares will be purchased at that price. If the offer is for all the shares, one need not worry about proration. However, if it is only a partial cash tender offer, the numbers are the basis for calculating the minimum proration ratio.

Any stockholder of Airgas desiring to tender all or a portion of such stockholder's Shares in the Offer should either (i) complete and sign the accompanying Letter of Transmittal or a facsimile thereof in accordance with the instructions in the Letter of Transmittal, and mail or deliver the Letter of Transmittal together with the certificates representing tendered Shares and all other required documents to American Stock Transfer & Trust Company, the Depositary for the Offer, or tender such Shares pursuant to the procedure for book-entry transfer set forth in "The Offer—Section 3—Book-Entry Transfer" or (ii) request such stockholder's broker, dealer, commercial bank, trust company or other nominee to effect the transaction for such stockholder. Stockholders whose Shares are registered in the name of a broker, dealer, commercial bank, trust company or other nominee must contact such person if they desire to tender their Shares. The associated preferred stock purchase rights are currently evidenced by the certificates representing the Shares, and by tendering Shares, a stockholder will also tender the associated preferred stock purchase rights. If the Distribution Date (as defined in "The Offer—Section 8—Preferred Stock Purchase Rights") occurs, stockholders will be required to tender one associated preferred stock purchase right for each Share tendered in order to effect a valid tender of such Share.

Any stockholder who desires to tender Shares and whose certificates representing such Shares (and/or, if applicable, associated preferred stock purchase rights) are not immediately available, or who cannot comply with the procedures for book-entry transfer on a timely basis, may tender such Shares pursuant to the guaranteed delivery procedure set forth in "The Offer—Section 3—Guaranteed Delivery."

Questions and requests for assistance may be directed to the Information Agent or to the Dealer Manager at their respective addresses and telephone numbers set forth on the back cover of this Offer to Purchase. Additional copies of this Offer to Purchase, the Letter of Transmittal, the Notice of Guaranteed Delivery and other related materials may be obtained from the Information Agent or from brokers, dealers, commercial banks and trust companies.

Table of Contents

Summary Term Sheet Air Products Distribution, Inc., a wholly-owned subsidiary of Air Products, is offering to purchase all outstanding shares of common stock, par value $0.01 per share, of Airgas (together with the associated preferred stock purchase rights) for $60.00 per Share, net to the seller in cash, without interest and less any required withholding taxes, upon the terms and subject to the conditions set forth in this Offer to Purchase and the related Letter of Transmittal. The following are some of the questions you, as an Airgas stockholder, may have and answers to those questions. You should carefully read this Offer to Purchase and the accompanying Letter of Transmittal in their entirety because the information in this summary term sheet is not complete and additional important information is contained in the remainder of this Offer to Purchase and the Letter of Transmittal.

Who is offering to buy my securities? Our name is Air Products Distribution, Inc. We are a Delaware corporation formed for the purpose of making this tender offer for all of the common stock of Airgas. We are a wholly owned subsidiary of Air Products, a Delaware corporation. See "The Offer—Section 9."

What securities are you offering to purchase? We are offering to purchase all of the outstanding common stock, par value \$0.01 per share, and the associated preferred stock purchase rights, of Airgas. We refer to one share of Airgas common stock, together with the associated preferred stock purchase right, as a "share" or "Share." See "Introduction."

How much are you offering to pay for my securities and what is the form of payment? We are offering to pay \$60.00 per Share net to you, in cash, without interest and less any required withholding taxes. If you are the record owner of your Shares and you directly tender your Shares to us in the Offer, you will not be required to pay brokerage fees or similar expenses. If you own your Shares through a broker, dealer, commercial bank, trust company or other nominee, and your broker, dealer, commercial bank, trust company or other nominee tenders your Shares on your behalf, it may charge you a fee for doing so. You should consult your broker, dealer, commercial bank, trust company or other nominee to determine whether any charges will apply. See "Introduction."

Why are you making the Offer? We are making the Offer because we want to acquire control of, and ultimately all of the common stock of, Airgas. See "The Offer—Section 12."

Do you have the financial resources to pay for the Shares? We will need approximately \$7 billion to purchase all outstanding Shares pursuant to the Offer, to refinance certain indebtedness in connection with the transaction and to pay related fees and expenses. As of December 31, 2009, Air Products had cash and cash items in the amount of approximately \$323 million. In addition, Air Products has entered into a commitment letter with JPMorgan Chase Bank, N.A. pursuant to which JPMorgan Chase Bank, N.A. has committed to provide a term loan credit facility to Air Products in the aggregate amount of \$6.724 billion. Air Products expects to contribute or otherwise advance funds to enable us to consummate the Offer. Air Products expects, based upon the combination of internally available cash and borrowings under the term loan credit facility, to have sufficient cash on hand at the expiration of the Offer to pay the offer price for all Shares in the Offer. The Offer is not conditioned upon any financing arrangements. See "The Offer—Section 10."

> *POINT 2: APD disclosed it needs about $7 billion to complete the tender. Between cash on hand and the term loan facility, APD has the needed funds. Usually the arbitrageur would like to see there is a cushion of cash available over the total cost of the offer to indicate that the bidder has room to raise the offer. In this case, the arbitrageur would assume APD could expand the term loan facility or arrange additional funds.*

Is your financial condition relevant to my decision to tender in the Offer? Because the form of payment consists solely of cash and is not conditioned upon any financing arrangements, we do not think our financial condition is material to your decision whether to tender in the Offer.

What does the Board of Directors of Airgas think of the Offer? On February 9, 2010, Airgas issued a press release in which it stated that its board of directors had unanimously determined that the proposal made by Air Products on February 4, 2010 to acquire Airgas for a purchase price in cash of $60.00 per Share undervalues Airgas and its future prospects and is not in the best interests of Airgas' stockholders.

How long do I have to decide whether to tender in the Offer? You have until the expiration date of the Offer to tender. The Offer currently is scheduled to expire at 12:00 midnight, New York City time, on Friday, April 9, 2010, which is the end of the day on April 9, 2010. We may, in our sole discretion, extend the Offer from time to time for any reason. If the Offer is extended, we will issue a press release announcing the extension at or before 9:00 A.M., New York City time, on the next business day after the date the Offer was scheduled to expire. See "The Offer—Section 1."

We may elect to provide a "subsequent offering period" for the Offer. A subsequent offering period, if one is included, will be an additional period of time beginning after we have purchased Shares tendered during the Offer, during which stockholders may tender, but not withdraw, their Shares and receive the offer consideration. We do not currently intend to include a subsequent offering period, although we reserve the right to do so. See "The Offer—Section 1."

What are the most significant conditions to the Offer? The Offer is conditioned upon, among other things, (i) there being validly tendered and not withdrawn before the expiration of the Offer a number of Shares, which, together with the Shares then owned by Air Products and its subsidiaries (including us), represents at least a majority of the total number of Shares outstanding on a fully diluted basis, (ii) Airgas's Board of Directors redeeming the associated preferred stock purchase rights or our being satisfied, in our sole discretion, that the rights have been invalidated or are otherwise inapplicable to the Offer and the merger of Airgas and us (or one of our subsidiaries) as described herein, (iii) Airgas's Board of Directors having approved the Offer and the Proposed Merger under Section 203 of the Delaware General Corporation Law or our being satisfied, in our sole discretion, that Section 203 of the DGCL is inapplicable to the Offer and the Proposed Merger, (iv) Airgas's Board of Directors having approved the Offer and the Proposed Merger under Article 6 of Airgas's Amended and Restated Certificate of Incorporation (the "Airgas Certificate") or our being satisfied, in our sole discretion, that Article 6 of the Airgas Certificate is inapplicable to the Offer and the Proposed Merger, (v) the waiting period under the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended, applicable to the purchase of Shares under this Offer having expired or been terminated as described herein and (vi) Airgas not having entered into or effectuated any agreement or transaction with any person or entity having the effect of impairing the Purchaser's or Air Products' ability to acquire Airgas or otherwise diminishing the expected value to Air Products of the acquisition of Airgas. See "The Offer—Section 14."

Do you intend to undertake a proxy solicitation to replace some or all of Airgas's directors with your nominees for directors? Yes. We currently intend to nominate, and solicit proxies for the election of, a slate of nominees for election at Airgas's 2010 annual meeting (the "Proxy Solicitation"). We reserve the right, however, at any time to determine not to commence the Proxy Solicitation (or to terminate the Proxy Solicitation or launch a different proxy solicitation) if we determine it to be in our best interests to do so or if we determine that the Proxy Solicitation is unnecessary, including, if we so determine, if Airgas's board of directors has taken all actions within its power to cause the conditions contained in this Offer to Purchase to be satisfied. Neither this Offer to Purchase nor the Offer constitutes a solicitation of proxies in connection with the Proxy Solicitation or otherwise. Any such solicitation (including the Proxy Solicitation) will be made only pursuant to separate proxy solicitation materials complying with the requirements of the rules and regulations of the Securities and Exchange Commission (the "SEC").

> *POINT 3: APD's plan to conduct a proxy fight was a key element it hoped would force ARG to negotiate a friendly merger.*

How will I be notified if the Offer is extended? If we decide to extend the Offer, we will inform American Stock Transfer & Trust Company, the depositary for the Offer, of that fact and will make a public announcement of the extension, no later than 9:00 A.M., New York City time, on the next business day after the date the Offer was scheduled to expire. See "The Offer—Section 1."

How do I tender my Shares? To tender Shares, you must deliver the certificates representing your Shares, together with a completed Letter of Transmittal and any other required documents, to American Stock Transfer & Trust Company, the depositary for the Offer, or tender such Shares pursuant to the procedure for book-entry transfer set forth in "The Offer—Section 3—Book-Entry Transfer," not later than the time the Offer expires. If your Shares are held in street name by your broker, dealer, bank, trust company or other nominee, such nominee can tender your Shares through The Depository Trust Company. If you cannot deliver everything required to make a valid tender to the depositary before the expiration of the Offer, you may have a limited amount of additional time by having a financial institution (including most banks, savings and loan associations and brokerage houses) that is a member of a recognized Medallion Program approved by The Securities Transfer Association Inc., including the Securities Transfer Agents Medallion Program (STAMP), the Stock Exchange Medallion Program (SEMP) and the New York Stock Exchange, Inc. Medallion Signature Program (MSP), guarantee, pursuant to a Notice of Guaranteed Delivery, that the missing items will be received by the depositary within three New York Stock Exchange trading days. However, the depositary must receive the missing items within that three-trading-day period. See "The Offer—Section 3."

If the Distribution Date occurs, you also must tender one associated preferred stock purchase right for each share of common stock tendered in order to validly tender such shares in the Offer. See "The Offer—Section 8."

Until what time can I withdraw tendered Shares? You can withdraw tendered Shares at any time until the Offer has expired, and, if we have not agreed to accept your Shares for payment by April 12, 2010, you can withdraw them at any time after such time until we accept Shares for payment. You may not, however, withdraw Shares tendered during a subsequent offering period, if one is included. See "The Offer—Section 4."

How do I withdraw tendered Shares? To withdraw Shares, you must deliver a written notice of withdrawal, or a facsimile of one, with the required information to American Stock Transfer & Trust Company while you have the right to withdraw the Shares. See "The Offer—Section 4."

When and how will I be paid for my tendered Shares? Subject to the terms and conditions of the Offer, we will pay for all validly tendered and not withdrawn Shares promptly after the later of the date of expiration of the Offer and the satisfaction or waiver of the conditions to the Offer set forth in "The Offer—Section 14."

We will pay for your validly tendered and not withdrawn Shares by depositing the purchase price with American Stock Transfer & Trust Company, which will act as your agent for the purpose of receiving payments from us and transmitting such payments to you. In all cases, payment for tendered Shares will be made only after timely receipt by American Stock Transfer & Trust Company of certificates for such Shares (or of a confirmation of a book-entry transfer of such Shares as described in "The Offer—Section 3—Book-Entry Transfer"), a properly completed and duly executed Letter of Transmittal (or facsimile thereof) and any other required documents for such Shares. See "The Offer—Section 2."

Will the Offer be followed by a merger if all Shares are not tendered in the Offer? If, pursuant to the Offer, we accept for payment and pay for at least that number of Shares that, when added to Shares then owned by Air Products or any of its subsidiaries, shall constitute a majority of the outstanding Shares on a fully diluted basis, we currently intend, as soon as practicable after consummation of the Offer, to seek to have Airgas consummate a merger or other similar business combination with us or another subsidiary of Air Products, pursuant to which each then outstanding Share not owned by Air Products or us (or our respective subsidiaries) would be converted into the right to receive an amount in cash equal to the highest price per Share paid in the Offer. See "Introduction."

If a majority of the Shares are tendered and accepted for payment, will Airgas continue as a public company? If the merger takes place, Airgas will no longer be publicly owned. Even if the merger does not take place, if we purchase all the tendered Shares, there may be so few remaining stockholders and publicly held Shares that the Shares will no longer be eligible to be traded on a securities exchange, there may not be a public trading market for the Shares, and Airgas may cease making filings with the SEC or otherwise cease being required to comply with the SEC rules relating to publicly held companies. See "The Offer—Section 7."

If I decide not to tender, how will the Offer affect my Shares? If the Offer is successful, we currently intend, as soon as practicable after the consummation of the Offer, to seek to have Airgas consummate a merger or other similar business combination with us or another subsidiary of Air Products in which each outstanding Share will be exchanged for an amount in cash per Share equal to the price per Share paid in the Offer. If the proposed second-step merger takes place, stockholders who do not tender in the Offer (other than those properly exercising their appraisal rights) will receive the same amount of cash per Share that they would have received had they tendered their Shares in the Offer. Therefore, if such merger takes place, the only difference between tendering and not tendering Shares in the Offer is that tendering stockholders will be paid earlier. If, however, the merger does not take place and the Offer is consummated, the number of stockholders and of Shares that are still in the hands of the public may be so small that there will no longer be an active or liquid public trading market (or, possibly, any public trading market) for Shares held by stockholders other than Air Products and its subsidiaries, which may affect prices at which Shares trade. Also, as described above, Airgas may cease making filings with the SEC or being required to comply with the SEC rules relating to publicly held companies. See "The Offer—Section 7."

Are appraisal rights available in the Offer or proposed merger? Appraisal rights are not available in the Offer. If the proposed merger is consummated, holders of Shares at the effective time of the merger who do not vote in favor of, or consent to, the proposed merger and who comply with Section 262 of the DGCL will have the right to demand appraisal of their Shares. Under Section 262, stockholders who demand appraisal and comply with the applicable statutory procedures will be entitled to receive a judicial determination of the fair value of their Shares, exclusive of any element of value arising from the accomplishment or expectation of the proposed merger, and to receive payment of that fair value in cash, together with a fair rate of interest, if any. Any judicial determination of the fair value of Shares could be based upon factors other than, or in addition to, the price per share to be paid in the proposed merger or the market value of the Shares. The value so determined could be more or less than the price per share to be paid in the proposed merger. See "The Offer—Section 15—Appraisal Rights."

What is the market value of my Shares as of a recent date? On February 4, 2010, the last full trading day before the first public announcement of our offer to acquire Airgas for $60.00 per Share in cash, the last reported sales price of Airgas common stock reported on the New York Stock Exchange was $43.53 per share. Please obtain a recent quotation for your Shares prior to deciding whether or not to tender.

What are the U.S. federal income tax consequences of participating in the Offer? The receipt of cash for Shares pursuant to the Offer will be a taxable transaction for U.S. federal income tax purposes. In general, if you hold your Shares as capital assets for U.S. federal income tax purposes and are a U.S.

Holder (as defined in "The Offer—Section 5"), you will recognize a capital gain or loss in an amount equal to the difference, if any, between the amount of cash received and your adjusted basis in the Shares. Gain or loss will be determined separately for each block of Shares (that is, Shares acquired at the same price in a single transaction) tendered in the Offer. If you are a non-corporate U.S. Holder who has held the Shares for more than one year, any such capital gain will generally be subject to U.S. federal income tax at a preferential rate (currently 15%). See "The Offer—Section 5."

You are urged to consult your own tax advisor to determine the tax consequences to you of participating in the Offer in light of your particular circumstances (including the application and effect of any state, local or foreign income and other tax laws).

Who can I talk to if I have questions about the Offer? You can call MacKenzie Partners, Inc., the information agent for the Offer, at 212-929-5500 (collect) or 800-322-2885 (toll-free). See the back cover of this Offer to Purchase.

> *POINT 4: The proxy soliciting firm can be a good source of information on the tender and the timing of events.*

To the Stockholders of Airgas, Inc.:

Introduction We, Air Products Distribution, Inc. (the "Purchaser"), a Delaware corporation and a wholly-owned subsidiary of Air Products and Chemicals, Inc., a Delaware corporation ("Air Products"), are offering to purchase all outstanding shares of common stock (the "Common Stock"), par value $0.01 per share, of Airgas, Inc., a Delaware corporation ("Airgas"), and the associated preferred stock purchase rights (the "Rights" and, together with the Common Stock, the "Shares") issued pursuant to the Rights Agreement, dated as of May 8, 2007, between Airgas and The Bank of New York, as Rights Agent, (the "Rights Agreement"), for $60.00 per Share, net to the seller in cash, without interest and less any withholding taxes, upon the terms and subject to the conditions set forth in this Offer to Purchase and the related Letter of Transmittal (which, together with any amendments or supplements thereto, collectively constitute the "Offer"). Stockholders who have Shares registered in their own names and tender directly to American Stock Transfer & Trust Company, the depositary for the Offer (the "Depositary"), will not have to pay brokerage fees, commissions or similar expenses. Stockholders with Shares held in street name by a broker, dealer, bank, trust company or other nominee should consult with their nominee to determine whether such nominee will charge a fee for tendering Shares on their behalf. Except as set forth in Instruction 6 of the Letter of Transmittal, stockholders will not be obligated to pay transfer taxes on the sale of Shares pursuant to the Offer. We will pay all charges and expenses of J.P. Morgan Securities Inc. (the "Dealer Manager"), the Depositary and MacKenzie Partners, Inc. (the "Information Agent") incurred in connection their services in such capacities in connection with the Offer. See "The Offer—Section 17."

The Offer is conditioned upon, among other things, (i) there being validly tendered and not withdrawn before the expiration of the Offer a number of Shares which, together with the shares then owned by Air Products and its subsidiaries (including us), represents at least a majority of the total number of shares outstanding on a fully diluted basis (the "Minimum Tender Condition"), (ii) Airgas's Board of Directors (the "Airgas Board") redeeming the Rights or our being satisfied, in our sole discretion, that the Rights have been invalidated or are otherwise inapplicable to the Offer and the merger of Airgas and us (or one of Air Products' subsidiaries) as described herein (the "Proposed Merger") (the "Rights Condition"), (iii) the Airgas Board having approved the Offer and the Proposed Merger under Section 203 ("Section 203") of the Delaware General Corporation Law (the "DGCL") or our being satisfied, in our sole discretion, that Section 203 is inapplicable to the Offer and the Proposed Merger (the "Section 203 Condition"), (iv) the Airgas Board having approved the Offer and the Proposed Merger under Article 6 of Airgas's Amended and Restated Certificate of Incorporation (the "Airgas Certificate") or our being satisfied, in our sole discretion, that Article 6 of the Airgas Certificate is inapplicable to the Offer and the Proposed Merger (the "Certificate Condition"), (v) the waiting period under the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended (the "HSR Act"), applicable to the purchase of shares under this Offer having expired or been terminated as described herein (the "HSR Condition") and (vi) Airgas not having entered into or effectuated any agreement or transaction with any person or entity having the effect of impairing the Purchaser's or Air Products' ability to acquire Airgas or otherwise diminishing the expected value to Air Products of the acquisition of Airgas (the "Impairment Condition").

The Offer is not conditioned on the Purchaser obtaining financing.

As of the date of this Offer to Purchase, Air Products beneficially owns 1,508,255 Shares, representing approximately 1.8% of the outstanding Shares. According to Airgas's Quarterly Report on Form 10-Q for the quarterly period ended December 31, 2009, there were (i) 82,729,623 Shares issued and outstanding as of February 3, 2010 and (ii) outstanding options to purchase approximately 7,571,000 Shares as of December 31, 2009. For purposes of the Offer, "fully diluted basis" assumes that all outstanding stock options are presently exercisable.

> *POINT 5: This section disclosed that APD already owns 1.8% of ARG's shares. Ownership of ARG stock would be interpreted as a positive for both the offer and the upcoming proxy fight. However, a larger holding would be more helpful.*

The purpose of the Offer is to acquire control of, and the entire equity interest in, Airgas. We currently intend, as soon as practicable after consummation of the Offer, to seek to have Airgas consummate the Proposed Merger, pursuant to which each then outstanding Share not owned by Air Products or the Purchaser (or their subsidiaries) would be converted into the right to receive an amount in cash equal to the highest price per Share paid in the Offer. Under the DGCL and the Airgas Certificate, if the Certificate Condition is satisfied and we acquire, pursuant to the Offer or otherwise, at least 90% of the outstanding Shares, we believe we would be able to consummate the Proposed Merger without a vote of the Airgas Board or other stockholders. If we do not acquire at least 90% of the outstanding Shares, under the DGCL we will have to seek approval of the Proposed Merger by Airgas's stockholders. Approval of a merger pursuant to the DGCL requires the affirmative vote of holders of a majority of the outstanding Shares. If the Certificate Condition is not satisfied but we elect to consummate the Offer, Article 6 also would require us to seek approval of the Proposed Merger unless certain exceptions apply. Article 6 of the Airgas Certificate provides that approval of a merger with an "Interested Stockholder" (generally, a stockholder who is the direct or indirect beneficial owner of 20% or more of the voting power of Airgas's outstanding voting stock or an affiliate or associate thereof) requires the affirmative vote of holders of 67% of the voting power of the outstanding Shares unless such merger is approved by a majority of Airgas's disinterested directors or certain fair price conditions are met. In addition, if the Section 203 Condition is not satisfied but we elect to consummate the Offer, Section 203 could significantly delay our ability to consummate the Proposed Merger. See "The Offer—Section 12."

We currently intend to nominate, and solicit proxies for the election of, a slate of nominees (the "Nominees") for election at Airgas's 2010 annual meeting (the "Proxy Solicitation"). We reserve the right, however, at any time to determine not to commence the Proxy Solicitation (or to terminate the Proxy Solicitation or launch a different proxy solicitation) if we determine it to be in our best interests to do so or if we determine that the Proxy Solicitation is unnecessary, including, if we so determine, if the Airgas Board has taken all actions within its power to cause the conditions contained in this Offer to Purchase to be satisfied.

Whether or not we propose a merger or other similar business combination with Airgas and whether or not our Nominees are elected at Airgas's annual meeting, we currently intend, as soon as practicable after consummation of the Offer, to seek maximum representation on the Airgas Board. We intend, promptly after the consummation of the Offer, to request that some or all of the current members of the Airgas Board resign and that our designees be elected to fill the vacancies so created. Should such request be refused, we intend to take such action as may be necessary and lawful to secure control of the Airgas Board. We reserve the right to seek the removal without cause of any or all of Airgas's directors and to seek to call a special meeting of Airgas's stockholders in order to act on proposals to be determined.

We expect that our Nominees and designees, subject to their fiduciary duties under applicable law, would cause the Airgas Board to:

- amend the Rights Agreement or redeem the Rights, or otherwise act to satisfy the Rights Condition;
- approve the Offer and the Proposed Merger, or otherwise act to satisfy the Section 203 Condition and the Certificate Condition; and
- take any other actions necessary to cause to permit the Proposed Merger to be consummated.

Neither this Offer to Purchase nor the Offer constitutes a solicitation of proxies in connection with the Proxy Solicitation or otherwise. Any such solicitation will be made only pursuant to separate proxy solicitation materials complying with the requirements of the rules and regulations of the Securities and Exchange Commission (the "SEC").

On February 4, 2010, Air Products commenced litigation against Airgas and the members of the Airgas Board in the Court of Chancery of the State of Delaware seeking, among other things, an order: (i) declaring that Airgas's directors breached their fiduciary obligations to Airgas's stockholders under Delaware law by refusing to negotiate with Air Products and to inform themselves of the potential parameters of Air Products' prior offers to acquire Airgas, and by failing to form a special committee of independent directors, with independent advisors, to consider and negotiate Air Products' prior offer to acquire Airgas; (ii) compelling Airgas's directors to form a special committee of Airgas's independent directors, with its own independent financial and legal advisors, to reasonably consider and negotiate the proposed transaction, in good faith; (iii) enjoining Airgas's directors from engaging in any action or inaction that has the effect of improperly impeding, thwarting, frustrating or interfering with the proposed transaction with Air Products in a manner inconsistent with their fiduciary duties; and (iv) enjoining Airgas, its employees, agents and all persons acting on its behalf or in concert with it from taking any action that has the effect of impeding Air Products' efforts to acquire control of Airgas, in violation of their respective fiduciary duties to Airgas's stockholders.

Air Products and the Purchaser are seeking to negotiate a business combination with Airgas. Subject to applicable law, Air Products and the Purchaser reserve the right to amend the Offer (including amending the number of Shares to be purchased, the offer price and the consideration to be offered in the Proposed Merger), including upon entering into a merger agreement with Airgas, or to negotiate a merger agreement with Airgas not involving a tender offer pursuant to which the Purchaser would terminate the Offer and the Shares would, upon consummation of such merger, be converted into the consideration negotiated by Air Products, the Purchaser and Airgas.

In the event the Offer is terminated or not consummated, or after the expiration of the Offer and pending the consummation of the Proposed Merger, we may purchase additional Shares not tendered in the Offer. Such purchases may be made in the open market or through privately negotiated transactions, tender offers or otherwise. Any such purchases may be on the same terms as, or on terms more or less favorable to stockholders than, the terms of the Offer. Any possible future purchases by us will depend on many factors, including the results of the Offer, our business and financial position and general economic and market conditions.

This Offer to Purchase and the related Letter of Transmittal contain important information, and you should carefully read both in their entirety before you make a decision with respect to the Offer.

The Offer

1. Terms of the Offer.

Upon the terms and subject to the conditions of the Offer, we will accept for payment and pay for all Shares validly tendered prior to the Expiration Date and not previously withdrawn in accordance with "The Offer—Section 4." "Expiration Date" means 12:00 midnight, New York City time, on Friday, April 9, 2010 (which is the end of the day on April 9, 2010), unless extended, in which event "Expiration Date" means the latest time and date at which the Offer, as so extended, shall expire.

The Offer is subject to the conditions set forth in "The Offer—Section 14," which include, among other things, satisfaction of the Minimum Tender Condition, the Rights Condition, the Section 203 Condition, the Certificate

Condition, the HSR Condition and the Impairment Condition. If any such condition is not satisfied, we may (i) terminate the Offer and return all tendered Shares to tendering stockholders, (ii) extend the Offer and, subject to withdrawal rights as set forth in "The Offer—Section 4," retain all such Shares until the expiration of the Offer as so extended, (iii) waive such condition and, subject to any requirement to extend the period of time during which the Offer is open, purchase all Shares validly tendered prior to the Expiration Date and not withdrawn or (iv) delay acceptance for payment or payment for Shares, subject to applicable law, until satisfaction or waiver of the conditions to the Offer.

Subject to any applicable rules and regulations of the SEC, we expressly reserve the right, but not the obligation, in our sole discretion, at any time and from time to time, to extend the period during which the Offer is open for any reason by giving oral or written notice of the extension to the Depositary and by making a public announcement of the extension. During any extension, all Shares previously tendered and not withdrawn will remain subject to the Offer and subject to the right of a tendering stockholder to withdraw Shares.

As of the date of this Offer to Purchase, the Rights do not trade separately. Accordingly, by tendering Common Stock you are automatically tendering a similar number of Rights. If, however, the Rights detach, tendering stockholders will be required to deliver Rights certificates with the Common Stock (or confirmation of book-entry transfer, if available, of such Rights).

If we decrease the percentage of Shares being sought or increase or decrease the consideration to be paid for Shares pursuant to the Offer and the Offer is scheduled to expire at any time before the expiration of a period of 10 business days from, and including, the date that notice of such increase or decrease is first published, sent or given in the manner specified below, the Offer shall be extended until the expiration of such period of 10 business days. If we make any other material change in the terms of or information concerning the Offer or waive a material condition of the Offer, we will extend the Offer, if required by applicable law, for a period sufficient to allow you to consider the amended terms of the Offer. In a published release, the SEC has stated that in its view an offer must remain open for a minimum period of time following a material change in the terms of such offer and that the waiver of a condition such as the Minimum Tender Condition is a material change in the terms of an offer. The release states that an offer should remain open for a minimum of five business days from the date the material change is first published, sent or given to stockholders, and that if material changes are made with respect to information that approaches the significance of price and share levels, a minimum of 10 business days may be required to allow adequate dissemination and investor response.

"Business day" means any day other than Saturday, Sunday or a U.S. federal holiday and consists of the time period from 12:01 A.M. through 12:00 midnight, Eastern time.

If we extend the Offer, are delayed in accepting for payment of or paying for Shares or are unable to accept for payment or pay for Shares pursuant to the Offer for any reason, then, without prejudice to our rights under the Offer, the Depositary may retain all Shares tendered on our behalf, and such Shares may not be withdrawn except to the extent tendering stockholders are entitled to withdrawal rights as provided in "The Offer—Section 4." Our reservation of the right to delay acceptance for payment of or payment for Shares is subject to applicable law, which requires that we pay the consideration offered or return the Shares deposited by or on behalf of stockholders promptly after the termination or withdrawal of the Offer.

Any extension, delay, termination, waiver or amendment of the Offer will be followed as promptly as practicable by a public announcement thereof. In the case of an extension of the Offer, we will make a public announcement of such extension no later than 9:00 A.M., New York City time, on the next business day after the previously scheduled Expiration Date.

After the expiration of the Offer, we may, in our sole discretion, but are not obligated to, include a subsequent offering period of at least three business days to permit additional tenders of Shares (a "Subsequent Offering Period"). A Subsequent Offering Period would be an additional period of time, following the expiration of the Offer and the purchase of Shares in the Offer, during which stockholders may tender shares not tendered in the Offer. A Subsequent Offering Period, if one is provided, is not an extension of the Offer, which already will have been completed.

No withdrawal rights apply to Shares tendered in a Subsequent Offering Period, and no withdrawal rights apply during a Subsequent Offering Period with respect to Shares previously tendered in the Offer and accepted for payment. The same price paid in the Offer will be paid to stockholders tendering Shares in a Subsequent Offering Period, if one is included.

Pursuant to Rule 14d-11 under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), we may include a Subsequent Offering Period so long as, among other things, (i) the initial offering period of at least 20 business days has expired, (ii) we immediately accept and promptly pay for all securities validly tendered during the Offer, (iii) we announce the results of the Offer, including the approximate number and percentage of Shares deposited in the Offer, no later than 9:00 A.M., Eastern time, on the next business day after the Expiration Date and immediately begin the Subsequent Offering Period and (iv) we immediately accept and promptly pay for Shares as they are tendered during the Subsequent Offering Period.

We do not currently intend to include a Subsequent Offering Period, although we reserve the right to do so. If we elect to include or extend a Subsequent Offering Period, we will make a public announcement of such inclusion or extension no later than 9:00 A.M., Eastern time, on the next business day after the Expiration Date or date of termination of any prior Subsequent Offering Period.

We are making a request to Airgas for its stockholder list and security position listings for the purpose of disseminating the Offer to holders of Shares. We will send this Offer to Purchase, the related Letter of Transmittal and other related documents to record holders of Shares and to brokers, dealers, banks, trust companies and other nominees whose names appear on the stockholder list or, if applicable, who are listed as participants in a clearing agency's security position listing for subsequent transmittal to beneficial owners of Shares.

2. Acceptance for Payment and Payment for Shares.

Upon the terms and subject to the conditions of the Offer (including, if we extend or amend the Offer, the terms and conditions of any such extension or amendment), we will accept for payment and pay for all Shares validly tendered before the Expiration Date and not withdrawn promptly after the Expiration Date. We expressly reserve the right, in our sole discretion, but subject to applicable laws, to delay acceptance for and thereby delay payment for Shares in order to comply with applicable laws or if any of the conditions referred to in "The Offer—Section 14" have not been satisfied or if any event specified in such section has occurred. Subject to any applicable rules and regulations of the SEC, including Rule 14e-1(c) under the Exchange Act, we reserve the right, in our sole discretion and subject to applicable law, to delay the acceptance for payment or payment for Shares until satisfaction of all conditions to the Offer. For a description of our right to terminate the Offer and not accept for payment or pay for Shares or to delay acceptance for payment or payment for Shares, see "The Offer—Section 14." If we increase the consideration to be paid for Shares pursuant to the Offer, we will pay such increased consideration for all Shares purchased pursuant to the Offer.

We will pay for Shares accepted for payment pursuant to the Offer by depositing the purchase price with the Depositary, which will act as your agent for the purpose of receiving payments from us and transmitting such payments to you. In all cases, payment for Shares accepted for payment pursuant to the Offer will be made only after timely receipt by the Depositary of (i) certificates for such Shares (or a confirmation of a book-entry transfer of such Shares into the Depositary's account at the Book-Entry Transfer Facility (as defined in "The Offer—Section 3")) and, if the Distribution

Date (as defined below) occurs, certificates for Rights (or a confirmation of book-entry transfer, if available, of such Rights into the Depositary's account at the Book-Entry Transfer Facility), (ii) a properly completed and duly executed Letter of Transmittal (or facsimile thereof) and (iii) any other required documents. For a description of the procedure for tendering Shares pursuant to the Offer, see "The Offer—Section 3." Accordingly, payment may be made to tendering stockholders at different times if delivery of the Shares and other required documents occurs at different times. If there is a Subsequent Offering Period, Shares tendered during a Subsequent Offering Period will be immediately accepted for payment and paid for as they are tendered. **Under no circumstances will we pay interest on the consideration paid for tendered Shares, regardless of any extension of or amendment to the Offer or any delay in making such payment.**

For purposes of the Offer, we shall be deemed to have accepted for payment tendered Shares when, as and if we give oral or written notice of our acceptance to the Depositary.

The per Share consideration paid to any stockholder pursuant to the Offer will be the highest per Share consideration paid to any other stockholder pursuant to the Offer.

We reserve the right to transfer or assign, in whole or in part from time to time, to one or more of our affiliates the right to purchase Shares tendered pursuant to the Offer, but any such transfer or assignment will not relieve us of our obligations under the Offer or prejudice your rights to receive payment for Shares validly tendered and accepted for payment.

If any tendered Shares are not accepted for payment pursuant to the Offer for any reason, or if certificates are submitted for more Shares than are tendered, certificates for such unpurchased or untendered Shares will be returned (or, in the case of Shares tendered by book-entry transfer, such Shares will be credited to an account maintained at the Book-Entry Transfer Facility), without expense to you, as promptly as practicable following the expiration or termination of the Offer.

3. Procedure for Tendering Shares.

Valid Tender of Shares. In order for you to validly tender Shares pursuant to the Offer, either (i) the Depositary must receive at one of its addresses set forth on the back cover of this Offer to Purchase (a) a properly completed and duly executed Letter of Transmittal (or facsimile thereof) and any other documents required by the Letter of Transmittal and (b) certificates for the Shares (including, if the Distribution Date occurs, certificates for the Rights) to be tendered or delivery of such Shares (including, if the Distribution Date occurs, such Rights) pursuant to the procedures for book-entry transfer described below (and a confirmation of such delivery including an Agent's Message (as defined below) if the tendering stockholder has not delivered a Letter of Transmittal), in each case by the Expiration Date, or (ii) the guaranteed delivery procedure described below must be complied with.

The method of delivery of Shares, the Letter of Transmittal and all other required documents, including delivery through the Book-Entry Transfer Facility, is at your sole option and risk, and delivery of your Shares will be deemed made only when actually received by the Depositary (including, in the case of a book-entry transfer, by book-entry confirmation). If certificates for Shares are sent by mail, we recommend registered mail with return receipt requested, properly insured, in time to be received on or prior to the Expiration Date.

The valid tender of Shares pursuant to any one of the procedures described above will constitute your acceptance of the Offer, as well as your representation and warranty that (i) you own the Shares being tendered within the meaning of Rule 14e-4 under the Exchange Act, (ii) the tender of such Shares complies with Rule 14e-4 under the Exchange Act, (iii) you have the full power and authority to tender, sell, assign and transfer the Shares tendered, as specified in the Letter of Transmittal and (iv) when the same are accepted for payment by the Purchaser, the Purchaser will acquire good and unencumbered title thereto, free and clear of all liens, restrictions, charges and encumbrances and not subject to any adverse claims.

Our acceptance for payment of Shares tendered by you pursuant to the Offer will constitute a binding agreement between us with respect to such Shares, upon the terms and subject to the conditions of the Offer.

Book-Entry Transfer. The Depositary will establish an account with respect to the Shares for purposes of the Offer at The Depository Trust Company (the "Book-Entry Transfer Facility") after the date of this Offer to Purchase. Any financial institution that is a participant in the Book-Entry Transfer Facility's system may make book-entry transfer of Shares by causing the Book-Entry Transfer Facility to transfer such Shares into the Depositary's account in accordance with the Book-Entry Transfer Facility's procedures for such transfer. However, although delivery of Shares may be effected through book-entry transfer, the Letter of Transmittal (or facsimile thereof), properly completed and duly executed, together with any required signature guarantees or an Agent's Message and any other required documents must, in any case, be transmitted to, and received by, the Depositary at one of its addresses set forth on the back cover of this Offer to Purchase by the Expiration Date, or the guaranteed delivery procedure described below must be complied with. **Delivery of the Letter of Transmittal and any other required documents to the Book-Entry Transfer Facility does not constitute delivery to the Depositary.**

The term "Agent's Message" means a message, transmitted by the Book-Entry Transfer Facility to, and received by, the Depositary and forming a part of a book-entry confirmation stating that the Book-Entry Transfer Facility has received an express acknowledgment from the participant in the Book-Entry Transfer Facility tendering the Shares that such participant has received, and agrees to be bound by, the terms of the Letter of Transmittal and that we may enforce such agreement against such participant.

Signature Guarantees. All signatures on a Letter of Transmittal must be guaranteed by a financial institution (including most banks, savings and loan associations and brokerage houses) that is a member of a recognized Medallion Program approved by The Securities Transfer Association Inc., including the Securities Transfer Agents Medallion Program (STAMP), the Stock Exchange Medallion Program (SEMP) and the New York Stock Exchange, Inc. Medallion Signature Program (MSP) or any other "eligible guarantor institution" (as such term is defined in Rule 17Ad-15 under the Exchange Act) (each an "Eligible Institution"), unless (i) the Letter of Transmittal is signed by the registered holder of the Shares tendered therewith and such holder has not completed the box entitled "Special Payment Instructions" on the Letter of Transmittal or (ii) such Shares are tendered for the account of an Eligible Institution. See Instructions 1 and 5 of the Letter of Transmittal. If the certificates for Shares are registered in the name of a person other than the signer of the Letter of Transmittal, or if payment is to be made or certificates for Shares not tendered or not accepted for payment are to be returned to a person other than the registered holder of the certificates surrendered, the tendered certificates must be endorsed or accompanied by appropriate stock powers, in either case signed exactly as the name or names of the registered holders or owners appear on the certificates, with the signatures on the certificates or stock powers guaranteed as aforesaid. See Instructions 1 and 5 of the Letter of Transmittal.

Guaranteed Delivery. If you wish to tender Shares pursuant to the Offer and cannot deliver such Shares and all other required documents to the Depositary by the Expiration Date or cannot complete the procedure for delivery by book-entry transfer on a timely basis, you may nevertheless tender such Shares if all of the following conditions are met:

- **(i)** such tender is made by or through an Eligible Institution;
- **(ii)** a properly completed and duly executed Notice of Guaranteed Delivery in the form provided by us is received by the Depositary, as provided below, by the Expiration Date; and
- **(iii)** the certificates for such Shares (or a confirmation of a book-entry transfer of such Shares into the Depositary's account at the Book-Entry Transfer Facility), together with a properly completed and duly executed Letter of Transmittal (or facsimile thereof) together with any

required signature guarantee or an Agent's Message and any other required documents, are received by the Depositary within three New York Stock Exchange ("NYSE") trading days after the date of execution of the Notice of Guaranteed Delivery.

The Notice of Guaranteed Delivery may be delivered by hand or transmitted by telegram, telex, facsimile transmission or mail to the Depositary and must include a guarantee by an Eligible Institution in the form set forth in such Notice of Guaranteed Delivery.

Backup Withholding. To avoid backup withholding of U.S. federal income tax on payments made pursuant to the Offer, each eligible tendering U.S. Holder (as defined in "The Offer—Section 5") should complete and return the Substitute Form W-9 included in the Letter of Transmittal. Eligible tendering Non-U.S. Holders (as defined in "The Offer—Section 5") should complete and submit IRS Form W-8BEN (or other applicable IRS Form W-8), which can be obtained from the Depositary or at www.irs.gov. For a more detailed discussion of backup withholding, see "The Offer—Section 5."

Appointment of Proxy. By executing a Letter of Transmittal (or facsimile thereof) or, in the case of a book-entry transfer, by delivery of an Agent's Message in lieu of a Letter of Transmittal, you irrevocably appoint our designees as your attorneys-in-fact and proxies in the manner set forth in the Letter of Transmittal, each with full power of substitution, to the full extent of your rights with respect to the Shares tendered and accepted for payment by us (and any and all other Shares or other securities issued or issuable in respect of such Shares on or after the date of this Offer to Purchase). This proxy will be governed by and construed in accordance with the laws of the State of Delaware and applicable federal securities laws. All such proxies are irrevocable and coupled with an interest in the tendered Shares (and such other Shares and securities). Such appointment is effective only upon our acceptance for payment of such Shares. Upon such acceptance for payment, all prior powers of attorney, proxies and consents granted by you with respect to such Shares (and such other Shares and securities) will, without further action, be revoked, and no subsequent powers of attorney, proxies or consents may be given (and, if previously given, will cease to be effective). Our designees will be empowered to exercise all your voting and other rights with respect to such Shares (and such other Shares and securities) as they, in their sole discretion, may deem proper at any annual, special or adjourned meeting of Airgas's stockholders, or with respect to any actions by written consent in lieu of any such meeting or otherwise. We reserve the right to require that, in order for Shares to be deemed validly tendered, immediately upon our acceptance for payment of such Shares, we or our designee must be able to exercise full voting, consent and other rights with respect to such Shares (and such other Shares and securities) (including voting at any meeting of stockholders).

The foregoing proxies are effective only upon acceptance for payment of Shares pursuant to the Offer. The Offer does not constitute a solicitation of proxies, absent a purchase of Shares, for any meeting of Airgas's stockholders.

Determination of Validity. **Our interpretation of the terms and conditions of the Offer (including the Letter of Transmittal and the instructions thereto) will be final and binding to the fullest extent permitted by law. All questions as to the form of documents and the validity, form, eligibility (including time of receipt) and acceptance for payment of any tender of Shares will be determined by us, in our sole discretion, which determination shall be final and binding.** We reserve the absolute right to reject any and all tenders determined by us not to be in proper form or the acceptance of or payment for which may, in the opinion of our counsel, be unlawful. We also reserve the absolute right to waive any condition of the Offer to the extent permitted by applicable law or any defect or irregularity in the tender of any Shares of any particular stockholder, whether or not similar defects or irregularities are waived in the case of other stockholders. No tender of Shares will be deemed to have been validly made until all defects and irregularities have been cured or waived. None of the Purchaser, Air Products or any of their respective affiliates or assigns, the Dealer Manager, the Depositary, the Information Agent or any other person will be under any duty to give any notification of any defects or irregularities in tenders or incur any liability for failure to give any such notification.

4. Withdrawal Rights.

Except as otherwise provided in this Section 4, tenders of Shares are irrevocable. You may withdraw Shares that you have previously tendered pursuant to the Offer pursuant to the procedures set forth below at any time before the Expiration Date. Thereafter, such tenders are irrevocable, except that they may be withdrawn after April 12, 2010, unless such Shares have been accepted for payment as provided in this Offer to Purchase. If we extend the Offer, delay acceptance for payment or payment for Shares or are unable to accept for payment or pay for Shares pursuant to the Offer for any reason, then, without prejudice to our rights under the Offer, the Depositary may, on our behalf, retain all Shares tendered, and such Shares may not be withdrawn except as otherwise provided in this Section 4.

For your withdrawal to be effective, a written, telegraphic, telex or facsimile transmission notice of withdrawal with respect to the Shares must be timely received by the Depositary at one of its addresses set forth on the back cover of this Offer to Purchase, and the notice of withdrawal must specify the name of the person who tendered the Shares to be withdrawn, the number of Shares to be withdrawn and the name of the registered holder of Shares, if different from that of the person who tendered such Shares. If the certificates evidencing Shares to be withdrawn have been delivered to the Depositary, a signed notice of withdrawal with (except in the case of Shares tendered by an Eligible Institution) signatures guaranteed by an Eligible Institution must be submitted before the release of such Shares. In addition, such notice must specify, in the case of Shares tendered by delivery of certificates, the name of the registered holder (if different from that of the tendering stockholder) and the serial numbers shown on the particular certificates evidencing the Shares to be withdrawn or, in the case of Shares tendered by book-entry transfer, the name and number of the account at the Book-Entry Transfer Facility to be credited with the withdrawn Shares.

Withdrawals may not be rescinded, and Shares withdrawn will thereafter be deemed not validly tendered. However, withdrawn Shares may be retendered by again following one of the procedures described in "The Offer—Section 3" at any time before the Expiration Date.

If we include a Subsequent Offering Period (as described in more detail in "The Offer—Section 1") following the Offer, no withdrawal rights will apply to Shares tendered in such Subsequent Offering Period and no withdrawal rights apply during such Subsequent Offering Period with respect to Shares previously tendered in the Offer and accepted for payment.

We will determine, in our sole discretion, all questions as to the form and validity (including time of receipt) of any notice of withdrawal, and our determination shall be final and binding. We also reserve the absolute right to waive any defect or irregularity in the withdrawal of Shares by any stockholder, whether or not similar defects or irregularities are waived in the case of any stockholder. None of the Purchaser, the Dealer Manager, the Depositary, the Information Agent or any other person will be under any duty to give notification of any defect or irregularity in any notice of withdrawal or waiver of any such defect or irregularity or incur any liability for failure to give any such notification.

5. Certain U.S. Federal Income Tax Consequences.

The following is a general summary of certain U.S. federal income tax consequences to stockholders of Airgas whose shares are tendered and accepted for payment pursuant to the Offer. This summary does not purport to address all U.S. federal income tax matters that may be relevant to a particular stockholder, nor is it a complete analysis of all potential U.S. federal income tax consequences. This summary does not address any tax consequences arising under any state, local or foreign tax laws or U.S. federal estate or gift tax laws. This summary is based on current provisions of the Internal Revenue Code of 1986, as amended (the "Code"), regulations thereunder and administrative and judicial interpretations thereof, all of which are subject to change, possibly with retroactive effect. No ruling has been or will be sought from the Internal Revenue Service (the "IRS") with respect to the matters discussed below, and there can be no assurance that the IRS will not take a contrary position regarding the tax consequences of the Offer or that any such contrary position would not be sustained by a court.

This discussion is limited to stockholders who hold shares as capital assets within the meaning of Section 1221 of the Code (generally, property held for investment). This discussion does not address all U.S. federal income tax considerations that may be relevant to a stockholder's particular circumstances. This discussion also does not address all U.S. federal income tax considerations that may be relevant to stockholders that are subject to special tax rules, including, without limitation, expatriates and certain former citizens of the United States, partnerships and other pass-through entities, "controlled foreign corporations," "passive foreign investment companies," financial institutions, insurance companies, brokers, dealers or traders in securities, commodities or currencies, tax-exempt organizations, tax qualified retirement plans, persons subject to the alternative minimum tax and persons holding Shares as part of a hedge, straddle or other risk reduction strategy or as part of a hedging or conversion transaction or other integrated investment. Finally, this discussion does not address the U.S. federal income tax consequences to stockholders who acquired their Shares through stock option or stock purchase plan programs or in other compensatory arrangements.

For purposes of the Offer, a "U.S. Holder" means a beneficial owner of Shares that is, for U.S. federal income tax purposes: (i) an individual who is a citizen or resident of the United States; (ii) a corporation (or other entity taxable as a corporation for U.S. federal income tax purposes) created or organized under the laws of the United States or any political subdivision thereof; (iii) an estate, the income of which is subject to U.S. federal income taxation regardless of its source; or (iv) a trust if (1) a court within the United States is able to exercise primary supervision over its administration and (2) one or more U.S. persons has the authority to control all of the substantial decisions of the trust. For purposes of the Offer, a "Non-U.S. Holder" is generally a person or entity that is not a U.S. Holder.

If a partnership (or other entity taxable as a partnership for U.S. federal income tax purposes) holds Shares, the tax treatment of a partner will generally depend upon the status of the partner and upon the activities of the partnership. Partners of partnerships holding Shares should consult their tax advisors.

You are urged to consult your own tax advisor to determine the tax consequences to you of participating in the Offer in light of your particular circumstances (including the application and effect of any state, local or foreign income and other tax laws).

U.S. Holders *Consequences of the Offer.* The receipt of cash for shares pursuant to the Offer will be a taxable transaction for U.S. federal income tax purposes. In general, if you hold your Shares as capital assets you will recognize a capital gain or loss in an amount equal to the difference, if any, between the amount of cash received and your adjusted basis in the Shares. Gain or loss will be determined separately for each block of Shares (that is, Shares acquired at the same price in a single transaction) tendered in the Offer. If you are a non-corporate U.S. Holder who has held the Shares for more than one year, any such capital gain will generally be subject to U.S. federal income tax at a preferential rate (currently 15%). The deductibility of capital losses is subject to limitations.

Information Reporting and Backup Withholding. Payments made to U.S. Holders pursuant to the Offer will be subject to information reporting and may be subject to backup withholding (currently at a rate of 28%). To avoid backup withholding, U.S. Holders that do not otherwise establish an exemption should complete and return the Substitute Form W-9 included in the Letter of Transmittal, certifying that such U.S. Holder is a U.S. person, the taxpayer identification number provided is correct and such U.S. Holder is not subject to backup withholding. Certain holders (including corporations) generally are not subject to backup withholding. Backup withholding is not an additional tax. U.S. Holders may use amounts withheld as a credit against their U.S. federal income tax liability or may claim a refund of any excess amounts withheld by timely filing a claim for refund with the IRS.

Non-U.S. Holders *Consequences of the Offer.* A Non-U.S. Holder generally will not be subject to U.S. federal income tax on gain realized upon the receipt of cash for Shares pursuant to the Offer provided that (i) the gain is not effectively connected with the conduct of a trade or business by the Non-U.S. Holder in the United States and (ii) in the case of a Non-U.S. Holder that is an individual, such Non-U.S. Holder is not present in the United States for 183 days or more in the taxable year of the disposition.

Unless an applicable tax treaty provides otherwise, gains described in (i) above generally will be subject to U.S. federal income tax in the same manner as if the Non-U.S. Holder were a resident of the United States. Gains described in (ii) above will generally be subject to U.S. federal income tax at a flat rate of 30%, but may be offset by U.S. source capital losses.

Information Reporting and Backup Withholding. Payments made to Non-U.S. Holders pursuant to the Offer may be subject to information reporting and backup withholding (currently at a rate of 28%). To avoid backup withholding, Non-U.S. Holders should provide the Depositary with a properly executed IRS Form W-8BEN (or other applicable IRS Form W-8) certifying such Non-U.S. Holder's non-U.S. status or by otherwise establishing an exemption. Backup withholding is not an additional tax. Non-U.S. Holders may use amounts withheld as a credit against their U.S. federal income tax liability or may claim a refund of any excess amounts withheld by timely filing a claim for refund with the IRS.

6. Price Range of Shares; Dividends.

POINT 6: The arbitrageur should always consult these tender offer documents to help determine whether any dividends that are paid during the pendency of the offer accrue to the holder. In some deals, if the target company were to pay a dividend during the pendency of the tender offer, the consideration being offered by the acquiring company may be reduced by the amount of that dividend. In this case, the merger agreement specifically allowed for the payment of dividends by Alumax, Inc.

The Shares are listed and principally traded on NYSE under the symbol "ARG." The following table sets forth, for each of the periods indicated, the high and low sales prices per Share on the NYSE, and dividends paid per Share, as reported in published financial sources:

	High	Low	Dividends
Calendar Year 2008:			
First Quarter	$ 52.00	$ 37.84	$ 0.12
Second Quarter	65.45	45.36	0.12
Third Quarter	60.70	43.30	0.12
Fourth Quarter	49.50	27.09	0.16
Calendar Year 2009:			
First Quarter	$ 41.09	$ 26.29	$ 0.16
Second Quarter	45.27	32.52	0.18
Third Quarter	50.29	36.68	0.18
Fourth Quarter	51.00	44.12	0.18
Calendar Year 2010:			
First Quarter (through February 10, 2010)	$ 62.82	$ 41.82	$ —

On January 28, 2010, Airgas declared a dividend of $0.22 per share to be paid on March 31, 2010 to stockholders of record as of March 15, 2010.

On February 4, 2010, the last trading day before the first public announcement of our offer to acquire Airgas for $60.00 per Share in cash, the last reported sale price of the Shares on the NYSE was $43.53 per Share. **You are urged to obtain current market quotations for the Shares.**

7. Possible Effects of the Offer on the Market for the Shares; Stock Exchange Listing; Registration under the Exchange Act; Margin Regulations.

Possible Effects of the Offer on the Market for the Shares. If the Proposed Merger is consummated, stockholders not tendering their Shares in the Offer (other than those properly exercising their appraisal rights) will receive cash in an amount equal to the price per Share paid in the Offer. Therefore, if such merger takes place, the only difference between tendering and not tendering Shares in the Offer is that tendering stockholders will be paid earlier. If, however, the Proposed Merger does not take place and the Offer is consummated, the number of stockholders and of Shares that are still in the hands of the public may be so small that there will no longer be an active or liquid public trading market (or possibly any public trading market) for Shares held by stockholders other than the Purchaser. We cannot predict whether the reduction in the number of Shares that might otherwise trade publicly would have an adverse or beneficial effect on the market price for, or marketability of, the Shares or whether such reduction would cause future market prices to be greater or less than the price paid in the Offer.

Stock Exchange Listing. The Shares are listed on the NYSE. Depending upon the number of Shares purchased pursuant to the Offer, the Shares may no longer meet the standards for continued listing on the NYSE and may delisted from the NYSE. If, as a result of the purchase of Shares pursuant to the Offer, the Shares no longer meet the criteria for continued listing on the NYSE, the market for the Shares could be adversely affected. According to the NYSE's published guidelines, the Shares would not meet the criteria for continued listing on the NYSE if, among other things, (i) the total number of holders of Shares fell below 400, (ii) the total number of holders of Shares fell below 1,200 and the average monthly trading volume over the most recent 12 months was less than 100,000 Shares or (iii) the number of publicly held Shares (exclusive of holdings of officers and directors of Airgas and their immediate families and other concentrated holdings of 10% or more) fell below 600,000. If the Shares are not delisted prior to the Proposed Merger, we intend to delist the Shares from the NYSE promptly following consummation of the Proposed Merger.

Registration under the Exchange Act. The Shares are currently registered under the Exchange Act. Such registration may be terminated upon application of Airgas to the SEC if the Shares are neither listed on a national securities exchange nor held by 300 or more holders of record. Termination of the registration of the Shares under the Exchange Act would substantially reduce the information required to be furnished by Airgas to its stockholders and to the SEC and would make certain of the provisions of the Exchange Act, such as the short-swing profit recovery provisions of Section 16(b), the requirement to furnish a proxy statement pursuant to Section 14(a) in connection with a stockholder's meeting and the related requirement to furnish an annual report to stockholders and the requirements of Rule 13e-3 under the Exchange Act with respect to "going private" transactions, no longer applicable to the Shares. Furthermore, "affiliates" of Airgas and persons holding "restricted securities" of Airgas may be deprived of the ability to dispose of such securities pursuant to Rule 144 or Rule 144A promulgated under the Securities Act of 1933, as amended (the "Securities Act"). If registration of the Shares under the Exchange Act were terminated, the Shares would no longer be "margin securities" or eligible for listing on the NYSE. We intend to seek to cause Airgas to terminate registration of the Shares under the Exchange Act as soon after consummation of the Offer as the requirements for termination of registration of the Shares are met.

Margin Regulations. The Shares are currently "margin securities" under the regulations of the Board of Governors of the Federal Reserve System (the "Federal Reserve Board"), which has the effect, among other things, of allowing brokers to extend credit on the collateral of such Shares. Depending upon factors similar to those described above regarding listing and market quotations, it is possible the Shares might no longer constitute "margin securities" for the purposes of the Federal Reserve Board's margin regulations and, therefore, could no longer be used as collateral for loans made by brokers.

8. Certain Information Concerning Airgas.

> *POINT 7: This document gives basic information on both the target company and the acquiring company. The arbitrageur, of course, would normally have utilized all other available sources of information to supplement what is disclosed in this document.*

Except as otherwise expressly set forth in this Offer to Purchase, the information concerning Airgas contained in this Offer to Purchase has been taken from or based upon publicly available documents and records on file with the SEC and other public sources and is qualified in its entirety by reference thereto. None of Air Products, the Purchaser, the Dealer Manager, the Information Agent or the Depositary can take responsibility for the accuracy or completeness of the information contained in such documents and records or for any failure by Airgas to disclose events which may have occurred or may affect the significance or accuracy of any such information but which are unknown to Air Products, the Purchaser, the Dealer Manager, the Information Agent or the Depositary. Air Products, the Purchaser, the Dealer Manager, the Information Agent and the Depositary have relied upon the accuracy of the information included in such publicly available documents and records and other public sources and have not made any independent attempt to verify the accuracy of such information.

According to Airgas's Annual Report on Form 10-K for the year ended March 31, 2009 (the "Airgas 10-K"), Airgas became a publicly traded company in 1986. The principal executive offices of Airgas are located at 259 North Radnor-Chester Road, Suite 100, Radnor, Pennsylvania 19087-5283 and its telephone number is (610) 687-5253. According to Airgas's 10-K, Airgas is the largest U.S. distributor of industrial, medical and specialty gases (delivered in "packaged" or cylinder form), and "hardgoods", such as welding equipment and supplies. Airgas is also one of the largest U.S. distributors of safety products, the largest U.S. producer of nitrous oxide and dry ice, the largest liquid carbon dioxide producer in the Southeast, the fifth largest producer of atmospheric merchant gases in North America and a leading distributor of process chemicals, refrigerants and ammonia products. Airgas markets these products to its diversified customer base through multiple sales channels including branch-based sales representatives, retail stores, strategic customer account programs, telesales, catalogs, eBusiness and independent distributors. Airgas's products reach customers through an integrated network of more than 14,000 employees and over 1,100 locations including branches, retail stores, packaged gas fill plants, cylinder testing facilities, specialty gas labs, production facilities and distribution centers.

Preferred Stock Purchase Rights. The following description of the Rights is based upon publicly available documents. This description does not purport to be complete and is qualified in its entirety by reference to the Rights Agreement which is filed as Exhibit 4.1 to Airgas's Current Report on Form 8-K filed with the SEC on May 10, 2007.

On May 8, 2007, pursuant to the Rights Agreement, the Airgas Board declared a dividend distribution of one Right for each outstanding share of Common Stock to stockholders of record at the close of business on May 25, 2007 (the "Record Date"). Each Right entitles the registered holder thereof to purchase from Airgas one ten-thousandth (1/10,000th) of a share of Series C Junior Participating Preferred Stock, par value $0.01 per share (the "Preferred Stock") (or in certain circumstances, cash, property or other securities of Airgas), at a purchase price of $230.00, subject to adjustment as provided in the Rights Agreement (the "Purchase Price"). In addition, one Right will automatically attach to each Share issued between the Record Date and the Distribution Date (as defined below).

Initially, the Rights were evidenced by the certificates representing Common Stock, and no separate Rights certificates were distributed. The Rights Agreement provides that, in general, the Rights will separate from the shares of Common Stock and become exercisable upon the earlier of (i) ten calendar days following a public announcement or disclosure that a person or group of affiliated or associated persons (an "Acquiring Person") has acquired beneficial ownership of 15% (or, in the case of Peter McCausland or certain of his affiliates, 20%) or more of the outstanding shares of Common Stock (the "Stock Acquisition Date") and (ii) ten business days, or a later date as is determined by the Airgas Board, after the commencement of, or first public announcement of an intention to commence, a tender offer or exchange offer that would result in a person or group beneficially owning 15% (or 20%, as the case may be) or more of such outstanding shares of Common Stock (the earlier of such dates being called the "Distribution Date").

Pursuant to the Rights Agreement, until the Distribution Date, the Rights will be evidenced by the Common Stock certificates and will be transferred with and only with such Common Stock certificates and the surrender for transfer of any Common Stock certificates outstanding will also constitute the transfer of the Rights associated with the Common Stock represented by such certificates.

The Rights are not exercisable until the Distribution Date and will expire at the close of business on May 8, 2017, unless earlier redeemed or exchanged by Airgas as described below.

The Rights Agreement provides that, as soon as practicable after the Distribution Date, Right certificates will be mailed to holders of record of the Common Stock as of the close of business on the Distribution Date, and thereafter, the separate Right certificates alone will represent the Rights. Except as otherwise provided by the Rights Agreement or determined by the Airgas Board, only shares of Common Stock that are issued prior to the Distribution Date will be issued with Rights.

In the event that a person becomes an Acquiring Person, each holder of a Right will thereafter have the right to receive, upon exercise, shares of Common Stock (or in certain circumstances, cash, property or other securities of Airgas) having a value equal to two times the Purchase Price of the Right. Notwithstanding the foregoing, following the occurrence of such an event or any other Triggering Event (as defined below), all Rights that are, or (under certain circumstances specified in the Rights Agreement) were, beneficially owned by any Acquiring Person will be null and void.

After the Stock Acquisition Date, in the event that (i) Airgas consolidates or merges with any other person, and Airgas is not the surviving corporation, (ii) any person engages in a share exchange, consolidation or merger with Airgas in which Airgas is the surviving corporation and in which the outstanding Common Stock is exchanged for securities of any other person or for cash or other property or (iii) 50% or more of the assets or earning power of Airgas and its subsidiaries is sold or transferred, proper provision will be made so that each holder of a Right shall thereafter have the right to receive, upon exercise, common stock of the acquiring person having a value equal to two times the Purchase Price of the Right. The events set forth in this paragraph and the preceding paragraph are referred to as the "Triggering Events."

The Purchase Price payable, and the number of shares of Common Stock or other securities, cash or property issuable, upon exercise of the Rights are subject to customary adjustments from time to time to prevent dilution in the event of certain changes in the Common Stock. With certain exceptions, no adjustment in the Purchase Price will be required until cumulative adjustments amount to an increase or decrease of at least 1% in the Purchase Price.

In general, Airgas may redeem the Rights in whole, but not in part, at a price of $0.0001 per Right (subject to adjustment), at any time before to the earlier of (i) the close of business on the day a person becomes an Acquiring Person and (ii) the close of business of the expiration date of the Rights. Immediately upon the action of the Airgas Board ordering redemption of the Rights, the Rights will terminate and the only right of the holders of Rights will be to receive the $0.0001 redemption price.

At any time after a person becomes an Acquiring Person (but before such Acquiring Person owns 50% or more of the Shares), the Airgas Board may exchange the then outstanding and exercisable Rights (other than those owned by an Acquiring Person), for Shares, each Right being exchangeable for one share of Common Stock, subject to adjustment.

Until a Right is exercised, the holder thereof, as such, will have no rights as a stockholder of Airgas, including the right to vote or to receive dividends.

The Rights Agreement provides that, other than those provisions relating to the principal economic terms of the Rights, any of the provisions of the Rights Agreement may be amended by the Airgas Board prior to the earliest of (i) the Distribution Date or (ii) a Triggering Event. After the first to occur of such events, the provisions of the Rights Agreement may be amended without the approval of any holders of Right certificates (x) to cure any ambiguity or to correct or supplement any provision contained in the Rights Agreement which may be defective or inconsistent with the other provisions contained therein, or (y) to make any other changes or provisions in regard to matters or questions arising thereunder which Airgas may deem necessary or desirable; provided, however, that no such supplement or amendment shall adversely affect the interests of the holders of Rights as such (other than an Acquiring Person, or any affiliate or associate of an Acquiring Person), and no such supplement or amendment may cause the Rights again to become redeemable at such time as the Rights are not then redeemable or cause the Rights Agreement again to become amendable other than as provided for in the Rights Agreement.

Based on publicly available information, Air Products and the Purchaser believe that, as of the date of this Offer to Purchase, the Rights are not exercisable, the Right certificates have not been issued and the Rights are evidenced by the certificates representing Common Stock. Unless the Distribution Date occurs, a tender of shares of Common Stock will include a tender of the associated Rights. If the Distribution Date does occur, you will need to tender one Right with each share of Common Stock tendered in order for such share to be validly tendered in the Offer. We will not pay any additional consideration for the tender of a Right. Unless the Airgas Board elects to redeem the Rights Agreement and, thus, terminates the Rights or amends the Rights Agreement to postpone the Distribution Date or otherwise acts to postpone the Distribution Date in accordance with the Rights Agreement, the Distribution Date will occur on the earlier of the tenth calendar day after the Stock Acquisition Date (as defined above) and the tenth business day after the commencement of this Offer or first public announcement of an intention to commence this Offer.

Additional Information. Airgas is subject to the informational requirements of the Exchange Act and, in accordance therewith, files periodic reports, proxy statements and other information with the SEC relating to its business, financial condition and other matters. Airgas is required to disclose in such proxy statements certain information, as of particular dates, concerning Airgas's directors and officers, their remuneration, stock options granted to them, the principal holders of Airgas's securities and any material interest of such persons in transactions with Airgas. Such reports, proxy statements and other information may be read and copied at the public reference facilities maintained by the SEC at 100 F Street, N.E., Washington, D.C. 20549. Copies of such material can also be obtained free of charge at the website maintained by the SEC at http://www.sec.gov.

9. Certain Information Concerning the Purchaser and Air Products.

We are a Delaware corporation incorporated on February 8, 2010, with principal executive offices at 7201 Hamilton Boulevard, Allentown, Pennsylvania, 18195-1501. The telephone number of our principal executive offices is (610) 481-4911. To date, we have engaged in no activities other than those incidental to our formation and the commencement of the Offer. The Purchaser is a wholly-owned subsidiary of Air Products.

Air Products is a Delaware corporation incorporated in Michigan on October 1, 1940, and reincorporated in Delaware on May 25, 1961, with principal executive offices at 7201 Hamilton Boulevard, Allentown, Pennsylvania, 18195-1501. The telephone number of Air Products' principal executive offices is (610) 481-4911. Air Products serves technology, energy, industrial and healthcare customers globally with a unique portfolio of products, services and solutions that include atmospheric gases, process and specialty gases, performance materials, equipment and services. Air Products is the world's largest supplier of hydrogen and helium and has built leading positions in growth markets such as semiconductor materials, refinery hydrogen, natural gas liquefaction and advanced coatings and adhesives.

The name, business address, principal occupation or employment, five-year employment history and citizenship of each director and executive officer of Air Products and the Purchaser and certain other information are set forth on Schedule I hereto.

As of the date of this offer to purchase, Air Products beneficially owns 1,508,255 Shares, representing approximately 1.8% of the outstanding Shares. Air Products acquired these Shares in the following ordinary brokerage transactions:

Date of Purchase	Number of Shares Purchased	Average Purchase Price per Share
January 20, 2010	71,730	$ 48.82
January 21, 2010	144,700	$ 49.25
January 22, 2010	127,601	$ 48.49
January 25, 2010	80,525	$ 48.52
January 26, 2010	74,231	$ 48.35
January 27, 2010	151,468	$ 47.26
January 28, 2010	124,400	$ 47.09
January 29, 2010	516,500	$ 43.77
February 1, 2010	122,100	$ 44.49
February 4, 2010	95,000	$ 43.85

No part of the purchase price or market value of these shares was represented by funds borrowed or otherwise obtained for the purpose of acquiring or holding such shares.

Except as set forth elsewhere in this Offer to Purchase or Schedule I to this Offer to Purchase: (i) none of Air Products, the Purchaser and, to Air Products' and the Purchaser's knowledge, the persons listed in Schedule I hereto or any associate or majority owned subsidiary of Air Products, the Purchaser or of any of the persons so listed, beneficially owns or has a right to acquire any Shares or any other equity securities of Airgas; (ii) none of Air Products, the Purchaser and, to Air Products' and the Purchaser's knowledge, the persons or entities referred to in clause (i) above has effected any transaction in the Shares during the past 60 days; (iii) none of Air Products, the Purchaser and, to Air Products' and the Purchaser's knowledge, the persons listed in Schedule I to this Offer to Purchase, has any contract, arrangement, understanding or relationship with any other person with respect to any securities of Airgas (including, but not limited to, any contract, arrangement, understanding or relationship concerning the transfer or the voting of any such securities, joint ventures, loan or option arrangements, puts or calls, guaranties of loans, guaranties against loss or the giving or withholding of proxies, consents or authorizations); (iv) during the two years before the date of this Offer to Purchase, there have been no transactions between Air Products, the Purchaser, their subsidiaries or, to Air Products' and the Purchaser's knowledge, any of the persons listed in Schedule I to this Offer to Purchase, on the one hand, and Airgas or any of its executive officers, directors or affiliates, on the other hand, that would require reporting under SEC rules and regulations; and (v) during the two years before the date of this Offer to Purchase, there have been no contacts, negotiations or transactions between Air Products, the Purchaser, their subsidiaries or, to Air Products' and the Purchaser's knowledge, any of the persons listed in Schedule I to this Offer to Purchase, on the one hand, and Airgas or any of its subsidiaries or affiliates, on the other hand, concerning a merger, consolidation or acquisition, a tender offer or other acquisition of securities, an election of directors or a sale or other transfer of a material amount of assets.

10. Source and Amount of Funds.

We will need approximately $7 billion to purchase all Shares pursuant to the Offer, to refinance certain indebtedness in connection with the transaction and to pay related fees and expenses. As of December 31, 2009, Air Products had cash and cash items in the amount of approximately $323 million. In addition, Air Products has entered into a commitment letter with JPMorgan Chase Bank, N.A. pursuant to which JPMorgan Chase Bank, N.A. has committed to provide a term loan credit facility (the "Acquisition Facility") to Air Products in an aggregate amount of up to $6.724 billion. JPMorgan Chase Bank, N.A. has committed to provide the full amount of the loans under the Acquisition Facility and has indicated its intention to form a syndicate of banks that would become lenders thereunder. Air Products expects to contribute or otherwise advance funds to enable the Purchaser to consummate the Offer. Air Products expects, based upon the combination of internally available cash and borrowings under the Acquisition Facility, to have sufficient cash on hand at the expiration of the Offer to pay the offer price for all Shares in the Offer.

Borrowings under the Acquisition Facility will be unsecured, will mature on the date that is one year after the date of consummation of the Offer and will bear interest at a rate per annum equal to, at the option of Air Products, (i) the highest of (a) JPMorgan Chase Bank, N.A.'s prime rate, (b) the rate equal to the federal funds effective rate plus 0.5% and (c) a rate based on certain rates offered for U.S. dollar deposits in the Eurodollar interbank market (the "Eurodollar Rate") plus 1.0%, or (ii) the Eurodollar Rate, in each case plus a margin which fluctuates based upon the relevant public debt credit ratings assigned to Air Products by Moody's and S&P from time to time (the "Ratings Grid"). Each bank will be entitled to a commitment fee payable quarterly in arrears, based upon the average daily unused amount of its commitments under the Acquisition Facility, which fee fluctuates based upon the Ratings Grid. In addition, Air Products will be required to pay the banks a duration fee 90 days, 180 days and 270 days after the consummation of the Offer, which fees will be based on the aggregate principal amount of loans outstanding under the Acquisition Facility on such dates.

It is anticipated that the Acquisition Facility will contain representations and warranties customary for credit facilities of this nature, including as to the accuracy of financial statements; absence of a material adverse change with respect to Air Products and its subsidiaries and Airgas and its subsidiaries; litigation; no conflict with material agreements or instruments; compliance with environmental laws; payment of taxes; use of proceeds; and accuracy of information.

It is also anticipated that the Acquisition Facility will contain certain covenants, including limitations on liens (with exclusions to the extent necessary to comply with margin lending regulations and certain other exceptions to be agreed upon); mergers, consolidations and sales of all or substantially all assets; and limitations on indebtedness of Air Products' subsidiaries. In addition, the Acquisition Facility will limit Air Products' ratio of consolidated indebtedness to consolidated EBITDA to a level to be determined.

The commitment of JPMorgan Chase Bank, N.A. is, and it is anticipated that the obligations of JPMorgan Chase Bank, N.A. and other banks in the syndicate of lenders to make the loans under the Acquisition Facility will be, conditioned upon, among other things, satisfactory negotiation, execution and delivery of the definitive documentation for the Acquisition Facility; tender offer documents and, if applicable, documents relating to the Proposed Merger being reasonably satisfactory to JPMorgan Chase Bank, N.A., as agent; consummation of the Offer; absence of material adverse change; absence of defaults under Air Products' existing revolving credit facility; receipt by Air Products of certain minimum debt ratings from each of Moody's and S&P; receipt of required approvals and consents; and delivery of certain financial statements.

It is anticipated that the borrowings described above will be refinanced or repaid from funds generated internally by Air Products (including, after consummation of any merger or other business combination that may be proposed with respect to Airgas, existing cash balances of and funds generated by Airgas) or other sources, which may include the proceeds of the sale of securities. No decision has been made concerning this matter, and decisions will be made based on Air Products' review from time to time of the advisability of selling particular securities as well as on interest rates and other economic conditions.

A copy of JPMorgan Chase Bank, N.A.'s commitment letter is filed with the SEC as an exhibit to the Tender Offer Statement on Schedule TO filed by Air Products and us pursuant to Rule 14d-3 under the Exchange Act on February 11, 2010. Reference is made to such exhibit for a more complete description of the proposed terms and conditions of the Acquisition Facility, and the foregoing summary of such terms and conditions is qualified in its entirety by such exhibit.

The Offer is not conditioned upon any financing arrangements.

11. Background of the Offer; Other Transactions with Airgas.

POINT 8: The sections describing the background of the offer and the financing of the offer are the most important sections of the document. In this section, we learn details that are generally not disclosed prior to a document's release. One may learn all types of information relating to how the transaction was negotiated and any potential problems that may have occurred along the way. In hostile takeover transactions, we may find information that sheds a whole new light on the history and analysis of the deal. In this particular case, we can see the specific steps that the two companies took in trying to arrive at the definitive agreement. Both sides negotiated back and forth, ultimately arriving at an agreement that resulted in Aluminum Company's making the offer.

By reading about the background of an offer, one can gain tremendous insight into the likelihood of the transaction's completion, as well as the potential for any increase in the price received by the target company's shareholders. If, as in this case, a merger agreement has been reached, many of the specific terms will be detailed, including all conditions that could result in termination of the merger agreement. The arbitrageur should analyze all the potential conditions that would allow the companies to terminate the agreement.

In this offer, the arbitrageur focuses on the interactions between the two parties for details of past offers and the reaction of the target company to the unsolicited offer. In this case, APD approached ARG

> *several ways to negotiate a friendly merger deal but ARG was clearly against structuring a merger with APD. It was clear from this section that the APD takeover attempt would most likely become a long and drawn-out battle.*

Background of the Offer. In 2002, Air Products sold its U.S. packaged gas assets to Airgas, because, at that time, Air Products' U.S. packaged gas business had limited breadth and scope. Since the sale of its U.S. packaged gas business, Air Products has focused its growth in other areas. During that same time period, Airgas expanded its U.S. packaged gas business through acquisitions. Air Products currently has a successful packaged gas business in Europe and other international markets, but does not have a U.S. packaged gas business.

Air Products regularly considers a variety of strategic options and transactions as part of the continuous evaluation of its businesses and plans in an effort to increase stockholder value. In recent years, as part of this process, Air Products has evaluated various alternatives for expanding its packaged gas business in North America, including through acquisitions. As part of that analysis, Air Products determined that packaged gas will be one of the important growth areas for Air Products, both within North America and in other regions.

Throughout 2009 and 2010, Air Products has considered re-entering the North American packaged gas market. Air Products decided that the most efficient way to expand into the North American packaged gas business was through an acquisition of Airgas. Given that the economy is just beginning to emerge from recession, Air Products concluded that the timing is ideal because the combined company would be able to take full advantage of the substantial growth potential, world-class competencies and synergies unique to this transaction. An Air Products / Airgas combination would create one of the leading integrated companies in the industrial gas business, with highly competitive positions in all modes of supply and in the world's important geographies. This combination would create the largest industrial gas company in North America and one of the largest globally—a leader with distinctive strengths and world-class competencies across all distribution channels and geographies.

On October 15, 2009, the Chief Executive Officers of Air Products, John E. McGlade, and Airgas, Peter McCausland, met at Airgas's headquarters. Mr. McGlade suggested the meeting that week to discuss a business proposal. At the meeting, Mr. McGlade indicated that Air Products was interested in pursuing a business combination with Airgas in a stock-for-stock deal that would value Airgas at a substantial premium to its then market price and allow Airgas's stockholders to share in the value created by the combination.

Mr. McGlade told Mr. McCausland that careful study had convinced Air Products' managers and directors that joining forces with Airgas would create a premier industrial gas company. Through geographic and business diversification, cost savings, and highly complementary business capabilities, stockholders of both companies could expect to reap significant additional returns.

After hearing Mr. McGlade's proposal, Mr. McCausland said that the timing was not right. In response, Mr. McGlade stressed that, in Air Products' view, the best time for a transaction was now. Among other reasons: (i) the economy was emerging from a recession, which created a window to integrate the companies and achieve synergies at lower cost; (ii) Airgas is just beginning to implement SAP software systems—a time-consuming and expensive process—and Air Products could share its seven years of experience implementing SAP; and (iii) Airgas is likely to begin spending capital on an international infrastructure, a costly expense that would be made unnecessary by a merger with Air Products' extensive global infrastructure. Accordingly, Mr. McGlade asked Mr. McCausland to discuss Air Products' proposal with the Airgas Board and signaled his intent to put Air Products' offer in writing. Mr. McCausland remained noncommittal but asked that nothing be sent to him in writing.

On October 29, 2009, Airgas publicly announced that its fiscal second quarter earnings were substantially lower than the prior-year quarter, and also lowered its future earnings guidance.

On October 31, 2009, one week before the Airgas Board was scheduled to hold its annual retreat, Mr. McGlade called Mr. McCausland to reaffirm Air Products' commitment to a transaction and the expectation that the offer would be presented to, and duly considered by, the Airgas Board. Mr. McCausland responded that he doubted that the Airgas Board would view the proposal differently than he did and again asked that nothing be sent to him in writing.

Following this annual retreat, Mr. McCausland returned Mr. McGlade's call. Mr. McCausland stated that the Airgas Board had no interest in exploring the proposal, and rejected the invitation to further discuss it.

On November 19, 2009, at a meeting of the Air Products Board of Directors (the "Air Products Board"), Mr. McGlade reported on Airgas's response to Air Products' overture. At this meeting, Air Products' financial and legal advisors discussed with Air Products' management and the Air Products Board the options available to Air Products, including the risks associated with each of those options. The Air Products Board stressed that it strongly preferred a negotiated transaction with Airgas. The Air Products Board counseled patience and instructed Air Products' management and its financial and legal advisors to take all actions necessary to attempt to pursue a negotiated transaction. After discussion and deliberation, the Air Products Board authorized Mr. McGlade to make a written offer to Airgas.

On November 20, 2009, Mr. McGlade sent a letter to Mr. McCausland setting out the basic terms of Air Products's offer. In that letter, Air Products offered to acquire all of Airgas's outstanding shares for $60 per Share in an all-stock transaction, equivalent to 0.7296 shares of Air Products common stock based on its then-current market price and representing a 27.5% premium to the market price of Airgas's stock.

In his letter, Mr. McGlade reiterated what he had told Mr. McCausland orally: that combining Air Products's global leadership in liquid bulk and tonnage gases with Airgas's leadership in North American packaged gases would unleash faster earnings growth, both domestically and internationally. Mr. McGlade also wrote that Air Products was ready and willing to negotiate with Airgas if Airgas found the offer unsatisfactory. In particular, Air Products has consistently stated that it will share any additional value that Airgas identifies with Airgas's stockholders.

In a November 25 letter, Mr. McCausland responded that the Airgas Board would meet in early December to consider Air Products' offer and that Mr. McCausland would contact Mr. McGlade after the meeting.

On December 8, 2009, Mr. McCausland wrote to Mr. McGlade that the Airgas Board had considered Air Products' offer and rejected it. According to Mr. McCausland, the Airgas Board concluded that Air Products was undervaluing Airgas and that Air Products' stock was a "currency that [was] not attractive." For those reasons, the Airgas Board was not interested in pursuing a deal. The Airgas Board also stated that it had no interest in continuing a dialogue between the two companies. Mr. McCausland told Mr. McGlade that the Airgas Board "do[es] not believe that any purpose would be served" by having the companies or their advisors meet. The Airgas Board did not propose a counter-offer to Air Products' original offer or tell Air Products why it valued Airgas's stock so differently than the market. In the December 8 letter, Airgas also alleged certain conflicts of interest with respect to Air Products' legal and financial advisors.

Air Products remained committed to pursuing an acquisition of Airgas that Air Products believed would maximize stockholder value and improve the performance of both companies. In a letter dated December 17, 2009, Mr. McGlade informed Mr. McCausland that, in a good faith effort to start discussions between the two companies, Air Products was raising its offer to $62 per Share. To address the Airgas Board's stated concerns about the attractiveness of Air Products' stock, and because of its strong preference for a negotiated transaction, Air Products also offered to fund up to half the purchase in cash. Air Products' revised offer represented a 33% premium to Airgas's closing price on the NYSE that day.

Mr. McGlade again communicated that Air Products would work flexibly with Airgas to reach a mutually acceptable deal, including on price: "If you believe that there is incremental value above and beyond our increased offer, we stand willing to listen and to understand your points on value with a view to sharing increased value appropriately with the Airgas shareholders." Believing that a continued exchange of letters could not adequately communicate the details of and rationale for Air Products' offer, Mr. McGlade requested a meeting among the Boards and advisors of each company "as soon as possible to explore additional sources of value in Airgas." With respect to the alleged conflicts of interest, Air Products responded that before hiring its financial and legal advisors it had made certain that they had no conflicts in their ability to represent Air Products in a merger with Airgas.

Shortly thereafter, the Airgas Board rejected Air Products' revised offer. On January 4, 2010, Mr. McCausland wrote to inform Mr. McGlade that the Airgas Board had met and concluded that Air Products was undervaluing Airgas. In his letter, Mr. McCausland stated: "[T]he Board is not interested in pursuing your company's proposal and continues to believe that there is no reason to meet."

On January 28, 2010, Airgas publicly announced that its fiscal third quarter earnings were below the lowest range of the earnings guidance it had given to the market, and also lowered its future earnings guidance.

Also on January 28, at a regularly scheduled meeting of the Air Products Board, Air Products' management and financial and legal advisors updated the Air Products Board on the status of their attempts to engage in negotiations with Airgas. The Air Products Board discussed and considered that, notwithstanding the fact that Air Products had already raised its offer by $2 per Share and had substantially increased the cash component of the consideration mix to accommodate Airgas's concerns, the Airgas Board continued to refuse to engage in discussions. Air Products' management and financial and legal advisors discussed with the Air Products Board the options available to Air Products in light of the Airgas Board's refusal to engage, including the risks and costs associated with a public process. The Air Products Board further discussed with management, and Air Products' financial and legal advisors, that a negotiated transaction remained its overriding preference and that a public offer to Airgas's stockholders should only be made as a last resort. In a further attempt to convince the Airgas Board to engage, the Air Products Board, after receiving the advice of Air Products' management and financial and legal advisors, determined that Air Products' next offer to Airgas should be an all-cash offer.

On February 1, Air Products' advisors made a final attempt to persuade the Airgas Board, through its advisors, to engage in discussions. Airgas's legal advisors responded that the Airgas Board's position on a meeting with Air Products had not and would not change. Airgas's financial advisors responded that there is a regularly-scheduled meeting of the Airgas Board set for the next week, but refused to reveal the date for which the Board meeting was actually scheduled and gave no indication that the Airgas Board would be addressing Air Products' repeated proposals. None of Air Products' advisors suggested a willingness to meet with Air Products or its advisors or to otherwise discuss the possibility of a transaction.

On February 4, 2010, Air Products sent a letter to Mr. McCausland and the Airgas Board reiterating its proposal to combine with Airgas. Because of the increased costs associated with a non-negotiated deal, and because the offer was an all-cash offer with committed financing from JPMorgan Chase Bank, N.A. (which entails additional costs such as financing commitment fees), Air Products offered $60 per Share in cash. At $60 per Share, the offer represented a 38% premium to Airgas's pre-offer market value. Because of the Airgas Board's unwillingness to engage, Air Products made a public announcement of its offer.

The full text of the letter is set forth below.

February 4, 2010

Mr. Peter McCausland

Chairman, President and CEO

Airgas, Inc.

259 North Radnor-Chester Road, Suite 100

Radnor, PA 19087-5283

Dear Peter:

As you know, we have been trying for the last four months to engage Airgas in friendly discussions regarding a business combination. We are deeply disappointed that you and your board have rejected out of hand two written offers providing your shareholders substantial premiums. In our prior correspondence, we clearly and repeatedly stated our flexibility as to both value and form of consideration, yet you have continued to refuse even to discuss our offers. Your unwillingness to engage has delayed the ability of your shareholders to receive a substantial premium. We remain committed to completing this transaction, and we have therefore decided to inform your shareholders of our offer to expedite the process.

Air Products is prepared to proceed with a fully financed, all-cash offer for all Airgas shares at $60.00 per share, which reflects a premium of 38%

to Airgas' closing price today of $43.53 and 18% above its 52-week high. In addition to a substantial premium, Airgas shareholders will benefit from immediate liquidity in an uncertain economic environment through an offer which we believe fully values Airgas' complementary capabilities and long-term growth prospects.

Bringing together our complementary skills and strengths will create one of the world's leading integrated industrial gas companies. Combining Air Products' global leadership in liquid bulk and tonnage gases with Airgas' leadership in U.S. packaged gases will create the largest industrial gas company in North America and one of the largest globally—a leader with distinctive strengths and world-class competencies across all distribution channels and geographies. While we have a strong and profitable packaged gas business in Europe and other key international markets, we do not have a position in the U.S. packaged gas business where Airgas is the market leader. As part of this uniquely compelling combination, Airgas would be well positioned to achieve higher growth than it could achieve on a stand-alone basis.

We do not believe there are any significant financial or regulatory impediments to your shareholders' timely realization of this substantial cash premium. We have secured committed financing from J.P. Morgan to complete the offer and are committed to maintaining a robust capital structure. We have also thoroughly considered the regulatory issues related to this combination and are prepared to make appropriate divestitures, none of which we expect to be material.

The strategic and industrial logic of this combination is clear, and we are confident that an Air Products/Airgas combination would create greater value than Airgas or Air Products could each achieve on its own. There are many advantages to consummating this combination now, including:

- The opportunity to improve growth, returns and cash generation.
- Substantial cost synergies, which are expected to yield savings of $250 million annually when fully realized, primarily related to reductions in overhead and public company costs, supply chain efficiencies, and better utilization of infrastructure.
- The ability to leverage Airgas' extensive U.S. sales force and packaged gases skills, and to build on the foundation of Air Products' global presence and infrastructure, to accelerate growth both domestically and internationally.
- An integrated platform better able to capture economies of scale from extensive engineering, operations and back office capabilities with a much greater reach and ability to provide better overall customer service.

- Air Products' presence in all of the world's key industrial gas markets, increased cash flow and greater access to capital would allow Airgas to achieve international expansion far faster and at a much lower cost, while accelerating its growth through acquisitions.

We believe the timing for this combination is ideal. The economy is just beginning to emerge from recession, and together we would be able to take full advantage of the substantial growth potential, economies of scale, and synergies unique to this transaction. You have made clear your international growth aspirations, which will require significant time and expense to build out on your own. Air Products has the global infrastructure in place that would allow you to achieve your goals faster and better. Airgas is also just in the initial stages of implementing SAP, and our demonstrated expertise in this area would greatly reduce the time, expense and disruption associated with this vital rollout.

Bringing our two companies together would also benefit employees, customers and the communities in which we operate. We highly value the talented operating team at Airgas, which would benefit greatly from the expanded opportunities and resources available as part of a larger and stronger global U.S. company headquartered in Pennsylvania—with significantly greater long-term growth prospects than a stand-alone Airgas. Your customers would benefit from a more robust product offering from a company with expanded resources and global scope.

Peter, let me reemphasize as I have in past discussions that Air Products is fully committed to the successful completion of this compelling transaction. Your continuing refusal to engage with us will serve only to further delay your shareholders' ability to receive a substantial all-cash premium. While we would strongly prefer to proceed through friendly negotiations, you should not doubt our resolve to take the necessary actions to complete this transaction. We would welcome the opportunity to meet with you or with any special committee of your independent directors which has been or will be formed to consider our offer, as well as their independent financial and legal advisors. Finally, we reiterate our willingness to reflect in our offer any incremental value you can demonstrate.

Very Truly Yours,

John E. McGlade

Chairman, President and Chief Executive Officer

cc: Airgas Board of Directors

On February 4, 2010, Air Products also commenced litigation against Airgas and the members of the Airgas Board in the Court of Chancery in the State of Delaware. The Delaware Action is described in more detail under "The Offer—Section 16."

On February 5, 2010, Airgas issued a press release stating that the Airgas Board would review Air Products' proposal with its financial and legal advisors and advising its stockholders to take no action at that time. In response to Air Products' public offer, Airgas commenced litigation against Air Products' legal advisors, Cravath, Swaine & Moore LLP, in the Court of Common Pleas, Philadelphia County, Pennsylvania. The Pennsylvania Action is described in more detail under "The Offer—Section 16."

On February 9, 2010, the Court of Common Pleas, Philadelphia County, Pennsylvania denied Airgas's motion in the Pennsylvania Action for a special injunction that would have prohibited Cravath from advising Air Products in connection with the Offer and scheduled an evidentiary hearing on Airgas's motion for a preliminary injunction in the Pennsylvania Action for February 16, 2010.

On February 9, 2010, an Airgas stockholder commenced a putative class action lawsuit against Airgas and the members of the Airgas Board in the Court of Chancery in the State of Delaware. The Airgas Stockholder Class Action is described in more detail under "The Offer—Section 16."

Also on February 9, 2010, Mr. McCausland sent a letter to Mr. McGlade stating that the Airgas Board had rejected Air Products' proposal to acquire Airgas for a purchase price in cash of $60.00 per Share. On the same day, Airgas issued a press release which included the contents of the letter.

Mr. McCausland and the Airgas Board have continued to refuse to meet with Air Products and its advisors.

Because of the Airgas Board's continued refusal to engage in any discussions with Air Products, on February 11, 2010, Air Products made a direct appeal to Airgas's stockholders and commenced this Offer.

Other Transactions with Airgas. Air Products is a party to numerous commercial arrangements, as both a buyer and a seller, with Airgas, under which the parties engaged in transactions having a total value of approximately $77 million in calendar year 2008 and approximately $74 million in calendar year 2009. These arrangements include a long-term take-or-pay supply agreement, in effect until 2017, pursuant to which Air Products supplies Airgas with bulk oxygen, nitrogen, argon, hydrogen, and helium. In each of calendar years 2008 and 2009, Airgas's purchases under this contract totaled approximately $70 million.

12. Purpose of the Offer; Plans for Airgas; Statutory Requirements; Approval of the Merger.

Purpose of the Offer; Plans for Airgas. The purpose of the Offer is to acquire control of, and the entire equity interest in, Airgas. We currently intend, as soon as practicable after consummation of the Offer, to seek to have Airgas consummate the Proposed Merger, pursuant to which each then outstanding Share not owned by Air Products or the Purchaser (or their subsidiaries) would be converted into the right to receive an amount in cash equal to the highest price per Share paid in the Offer. Under the DGCL and Airgas Certificate, if the Certificate Condition is satisfied and we acquire, pursuant to the Offer or otherwise, at least 90% of the outstanding Shares, we believe we would be able to consummate the Proposed Merger without a vote of the Airgas Board or other stockholders. If we do not acquire at least 90% of the outstanding Shares, under the DGCL we will have to seek approval of the Proposed Merger by Airgas's stockholders. Approval of a merger pursuant to the DGCL requires the affirmative vote of holders of a majority of the outstanding Shares. If the Certificate Condition is not satisfied but we elect to consummate the Offer, Article 6 also would require us to seek approval of the Proposed Merger unless certain exceptions apply. Article 6 of the Airgas Certificate provides that approval of a merger with an "Interested Stockholder" (generally, a stockholder who is the direct or indirect beneficial owner of 20% or more of the voting power of Airgas's outstanding voting stock or an affiliate or associate thereof) requires the affirmative vote of holders of 67% of the voting power of the outstanding Shares unless such merger is approved by a majority of Airgas's disinterested directors or certain fair price conditions are met. In addition, if the Section 203 Condition is not satisfied but we elect to consummate the Offer, Section 203 could significantly delay our ability to consummate the Proposed Merger. See "Statutory Requirements; Approval of the Merger" below.

If we acquire Shares pursuant to the Offer, depending upon the number of Shares so acquired and other factors relevant to our equity ownership in Airgas, we may, subsequent to the consummation of the Offer, seek to acquire additional Shares through open market purchases, privately negotiated transactions, a tender or exchange offer or other transactions or a combination of the foregoing on such terms and at such prices as we shall determine, which may be different from the price paid in the Offer. We also reserve the right to dispose of Shares that we have acquired or may acquire.

We currently intend to nominate, and solicit proxies for the election of, a slate of Nominees for election at Airgas's 2010 annual meeting pursuant to the Proxy Solicitation. We reserve the right, however, at any time to determine not to commence the Proxy Solicitation (or to terminate the Proxy Solicitation or launch a different proxy solicitation) if we determine it to be in our best interests to do so or if we determine that the Proxy Solicitation is unnecessary, including, if we so determine, if the Airgas Board has taken all actions within its power to cause the conditions contained in this Offer to Purchase to be satisfied.

Whether or not we propose a merger or other similar business combination with Airgas and whether or not our Nominees are elected at Airgas's annual meeting, we currently intend, as soon as practicable after consummation of the Offer, to seek maximum representation on the Airgas Board. We intend, promptly after the consummation of the Offer, to request that some or all of the current members of the Airgas Board resign and that our designees be elected to fill the vacancies so created. Should such request be refused, we intend to take such action as may be necessary and lawful to secure control of the Airgas Board. We reserve the right to seek the removal without cause of any or all of Airgas's directors and to seek to call a special meeting of Airgas's stockholders in order to act on proposals to be determined.

We expect that our Nominees and designees, subject to their fiduciary duties under applicable law, would cause the Airgas Board to:

- amend the Rights Agreement or redeem the Rights, or otherwise act to satisfy the Rights Condition;
- approve the Offer and the Proposed Merger, or otherwise act to satisfy the Section 203 Condition and the Certificate Condition; and
- take any other actions necessary to cause to permit the Proposed Merger to be consummated.

If the Shares are not delisted prior to the Proposed Merger, we intend to cause the delisting of the Shares by the NYSE promptly following consummation of the Offer. We intend to seek to cause Airgas to terminate registration of the Shares under the Exchange Act as soon after the consummation of the Offer as the requirements for deregistration, including the delisting of the Shares, are met. See "The Offer—Section 7."

In connection with the Offer, Air Products and the Purchaser have reviewed, and will continue to review, on the basis of publicly available information, various possible business strategies that they might consider in the event that the Purchaser acquires control of Airgas. In addition, if and to the extent that the Purchaser acquires control of Airgas or otherwise obtains access to the books and records of Airgas, Air Products and the Purchaser intend to conduct a detailed review of Airgas and its assets, financial projections, corporate structure, capitalization, operations, properties, policies, management and personnel and consider and determine what, if any, changes would be desirable to achieve anticipated synergies in the combined company, in light of the circumstances which then exist. Such strategies could include, among other things, changes in Airgas's business, facility locations, corporate structure, rationalization of employment and cost levels, product development, marketing strategies, capitalization, management or dividend policy.

Air Products and the Purchaser are prepared to make appropriate divestitures in connection with obtaining the regulatory approvals required for the consummation of the Offer, none of which divestitures we expect will be material.

If we acquire control of Airgas, we currently intend that, prior to our acquisition of the entire equity interest in Airgas or the consummation of the Proposed Merger, no dividends will be declared on the Shares.

Except as described above or elsewhere in this Offer to Purchase, the Purchaser has no present plans or proposals that would relate to or result in an extraordinary corporate transaction involving Airgas or any of its subsidiaries (such as a merger, reorganization, liquidation, relocation of any operations or sale or other transfer of a material amount of assets), any change in the Airgas Board or management, any material change in Airgas's indebtedness, capitalization or dividend rate or policy or any other material change in Airgas's corporate structure or business.

> *POINT 9: In the following section, the potential state legal and regulatory issues are disclosed. These details can be very important in a takeover battle and the arbitrageur must analyze these legal issues in depth.*

Statutory Requirements; Approval of the Proposed Merger. Under the DGCL, if the Section 203 Condition and the Certificate Condition are satisfied, the Proposed Merger would require the approval of the Airgas Board and the holders of a majority of the outstanding Shares. In addition, under the DGCL, if such conditions are satisfied and we acquire, pursuant to the Offer or otherwise, at least 90% of the outstanding Shares, we believe we would be able to approve the Proposed Merger without a vote of the Airgas Board or other stockholders.

If the Certificate Condition is not satisfied but we elect, in our sole discretion, to consummate the Offer, Article 6 of the Airgas Certificate would require us to seek approval of the Proposed Merger unless certain exceptions apply. Article 6 of the Airgas Certificate provides that approval of a merger with an "Interested Stockholder" (generally, a stockholder who is the direct or indirect beneficial owner of 20% or more of the voting power of Airgas's outstanding voting stock or an affiliate or associate thereof) requires the affirmative vote of holders of 67% of the voting power of the outstanding Shares unless such merger is approved by a majority of Airgas's disinterested directors or certain fair price conditions are met. We reserve the right to waive the Certificate Condition, although there can be no assurance that we will do so and we have not determined whether we would be willing to do so under any circumstances.

If the Section 203 Condition is not satisfied but we elect, in our sole discretion, to consummate the Offer, Section 203 could significantly delay our ability to acquire the entire equity interest in Airgas. In general, Section 203 prevents an "interested stockholder" (generally, a stockholder owning 15% or more of a corporation's outstanding voting stock or an affiliate or associate thereof) from engaging in a "business combination" (defined to include a merger or consolidation and certain other transactions) with a Delaware corporation for a period of three years following the time on which such stockholder became an interested stockholder unless (i) prior to such time the corporation's board of directors approved either the business combination or the transaction which resulted in such stockholder becoming an interested stockholder, (ii) upon consummation of the transaction which resulted in such stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the corporation's voting stock outstanding at the time the transaction commenced (excluding shares owned by certain employee stock plans and persons who are directors and also officers of the corporation) or (iii) at or subsequent to such time the business combination is approved by the corporation's board of directors and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least 662/3% of the outstanding voting stock not owned by the interested stockholder.

The provisions of Section 203 do not apply to a Delaware corporation if, among other things, (i) such corporation amends its certificate of incorporation or bylaws to elect not to be governed by Section 203 by (in addition to any other required vote) the affirmative vote of a majority of the shares entitled to vote; provided that such amendment would not be effective until 12 months after its adoption and would not apply to any business combination between such corporation and any person who became an interested stockholder on or prior to its adoption, (ii) such corporation does not have a class of voting stock that is listed on a national securities exchange or held of record by more than 2,000 stockholders, unless any of the foregoing results from action taken, directly or indirectly, by an interested stockholder or from a transaction in which a person becomes an interested stockholder, or (iii) the business combination is proposed by an interested stockholder prior to the consummation or abandonment of, and subsequent to the earlier of the public announcement or the notice required under Section 203 of, any one of certain proposed transactions which is with or by a person who was not an interested stockholder during the previous three years or who became an interested stockholder with the approval of the corporation's board of directors and is approved or not opposed by a majority of the board of directors then in office who were directors prior to any person becoming an interested stockholder during the previous three years or were recommended for election to succeed such directors by a majority of such directors.

The Offer is subject to satisfaction of the Section 203 Condition, which will be satisfied if, among other things, (i) prior to the acceptance for payment of Shares pursuant to the Offer, the Airgas Board approves the Offer or the Proposed Merger or (ii) there are validly tendered prior to the Expiration Date and not withdrawn a number of Shares which, together with the Shares then owned by us, would represent at least 85% of the Shares outstanding on the date hereof (excluding Shares owned by certain employee stock plans and persons who are directors and also officers of Airgas).

We reserve the right to waive the Section 203 Condition, although there can be no assurance that we will do so, and we have not determined whether we would be willing to do so under any circumstances. If we waive such condition and purchase Shares pursuant to the Offer or otherwise and Section 203 is applicable, we may nevertheless seek to consummate a merger or other business combination with Airgas. We believe we would be able to cause the consummation of such a merger or other business combination if we own a majority of the outstanding Shares and (i) such merger or other business combination is approved by the Airgas Board and authorized at an annual or special meeting of stockholders of Airgas, and not by written consent, by the affirmative vote of at least 662/3% of the outstanding Shares not owned by us or our affiliates and associates; or (ii) such merger or other business combination occurs after the expiration of three years following the date we became an interested stockholder.

On the other hand, if we waive the Section 203 Condition and purchase Shares pursuant to the Offer or otherwise and are prevented by Section 203 from consummating a merger or other business combination with Airgas for any period of time, we may (i) determine not to seek to consummate such a merger or other business combination, (ii) seek to acquire additional Shares in the open market, pursuant to privately negotiated transactions or otherwise, at prices that may be higher, lower or the same as the price paid in the Offer or (iii) seek to effect one or more alternative transactions with or by Airgas. We have not determined whether we would take any of the actions described above under such circumstances.

The exact timing and details of any merger or other similar business combination involving Airgas will necessarily depend upon a variety of factors, including the number of Shares we acquire pursuant to the Offer. Although we currently intend to propose a merger or similar business combination generally on the terms described above, it is possible that, as a result of substantial delays in our ability to effect such a transaction, actions Airgas may take in response to the Offer, information we obtain hereafter, changes in general economic or market conditions or in the business of Airgas or other currently unforeseen factors, such a transaction may not be so proposed, may be delayed or abandoned or may be proposed on different terms. We reserve the right not to propose a merger or other similar business combination with Airgas or to propose such a transaction on terms other than those described above. Specifically, we reserve the right (i) to propose consideration in a merger or other similar business combination consisting of securities or a combination of cash and securities and (ii) to propose consideration in such a transaction having a value that is greater than or less than the amount referred to above.

The foregoing discussion is not a complete statement of the DGCL and is qualified in its entirety by reference to the DGCL.

13. Dividends and Distributions.

If, on or after the date of this Offer to Purchase, Airgas (i) splits, combines or otherwise changes the Shares or its capitalization, (ii) acquires Shares or otherwise causes a reduction in the number of Shares, (iii) issues or sells additional Shares, or any shares of any other class of capital stock, other voting securities or any securities convertible into or exchangeable for, or rights, warrants or options, conditional or otherwise, to acquire, any of the foregoing, or (iv) discloses that it has taken such action, then, without prejudice to our rights under "The Offer—Section 14," we may make such adjustments in the offer price and other terms of the Offer and the Proposed Merger as we deem appropriate to reflect such split, combination or other change including the number or type of securities offered to be purchased.

If, on or after the date of this Offer to Purchase, Airgas declares or pays any cash dividend on the Shares or other distribution on the Shares, or issues with respect to the Shares any additional Shares or Rights, shares of any other class of capital stock, other than voting securities or any securities convertible into, or rights, warrants or options, conditional or otherwise, to acquire, any of the foregoing, payable or distributable to stockholders of record on a date prior to the transfer of the Shares purchased pursuant to the Offer to us or our nominee or transferee on Airgas's stock transfer records, then, subject to the provisions of "The Offer—Section 14," (i) the offer price may be reduced by the amount of any such cash dividends or cash distributions and (ii) the whole of any such non-cash dividend, distribution or issuance to be received by the tendering stockholders will (a) be received and held by the tendering stockholders for our account and will be required to be promptly remitted and transferred by each tendering stockholder to the Depositary for our account, accompanied by appropriate documentation of transfer, or (b) at our direction, be exercised for our benefit, in which case the proceeds of such exercise will promptly be remitted to us. Pending such remittance and subject to applicable law, we will be entitled to all rights and privileges as owner of any such non-cash dividend, distribution, issuance or proceeds and may withhold the entire offer price or deduct from the offer price the amount or value thereof, as determined by us in our sole discretion.

14. Conditions of the Offer.

> *POINT 10: The specific conditions of the offer are very important and can determine the likelihood of the hostile offer's success.*

Notwithstanding any other provision of the Offer, we are not required to accept for payment or, subject to any applicable rules and regulations of the SEC, including Rule 14e-1(c) under the Exchange Act (relating to the Purchaser's obligation to pay for or return tendered Shares promptly after termination or expiration of the Offer), pay for any Shares, and may terminate or amend the Offer, if before the Expiration Date the Minimum Tender Condition, the Rights Condition, the Section 203 Condition, the Certificate Condition, the HSR Condition or the Impairment Condition shall not have been satisfied, or if, at any time on or after the date of this Offer to Purchase, and before the time of payment for such Shares (whether or not any Shares have theretofore been accepted for payment pursuant to the Offer), any of the following conditions exist:

(i) there is threatened, instituted or pending any action or proceeding by any government, governmental authority or agency or any other person, domestic, foreign or supranational, before any court or governmental authority or agency, domestic, foreign or supranational, (a) challenging or seeking to, or which is reasonably likely to, make illegal, delay or otherwise, directly or indirectly, restrain or prohibit the making of the Offer, the acceptance for payment of or payment for some or all of the Shares by us or any of our subsidiaries or affiliates or the consummation by us or any of our subsidiaries or affiliates of a merger or other similar business combination involving Airgas,

(b) seeking to obtain material damages in connection with, or otherwise directly or indirectly relating to, the transactions contemplated by the Offer or any such merger or other similar business combination, (c) seeking to restrain or prohibit the exercise of our full rights of ownership or operation by us or any of our subsidiaries or affiliates of all or any portion of our business or assets or those of Airgas or any of our or Airgas's respective subsidiaries or affiliates or to compel us or any of our subsidiaries or affiliates to dispose of or hold separate all or any portion of our business or assets or those of Airgas or any of our or Airgas's respective subsidiaries or affiliates or seeking to impose any limitation on our or any of our subsidiaries' or affiliates' ability to conduct such businesses or own such assets, (d) seeking to impose or confirm limitations on our ability or that of any of our subsidiaries or affiliates effectively to exercise full rights of ownership of the Shares, including the right to vote any Shares acquired or owned by us or any of our subsidiaries or affiliates on all matters properly presented to Airgas's stockholders, (e) seeking to require divestiture by us or any of our subsidiaries or affiliates of any Shares, (f) seeking any material diminution in the benefits expected to be derived by us or any of our subsidiaries or affiliates as a result of the transactions contemplated by the Offer or any merger or other business combination involving Airgas, (g) adversely affecting the financing of the Offer or any merger or other business combination involving Airgas or (h) that otherwise, in our reasonable judgment, has or may have material adverse significance with respect to either the value of Airgas or any of its subsidiaries or affiliates or the value of the Shares to us or any of our subsidiaries or affiliates; or

(ii) any action is taken, or any statute, rule, regulation, interpretation, judgment, injunction, order or decree is proposed, enacted, enforced, promulgated, amended, issued or deemed applicable to Air Products, the Purchaser or any of their subsidiaries or affiliates, the Offer, the acceptance for payment of or payment for Shares, or any merger or other business combination involving Airgas, by any court, government or governmental authority or agency, domestic, foreign or supranational (other than the application of the waiting period provisions of the HSR Act to the Offer or to any such merger or other business combination), that, in our reasonable judgment, does or may, directly or indirectly, result in any of the consequences referred to in clauses (a) through (h) of paragraph (i) above; or

(iii) any change occurs or is threatened (or any development occurs or is threatened involving a prospective change) in the business, assets, liabilities, financial condition, capitalization, operations, results of operations or prospects of Airgas or any of its affiliates that, in our reasonable judgment, is or may be materially adverse to Airgas or any of its affiliates, or we become aware of any facts that, in our reasonable judgment, have or may have material adverse significance with respect to either the value of Airgas or any of its affiliates or the value of the Shares to us or any of our affiliates; or

(iv) there occurs (a) any general suspension of trading in, or limitation on prices for, securities on any national securities exchange or in the over-the-counter market, (b) any decline in either the Dow Jones Industrial Average, the Standard and Poor's Index of 500 Industrial Companies or the NASDAQ-100 Index by an amount in excess of 15%, measured from the close of business on February 4, 2010, (c) any change in the general political, market, economic or financial conditions in the United States or abroad that, in our reasonable judgment, could have a material adverse effect on the business, assets, liabilities, financial condition, capitalization, operations, results of operations or prospects of Airgas and its subsidiaries, taken as a whole, (d) the declaration of a banking moratorium or any suspension of payments in respect of banks in the United States, (e) any material adverse change (or development or threatened development involving a prospective material adverse change) in United States dollars or any other currency exchange rates or a suspension of, or a limitation on, the markets therefor, (f) the commencement of a war, armed hostilities or other international or national calamity directly or indirectly involving the United States or any attack on, outbreak or act of terrorism involving the United States, (g) any limitation (whether or not mandatory) by any governmental authority or agency on, or any other event that, in our reasonable judgment, may adversely affect, the extension of credit by banks or other financial institutions or (h) in the case of any of the foregoing existing as of the close of business on February 4, 2010, a material acceleration or worsening thereof; or

(v) (a) a tender or exchange offer for some or all of the Shares has been publicly proposed to be made or has been made by another person (including Airgas or any of its subsidiaries or affiliates), or has been publicly disclosed, or we otherwise learn that any person or "group" (as defined in Section 13(d)(3) of the Exchange Act) has acquired or proposes to acquire beneficial ownership of more than 5% of any class or series of capital stock of Airgas (including the Shares), through the acquisition of stock, the formation of a group or otherwise, or is granted any option, right or warrant, conditional or otherwise, to acquire beneficial ownership of more than 5% of any class or series of capital stock of Airgas (including the Shares) other than acquisitions for bona fide arbitrage purposes only and other than as disclosed in a Schedule 13D or 13G on file with the SEC on February 4, 2010, (b) any such person or group which, prior to February 4, 2010, had filed such a Schedule with the SEC has acquired or proposes to acquire beneficial ownership of additional shares of any class or series of capital stock of Airgas, through the acquisition of stock, the formation of a group or otherwise, constituting 1% or more of any such class or series, or is granted any option, right or warrant, conditional or otherwise, to acquire beneficial ownership of additional shares of any class or series of capital stock of Airgas constituting 1% or more of any such class or series, (c) any person or group has entered into a definitive agreement or an agreement in principle or made a proposal with respect to a tender or exchange offer or a merger, consolidation or other business combination with or involving Airgas or (d) any person has filed a Notification and Report Form under the HSR Act or made a public announcement reflecting an intent to acquire Airgas or any assets or securities of Airgas; or

(vi) Airgas or any of its subsidiaries has (a) split, combined or otherwise changed, or authorized or proposed the split, combination or other change of, the Shares or its capitalization, (b) acquired or otherwise caused a reduction in the number of, or authorized or proposed the acquisition or other reduction in the number of, outstanding Shares or other securities, (c) issued or sold, or authorized or proposed the issuance or sale of, any additional Shares, shares of any other class or series of capital stock, other voting securities or any securities convertible into, or options, rights or warrants, conditional or otherwise, to acquire, any of the foregoing (other than the issuance of Shares pursuant to and in accordance with the terms in effect on December 31, 2009, of employee stock options outstanding prior to such date), or any other securities or rights in respect of, in lieu of, or in substitution or exchange for any shares of its capital stock, (d) permitted the issuance or sale of any shares of any class of capital stock or other securities of any subsidiary of Airgas, (e) declared, paid or proposed to declare or pay any dividend or other distribution on any shares of capital stock of Airgas (other than a distribution of the Rights certificates or a redemption of the Rights in accordance with the Rights Agreement as publicly disclosed to be in effect prior to the date of this Offer to Purchase), (f) altered or proposed to alter any material term of any outstanding security, issued or sold, or authorized or proposed the issuance or sale of, any debt securities or otherwise incurred or authorized or proposed the incurrence of any debt other than in the ordinary course of business (other than to amend the Rights Agreement to make the Rights inapplicable to the Offer and the proposed second-step merger described herein), (g) authorized, recommended, proposed or announced its intent to enter into or entered into an agreement with respect to or effected any merger, consolidation, liquidation, dissolution, business combination, acquisition of assets, disposition of assets or relinquishment of any material contract or other right of Airgas or any of its subsidiaries or any comparable event not in the ordinary course of business, (h) authorized, recommended, proposed or announced its intent to enter into or entered into any agreement or arrangement with any person or group that, in our reasonable judgment, has or may have material adverse significance with respect to either the value of Airgas or any of its subsidiaries or affiliates or the value of the Shares to us or any of our subsidiaries or affiliates, (i) adopted, entered into or amended any employment, severance, change of control, retention or other similar agreement, arrangement or plan with or for the benefit of any of its officers, directors, employees or consultants or made grants or awards thereunder, in each case other than in the ordinary course of business or adopted, entered into or amended any such agreements, arrangements or plans so as to provide for increased benefits to officers, directors, employees or consultants as a result of or in connection with the making of the Offer, the acceptance for payment of or payment for some of or all the Shares by us or our consummation of any merger or other similar business combination involving Airgas (including, in each case, in combination with any other event such as termination of employment or service), (j) except as may be required by law, taken any action to terminate or amend or materially increase liability under any employee benefit plan (as defined in Section 3(2) of the Employee Retirement Income Security Act of 1974) of Airgas or any of its subsidiaries, or we shall have become aware of any such action which was not previously announced, (k) transferred into escrow (or other similar arrangement) any amounts required to fund any existing benefit, employment, severance, change of control or other similar agreement, in each case other than in the ordinary course of business, or (l) amended, or authorized or proposed any amendment to, its certificate of incorporation or bylaws (or other similar constituent documents) or we become aware that Airgas or any of its subsidiaries shall have amended, or authorized or proposed any amendment to, the Airgas Certificate or bylaws (or other similar constituent documents) which has not been previously disclosed (in each case, other than to amend the Rights Agreement to make the Rights inapplicable to the Offer and the proposed second-step merger described herein); or

(vii) we become aware (a) that any material contractual right of Airgas or any of its subsidiaries has been impaired or otherwise adversely affected or that any material amount of indebtedness of Airgas or any of its subsidiaries has been accelerated or has otherwise become due or become subject to acceleration prior to its stated due date, in each case with or without notice or the lapse of time or both, as a result of or in connection with the Offer or the consummation by us or any of our subsidiaries or affiliates of a merger or other similar business combination involving Airgas or (b) of any covenant, term or condition in any instrument or agreement of Airgas or any of its subsidiaries that, in our reasonable judgment, has or may have material adverse significance with respect to either the value of Airgas or any of its affiliates or the value of the Shares to us or any of our affiliates (including any event of default that may ensue as a result of or in connection with the Offer, the acceptance for payment of or payment for some or all of the Shares by us or our consummation of a merger or other similar business combination involving Airgas); or

(viii) we or any of our affiliates enters into a definitive agreement or announces an agreement in principle with Airgas providing for a merger or other similar business combination with Airgas or any of its subsidiaries or the purchase of securities or assets of Airgas or any of its subsidiaries, or we and Airgas reach any other agreement or understanding pursuant to which it is agreed that the Offer will be terminated;

(ix) Airgas or any of its subsidiaries shall have (i) granted to any person proposing a merger or other business combination with or involving Airgas or any of its subsidiaries or the purchase of securities or assets of Airgas or any of its subsidiaries any type of option, warrant or right which, in our reasonable judgment, constitutes a “lock-up” device (including a right to acquire or receive any Shares or other securities, assets or business of Airgas or any of its subsidiaries) or (ii) paid or agreed to pay any cash or other consideration to any party in connection with or in any way related to any such business combination or purchase; or

(x) any required approval, permit, authorization, extension, action or non-action, waiver or consent of any governmental authority or agency (including the other matters described or referred to in “The Offer—Section 15—Certain Legal Matters; Regulatory Approvals”) shall not have been obtained on terms satisfactory to Air Products and the Purchaser or any waiting period or extension thereof imposed by any government or governmental authority or agency with respect to the Offer shall not have expired.

The foregoing conditions are for the sole benefit of Air Products, the Purchaser and their affiliates and may be asserted by us or Air Products in our sole discretion regardless of the circumstances giving rise to any such conditions or may be waived by us in our sole discretion in whole or in part at any time or from time to time before the Expiration Date. We expressly reserve the right to waive any of the conditions to the Offer and to make any change in the terms of or conditions to the Offer. Our failure at any time to exercise our rights under any of the foregoing conditions shall not be deemed a waiver of any such right. The waiver of any such right with respect to particular facts and circumstances shall not be deemed a waiver with respect to any other facts and circumstances. Each such right shall be deemed an ongoing right which may be asserted at any time or from time to time.

15. Certain Legal Matters; Regulatory Approvals.

> *POINT 11: Any regulatory approvals that are required must be analyzed in depth.*

General. Based on our examination of publicly available information filed by Airgas with the SEC and other publicly available information concerning Airgas, we are not aware of any governmental license or regulatory permit that appears to be material to Airgas's business that might be adversely affected by our acquisition of Shares pursuant to the Offer or, except as set forth below, of any approval or other action by any government or governmental administrative or regulatory authority or agency, domestic or foreign, that would be required for our acquisition or ownership of Shares pursuant to the Offer. Should any such approval or other action be required or desirable, we currently contemplate that, except as described below under "Other State Takeover Statutes," such approval or other action will be sought. Except as described below under "Antitrust," there is, however, no current intent to delay the purchase of Shares tendered pursuant to the Offer pending the outcome of any such matter. There can be no assurance that any such approval or other action, if needed, would be obtained (with or without substantial conditions) or that if such approvals were not obtained or such other actions were not taken adverse consequences might not result to Airgas's business or certain parts of Airgas's business might not have to be disposed of, any of which could cause us to elect to terminate the Offer without the purchase of Shares thereunder. Our obligation under the Offer to accept for payment and pay for Shares is subject to the conditions set forth in "The Offer—Section 14."

Delaware Business Combination Statute. Airgas is subject to the provisions of Section 203, which imposes certain restrictions on business combinations involving Airgas. For a discussion of the provisions of Section 203, see "The Offer—Section 12."

Other State Takeover Statutes. A number of states have adopted laws which purport, to varying degrees, to apply to attempts to acquire corporations that are incorporated in, or which have substantial assets, stockholders, principal executive offices or principal places of business or whose business operations otherwise have substantial economic effects in, such states. Airgas, directly or through subsidiaries, conducts business in a number of states throughout the United States, some of which have enacted such laws. Except as described herein, we do not know whether any of these laws will, by their terms, apply to the Offer or any merger or other business combination between us or any of our affiliates and Airgas, and we have not complied with any such laws. To the extent that certain provisions of these laws purport to apply to the Offer or any such merger or other business combination, we believe that there are reasonable bases for contesting such laws.

In 1982, in *Edgar v. MITE Corp*., the Supreme Court of the United States invalidated on constitutional grounds the Illinois Business Takeover Statute which, as a matter of state securities law, made takeovers of corporations meeting certain requirements more difficult. However, in 1987 in *CTS Corp. v. Dynamics Corp. of America*, the Supreme Court held that the State of Indiana could, as a matter of corporate law, constitutionally disqualify a potential acquiror from voting shares of a target corporation without the prior approval of the remaining stockholders where, among other things, the corporation is incorporated, and has a substantial number of stockholders, in the state. Subsequently, in *TLX Acquisition Corp. v. Telex Corp*., a U.S. federal district court in Oklahoma ruled that the Oklahoma statutes were unconstitutional as applied to corporations incorporated outside Oklahoma in that they would subject such corporations to inconsistent regulations. Similarly, in *Tyson Foods, Inc. v. McReynolds*, a U.S. federal district court in Tennessee ruled that four Tennessee takeover statutes were unconstitutional as applied to corporations incorporated outside Tennessee. This decision was affirmed by the United States Court of Appeals for the Sixth Circuit. In December 1988, a U.S. federal district court in Florida held in *Grand Metropolitan PLC v. Butterworth* that the provisions of the Florida Affiliated Transactions Act and the Florida Control Share Acquisition Act were unconstitutional as applied to corporations incorporated outside of Florida.

If any government official or third party seeks to apply any state takeover law to the Offer or any merger or other business combination between us or any of our affiliates and Airgas, we will take such action as then appears desirable, which action may include challenging the applicability or validity of such statute in appropriate court proceedings. If it is asserted that one or more state takeover statutes is applicable to the Offer or any such merger or other business combination and an appropriate court does not determine that it is inapplicable or invalid as applied to the Offer or any such merger or other business combination, we might be required to file certain information with, or to receive approvals from, the relevant state authorities or holders of Shares, and we may be unable to accept for payment or pay for Shares tendered pursuant to the Offer, or be delayed in continuing or consummating the Offer or any such merger or other business combination. In such case, we may not be obligated to accept for payment or pay for any tendered Shares. See "The Offer—Section 14."

Antitrust. Under the HSR Act and the rules that have been promulgated thereunder by the Federal Trade Commission (the "FTC"), certain acquisition transactions may not be consummated unless certain information has been furnished to the Antitrust Division of the Department of Justice (the "Antitrust Division") and the FTC and certain waiting period requirements have been satisfied. The purchase of Shares pursuant to the Offer is subject to such requirements.

> *POINT 12: Since ARG and APD have overlapping businesses, getting antitrust approval would be a key element in the battle.*

Pursuant to the requirements of the HSR Act, we plan to file a Notification and Report Form with respect to the Offer with the Antitrust Division and the FTC as promptly as possible after the date hereof. As a result, the waiting period applicable to the purchase of Shares pursuant to the Offer will expire at 11:59 P.M., New York City time, 15 days following such filing, unless such 15th day is a Saturday, Sunday or other legal public holiday, in which case the waiting period will expire at 11:59 P.M., New York City time, on the next regular business day. However, before such time, the Antitrust Division or the FTC may extend the waiting period by requesting additional information or documentary material relevant to the Offer from us. If such a request is made, the waiting period will be extended until 11:59 P.M., New York City time, 10 days after our substantial compliance with such request. Thereafter, such waiting period can be extended only by court order.

Shares will not be accepted for payment or paid for pursuant to the Offer until the expiration or earlier termination of the applicable waiting period under the HSR Act. See "The Offer—Section 14." Subject to certain circumstances described in "The Offer—Section 4," any extension of the waiting period will not give rise to any withdrawal rights not otherwise provided for by applicable law. If our acquisition of Shares is delayed pursuant to a request by the Antitrust Division or the FTC for additional information or documentary material pursuant to the HSR Act, the Offer may, but need not, be extended.

The Antitrust Division and the FTC frequently scrutinize the legality under the antitrust laws of transactions such as our acquisition of Shares pursuant to the Offer. At any time before or after the consummation of any such transactions, the Antitrust Division or the FTC could take such action under the antitrust laws as it deems necessary or desirable in the public interest, including seeking to enjoin the purchase of Shares pursuant to the Offer or seeking divestiture of the Shares so acquired or divestiture of our or Airgas's substantial assets. Private parties and individual states may also bring legal actions under the antitrust laws. There can be no assurance that a challenge to the Offer on antitrust grounds will not be made, or if such a challenge is made, what the result will be. See "The Offer—Section 14" for certain conditions to the Offer, including conditions with respect to litigation and certain governmental actions.

If the Antitrust Division, the FTC, a state or a private party raises antitrust concerns in connection with the Offer, Air Products and Purchaser may engage in negotiations with the relevant governmental agency or party concerning possible means of addressing these issues and may delay consummation of the Offer or the Proposed Merger while such discussions are ongoing.

The Offer and Proposed Merger will likely be subject to antitrust filings in other countries in addition to the United States. We believe that any required approvals or clearances will be obtained, but there can be no assurance that all such approvals or clearances will be obtained.

Appraisal Rights. You do not have appraisal rights as a result of the Offer. However, if the Proposed Merger is consummated, stockholders of Airgas who do not tender their Shares in the Offer, continue to hold Shares at the time of the consummation of the Proposed Merger, neither vote in favor of the Proposed Merger nor consent thereto in writing and otherwise comply with the applicable statutory procedures under Section 262 of the DGCL will be entitled to receive a judicial determination of the fair value of their Shares (exclusive of any element of value arising from the accomplishment or expectation of such merger) and to receive payment of such fair value in cash, together with a fair rate of interest, if any (all such Shares collectively, the "Dissenting Shares"). Since appraisal rights are not available in connection with the Offer, no demand for appraisal under Section 262 of the DGCL may be made at this time. Any such judicial determination of the fair value of the Dissenting Shares could be based upon considerations other than or in addition to the price paid in the Offer and the market value of the Shares. Stockholders should recognize that the value so determined could be higher or lower than, or the same as, the price per Share paid pursuant to the Offer or the consideration paid in such a merger. Moreover, we may argue in an appraisal proceeding that, for purposes of such a proceeding, the fair value of the Dissenting Shares is less than the price paid in the Offer.

If any holder of Shares who demands appraisal under Section 262 of the DGCL fails to perfect, or effectively withdraws or loses, its, his or her rights to appraisal as provided in the DGCL, the Shares of such stockholder will be converted into the right to receive the price per Share paid in the Proposed Merger. A stockholder may withdraw his demand for appraisal by delivering to us a written withdrawal of his demand for appraisal and acceptance of the merger.

Failure to follow the steps required by Section 262 of the DGCL for perfecting appraisal rights may result in the loss of such rights.

Other. Based upon our examination of publicly available information concerning Airgas, it appears that Airgas and its subsidiaries own property and conduct business in a number of foreign countries. In connection with the acquisition of Shares pursuant to the Offer, the laws of certain of these foreign countries may require the filing of information with, or the obtaining of the approval of, governmental authorities therein. After commencement of the Offer, we will seek further information regarding the applicability of any such laws and currently intend to take such action as they may require, but no assurance can be given that such approvals will be obtained. If any action is taken before completion of the Offer by any such government or governmental authority, we may not be obligated to accept for payment or pay for any tendered Shares. See "The Offer—Section 14."

Any merger or other similar business combination that we propose would also have to comply with any applicable U.S. federal law. In particular, unless the Shares were deregistered under the Exchange Act prior to such transaction, if such merger or other business combination were consummated more than one year after termination of the Offer or did not provide for stockholders to receive cash for their Shares in an amount at least equal to the price paid in the Offer, we may be required to comply with Rule 13e-3 under the Exchange Act. If applicable, Rule 13e-3 would require, among other things, that certain financial information concerning Airgas and certain information relating to the fairness of the proposed transaction and the consideration offered to minority stockholders in such a transaction be filed with the SEC and distributed to such stockholders prior to consummation of the transaction.

16. Legal Proceedings.

> *POINT 13: The outcome of APD's attempt to take over ARG would hinge on the litigation in the Delaware Chancery Court.*

Delaware Action. On February 4, 2010, Air Products commenced litigation against Airgas and the members of the Airgas Board in the Court of

Chancery of the State of Delaware. In the action, captioned *Air Products and Chemicals, Inc. v. Airgas, Inc., et al.*, Civil Action No. 5249 (the "Delaware Action"), Air Products seeks, among other things, an order:

- declaring that Airgas's directors breached their fiduciary obligations to Airgas's stockholders under Delaware law by refusing to negotiate with Air Products and to inform themselves of the potential parameters of Air Products' prior offers to acquire Airgas, and by failing to form a special committee of independent directors, with independent advisors, to consider and negotiate Air Products' prior offer to acquire Airgas;
- compelling Airgas's directors to form a special committee of Airgas's independent directors, with its own independent financial and legal advisors, to reasonably consider and negotiate the proposed transaction, in good faith;
- enjoining Airgas's directors from engaging in any action or inaction that has the effect of improperly impeding, thwarting, frustrating or interfering with the proposed transaction with Air Products in a manner inconsistent with their fiduciary duties; and
- enjoining Airgas, its employees, agents and all persons acting on its behalf or in concert with it from taking any action that has the effect of impeding Air Products' efforts to acquire control of Airgas, in violation of their respective fiduciary duties to Airgas's stockholders.

A copy of the complaint filed in the Delaware Action was filed with the SEC as Exhibit 99.2 to the Form 8-K filed by Air Products on February 5, 2010.

Pennsylvania Action. On February 5, 2010, Airgas commenced litigation against Cravath, Swaine & Moore LLP ("Cravath"), counsel to Air Products, in the Court of Common Pleas of Philadelphia County, Pennsylvania. In the action, captioned as *Airgas, Inc. v. Cravath*, Swaine & Moore LLP, Civil Action No. 000857, February Term, 2010 (the "Pennsylvania Action"), Airgas is seeking, among other things, an order requiring Cravath to withdraw from its representation of Air Products in connection with the Offer based on Cravath's past representation of Airgas in connection with certain financing transactions and unspecified punitive and other damages.

On February 9, 2010, the Court of Common Pleas, Philadelphia County, Pennsylvania denied Airgas's motion in the Pennsylvania Action for a special injunction that would have prohibited Cravath from advising Air Products in connection with the Offer and scheduled an evidentiary hearing on Airgas's motion for a preliminary injunction in the Pennsylvania Action for February 16, 2010.

Airgas Stockholder Class Action. On February 9, 2010, an Airgas stockholder commenced a putative class action lawsuit against Airgas and the members of the Airgas Board in the Court of Chancery in the State of Delaware. In the action, captioned *Hollywood Police Officers' Retirement System v. Airgas, Inc., et al.*, Civil Action No. 5256 (the "Airgas Stockholder Class Action"), the plaintiff alleges, among other things, that the Airgas Board violated its fiduciary duties to Airgas stockholders and "effectively disenfranchised" Airgas stockholders by "spurning Air Products' overtures, and taking other defensive measures." On behalf of all Airgas stockholders, the plaintiff seeks relief that includes an order declaring that the Airgas directors breached their fiduciary duties and requiring the Airgas Board to conduct an auction of Airgas and/or a market-check of Airgas's value.

17. Fees and Expenses.

J.P. Morgan Securities Inc. is acting as our financial advisor and is acting as Dealer Manager in connection with the Offer and will receive customary fees in connection with this engagement. We have agreed to reimburse J.P. Morgan Securities Inc. for out-of-pocket expenses incurred in connection with the Offer and to indemnify J.P. Morgan Securities Inc. against certain liabilities, including certain liabilities under the U.S. federal securities laws.

We have retained MacKenzie Partners to act as the Information Agent and American Stock Transfer & Trust Company to act as the Depositary in connection with the Offer. The Information Agent may contact holders of Shares by mail, telephone, telex, telegraph and personal interviews and may request brokers, dealers, banks, trust companies and other nominees to forward materials relating to the Offer to beneficial owners. The Information Agent and the Depositary each will receive reasonable and customary compensation for their respective services, will be reimbursed for certain reasonable out-of-pocket expenses and will be indemnified against certain liabilities in connection therewith, including certain liabilities under the U.S. federal securities laws.

We will not pay any fees or commissions to any broker or dealer or any other person (other than the Dealer Manager, the Information Agent and the Depositary) for soliciting tenders of Shares pursuant to the Offer. Brokers, dealers, banks, trust companies and other nominees will, upon request, be reimbursed by us for reasonable and necessary costs and expenses incurred by them in forwarding materials to their customers.

18. Miscellaneous.

The Offer is not being made to, nor will tenders be accepted from or on behalf of, holders of Shares in any jurisdiction in which the making of the Offer or acceptance thereof would not be in compliance with the laws of such jurisdiction. However, we may, in our sole discretion, take such action as we may deem necessary to make the Offer in any such jurisdiction and extend the Offer to holders of Shares in such jurisdiction.

No person has been authorized to give any information or make any representation on behalf of Air Products or the Purchaser not contained in this Offer to Purchase or in the Letter of Transmittal and, if given or made, such information or representation must not be relied upon as having been authorized.

We have filed with the SEC a Tender Offer Statement on Schedule TO, together with exhibits, pursuant to Rule 14d-3 under the Exchange Act, furnishing certain additional information with respect to the Offer. The Schedule TO and any amendments thereto, including exhibits, may be examined and copies may be obtained from the offices of the SEC in the manner described in "The Offer—Section 9" of this Offer to Purchase.

APPENDIX B

Airgas/Air Products—Text of Court Decision

POINT 1: We will only be using some of the sections of Chancellor Chandler's ruling in this appendix since the entire decision is quite lengthy. The full text of the Delaware Court ruling can be found at the following site:

http://courts.delaware.gov/opinions/download.aspx?ID=150850

IN THE COURT OF CHANCERY OF THE STATE OF DELAWARE

AIR PRODUCTS AND CHEMICALS,

INC.,

Plaintiff,

v.

AIRGAS, INC., PETER MCCAUSLAND,

JAMES W. HOVEY, PAULA A. SNEED,

DAVID M. STOUT, ELLEN C. WOLF,

LEE M. THOMAS and JOHN C. VAN

RODEN, JR.,

Defendants.

IN RE AIRGAS INC. SHAREHOLDER

LITIGATION
Civil Action No. 5249-CC
Civil Action No. 5256-CC

OPINION

Date Submitted: February 8, 2011
Date Decided: February 15, 2011

Kenneth J. Nachbar, Jon E. Abramczyk, William M. Lafferty, John P. DiTomo, Eric S. Wilensky, John A. Eakins, Ryan D. Stottmann and S. Michael Sirkin, of MORRIS, NICHOLS, ARSHT & TUNNELL LLP, Wilmington, Delaware; OF COUNSEL: Thomas G. Rafferty, David R. Marriott and Gary A. Bornstein, of CRAVATH, SWAINE & MOORE LLP, New York, New York, Attorneys for Plaintiff Air Products and Chemicals, Inc.

Pamela S. Tikellis, Robert J. Kriner, Jr., A. Zachary Naylor and Scott M. Tucker, of CHIMICLES & TIKELLIS LLP, Wilmington, Delaware; OF COUNSEL: Jeffrey W. Golan, M. Richard Komins and Julie B. Palley, of BARRACK, RODOS & BACINE, Philadelphia, Pennsylvania; Mark Lebovitch, Amy Miller and Jeremy Friedman, of BERNSTEIN LITOWITZ BERGER & GROSSMAN LLP, New York, New York; Randall J. Baron, A. Rick Atwood, Jr. and David T. Wissbroecker, of ROBBINS GELLER RUDMAN & DOWD LLP, San Diego, California; Leslie R. Stern, of BERMAN DEVALERIO, Boston, Massachusetts; Joseph E. White III, of SAXENA WHITE P.A., Boca Raton, Florida, Attorneys for Shareholder Plaintiffs.

Donald J. Wolfe, Jr., Kevin R. Shannon, Berton W. Ashman, Jr. and Ryan W. Browning, of POTTER ANDERSON & CORROON LLP, Wilmington, Delaware; OF COUNSEL: Kenneth B. Forrest, Theodore N. Mirvis, Eric M. Roth, Marc Wolinsky, George T. Conway III, Joshua A. Naftalis, Bradley R. Wilson, Jasand Mock and Charles D. Cording, of WACHTELL, LIPTON, ROSEN & KATZ, New York, New York, Attorneys for Defendants.

CHANDLER, Chancellor

TABLE OF CONTENTS

This case poses the following fundamental question: Can a board of directors, acting in good faith and with a reasonable factual basis for its decision, when faced with a structurally non-coercive, all-cash, fully financed tender offer directed to the stockholders of the corporation, keep a poison pill in place so as to prevent the stockholders from making their own decision about whether they want to tender their shares—even after the incumbent board has lost one election contest, a full year has gone by since the offer was first made public, and the stockholders are fully informed as to the target board's views on the inadequacy of the offer? If so, does that effectively mean that a board can "just say never" to a hostile tender offer?

The answer to the latter question is "no." A board cannot "*just* say no" to a tender offer. Under Delaware law, it must first pass through two prongs of exacting judicial scrutiny by a judge who will evaluate the actions taken by, and the motives of, the board. Only a board of directors found to be acting in good faith, after reasonable investigation and reliance on the advice of outside advisors, which articulates and convinces the Court that a hostile tender offer poses a legitimate threat to the corporate enterprise, may address that perceived threat by blocking the tender offer and forcing the bidder to elect a board majority that supports its bid.

In essence, this case brings to the fore one of the most basic questions animating all of corporate law, which relates to the allocation of power between directors and stockholders. That is, "when, if ever, will a board's duty to 'the corporation and its shareholders' require [the board] to abandon concerns for 'long term' values (and other constituencies) and enter a current share value maximizing mode?"[1] More to the point, in the context of a hostile tender offer, who gets to decide when and if the corporation is for sale?

Since the Shareholder Rights Plan (more commonly known as the "poison pill") was first conceived and throughout the development of Delaware corporate takeover jurisprudence during the twenty-five-plus years that followed, the debate over who ultimately decides whether a tender offer is adequate and should be accepted—the shareholders of the corporation or its board of directors—has raged on. Starting with *Moran v. Household International, Inc.*[2] in 1985, when the Delaware Supreme Court first upheld the adoption of the poison pill as a valid takeover defense, through the hostile takeover years of the 1980s, and in several recent decisions of the Court of Chancery and the Delaware Supreme Court,[3] this fundamental question has engaged practitioners, academics, and members of the judiciary, but it has yet to be confronted head on.

For the reasons much more fully described in the remainder of this Opinion, I conclude that, as Delaware law currently stands, the answer must be that the power to defeat an inadequate hostile tender offer ultimately lies with the board of directors. As such, I find that the Airgas board has met its burden under *Unocal* to articulate a legally cognizable threat (the allegedly inadequate price of Air Products' offer, coupled with the fact that a majority of Airgas's stockholders would likely tender into that inadequate offer) and has taken defensive measures that fall within a range of reasonable responses proportionate to that threat. I thus rule in favor of defendants. Air Products' and the Shareholder Plaintiffs' requests for relief are denied, and all claims asserted against defendants are dismissed with prejudice.[4]

---

[1] *TW Servs., Inc. v. SWT Acquisition Corp.*, 1989 WL 20290, at *8 (Del. Ch. Mar. 2, 1989).

[2] 490 A.2d 1059 (Del. 1985).

[3] *See, e.g.*, *Yucaipa Am. Alliance Fund II, L.P. v. Riggio*, 1 A.3d 310, 351 n.229 (Del. Ch. 2010); *eBay Domestic Holdings, Inc. v. Newmark*, 2010 WL 3516473 (Del. Ch. Sept. 9, 2010); *Versata Enters., Inc. v. Selectica, Inc.*, 5 A.3d 586 (Del. 2010).

[4] Defendants have also asked the Court to order Air Products to pay the witness fees and expenses incurred by defendants in connection with the expert report and testimony of David E. Gordon in defense against Count I of Air Products' Amended Complaint, alleging breach of fiduciary duties in connection with Peter McCausland's January 5, 2010 exercise of Airgas stock options. That request is denied. The parties shall bear all of their own fees and expenses.

INTRODUCTION

This is the Court's decision after trial, extensive post-trial briefing, and a supplemental evidentiary hearing in this long-running takeover battle between Air Products & Chemicals, Inc. ("Air Products") and Airgas, Inc. ("Airgas"). The now very public saga began quietly in mid-October 2009 when John McGlade, President and CEO of Air Products, privately approached Peter McCausland, founder and CEO of Airgas, about a potential acquisition or combination. After McGlade's private advances were rebuffed, Air Products went hostile in February 2010, launching a public tender offer for all outstanding Airgas shares.

Now, over a year since Air Products first announced its all-shares, all-cash tender offer, the terms of that offer (other than price) remain essentially unchanged.[5] After several price bumps and extensions, the offer currently stands at $70 per share and is set to expire today, February 15, 2011—Air Products' stated "best and final" offer. The Airgas board unanimously rejected that offer as being "clearly inadequate."[6] The Airgas board has repeatedly expressed the view that Airgas is worth at least $78 per share in a sale transaction—and at any rate, far more than the $70 per share Air Products is offering.

So, we are at a crossroads. Air Products has made its "best and final" offer—apparently its offer to acquire Airgas has reached an end stage. Meanwhile, the Airgas board believes the offer is clearly inadequate and its value in a sale transaction is at least $78 per share. At this stage, it appears, neither side will budge. Airgas continues to maintain its defenses, blocking the bid and effectively denying shareholders the choice whether to tender their shares. Air Products and Shareholder Plaintiffs now ask this Court to order Airgas to redeem its poison pill and other defenses that are stopping Air Products from moving forward with its hostile offer, and to allow Airgas's stockholders to decide for themselves whether they want to tender into Air Products' (inadequate or not) $70 "best and final" offer.

A week-long trial in this case was held from October 4, 2010 through October 8, 2010. Hundreds of pages of post-trial memoranda were submitted by the parties. After trial, several legal, factual, and evidentiary questions remained to be answered. In ruling on certain outstanding evidentiary issues, I sent counsel a Letter Order on December 2, 2010 asking for answers to a number of questions to be addressed in supplemental posttrial briefing. On the eve of the parties' submissions to the Court in response to that Letter Order, Air Products raised its offer to the $70 "best and final"

---

[5] *See* Section I.*F*. (*The $60 Tender Offer*) for details about the terms of the offer.

[6] JX 659 (Airgas Schedule 14D-9 (Dec. 22, 2010)) at Ex. (a)(111).

number. At that point, defendants vigorously opposed a ruling based on the October trial record, suggesting that the entire trial (indeed, the entire case) was moot because the October trial predominantly focused on the Airgas board's response to Air Products' then-$65.50 offer and the board's decision to keep its defenses in place with respect to that offer. Defendants further suggested that any ruling with respect to the $70 offer was not ripe because the board had not yet met to consider that offer.

I rejected both the mootness and ripeness arguments.[7] As for mootness, Air Products had previously raised its bid several times throughout the litigation but the core question before me—whether Air Products' offer continues to pose a threat justifying Airgas's continued maintenance of its poison pill—remained, and remains, the same. And as for ripeness, by the time of the December 23 Letter Order the Airgas board had met and rejected Air Products' revised $70 offer. I did, however, allow the parties to take supplemental discovery relating to the $70 offer. A supplemental evidentiary hearing was held from January 25 through January 27, 2011, in order to complete the record on the $70 offer. Counsel presented closing arguments on February 8, 2011.

Now, having thoroughly read, reviewed, and reflected upon all of the evidence presented to me, and having carefully considered the arguments made by counsel, I conclude that the Airgas board, in proceeding as it has since October 2009, has not breached its fiduciary duties owed to the Airgas stockholders. I find that the board has acted in good faith and in the honest belief that the Air Products offer, at $70 per share, is inadequate.

Although I have a hard time believing that inadequate price alone (according to the target's board) in the context of a non-discriminatory, all-cash, all-shares, fully financed offer poses any "threat"—particularly given the wealth of information available to Airgas's stockholders at this point in time—under existing Delaware law, it apparently does. Inadequate price has become a form of "substantive coercion" as that concept has been developed by the Delaware Supreme Court in its takeover jurisprudence. That is, the idea that Airgas's stockholders will disbelieve the board's views on value (or in the case of merger arbitrageurs who may have short-term profit goals in mind, they may simply ignore the board's recommendations), and so they may mistakenly tender into an inadequately priced offer. Substantive coercion has been clearly recognized by our Supreme Court as a valid threat.

Trial judges are not free to ignore or rewrite appellate court decisions. Thus, for reasons explained in detail below, I am constrained by Delaware Supreme Court precedent to conclude that defendants have met their burden

---

[7]Dec. 23, 2010 Letter Order.

under *Unocal* to articulate a sufficient threat that justifies the continued maintenance of Airgas's poison pill. That is, assuming defendants have met their burden to articulate a legally cognizable threat (prong 1), Airgas's defenses have been recognized by Delaware law as reasonable responses to the threat posed by an inadequate offer—even an all-shares, all-cash offer (prong 2).

In my personal view, Airgas's poison pill has served its legitimate purpose. Although the "best and final" $70 offer has been on the table for just over two months (since December 9, 2010), Air Products' advances have been ongoing for over sixteen months, and Airgas's use of its poison pill—particularly in combination with its staggered board—has given the Airgas board over a full year to inform its stockholders about its view of Airgas's intrinsic value and Airgas's value in a sale transaction. It has also given the Airgas board a full year to express its views to its stockholders on the purported opportunistic timing of Air Products' repeated advances and to educate its stockholders on the inadequacy of Air Products' offer. It has given Airgas *more time than any litigated poison pill in Delaware history*— enough time to show stockholders four quarters of improving financial results,[8] demonstrating that Airgas is on track to meet its projected goals.

And it has helped the Airgas board push Air Products to raise its bid by $10 per share from when it was first publicly announced to what Air Products has now represented is its highest offer. The record at both the October trial and the January supplemental evidentiary hearing confirm that Airgas's stockholder base is sophisticated and well-informed, and that essentially all the information they would need to make an informed decision is available to them. In short, there seems to be no threat here—the stockholders know what they need to know (about both the offer and the Airgas board's opinion of the offer) to make an informed decision.

That being said, however, as I understand binding Delaware precedent, I may not substitute my business judgment for that of the Airgas board.[9] The Delaware Supreme Court has recognized inadequate price as a valid threat to corporate policy and effectiveness.[10] The Delaware Supreme Court has also made clear that the "selection of a time frame for achievement of

[8]*See* JX 304; JX 433; JX 645; JX 1086.

[9]*Paramount Commc'ns, Inc. v. Time, Inc.*, 571 A.2d 1140, 1154 (Del. 1990); *see City Capital Assocs. Ltd. P'ship v. Interco, Inc.*, 551 A.2d 787 (Del. Ch. 1988); *Grand Metro. Pub. Ltd. Co. v. Pillsbury Co.*, 558 A.2d 1049 (Del. Ch. 1988).

[10]*See Unitrin, Inc. v. Am. Gen. Corp.*, 651 A.2d 1361, 1384 (Del. 1995) ("This Court has held that the 'inadequate value' of an all cash for all shares offer is a 'legally cognizable threat.'") (quoting *Paramount Commc'ns, Inc. v. Time, Inc.*, 571 A.2d 1140, 1153 (Del. 1990)).

corporate goals . . . may not be delegated to the stockholders."[11] Furthermore, in powerful dictum, the Supreme Court has stated that "[d]irectors are not obliged to abandon a deliberately conceived corporate plan for a short-term shareholder profit unless there is clearly no basis to sustain the corporate strategy."[12] Although I do not read that dictum as eliminating the applicability of heightened *Unocal* scrutiny to a board's decision to block a non-coercive bid as underpriced, I do read it, along with the actual holding in *Unitrin*, as indicating that a board that has a good faith, reasonable basis to believe a bid is inadequate may block that bid using a poison pill, irrespective of stockholders' desire to accept it.

Here, even using heightened scrutiny, the Airgas board has demonstrated that it has a reasonable basis for sustaining its long term corporate strategy—the Airgas board is independent, and has relied on the advice of three different outside independent financial advisors in concluding that Air Products' offer is inadequate. Air Products' *own three nominees* who were elected to the Airgas board in September 2010 have joined wholeheartedly in the Airgas board's determination, and when the Airgas board met to consider the $70 "best and final" offer in December 2010, it was one of those Air Products Nominees who said, "We have to protect the pill."[13] Indeed, one of Air Products' *own directors* conceded at trial that the Airgas board members had acted within their fiduciary duties in their desire to "hold out for the proper price,"[14] and that "if an offer was made for Air Products that [he] considered to be unfair to the stockholders of Air Products . . . [he would likewise] use every legal mechanism available" to hold out for the proper price as well.[15] Under Delaware law, the Airgas directors have complied with their fiduciary duties. Thus, as noted above, and for the reasons more fully described in the remainder of this Opinion, I am constrained to deny Air Products' and the Shareholder Plaintiffs' requests for relief.

POINT 2: While we are leaving out many sections of the decision in the interest of space, the decision will be a very important standard for future takeover cases in Delaware.

[11] *Paramount*, 571 A.2d at 1154.

[12] *Id.*

[13] SEH Tr. 420 (Clancey).

[14] *See* Section III.*B*.1.; *see also supra* note 449.

[15] Bebchuk et al. at 944 ("Note that without an ESB, no court intervention is necessary in order to achieve [the professors' desired] outcome.").

The Conclusion of Chancellor Chandler's decision is shown below:

CONCLUSION

Vice Chancellor Strine recently suggested that:

> *The passage of time has dulled many to the incredibly powerful and novel device that a so-called poison pill is. That device has no other purpose than to give the board issuing the rights the leverage to prevent transactions it does not favor by diluting the buying proponent's interests.*[16]

There is no question that poison pills act as potent anti-takeover drugs with the potential to be abused. Counsel for plaintiffs (both Air Products and Shareholder Plaintiffs) make compelling policy arguments in favor of redeeming the pill in this case—to do otherwise, they say, would essentially make all companies with staggered boards and poison pills "takeover proof."[17] The argument is an excellent sound bite, but it is ultimately not the holding of this fact-specific case, although it does bring us one step closer to that result.

As this case demonstrates, in order to have any effectiveness, pills do not—and cannot—have a set expiration date. To be clear, though, this case does not endorse "just say never." What it does endorse is Delaware's long understood respect for reasonably exercised managerial discretion, so long as boards are found to be acting in good faith and in accordance with their fiduciary duties (after rigorous judicial fact-finding and enhanced scrutiny of their defensive actions). The Airgas board serves as a quintessential example.

Directors of a corporation still owe fiduciary duties to *all stockholders*—this undoubtedly includes short-term as well as long-term holders. At the same time, a board cannot be forced into *Revlon* mode any time a hostile bidder makes a tender offer that is at a premium to market value. The mechanisms in place to get around the poison pill—even a poison pill in combination with a staggered board, which no doubt makes the process prohibitively more difficult—have been in place since 1985, when the Delaware Supreme Court first decided to uphold the pill as a legal defense to an unwanted bid. That is the current state of Delaware law until the Supreme Court changes it.

For the foregoing reasons, Air Products' and the Shareholder Plaintiffs' requests for relief are denied, and all claims asserted against defendants are dismissed with prejudice. The parties shall bear their own costs.

An Order has been entered that implements the conclusions reached in this Opinion.

[16] *Hollinger Int'l, Inc. v. Black*, 844 A.2d 1022, 1083 (Del. Ch. 2004).

[17] Closing Argument Tr. 88 (Nachbar).

APPENDIX C

Whole Foods Markets—Excerpts from Proxy Statement

POINT 1: We are providing the valuation sections from the Whole Foods Markets proxy statement that was calculated by the investment bankers.

Summary of Evercore's Financial Analysis

Selected Public Company Trading Analysis Evercore reviewed and compared certain financial information of Whole Foods Market to corresponding financial multiples and ratios for the following publicly traded grocery retailers and mass merchandisers:

Grocery Retailers	Mass Merchandisers
The Kroger Co.	Wal-Mart Stores, Inc.
Ahold Delhaize	Target Corporation
Sprouts Farmers Market, Inc.	
Weis Markets, Inc.	
Supervalu, Inc.	
Ingles Markets, Inc.	

Although no grocer or merchandiser is directly comparable to Whole Foods Market, Evercore selected these companies because it believed that they had characteristics that were instructive for purposes of its analysis. For each of the companies identified above, Evercore calculated and compared

Risk Arbitrage: An Investor's Guide, Second Edition. Keith M. Moore.

various financial multiples and ratios based on financial data and closing stock prices as of June 14, 2017, which Evercore obtained from filings made with the SEC and from publicly available equity research analysts' projections. The financial multiples and ratios of Whole Foods Market were based on publicly available equity research analysts' projections and information from Whole Foods Market management.

Because no selected peer group company is exactly the same as Whole Foods Market, Evercore believed that it was inappropriate to, and therefore did not, rely solely on the quantitative results of the public trading analysis. Accordingly, Evercore also made qualitative judgments concerning differences between the business, financial and operating characteristics and prospects of Whole Foods Market and the selected companies. Based upon these judgments, Evercore derived a range of multiples for the selected companies for each of calendar years 2017 and 2018 and applied such multiples to estimates prepared by the management of Whole Foods Market for calendar year 2017, which implied, in each case, a range of equity values per share of Company common stock.

Enterprise Value to EBITDA Analysis: Evercore derived for the selected companies the enterprise value as a multiple of estimated 2017 earnings before interest, taxes, depreciation and amortization ("EBITDA"), and estimated 2018 EBITDA. The enterprise value to EBITDA multiples for the selected companies are set forth below:

Selected Company	EV/2017E EBITDA	EV/2018E EBITDA
Grocery Retailers		
The Kroger Co.	6.9×	6.7×
Ahold Delhaize	6.5×	6.1×
Sprouts Farmers Market, Inc.	12.6×	11.1×
Weis Markets, Inc.	8.0×	NA
Supervalu, Inc.	4.9×	5.0×
Ingles Markets, Inc.	6.9×	6.6×
Mass Merchandisers		
Wal-Mart Stores, Inc.	8.7×	8.6×
Target Corporation	6.7×	6.7×

Based on this analysis, Evercore established a reference range of 2017 and 2018 estimated EBITDA multiples of 7.0× to 9.5× for the selected companies and applied this range of multiples to Whole Foods Market management's estimated 2017 EBITDA, as adjusted for charges, including a severance payment and store and facility closures ("Adjusted EBITDA"), and Whole Foods Market management's estimates of 2018 EBITDA.

The implied value ranges for shares of Company common stock on a fully diluted basis are set forth below:

Analysis	Adjusted EBITDA/ EBITDA	Selected Multiple Range	Implied Share Price Range
	(millions)		
EV/2017E Adj. EBITDA	$1,258	7.0× to 9.5×	$27.75 to $36.89
EV/2018E EBITDA	$1,331	7.0× to 9.5×	$29.22 to $39.04

Price to Earnings Per Share (EPS) Analysis: Evercore derived and compared for the selected companies the equity market capitalization of such companies as a multiple of estimated 2017 earnings per share and estimated 2018 earnings per share. The earnings per share multiples for the selected companies are set forth below:

Selected Company	Price/2017E EPS	Price/2018E EPS
Grocery Retailers		
The Kroger Co.	13.8×	13.1×
Ahold Delhaize	14.7×	13.0×
Sprouts Farmers Market, Inc.	27.2×	23.9×
Weis Markets, Inc.	NA	NA
Supervalu, Inc.	11.8×	11.4×
Ingles Markets, Inc.	14.1×	12.7×
Mass Merchandisers		
Wal-Mart Stores, Inc.	18.3×	17.4×
Target Corporation	13.4×	13.8×

Based on this analysis, Evercore established a reference range of 2017 and 2018 earnings per share multiples of 20.0× to 24.0× for the selected companies and applied this range of multiples to Whole Foods Market's 2017 estimated earnings per share, as adjusted for after-tax charges, including a severance payment and store and facility closures ("Adjusted EPS"), and Whole Foods Market's 2018 estimated earnings per share. The implied value ranges for shares of Company common stock on a fully diluted basis are set forth below:

Analysis	Adj. EPS/EPS	Selected Multiple Range	Implied Share Price Range
Price/2017E Adj. EPS	$1.43	20.0x to 24.0×	$28.69 to $34.43
Price/2018E EPS	$1.49	20.0x to 24.0×	$29.76 to $35.72

Precedent Transactions Analysis

Evercore reviewed publicly available information related to certain precedent acquisition transactions involving grocery retail targets from January 1, 2007 to June 14, 2017. Evercore chose the precedent transactions it deemed to be relevant transactions in the grocery retail industry, and excluded transactions involving minority investments from its analysis. For each precedent transaction, Evercore calculated the total enterprise value as a multiple of trailing twelve-month EBITDA ("LTM EBITDA"). The precedent transactions reviewed by Evercore were:

Date Announced	Target	Acquiror	TEV/LTM Adjusted EBITDA:
04/10/17	Unified Grocers, Inc.	Supervalu, Inc.	10.0×
10/17/16	Save-A-Lot (subsidiary of Supervalu Inc.)	Onex Corp.	6.4×
03/14/16	The Fresh Market, Inc.	Apollo Global Management, LLC	7.1×
11/11/15	Roundy's, Inc.	The Kroger Co.	7.1×
06/24/15	Delhaize Group	Koninklijke Ahold NV	8.1×
08/27/14	Demoulas Super Markets, Inc. (50.5% stake)	Arthur T. Demoulas	*
03/06/14	Safeway, Inc.	Cerberus Capital Management, LP, Kimco Realty Corporation, Klaff Realty, LP, Lubert-Adler Partners LP, Schottenstein Stores Corporation	5.0×
12/20/13	Arden Group, Inc.	TPG	10.0×
07/22/13	Nash Finch Company	Spartan Stores, Inc.	6.7×
07/09/13	Harris Teeter Supermarkets, Inc.	The Kroger Co.	7.3×
01/10/13	Supervalu (five retail grocery banners)	Cerberus Capital Management LP	4.0×
10/11/12	Smart & Final Holdings Corp.	Ares Management	7.5×
12/19/11	Winn-Dixie Stores, Inc.	Lone Star Funds	5.4×

Date Announced	Target	Acquiror	TEV/LTM Adjusted EBITDA:
06/28/11	BJ's Wholesale Club, Inc.	CVC Capital Partners, Leonard Green & Partners LP	7.6×
12/17/09	Ukrop's Super Markets, Inc.	Ahold USA	*
10/05/09	Bi-Lo	Delhaize Group	*
10/11/07	TOPS Friendly Markets, LLC Markets	Morgan Stanley Private Equity	*
03/05/07	Pathmark Stores, Inc.	The Great Atlantic & Pacific Tea Company	10.0×
02/21/07	Wild Oats Marketplace	Whole Foods	15.3×
02/20/07	Smart & Final, Inc.	Apollo Global Management, LLC	10.5×

*Not publicly disclosed.

From the range of multiples from the precedent transactions, Evercore then selected a reference range of enterprise value to EBITDA multiples of 8.0x to 10.0x and applied these ranges of multiples to Whole Foods Market's LTM EBITDA at the quarter ended April 9, 2017, adjusted for certain charges, including a severance payment and store and facility closures ("LTM Adjusted EBITDA"), to calculate an implied value range for shares of Company common stock on a fully diluted basis as set forth below:

Analysis	LTM Adjusted EBITDA	Selected Multiple Range	Implied Share Price Range
	(millions)		
Enterprise Value/LTM Adjusted EBITDA	$1,293	8.0× to 10.0×	$31.84 to $39.93

No company or transaction utilized in the precedent transactions analysis is identical or directly comparable to Whole Foods Market or the merger. In evaluating the precedent transactions, Evercore made judgments and assumptions with regard to general business, market and financial conditions and other matters, which are beyond the control of Whole Foods

Market, such as the impact of competition on the business of Whole Foods Market, or the industry generally, industry growth and the absence of any material adverse change in the financial condition of Whole Foods Market or the industry or in the financial markets in general, which could affect the public trading value of the companies and the aggregate value of the transactions to which the merger is being compared.

Discounted Cash Flow Analysis

Evercore performed a discounted cash flow analysis, which is designed to estimate the value of a company by calculating the present value of estimated future cash flows of the company. Evercore calculated a range of equity values per share of Whole Foods Market based on a discounted cash flow analysis for the fiscal years 2017 through 2022. In preparing its analysis, Evercore relied on the Whole Foods Market Projections; in addition, for purposes of calculating terminal year cash flow, Evercore derived, and the Company confirmed the reasonableness of deriving, fiscal year 2022 EBITDA of $2,058 million and normalized unlevered free cash flow of $845 million by increasing 2021 revenues by the same percentage as the percentage revenue growth from 2020 to 2021 and holding operating margins constant at 2021 levels (together with the Whole Foods Market Projections, the "Management Estimates"). For comparative purposes, Evercore also performed a discounted cash flow analysis based upon publicly available equity research analysts' reports that provided projections through fiscal year 2021 and were published after May 10, 2017, and as to which Evercore similarly derived fiscal year 2022 EBITDA of $1,556 million and normalized unlevered free cash flow of $516 million ("Public Equity Analysts' Estimates").

In arriving at the estimated equity values per share of Company common stock, Evercore estimated a range of terminal values in 2022 by applying to Whole Foods Market's fiscal year 2022 estimated EBITDA, a multiple of Enterprise Value to EBITDA of 7.0× to 9.5× and by applying a perpetuity growth rate of 2.5% to 3.5%. Evercore then discounted Whole Foods Market's projected, unlevered free cash flows, included in the Management Estimates and the Public Equity Analysts' Estimates and the estimated terminal value for each scenario, in each case, to a present value using discount rates ranging from 7.0% to 9.0%. The discount rates were based on Evercore's judgment of the estimated range of Whole Foods Market's weighted average cost of capital established by considering market and size risk premiums, a U.S. Treasury bond risk-free rate, historical beta and cost of debt. Evercore calculated unlevered free cash flow by first deriving net operating profit after tax by subtracting depreciation and amortization from EBITDA and assuming a 39.0% tax rate, then adjusting the result by adding back depreciation and amortization, subtracting capital expenditures and adjusting for changes in net working capital. Based on the foregoing analysis, the discounted cash flow analysis yielded the implied value ranges for Company common stock on a fully diluted basis as set forth below:

Scenario	**Implied Value Range per Share (Terminal Multiple)**
Management Estimates	\$37.11 to \$51.22
Public Equity Analysts' Estimates	\$28.50 to \$39.55

Scenario	**Implied Value Range per Share (Perpetuity Growth Rate)**
Management Estimates	\$36.05 to \$65.01
Public Equity Analysts' Estimates	\$23.17 to \$41.80

APPENDIX D

Straight Path Communications—Excerpts from Proxy Statement

POINT 1: This appendix provides the background section of the Straight Path Communications proxy.

Background of the Merger

The Straight Path board regularly meets to review Straight Path's operations and discuss potential strategic alternatives available to Straight Path, with the goal of maximizing stockholder value.

In November 2015, certain allegations were made in an anonymous report regarding the circumstances under which certain of Straight Path's spectrum licenses were renewed by the FCC in 2011 and 2012. Following the publication of that report, Straight Path conducted an independent investigation and disclosed the results of the investigation to the Federal Communications Commission, which we refer to as the FCC, on August 1, 2016.

Periodically during the month of June 2016, representatives of Straight Path and representatives of AT&T engaged in discussions regarding the potential leasing of some or all of Straight Path's 28 GHz LMDS wireless spectrum. On June 23, 2016, a representative of AT&T informed Davidi Jonas, the chief executive officer of Straight Path, that AT&T was also interested in Straight Path's 39 GHz wireless spectrum and on June 29, 2016, AT&T submitted a list of diligence requests regarding the licenses relating to Straight Path's 39 GHz wireless spectrum.

Risk Arbitrage: An Investor's Guide, Second Edition. Keith M. Moore.

POINT 2: In the proxy, shareholders and arbitrageurs learned that the STRP board engaged in discussions with other parties starting in the fall of 2016.

During the summer and fall of 2016, Straight Path engaged in discussions with various parties who expressed an interest in acquiring various of Straight Path's spectrum assets, which we refer to as Bidders A, B and C, none of which discussions resulted in a transaction. Bidder A never expressed an interest in acquiring the entire company. On August 26, 2016, AT&T delivered an additional list of diligence requests and indicated that it might be interested in an acquisition of the entire company.

On September 20, 2016, the enforcement bureau of the FCC delivered a letter of inquiry requesting additional documents and information regarding Straight Path's 39 GHz and 28 GHz spectrum licenses, and Straight Path cooperated fully with the FCC's inquiries.

On September 21, 2016, AT&T submitted a term sheet proposing the acquisition of all of the issued and outstanding stock of Straight Path for $32.32 per share, or a total purchase price of $400 million.

On September 28, 2016, Davidi Jonas informed AT&T that Straight Path would be retaining an outside financial advisor and that any whole company acquisition would require a purchase price at a premium to Straight Path's 52-week high share price of $50 per share. The representative of AT&T suggested that procedurally, the highest price at which AT&T could quickly complete a transaction would be a per share price reflecting a total enterprise value of $499 million.

On October 28, 2016, Straight Path engaged Evercore as its financial advisor in connection with the Straight Path board's evaluation of strategic alternatives.

POINT 3: AT&T made its initial offer in November 2016.

On November 11, 2016, AT&T sent Straight Path a non-binding summary of proposed preliminary terms, pursuant to which AT&T would acquire all of the outstanding shares of Straight Path at $43.90 per share, representing a total enterprise value of $550 million in cash. AT&T also requested that Straight Path negotiate exclusively with AT&T for a period of ninety days following execution of an exclusivity agreement, a draft of which was attached to the term sheet.

On November 14, 2016, the Straight Path board held a meeting to discuss the term sheet received from AT&T, the current status of the FCC inquiry and the potential to resolve the FCC inquiry before further considering the indications of interest received from AT&T and Bidder B. The Straight Path board discussed these matters with Straight Path's management and, following such discussion, the Straight Path board determined that Straight Path would be able to negotiate more favorable terms for a potential transaction with the prospective bidders if the FCC's inquiry could be resolved first.

On November 18, 2016, Bidder B sent Straight Path a letter proposing a transaction pursuant to which Bidder B would acquire all of the 28 GHz and 39 GHz licenses and related assets of Straight Path in exchange for $350 million in cash. The letter requested that Straight Path agree to negotiate with Bidder B exclusively through December 10, 2016 and to enter into an exclusivity agreement by no later than 5:00 P.M. eastern time on November 27, 2016, a draft of which was attached to the letter.

Starting in November 2016, representatives of Straight Path and the FCC held several meetings to discuss a possible consent decree to resolve the FCC's inquiry. Straight Path and the FCC exchanged draft term sheets of a consent decree and negotiated a potential settlement throughout December 2016 and early January. Throughout these negotiations, the Straight Path board received updates regarding the process of negotiations and proposed terms of the consent decree.

On December 30, 2016, the Straight Path board retained Weil, Gotshal & Manges LLP, which we refer to as Weil, as outside legal counsel to Straight Path in connection with the Straight Path board's evaluation of strategic alternatives.

> *<u>POINT 4</u>: The trigger for the sale of STRP occurred in January 2017 when STRP entered into a consent decree with the FCC that required STRP to take a number of actions. We believe the actions required under the consent decree basically forced STRP into a sales process.*

On January 11, 2017, the Straight Path board met to consider the negotiated terms of the proposed FCC consent decree. The proposed FCC consent decree would settle the FCC's investigation commenced by the enforcement bureau of the FCC. Under the proposed FCC consent decree, Straight Path would commit to, among other things, (i) pay a civil penalty of $15 million, payable in installments, (ii) surrender to the FCC 196 of its licenses in the 39 GHz spectrum band and (iii) submit for approval an application for the sale of its remaining 39 GHz and 28 GHz spectrum licenses on or before January 11, 2018 and remit twenty percent of the proceeds from such sale to the United States Treasury as an additional civil penalty. The FCC consent decree further provided that if Straight Path failed to submit an application for the transfer of Straight Path's spectrum license portfolio prior to January 11, 2018, Straight Path would be required to pay an additional civil penalty of $85 million to the United States Treasury or, at Straight Path's option, surrender all of the spectrum licenses in its portfolio to the FCC. After receiving advice from Straight Path's outside FCC counsel, the Straight Path board concluded that, under the circumstances, the terms proposed in the FCC consent decree were reasonable and there was significant risk that the outcome would be materially less favorable if Straight Path declined to enter into the FCC consent decree, including the possibility of protracted litigation with the FCC. FCC counsel noted that changes to the FCC's policy and approach on consent decrees could arise in connection with a new administration. After discussing the terms of the FCC consent decree with Straight Path's management, outside legal counsel and representatives of Evercore, the Straight Path board approved Straight Path's entry into the proposed FCC consent decree, and Straight Path and the FCC executed the FCC consent decree on January 11, 2017.

Following Straight Path's entry into the FCC consent decree, Straight Path's management, together with its outside legal advisors and representatives of Evercore, discussed the potential options available to finance the initial $15 million civil penalty due under the FCC consent decree. Straight Path's management considered a potential equity raise, and Straight Path filed a registration statement on Form S-3 in preparation for the potential equity raise. Straight Path's management also considered seeking debt financing and, at the direction of Straight Path's management, representatives of Evercore contacted certain potential debt financing sources. During the period between January 23, 2017 and January 31, 2017, Straight Path executed confidentiality agreements with various potential financing sources, including Clutterbuck Capital Management, for the purpose of raising funds to pay the initial $15 million penalty due to the FCC under the FCC consent decree.

On January 31, 2017, the Straight Path board held a telephonic meeting with representatives of Evercore and Schwell, Wimpfheimer & Associates LLP, Straight Path's corporate counsel which we refer to as Schwell, participating. Representatives of Evercore discussed with the Straight Path board the proposed terms of a loan agreement, pursuant to which a syndicate of investors, led by CF Special Situation Fund I, LP, an affiliate of Clutterbuck Capital Management, which we collectively refer to as the Lenders, would lend Straight Path $17.5 million. Representatives of Evercore also discussed with the Straight Path board the process of contacting potential bidders for an acquisition of Straight Path and the likely timeline of such a process, following which the Straight Path board authorized representatives of Evercore to work with Straight Path management to identify a list of potential bidders and commence outreach to those potential bidders to gauge their interest in a potential transaction with Straight Path.

During the month of February 2017, at the direction of the Straight Path board, representatives of Evercore contacted 20 potential bidders, and 11 of the 20 potential bidders executed confidentiality agreements with Straight Path. Those bidders were Verizon, AT&T, Bidder B, Bidder C and seven other strategic bidders, which we refer to as Bidders D, E, F, G, H, I and J. After executing confidentiality agreements with Straight Path, the bidders, other than Bidder D, were granted access to an online data room established by Straight Path, which we refer to as the virtual data room. Bidder D informed representatives of Evercore after executing the confidentiality agreement that such bidder was no longer interested in pursuing a potential transaction with Straight Path and was not provided access to the virtual data room.

On February 6, 2017, the Straight Path board formed a special committee, consisting of independent board members K. Chris Todd, William F. Weld, and Fred Zeidman, which we refer to as the special committee, for the purpose of, among other things, evaluating potential options to divest Straight Path's interest in patent rights and the existing and potential claims against third parties associated with such patent rights (which Straight Path holds through Straight Path's 84.5% interest in Straight Path IP Group, Inc., which we refer to as the IP Group).

On February 7, 2017, Straight Path entered into a loan agreement with the Lenders, pursuant to which the Lenders lent Straight Path $17.5 million under the terms and conditions set forth in the loan agreement. The funds were allocated to pay the initial $15 million penalty owed to the FCC under the FCC consent decree when such payment became due, and for general corporate purposes.

On February 10, 2017, at the direction of the Straight Path board, representatives of Evercore sent a first-round bid instruction letter together with an introductory presentation about Straight Path to the parties with whom Straight Path had executed confidentiality agreements, requesting that the parties submit preliminary indications of interest by 5:00 P.M. eastern time on March 2, 2017. In order to enable the bidders to calculate the implied enterprise value of Straight Path on a consistent basis, the first round bid instruction letter included a waterfall analysis based on certain information and assumptions provided by Straight Path's management, which detailed the 20% penalty owed to the FCC under the FCC consent decree and other estimated payment obligations to third parties and expected transaction expenses that the successful bidder would incur in connection with an acquisition of Straight Path.

On February 14, 2017, the special committee held an in-person meeting at Weil's offices in New York for the purpose of evaluating potential options to divest Straight Path's interest in the IP Group. After discussion, the special committee authorized Straight Path to explore other means of obtaining value for the IP Group as such assets were not expected to be of material value to the potential whole-company bidders and possibly would be considered by such bidders as a liability.

From time to time, Straight Path had sought indemnification from its former parent company, IDT Corporation, which we refer to as IDT, pursuant to the Separation and Distribution Agreement, dated as of July 31, 2013, between Straight Path and IDT. Because Howard Jonas is a significant stockholder of both Straight Path and IDT, the special committee (rather than the entire Straight Path board) decided to evaluate Straight Path's rights and obligations under the Separation and Distribution Agreement and the feasibility of asserting an indemnification claim on behalf of Straight Path against IDT in relation to the FCC consent decree and Straight Path's related liabilities in connection with the Straight Path board's evaluation of Straight Path's strategic alternatives. The special committee retained Shearman & Sterling LLP, which we refer to as Shearman, as outside legal counsel to the special committee. On February 14, 2017, the special committee held an in-person meeting at Shearman's offices in New York for the purpose of discussing the feasibility of asserting or preserving the potential indemnification claim against IDT for the benefit of Straight Path's stockholders.

On February 16, 2017, the Straight Path board held a telephonic meeting, with representatives of Straight Path's management, Evercore, Weil, Shearman and Schwell in attendance, to provide an update to the Straight Path board on the current status of the process and the initial outreach by representatives of Evercore. Representatives of Evercore noted that as of such date, seven parties were active in the data room. By February 21, 2017, Straight Path had executed confidentiality agreements with a total of 11 parties, though only 10 parties received access to the data room as one of the parties declined to proceed in the process. Representatives of Evercore also noted that the first-round bid instruction letter requested that the parties submit non-binding indications of interest by March 2, 2017.

On February 28, 2017, a representative of Shearman contacted a representative of Weil to convey that the independent directors intended to preserve the potential indemnification claim against IDT for the benefit of the stockholders of Straight Path, and that they were exploring various alternatives to do so, including (i) selling Straight Path's wireless spectrum assets (instead of selling the entire company), and (ii) assigning the indemnification claim against IDT to a litigation trust.

<u>POINT 5</u>: In March, STRP started to receive bids from other parties. This process was still not disclosed to the public and was learned only after the proxy material was filed.

On March 1, 2017, representatives of Evercore received a preliminary indication of interest from Bidder F to acquire all of Straight Path's wireless spectrum for $435 million in cash, or $24.99 per share. Throughout the day on March 2, 2017, representatives of Evercore received preliminary indications of interest from each of AT&T, Verizon, Bidder B and Bidder C. Bidder C offered to acquire Straight Path's 28 GHz wireless spectrum portfolio on a stand-alone basis for $40 million or the whole company for a total enterprise value of $511 million or $34.28 per share. AT&T offered to acquire Straight Path for a total enterprise value of $602 million, or $35.44 per share. Verizon offered to acquire Straight Path for a total enterprise value of $550 million, or $32.18 per share. Bidder B offered to acquire half of Straight Path's 39 GHz wireless spectrum portfolio for $280 million or all of Straight Path's 39 GHz wireless spectrum portfolio for $470 million. Bidder E and Bidder I each requested an additional week to complete their respective due diligence efforts and submit a preliminary non-binding indication of interest. Bidder G, Bidder H and Bidder J elected not to submit a preliminary non-binding indication of interest and did not participate further in the process.

On March 3, 2017, the Board held a telephonic meeting, with representatives of Straight Path's management, Evercore and Weil in attendance, to discuss the preliminary indications of interest received and responses thereto. Representatives of Evercore reviewed each preliminary indication of interest with the Straight Path board, and the Straight Path board discussed considerations for the second-round of the process with representatives of Evercore and Weil. The Straight Path board then authorized representatives of Evercore to provide each bidder with feedback on its respective bid and to prepare a second-round bid instruction letter. The Straight Path board also authorized Weil to prepare a draft merger agreement which would be provided to bidders concurrently with the second-round bid instruction letter.

On March 8, 2017, the special committee held a telephonic meeting, with Straight Path's general counsel and representatives of Weil and Shearman participating. During this meeting, the special committee reviewed the status of Straight Path's outreach to various intellectual property valuation firms regarding the IP Group. The special committee expressed and discussed concerns that bidders for Straight Path would not have interest in vigorously pursuing a potential indemnity claim against IDT and thus would not ascribe appropriate value to such claim in their bids to acquire Straight Path. The special committee then discussed the feasibility of separating Straight Path's potential indemnity claim against IDT for purposes of any sale of Straight Path or negotiating a settlement of the potential indemnity claim against IDT.

On March 9, 2017, representatives of Evercore received a preliminary indication of interest from Bidder I to acquire Straight Path's 39 GHz portfolio, or the 28 GHz portfolio, or the whole company, in each case at values well below the offers from other bidders, following which, at the direction of the Straight Path board, representatives of Evercore informed Bidder I that Straight Path had determined not to further involve them in the process.

On the evening of March 13, 2017, the Straight Path board held a telephonic meeting, with representatives of Straight Path's management, Evercore, Weil, Schwell and Shearman in attendance. Representatives of Evercore indicated that a representative of Verizon communicated to representatives of Evercore that it would be prepared to preempt the process and to proceed on an accelerated basis, and on that basis, was willing to increase its offer to a total enterprise value of $750 million, instead of the offer in its initial indication of interest of $550 million. Following a detailed discussion, the Straight Path board determined to allow Verizon to complete its due diligence review on an expedited basis, but not to preclude the other bidders from the process. The Straight Path board instructed representatives of Evercore to proceed with the sale process as planned by preparing a second-round bid instruction letter to be made available to all bidders.

Also on the evening of March 13, 2017, the special committee held a telephonic meeting, with Straight Path's general counsel, and representatives of Evercore, Weil and Shearman in attendance. Representatives of Shearman discussed with the special committee various alternatives for preserving the potential indemnification claim against IDT for the benefit of Straight Path's stockholders. The special committee considered and discussed the foregoing, including the possibility of counterclaim risk in connection with the potential indemnity claim and determined that it was in the best interests of Straight Path and its stockholders that the potential indemnity claim against IDT be excluded from the potential transaction and that potential bidders be so informed in the second-round bid instruction letter.

> *POINT 6: The second-round bidding process began in March.*

On March 14, 2017, at the direction of the Straight Path board, representatives of Evercore sent a second-round bid instruction letter to AT&T,

Verizon, Bidder B, Bidder C and Bidder F requesting that the bidders submit their revised indications of interest by 5:00 P.M. eastern time on March 30, 2017.

On March 14 and 15, 2017, Howard Jonas contacted each of the three independent directors by telephone. In one of those calls, Howard Jonas asserted that the Separation and Distribution Agreement afforded IDT certain rights against Straight Path with respect to any responsibility Straight Path bore for the events leading to the FCC consent decree. Howard Jonas proposed a meeting with the independent directors to explore the possibility of resolving these potential claims.

On March 15, 2017, a representative of IDT told a representative of Straight Path that Howard Jonas was interested in a potential transaction for the IP Group as part of a larger discussion to resolve any indemnification claim against IDT.

On March 16, 2017, a draft merger agreement was made available to bidders. Later that day, representatives of Evercore received a preliminary indication of interest from Bidder E to acquire Straight Path for a total enterprise value well below the offers received from other bidders, following which representatives of Evercore, at the direction of the Straight Path board, informed Bidder E that Straight Path had determined not to further involve them in the process.

On March 17, 2017, representatives of Weil held a discussion with Howard Jonas and Boies, Schiller & Flexner LLP, which we refer to as Boies Schiller, outside legal counsel to Howard Jonas and IDT, to discuss the likelihood that bidders would require Howard Jonas and the Patrick Henry Trust, through which Howard Jonas holds the majority of his voting interest in Straight Path, to enter into a voting agreement in support of the potential transaction. Under the terms of the Patrick Henry Trust, Howard Jonas votes the trust shares in connection with a merger and accordingly, his support is required in order for stockholder support to be obtained. Howard Jonas informed representatives of Weil that although he was not prepared to commit to support a transaction that involved a merger or sale of Straight Path as a whole, he was prepared to support a transaction that involved a sale of only Straight Path's wireless spectrum assets—which were the only assets that had to be sold pursuant to the FCC consent decree. That evening, the special committee held a telephonic meeting, with Straight Path's general counsel, and representatives of Weil and Shearman participating. Representatives of Weil updated the special committee on its prior discussion with Howard Jonas. Following that update, the special committee determined to arrange a meeting between the members of the special committee, Howard Jonas and their respective outside legal counsel to discuss Howard Jonas's views with respect to a potential sale of Straight Path and potential support for such a transaction, and to discuss concerns relating to the potential indemnity claim against IDT, which is controlled by Howard Jonas.

Also on March 17, 2017, representatives of Verizon verbally indicated to representatives of Evercore that it would be submitting a revised proposal to acquire Straight Path for a total enterprise value of $750 million along with a revised draft of the merger agreement in advance of the second-round bid deadline, with a view towards preempting the process.

On March 20, 2017, a representative of Shearman had a telephone call with a representative of Boies Schiller, during which the representative of Boies Schiller noted that Howard Jonas was not prepared to commit to support a potential transaction that would allow an indemnification claim under the Separation and Distribution Agreement to be pursued against IDT after the closing of a merger.

On the evening of March 20, 2017, Weil received a revised draft of the merger agreement from Verizon's outside legal counsel, Debevoise & Plimpton LLP, which we refer to as Debevoise. Verizon's draft of the merger agreement contemplated an all-cash purchase price and that Howard Jonas and the Patrick Henry Trust would execute a written consent approving and adopting the merger agreement. The written consent would have constituted stockholder approval and eliminated the Straight Path board's opportunity to respond to a superior proposal from a third party between signing of the merger agreement and closing of the merger.

On March 21, 2017, Verizon delivered a written non-binding indication of interest to representatives of Evercore, which confirmed the previously delivered verbal offer reflecting a total enterprise value of $750 million and requested that Straight Path enter into exclusivity with Verizon by no later than 5:00 P.M. eastern time on March 24, 2017. Verizon also noted that if Straight Path failed to enter into an exclusivity agreement with Verizon by that time, it might reassess its desire to continue in the process.

On March 21, 2017, the Straight Path board held a telephonic meeting, with representatives of Straight Path's management and Weil in attendance, to discuss the revised draft of the merger agreement submitted by Verizon. At that meeting, representatives of Weil reported to the Straight Path board that Verizon had confirmed to representatives of Evercore its revised proposal of $750 million and conditioned such proposal on Straight Path entering into an exclusivity agreement with Verizon, and representatives of Weil reviewed the terms proposed in Verizon's draft of the merger agreement. After discussion, the Straight Path board instructed Weil to ask representatives of Evercore to communicate to each of the other bidders that Straight Path had received a substantially higher offer from one of the bidders, and to ask each of the other bidders whether they would be able to raise their offers significantly if the process was continued and whether they would be prepared to proceed on an accelerated timeline if needed. The Straight

Path board also instructed Weil to revise the merger agreement received from Verizon with a view towards providing a revised draft of the agreement to Debevoise by March 24, 2017.

From the evening of March 21, 2017, to March 22, 2017, at the direction of the Straight Path board, representatives of Evercore contacted representatives of each of AT&T, Bidder B and Bidder F with a transaction update, stating that Straight Path had received a pre-emptive bid from a highly motivated, well-capitalized bidder, including a mark-up of the draft merger agreement with minimal future diligence needs. Representatives of Evercore indicated to each of the bidders that Straight Path had not yet made a decision on how to proceed, but asked each bidder whether, based on the diligence they performed to date, they could foresee themselves offering a revised bid at a materially higher amount. Representatives of Evercore requested that each bidder provide a response by the end of the day on March 23, 2017. Bidders were also informed that based on the responses received, the process may continue to the original bid deadline of March 30, 2017, or proceed on a different timeline.

On March 23, 2017, representatives of Evercore received feedback from each of the previously contacted bidders. Each of AT&T and Bidder B indicated that it was prepared to offer a minimum bid at a mid- to high-$40s per share price. Bidder F communicated that it would be able to revise its bid to reflect a total enterprise value for Straight Path of approximately $800 million, which would reflect a per share price of approximately $47.95.

On March 24, 2017, the Straight Path board held a telephonic meeting, with representatives of Straight Path's management, Evercore and Weil in attendance, to summarize the developments of the past week and to discuss whether it was in the best interests of Straight Path and its stockholders to enter into an exclusivity agreement with Verizon. Representatives of Evercore also discussed with the Straight Path board key external deadlines to be cognizant of as the process continued, noting that certain restrictions on the ability of companies in the telecommunications industry that participated in recent U.S. spectrum auctions to communicate with each other as to certain matters would fall away in mid-to-late April and that the affected companies could shift their focus away from Straight Path's bid process in favor of pursuing other possible transactions that could be much larger and potentially of greater strategic importance to such companies. Also at this meeting, representatives of Weil reviewed with the Straight Path board the directors' fiduciary duties and other legal matters in connection with the Straight Path board's consideration of a potential sale of Straight Path, and a representative of Morgan Lewis & Bockius LLP, which we refer to as Morgan Lewis, outside FCC counsel to Straight Path, reviewed with the Straight Path board the potential risks relating to spectrum aggregation with respect to each of the bidders and the anticipated FCC review process with respect to each of the potential bidders. Following discussion with its outside legal and financial advisors, the Straight Path board decided that it would not be in the best interests of Straight Path and its stockholders to enter into an exclusivity agreement with Verizon and instructed representatives of Evercore to communicate such decision to representatives of Verizon. The Straight Path board then discussed the message that would be communicated to each of the other remaining bidders and instructed representatives of Evercore to request that each of the other bidders provide a revised draft of the merger agreement as soon as practicable and notify each of the other bidders that Straight Path had determined to continue along the original timeline, maintaining the second-round bid deadline of March 30, 2017.

On March 28, 2017, Weil received revised drafts of the merger agreement from legal counsel to each of AT&T and Bidder B. Each of the draft merger agreements received from AT&T and Bidder B contemplated an all-cash purchase price and that Howard Jonas and the Patrick Henry Trust would execute a written consent approving and adopting the merger agreement. Also on March 28, 2017, Bidder F communicated to representatives of Evercore that it would be withdrawing from the process, stating that it had determined that at the valuation being contemplated, it had other priorities for its capital. Early on the morning of March 29, 2017, Weil delivered a revised markup of the merger agreement to Debevoise which, among other things, replaced the written consent with a voting agreement to be delivered by Howard Jonas and the Patrick Henry Trust, thereby preserving the ability of the Straight Path board to consider a subsequent unsolicited superior proposal, reinserted the right of Straight Path to terminate the merger agreement in connection with the entry into an agreement for a Superior Proposal (as defined therein) or following a change in recommendation by the Straight Path board as a result of an Intervening Event (as defined therein), proposed a heightened divestiture obligation by Verizon if required to obtain FCC approval of the merger, and obligated Verizon to pay a termination fee in the event that the merger agreement were to be terminated due to a failure to obtain required regulatory approval prior to the outside termination date.

On March 29, 2017, the special committee held in-person meetings at Weil's offices in New York, with Straight Path's general counsel, representatives of Weil, Shearman, Boies Schiller, and IDT and Howard Jonas participating, to discuss the indemnity claim and the assets of the IP Group. At that meeting, Howard Jonas indicated that he would support a merger transaction that was structured to include stock of the buyer as consideration. With respect to the potential indemnification claim, IDT and its counsel outlined their view of the various reasons why Straight Path did not have a viable claim for indemnification against IDT, the limitations on any damages such potential indemnification claims would have, and the various claims that IDT could pursue against Straight Path. The special committee and representatives of IDT, accompanied by representatives of Shearman and Boies Schiller, respectively, after engaging in lengthy and detailed discussions, reached an agreement in principle to settle the potential indemnification claim and to sell Straight Path's 84.5% interest in the IP Group to IDT.

POINT 7: STRP received several revised indications of interest.

On March 30, 2017, representatives of Evercore received revised indications of interest from each of AT&T, Verizon and Bidder B. AT&T submitted a non-binding revised indication of interest to acquire Straight Path for a total enterprise value of $875 million, or $52.44 per share. Bidder B submitted a non-binding revised indication of interest to acquire Straight Path for $801 million, or $48 per share. Verizon submitted a non-binding revised indication of interest to acquire Straight Path for a total enterprise value of $776 million, or $45.26 per share. Each of the proposals was conditioned upon Straight Path obtaining stockholder approval from Howard Jonas and the Patrick Henry Trust, pursuant to a written consent, and each of the bidders indicated that it could enter into a transaction in the next few days. Bidder C did not submit a revised indication of interest and did not participate further in the process.

On March 31, 2017, the Straight Path board held a telephonic meeting, with representatives of Straight Path's management, Evercore and Weil in attendance, to discuss the revised indications of interest received from each of AT&T, Verizon and Bidder B. The Straight Path board discussed with Straight Path's management and representatives of Evercore and Weil, the requirement of Howard Jonas to receive stock consideration in lieu of cash consideration, the potential benefits to Straight Path of Howard Jonas entering into a voting agreement instead of providing a written consent, the likelihood that each of the bidders would be willing to consider a transaction involving stock consideration or a combination of cash and stock consideration, and the desire to maintain a fixed consideration value rather than a fixed exchange ratio in the case of a stock-for-stock transaction. Following such discussion, the Straight Path board authorized representatives of Evercore to communicate to each of the bidders that the requested form of consideration would be changed from cash to a combination of cash and stock and would include a right of Straight Path's stockholders to elect to receive consideration in cash or stock, subject to a minimum percentage of the aggregate consideration being paid in stock. The Straight Path board then requested that Weil prepare a revised draft of the merger agreement contemplating cash and stock consideration with a stockholder election mechanism.

On April 2, 2017, at the direction of the Straight Path board, representatives of Evercore sent the remaining bidders a third-round bid instruction letter, requesting that each bidder submit a written, non-binding proposal with a mark-up of the merger agreement by no later than 5:00 P.M. eastern time on April 6, 2017. The letter also indicated that Straight Path had reached an agreement in principle with IDT to sell the IP Group and to settle the indemnity claim.

Early on the morning of April 5, 2017, Weil distributed revised drafts of the merger agreement to the outside legal counsel for each of AT&T, Verizon and Bidder B, which drafts reflected the cash and stock merger consideration structure.

On the afternoon of April 5, 2017, the special committee held a telephonic meeting, with representatives of Shearman participating, to consider the settlement in principle with IDT and the sale of the assets of the IP Group, as reflected in a draft term sheet. After discussion, and after taking into account both the potential gain in the event that Straight Path were to pursue an indemnification claim against IDT and the costs and risks to the merger transaction, the special committee voted to proceed with such settlement and sale and instructed the general counsel of Straight Path to execute the term sheet with IDT on behalf of Straight Path. The term sheet was executed by Straight Path and IDT on April 6, 2017.

On the evening of April 5, 2017, the Straight Path board held a telephonic meeting, with representatives of Straight Path's management, Evercore and Weil in attendance, to provide the Straight Path board with a process update. Representatives of Evercore informed the Straight Path board that it had, as requested by the Straight Path board, communicated the change in merger consideration structure to each of the bidders. Also at this meeting, representatives of Evercore discussed with the Straight Path board its preliminary financial analysis of Straight Path and the financial terms in the indications of interest submitted by the bidders to date. Representatives of Evercore also discussed with the Straight Path board that, among other things, its preliminary financial analyses did not include a discounted cash flow analysis due to the fact that Straight Path had not prepared financial projections for any period beyond January 31, 2018, that its preliminary financial analysis did not include an analysis of publicly traded companies because of the lack of publicly traded companies that had assets, operations and a strategic position that were comparable for purposes of Evercore's preliminary financial analysis to that of Straight Path, and that there were a limited number of precedent transactions involving the sale or lease of radio spectrum in the 28 GHz and 39 GHz bands for which financial information was publicly available.

POINT 8: AT&T and VZ continued to bid against each other.

On April 6, 2017, representatives of Evercore received offers from (i) AT&T, which proposed to acquire Straight Path for a total enterprise value of $951.2 million, or $57 per share and (ii) Verizon, which proposed to acquire Straight Path for a total enterprise value of $1.028 billion, or $61.57 per share. Weil also received revised drafts of the merger agreement from Debevoise, on behalf of Verizon, and from AT&T's outside legal counsel, Kilpatrick Townsend & Stockton LLP, which we refer to as Kilpatrick. Also on April 6, 2017, a draft voting agreement, a form of which had been previously negotiated and agreed to by Howard Jonas and Boies Schiller, was made available to the bidders in the virtual data room.

Later that evening, the Straight Path board held a telephonic meeting, with representatives of Straight Path's management, Evercore and Weil in attendance, to discuss the offers received from Verizon and AT&T. Representatives of Weil summarized for the Straight Path board the key issues remaining in the revised drafts of the merger agreement which included, among other things, (i) Verizon's unwillingness to agree to a reverse termination fee (payable by Verizon to Straight Path in the event that regulatory approval of the transaction is not obtained), whereas AT&T accepted the concept of a reverse termination fee and proposed that such fee equal $85 million and (ii) Verizon's requested inclusion of a "force the vote" covenant that would obligate Straight Path to hold its stockholder meeting regardless of whether a Superior Proposal were to be received by Straight Path, whereas AT&T did not require such a provision. Verizon's comments to the draft merger agreement also required that the IP Group dismiss its pending patent infringement claim against Verizon. Following discussion, the Straight Path board decided to wait to determine next steps until after it received Bidder B's revised indication of interest, which representatives of Bidder B had previously communicated to representatives of Evercore would be submitted following Bidder B's board meeting on April 7, 2017.

On April 7, 2017, at the instruction of the Straight Path board, representatives of Evercore communicated to AT&T's financial advisor that the Straight Path board had determined to move forward with another bidder who had submitted a higher offer than AT&T's offer. In response to questions from AT&T's financial advisor, at the direction of the Straight Path board, representatives of Evercore indicated that if the bid made by AT&T of $951.2 million, or $57 per share, was not AT&T's "best and final" offer, a revised proposal could be submitted by no later than 2:00 P.M. eastern time on April 7, 2017.

On the afternoon of April 7, 2017, representatives of Evercore received a "best and final" offer from Bidder B, which proposed to acquire Straight Path for a total enterprise value of $959.6 million, or $57.50 per share and a revised proposal from AT&T for a total enterprise value of $1.2 billion, or $71.81 per share. Also on the afternoon of April 7, 2017, each of Debevoise and Kilpatrick delivered comments to the draft voting agreement to Weil on behalf of Verizon and AT&T, respectively.

Early on the evening of April 7, 2017, in response to calls from representatives of Evercore inquiring whether Verizon and Bidder B would increase their respective offers, representatives of Evercore received a further revised proposal from Verizon of $1.262 billion, or $75.50 per share, and Bidder B verbally communicated to representatives of Evercore that it could increase its offer to, but not support a transaction value in excess of, $1 billion. Later that evening, the Straight Path board held a telephonic meeting, with representatives of Straight Path's management, Evercore and Weil in attendance, to discuss the revised proposals received from each of the bidders. The Straight Path board discussed with its legal and financial advisors the deal protection terms proposed by Verizon in the merger agreement and the voting agreement and the requirement that Straight Path dismiss the pending patent infringement claim against Verizon. Following such discussions, the Straight Path board instructed Weil to proceed with negotiating the final terms of the merger agreement and voting agreement with counsel to Verizon and counsel to Howard Jonas.

Also on April 7, 2017, a representative of Boies Schiller expressed concerns to representatives of Shearman that the consummation of the merger should not be contingent upon further documentation of the settlement between IDT and Straight Path, and requested that the term sheet be made binding to protect against that possibility.

On the morning of April 8, 2017, representatives of Weil and Debevoise negotiated the remaining open issues of the merger agreement and exchanged drafts of the merger agreement and disclosure schedules throughout the day. During the early afternoon, at the direction of the Straight Path board, representatives of Evercore communicated to AT&T that Straight Path would be proceeding with another bidder. Later that day, representatives of Evercore received a revised proposal from AT&T to acquire Straight Path for a total enterprise value of $1.4 billion, or $83.72 per share. AT&T also proposed that the merger consideration be in the form of 100% stock consideration to simplify the transaction mechanics, but offered that if Straight Path required a mix of stock and cash consideration, AT&T would be willing to agree to that requirement. A telephonic meeting of the Straight Path board was convened at 3:00 P.M. eastern time, with representatives of Evercore and Weil in attendance, to discuss the new proposal received from AT&T. The Straight Path board discussed with representatives of Evercore and Weil the potential benefits and disadvantages of a transaction in which Straight Path stockholders received all stock, including that the proposed fixed value structure greatly reduced the risk to Straight Path stockholders of market volatility in the price of the bidder's stock between the signing and the closing of the transaction, the fact that both AT&T and Verizon were very large, highly capitalized issuers with liquid markets for their securities, the tax considerations of an all-stock transaction and the brokerage costs to stockholders who wish to sell the shares they receive as consideration and, as a result, the Straight Path board determined that it was prepared to accept a transaction in which the consideration offered was all stock. Following discussion with representatives of Evercore and Weil, the Straight Path board determined that it was in the best interests of Straight Path and its stockholders to engage with AT&T, and authorized Weil to deliver a revised draft of the merger agreement to AT&T, but to also continue negotiations with Verizon. The Straight Path directors also determined to reconvene later that evening.

On the evening of April 8, 2017, the Straight Path board held a telephonic meeting, with representatives of Straight Path's management, Evercore and Weil in attendance, to review the events that occurred throughout the day, including the receipt of AT&T's proposal to acquire Straight Path for a total enterprise value of $1.4 billion in an all-stock transaction. Representatives of Weil also updated the Straight Path board on the status of negotiations with Verizon and informed the Straight Path board that following the earlier board meeting, Weil circulated a revised draft of the merger agreement to Kilpatrick and noted that no major issues remained outstanding in the AT&T draft merger agreement. AT&T's draft of the merger agreement accepted a reverse termination fee of $85 million and also provided the Straight Path board with the right to terminate the merger agreement to enter into an agreement for a Superior Proposal (as defined in the merger agreement) in the event that an unsolicited offer resulting in a Superior Proposal was received prior to approval of the merger by Straight Path's stockholders. During the board meeting, Kilpatrick informed Weil that AT&T would be withdrawing all of its comments to the voting agreement and that it accepted the form of voting agreement initially provided by Weil. Following discussion, the Straight Path board authorized representatives of Evercore to communicate to Verizon that Straight Path had received a superior offer from another bidder and that the Straight Path board had determined that it was in the best interests of Straight Path and its stockholders to pursue the superior offer. Weil continued to progress the merger agreements and related transaction documents for both AT&T and Verizon throughout the evening.

Also on April 8, 2017, at a telephonic meeting of the special committee, at which representatives of Shearman participated, the special committee instructed representatives of Shearman to seek additional settlement consideration from IDT in light of the substantially increased bids for Straight Path received since the settlement in principle was reached on March 29, 2017, and in light of the increased amount that Straight Path would accordingly have to pay to the FCC under the terms of the FCC consent decree.

On the same date, a representative of Shearman informed a representative of Boies Schiller that, because the bids for Straight Path had climbed to a substantially higher level, the value of the potential indemnification claim had increased significantly, and the special committee was requesting that IDT increase the settlement consideration in light of the significant change in circumstances. The representative of Boies Schiller, on behalf of IDT, emphatically rejected the special committee's request, both orally and in writing, and the representative stated that in the event Straight Path did not proceed with the settlement on the terms outlined in the executed term sheet, then IDT would be forced to pursue legal action. After considering the foregoing response, the special committee determined that it would not insist on increased consideration for the settlement of the indemnification claim and that it was not worth taking any risk of holding up the prospective merger in light of the vastly improved offers for Straight Path, which the special committee recognized would greatly benefit stockholders. On April 9, 2017, Straight Path and IDT executed a revised term sheet, reflecting IDT's request that the term sheet include a provision making the term sheet binding in the event that the parties were unable to further document the settlement.

On the morning of April 9, 2017, at the instruction of the Straight Path board, representatives of Evercore communicated to Verizon that Straight Path had received a superior offer from another bidder and that the Straight Path board had determined to pursue the superior offer. Representatives of Verizon asked if Straight Path would be willing to terminate the process and engage exclusively with Verizon if Verizon offered to acquire Straight Path for a total enterprise value equal to $1.425 billion, to which representatives of Evercore responded that they would convey the request to the Straight Path board.

During the day on April 9, 2017, Weil and Kilpatrick continued finalizing the terms of the merger agreement with AT&T. At 12:15 P.M. eastern time on April 9, 2017, the Straight Path board held a telephonic meeting, with representatives of Straight Path's management, Evercore and Weil in attendance. Representatives of Evercore updated the Straight Path board on its communications with Verizon and representatives of Weil provided the Straight Path board with an update on the status of all transaction documents.

At 2:00 P.M. eastern time, the Straight Path board held a telephonic meeting, with representatives of Straight Path's management, Evercore and Weil in attendance. The Straight Path board discussed with its advisors whether it was reasonable to expect that the price for shares of Straight Path would continue to be bid higher, and determined that the $25 million increase above AT&T's current offer was not compelling enough to proceed exclusively with Verizon.

Following the 2:00 P.M. board meeting, Davidi Jonas, chief executive officer of Straight Path, and Dave Breau, general counsel of Straight Path, contacted Howard Jonas to provide an update on the status of the process. Howard Jonas expressed his view that the regulatory approval process for a transaction with Verizon might be more involved than for a transaction with AT&T.

At 4:00 P.M. eastern time, the Straight Path board held a telephonic meeting, with representatives of Straight Path's management, Evercore and Weil in attendance. Davidi Jonas provided an update to the Straight Path board regarding the discussion that he and Mr. Breau had with Howard Jonas. The Straight Path board's legal counsel reviewed with the Straight Path board the regulatory advice that had been received from its regulatory counsel, which was that the transaction negotiated with Verizon would be no less likely than the transaction negotiated with AT&T to obtain regulatory approval. After discussion, and in light of, among other things, Verizon's request for exclusivity and Howard Jonas's concerns, the Straight Path board determined that it was in the best interests of Straight Path and its stockholders to inform Verizon that it would not be proceeding towards a transaction with Verizon and authorized representatives of Evercore to deliver such message to Verizon.

On the afternoon on April 9, 2017, representatives of Evercore contacted representatives of Verizon, notifying them that the Straight Path board had determined to move forward with another bidder. Following that call, at the instruction of the Straight Path board, representatives of Evercore communicated to AT&T that although its current draft of the merger agreement provided Straight Path with more favorable terms than the other bidder, that valuation offered by AT&T was less than that offered by the other bidder. AT&T then informed representatives of Evercore that it could increase its current offer by $50 million by entering into a lease with Straight Path for Straight Path's wireless spectrum, but that Straight Path would have to commit to the transaction with AT&T and terminate the sale process at that time. Concurrently with the conversations with AT&T, Verizon notified representatives of Evercore that Verizon would be sending a further revised offer for Straight Path reflecting a total enterprise value of $1.55 billion, or $92.65 per share, and that it also would be willing to concede the exclusivity request and the issue related to the release of the pending patent infringement claim against Verizon.

> *<u>POINT 9</u>: The STRP CEO indicated he favored a bid by AT&T because he believed AT&T was more likely to receive timely regulatory approvals.*

At 7:00 P.M. eastern time on April 9, 2017, the Straight Path board reconvened, with representatives of Straight Path's management, Evercore and Weil in attendance. Representatives of Evercore updated the Straight Path board on the discussions they had with representatives of each of Verizon and AT&T. Davidi Jonas provided an update regarding further conversations with Howard Jonas and informed the Straight Path board that despite the increase in price being offered by Verizon, Howard Jonas favored a transaction with AT&T because of his view that AT&T would receive regulatory approval on a more expedited basis (which view Howard Jonas later confirmed to the Straight Path board). The Straight Path board then discussed the terms of the proposed merger agreement with AT&T with its outside legal and financial advisors, including that the agreement did not include terms that would preclude the board from considering an unsolicited superior proposal and that the termination fee equal to approximately 3% of the equity value of Straight Path would not be preclusive. The Straight Path board and its advisors discussed the possibility of a principal-to-principal call between Davidi Jonas and the chief financial officer of AT&T, whom we refer to as the AT&T CFO, to inquire whether AT&T would consider further raising its offer. Following discussion, the Straight Path board authorized Davidi Jonas to call the AT&T CFO.

Following the 7:00 P.M. board meeting, Davidi Jonas called the AT&T CFO and communicated that the Straight Path board had received a proposal from another bidder, which offered a higher price relative to AT&T's current offer. Davidi Jonas informed the AT&T CFO that the Straight Path board was ready to approve a transaction with AT&T for $1.6 billion if AT&T was able to offer such a price. The AT&T CFO informed Davidi Jonas that approval for an offer reflecting a total enterprise value of $1.6 billion would require the approval of the board of directors of AT&T and agreed to seek board approval for the requested increase in price. Davidi Jonas thereafter informed the Straight Path board and advisors of the response received from the AT&T CFO.

At approximately 10:15 P.M. eastern time, the AT&T CFO called Davidi Jonas to inform him that AT&T was prepared to increase its offer to reflect a total enterprise value of $1.6 billion, provided that the Straight Path board approved the transaction with AT&T that evening. At 10:30 P.M. eastern time on April 9, 2017, the Straight Path board reconvened, with representatives of Straight Path's management, Evercore and Weil in attendance. Davidi Jonas reported to the Straight Path board regarding his conversation with the AT&T CFO. Representatives of Weil reviewed the directors' fiduciary duties and other legal matters in connection with the Straight Path board's consideration of the merger, including the proposed terms of the merger agreement that had been negotiated between the parties. Representatives of Evercore then reviewed with the Straight Path board its analyses of the merger and delivered Evercore's opinion that, as of the date of its opinion, and based upon and subject to the procedures followed, assumptions made, matters considered, qualifications and limitations on the scope of review undertaken by Evercore, and taking into account (i) the company-specific facts and circumstances and determinations by the Straight Path board as described in its opinion, (ii) the limited information related to Straight Path that was provided to Evercore by Straight Path or that was publicly available as described in its opinion, including that, at the direction of the Straight Path board, management of Straight Path had not prepared financial projections for Straight Path for any period beyond January 31, 2018, (iii) that, with the consent of Straight Path's board, Evercore did not perform in connection with its opinion certain analyses relating to Straight Path that Evercore would customarily perform in connection with an opinion in light of the company-specific facts and circumstances and determinations by Straight Path's board and the limited information related to Straight Path that Evercore was provided by Straight Path or that was publicly available, as described in its opinion, including that Evercore was not able to perform a discounted cash flow analysis of Straight Path, an analysis of selected publicly traded companies, and certain other analyses, and (iv) the competitive sale process undertaken by Straight Path, as set forth in its written opinion, the per share merger consideration provided for in the AT&T merger agreement was fair, from a financial point of view, to the holders of the shares of Straight Path Common Stock (other than holders of Excluded Shares as defined in the AT&T merger agreement) entitled to receive such per share merger consideration.

The Straight Path board also considered, among other things, the terms of the merger agreement that would allow Straight Path to entertain unsolicited third-party proposals following the execution and announcement of the merger agreement, including the non-preclusive termination fee that would be payable in the event the Straight Path board were to pursue an alternative proposal that was superior to the transaction with AT&T, as well as AT&T's contractual commitments with respect to obtaining regulatory approval.

After discussion, the Straight Path board unanimously (i) determined that it is in the best interests of Straight Path and its stockholders and declared it advisable to enter into the merger agreement with AT&T and

Switchback Merger Sub, Inc., (ii) directed that the adoption of the merger agreement be submitted to a vote of the stockholders of Straight Path at the stockholders meeting and (iii) recommended to the stockholders of Straight Path that they adopt the merger agreement and approve the merger.

Following the meeting, Straight Path and AT&T executed the AT&T merger agreement. On the morning of April 10, 2017, Straight Path and AT&T each issued a press release announcing the execution of the AT&T merger agreement.

On April 13, 2017, representatives of Evercore received a letter from a representative of Verizon indicating that Verizon continued to be interested in a transaction with Straight Path and that it currently is "evaluating a topping bid that it believes would be more favorable to your stockholders than your current transaction." Later that afternoon, Straight Path filed a Form 8-K with the SEC, which included the AT&T merger agreement and referenced in the Form 8-K Straight Path's receipt of such letter from Verizon without identifying Verizon by name.

POINT 10: VZ made a "topping offer" for STRP.

On April 20, 2017, representatives of Evercore received a letter from Verizon, offering to acquire 100% of Straight Path's issued and outstanding shares at $104.64 per share based on a total enterprise value of $1.8 billion for Straight Path, which we refer to as the Topping Offer. The letter indicated that Verizon believed that the Topping Offer constituted a "Superior Proposal" as defined in the AT&T merger agreement, after giving effect to the AT&T termination fee and the payment required to the FCC. Attached to the letter was a revised draft of the merger agreement. The revised merger agreement reflected that Verizon had withdrawn the requirement of Straight Path to stay the pending patent infringement claim against Verizon and proposed that, in the event the merger agreement was executed with Verizon and Straight Path subsequently terminated that agreement to enter into an agreement for a Superior Proposal, Straight Path would be able to either pay Verizon the Straight Path termination fee or sell all of the 28 GHz wireless spectrum owned by Straight Path to Verizon for a purchase price of $500 million. The letter indicated that the Topping Offer expired automatically at (i) 11:59 P.M. New York time on April 24, 2017, unless prior to such time the Straight Path board determined that the Topping Offer constitutes a Superior Proposal under the AT&T merger agreement and (ii) 11:59 P.M. New York time on May 2, 2017, if Straight Path and Verizon had not executed a definitive agreement by that time.

On the evening of April 20, 2017, the Straight Path board held a telephonic meeting with representatives of Straight Path's management, Evercore and Weil in attendance, to discuss the Topping Offer. At the request of the Straight Path board, representatives of Evercore then provided the Straight Path board with a summary of the April 13 letter received from Verizon and the terms of the Topping Offer. Representatives of Evercore reviewed the financial terms of the Topping Offer and compared the financial terms to those of the AT&T merger agreement, noting that Verizon had agreed to pay the $38 million Company Termination Fee on behalf of Straight Path, subject to reimbursement by Straight Path in the event a merger agreement with Verizon were terminated. Representatives of Weil reviewed for the Straight Path board the terms of the revised merger agreement submitted by Verizon and summarized the procedure and contractual obligations of Straight Path under the non-solicitation provisions of the AT&T merger agreement and the standard in order to terminate the AT&T merger agreement in order to enter into an agreement for a Superior Proposal. Following such discussions with its legal and financial advisors, the Straight Path board determined that the Topping Offer could reasonably be expected to result in a Superior Proposal and that the failure to consider the Topping Offer would reasonably be expected to be inconsistent with the Straight Path board's fiduciary duties. Following discussion, the Straight Path board instructed representatives of Weil to send to AT&T's legal advisors the documents received from Verizon in accordance with the AT&T merger agreement and to engage with Verizon in the negotiation of the transaction documents.

During the weekend of April 22–23, 2017, representatives of Weil engaged in discussions with representatives of Debevoise regarding the terms of the revised merger agreement.

POINT 11: The STRP CEO agreed to back a VZ offer.

On April 23, 2017, Davidi Jonas had a telephone call with Howard Jonas and a representative of Boies Schiller to discuss Howard Jonas' views on the Topping Offer. Howard Jonas informed Davidi Jonas that, in light of certain modifications to the terms of the merger agreement that had been discussed by representatives of Weil and Debevoise, he would be willing to support the Topping Offer.

On the evening of April 23, 2017, Weil delivered a revised draft of the merger agreement to Debevoise, along with the related disclosure letters. Weil and Debevoise negotiated the terms of the merger agreement, voting agreement and disclosure letters during the course of the day on April 24, 2017, and agreed to the final versions of such documents, subject to Straight Path board approval. Also on the evening of April 24, 2017, representatives of Kilpatrick delivered a draft amendment to the merger agreement to Weil, which did not indicate a revised per share price and remained subject to the final determination of AT&T regarding whether to submit a matching or superior offer.

At 9:30 P.M. on April 24, 2017, the Straight Path board convened a telephonic meeting with representatives of Straight Path's management, Evercore and Weil in attendance. Representatives of Weil provided an update regarding the terms of the merger agreement and voting agreement agreed with Debevoise. Representatives of Evercore then reviewed with the Straight Path board its analysis of the Topping Offer and its financial analyses of Straight Path. Following discussions with representatives of Weil and Evercore, the Straight Path board determined that the Topping Offer constituted a Superior Proposal under the AT&T merger agreement and that, subject to the right of AT&T to match the Topping Offer during the following five business days as per the AT&T merger agreement, the Straight Path board would terminate the AT&T merger agreement. The Straight Path board authorized representatives of Evercore to inform Verizon of its decision. Thereafter, on behalf of Straight Path, Weil delivered a notice of superior proposal and related documents to Kilpatrick on behalf of AT&T. On the morning of April 25, 2017, Straight Path issued a press release announcing that the Straight Path board had determined that the Topping Offer constituted a Superior Proposal under the AT&T merger agreement.

That same morning, AT&T notified Straight Path that it was exercising its rights under the AT&T merger agreement to request that Straight Path engage in good faith negotiations with AT&T for a period of five business days in order to amend the AT&T merger agreement in such a manner that the Topping Offer would cease to constitute a Superior Proposal under the AT&T merger agreement.

POINT 12: AT&T made two alternative offers. One was for $108.64 and the other for $120.78. However, the higher offer would preclude STRP from entertaining any further offers from VZ. AT&T was trying to terminate the auction process. VZ then raised its offer to $135.96 on May 1, 2017.

On May 1, 2017, at AT&T's request, representatives of AT&T met with representatives of Straight Path's management, Evercore and Weil at

Weil's offices in New York, at which meeting representatives of AT&T discussed their views of the benefits regarding a transaction with AT&T. During a break in these discussions, representatives of Verizon contacted Weil regarding the status of Verizon's offer, and its continued interest in acquiring Straight Path and its willingness to offer additional consideration if necessary to prevail in the bidding process. At 8:00 P.M. eastern time, the Straight Path board held a telephonic meeting, with representatives of Straight Path's management, Evercore and Weil in attendance, to discuss a letter delivered by Kilpatrick, on behalf of AT&T, which outlined two alternative offers to acquire 100% of the issued and outstanding shares of Straight Path at (i) $108.64 per share, which we refer to as the May 1 Revised AT&T Proposal or (ii) $120.78 per share, which was conditioned on the Straight Path board and Howard Jonas agreeing to enhanced deal protections that would have had the effect of precluding Straight Path from entertaining any further proposals from Verizon or others, which we refer to as the May 1 Alternative AT&T Proposal. The letter indicated that the May 1 Revised AT&T Proposal would expire automatically at 11:59 P.M. eastern time on May 2, 2017, unless prior to such time the Straight Path board had unanimously determined that the Topping Offer ceased to constitute a Superior Proposal, unanimously approved AT&T's amendment and the May 1 Revised AT&T Proposal and delivered to AT&T its proposed amendment to the AT&T merger agreement. The May 1 Alternative AT&T Proposal expired automatically at 11:59 P.M. eastern time on May 1, 2017, unless prior to such time the Straight Path board had unanimously determined that the Topping Offer ceased to constitute a Superior Proposal and had also unanimously approved the amendment to the AT&T merger agreement related to the May 1 Alternative AT&T Proposal, the amended voting agreement and the May 1 Alternative AT&T Proposal and delivered to AT&T its proposed amendment to the AT&T merger agreement. Following discussion, the Straight Path board determined that the Straight Path board meeting should be adjourned and reconvened following receipt of a revised binding offer from Verizon, which Verizon had previously indicated to representatives of Weil that it intended to deliver to the Straight Path board that same evening.

Later that evening, Verizon delivered a binding offer for 100% of the issued and outstanding shares of Straight Path at $135.96 per share based on an enterprise value of approximately $2.3 billion, which we refer to as the May 1 Verizon Offer. The letter indicated that the May 1 Verizon Offer would expire automatically at 11:59 P.M. New York City time on May 8, 2017, if the parties had not executed a definitive agreement by that time. Representatives of Weil forwarded the May 1 Verizon Offer letter to Kilpatrick as required under the terms of the AT&T merger agreement.

The Straight Path board reconvened a telephonic meeting at 10:30 P.M. eastern time, with representatives of Straight Path's management, Evercore and Weil in attendance, to discuss the May 1 Verizon Offer. Following discussion, the Straight Path board determined that it required additional time to consider the May 1 Verizon Offer and determined to reconvene the following day.

On the afternoon of May 2, 2017, the Straight Path board held a telephonic meeting, with representatives of Straight Path's management, Evercore and Weil in attendance, to further discuss the May 1 Verizon Offer. Representatives of Evercore reviewed its financial analyses of the May 1 Verizon Offer. Following discussion with representatives of Weil and Evercore, the Straight Path board determined in good faith, after consultation with representatives of Evercore and Weil, that the May 1 Verizon Offer constituted a Superior Proposal under the AT&T merger agreement and that, subject to the right of AT&T to match the May 1 Verizon Offer during the following three business days (as required under the AT&T merger agreement), the Straight Path board would terminate the AT&T merger agreement. The Straight Path board authorized representatives of Evercore to contact Verizon to inform them of the Straight Path board's decision. Later that evening, on behalf of Straight Path, Weil delivered a notice of superior proposal and related documents to Kilpatrick on behalf of AT&T. AT&T subsequently delivered to Straight Path a notice that it was exercising its rights under the AT&T merger agreement to request that Straight Path engage in good faith negotiations with AT&T for a period of three business days in order to amend the AT&T merger agreement in such a manner that the May 1 Verizon Offer would cease to constitute a Superior Proposal. Straight Path issued a press release on the morning of May 3, 2017, announcing that the Straight Path board had determined that the May 1 Verizon Offer constituted a Superior Proposal under the AT&T merger agreement.

On the afternoon of May 5, 2017, Kilpatrick, on behalf of AT&T, delivered to representatives of Evercore and Weil a binding offer to acquire 100% of the issued and outstanding shares of Straight Path at $138.89 per share based on an enterprise value of approximately $2.3 billion, which we refer to as the May 5 AT&T Offer. The letter indicated that the May 5 AT&T Offer expired automatically at 11:59 P.M. eastern time on May 8, 2017, unless prior to such time the Straight Path board had determined that the May 1 Verizon Offer ceased to constitute a Superior Proposal and approved AT&T's amendment to the AT&T merger agreement and the May 5 AT&T Offer and delivered to AT&T its proposed amendment to the AT&T merger agreement.

On the morning of May 7, 2017, representatives of Weil spoke with representatives of Verizon and informed Verizon that Straight Path had received a revised offer from AT&T, which the Straight Path board planned to consider at a meeting scheduled for 10:30 A.M. that morning and that it was possible that the Straight Path board could determine to have Straight Path execute an amendment to the AT&T merger agreement reflecting the revised offer from AT&T. The representative of Verizon informed Weil that Verizon was considering submitting an increased offer and, if Verizon decided to do so, it would submit the revised offer in advance of the scheduled Straight Path board meeting.

> *POINT 13: VZ made a base offer and an offer for $12 more if STRP would allow AT&T and VZ to negotiate with each other regarding STRP and its licenses. This clause would effectively end the competitive bidding process.*

Shortly before the 10:30 A.M. meeting of the Straight Path board on the morning of May 7, 2017, Verizon delivered to representatives of Evercore and Weil a revised binding offer to acquire 100% of the issued and outstanding shares of Straight Path (a) at $184 per share based on an enterprise value of approximately $3.1 billion, which we refer to as the May 7 Verizon Base Offer or, alternatively, (b) at $196 per share based on an enterprise value of approximately $3.3 billion if Straight Path allowed Verizon the opportunity to discuss with AT&T for a period of five business days a transaction that would result in a sale of Straight Path after which each of Verizon and AT&T would own some of Straight Path's licenses, which we refer to as the May 7 Verizon Enhanced Offer. At 10:30 A.M. eastern time on May 7, 2017, the Straight Path board held a telephonic meeting, with representatives of Straight Path's management, Evercore and Weil in attendance, to discuss the May 7 Verizon Base Offer and the May 7 Verizon Enhanced Offer. The Straight Path board determined to reconvene at a later time to allow the Straight Path board, Straight Path's management and Straight Path's advisors to consider more thoroughly the implications of each offer.

> *POINT 14: The STRP board did not agree to allow negotiations between VZ and AT&T, believing the bidding would continue higher.*

At 12:00 noon eastern time on May 7, 2017, the Straight Path board reconvened. Davidi Jonas updated the Straight Path board that since the prior meeting, he had spoken with Howard Jonas, who indicated that his preference was for Straight Path to proceed with the May 7 Verizon Enhanced Offer if Straight Path had not received a response from AT&T prior to the expiration of the May 7 Verizon Enhanced Offer.

At 3:00 P.M. eastern time on May 7, 2017, the Straight Path board reconvened. The Straight Path board discussed with its legal and financial advisors the differences between the May 7 Verizon Base Offer and the May 7 Verizon Enhanced Offer and the implications of each, including that while the May 7 Verizon Enhanced Offer reflected potential additional value to Straight Path's stockholders of $12.00 per share, as a result of allowing Verizon and AT&T to discuss the allocation of Straight Path's wireless spectrum directly, the May 7 Verizon Enhanced Offer would likely end the competitive bidding process because Verizon had expressed a preferred interest in the 28 GHz wireless spectrum and AT&T had expressed a preferred interest in the 39 GHz wireless spectrum. Following the discussion with its legal and financial advisors, the Straight Path board concluded that, based on the competitive bidding process to date, it was not in the best interests of Straight Path and its stockholders to proceed with the May 7 Verizon Enhanced Offer due to the Straight Path board's belief that AT&T would likely match Verizon's offer and that Verizon might further increase its offer, thereby enabling the Straight Path board to obtain a higher value for Straight Path's stockholders. The Straight Path board unanimously determined that the May 7 Verizon Base Offer constituted a "Superior Proposal" as defined in the AT&T merger agreement and that the failure to engage in discussions with Verizon would reasonably be expected to be inconsistent with the Straight Path board's fiduciary duties. The Straight Path board instructed representatives of Weil and Evercore to communicate the Straight Path board's determination to proceed with the May 7 Verizon Base Offer to each of Verizon and AT&T. Davidi Jonas thereafter updated Howard Jonas regarding the Straight Path board's determination that the May 7 Verizon Base Offer constituted a "Superior Proposal" and the rationale for reaching that determination, and Howard Jonas expressed his support for the board's determination.

On the morning of May 8, 2017, Straight Path issued a press release, announcing that the Straight Path board had determined that the May 7 Verizon Base Offer constituted a Superior Proposal.

> *POINT 15: AT&T dropped out and the STRP board was left having to accept an offer from VZ that was $12 less than VZ's higher alternative. The STRP board had gambled that the bidding would continue but left a lot of money on the table for its shareholders.*

At approximately 8:15 P.M. eastern time on May 10, 2017, the Straight Path board received a letter from AT&T indicating that AT&T had (i) determined not to make any new bids or proposals to Straight Path or to propose any amendments to the AT&T merger agreement, (ii) acknowledged that the Straight Path board had determined that the May 7 Verizon Base Offer constituted a Superior Proposal under the AT&T merger agreement, and (iii) understood that its decision not to amend the AT&T merger agreement would cause Straight Path to terminate the AT&T merger agreement. Attached to the letter were AT&T's wire instructions for payment of the $38 million AT&T termination fee upon termination of the AT&T merger agreement.

At 10:00 P.M. eastern time on May 10, 2017, the Straight Path board held a telephonic meeting, with representatives of Straight Path's management, Evercore and Weil in attendance. Davidi Jonas updated the Straight Path board that, following receipt of AT&T's letter, he communicated with the AT&T CFO, who confirmed that AT&T was not interested in submitting any further offers to acquire Straight Path. Representatives of Weil also noted that, earlier in the day, Weil approached Verizon to seek to re-open the May 7 Verizon Enhanced Offer, however, Verizon declined to do so. Representatives of Weil reviewed the directors' fiduciary duties and other legal matters in connection with the Straight Path board's consideration of proceeding to terminate the AT&T merger agreement and enter into the merger agreement with Verizon, including the terms of the merger agreement with Verizon that had been negotiated between the parties. Representatives of Evercore then reviewed with the Straight Path board its analyses of the merger with Verizon and delivered Evercore's opinion that, as of the date of its opinion, and based upon and subject to the procedures followed, assumptions made, matters considered, qualifications and limitations on the scope of review undertaken by Evercore, and taking into account (i) the company-specific facts and circumstances and determinations by the Straight Path board as described in its opinion, (ii) the limited information related to Straight Path that was provided to Evercore by Straight Path or that was publicly available as described in its opinion, including that, at the direction of the Straight Path board, management of Straight Path had not prepared financial projections for Straight Path for any period beyond January 31, 2018, (iii) that, with the consent of the Straight Path board, Evercore did not perform in connection with its opinion certain analyses relating to Straight Path that Evercore would customarily perform in connection with an opinion in light of the company-specific facts and circumstances and determinations by the Straight Path board and the limited information related to Straight Path that Evercore was provided by Straight Path or that was publicly available, as described in its opinion, including that Evercore was not able to perform a discounted cash flow analysis of Straight Path, an analysis of selected publicly traded companies, and certain other analyses, and (iv) the competitive sale process undertaken by Straight Path, as set forth in its written opinion, the per share merger consideration provided for in the merger agreement with Verizon was fair, from a financial point of view, to the holders of the shares of Straight Path common stock (other than holders of Excluded Shares) entitled to receive such per share merger consideration.

After discussion, the Straight Path board unanimously (i) determined that it is in the best interests of Straight Path and its stockholders and declared it advisable to enter into the merger agreement with Verizon and Merger Sub, (ii) directed that the adoption of the merger agreement be submitted to a vote of the stockholders of Straight Path at the stockholders meeting and (iii) recommended to the stockholders of Straight Path that they adopt the merger agreement and approve the merger.

On the morning of May 11, 2017, Straight Path and Verizon executed the merger agreement and concurrently, Verizon, on behalf of Straight Path, paid the AT&T termination fee to AT&T. Straight Path and Verizon each issued a press release announcing the merger, the termination of the AT&T merger agreement and the execution of the merger agreement.

Verizon's Reasons for the Merger

The Verizon board delegated responsibility to a Special Transaction Committee of the Verizon board to review and approve a potential transaction with Straight Path. The Special Transaction Committee unanimously approved the merger and the merger agreement. The Verizon board believes that the merger will support Verizon's continued leadership in 5G development by allowing it to obtain licenses to 39 GHz spectrum nationwide and to enhance its 28 GHz spectrum portfolio in key markets. In reaching its determination, the Verizon board consulted with Verizon's management, and considered the spectrum holdings of Straight Path, other potential sources of high band spectrum for 5G, and the spectrum holdings by other companies.

APPENDIX E

Straight Path Communications—Excerpts from STRP's 8-K Filed on April 13, 2017

POINT 1: This appendix provides the 8-K filed by STRP that disclosed that a third party had indicated that it remained interested in bidding for STRP after STRP entered into an agreement to merge with AT&T.

It is important for the arbitrageur to read filings very closely. The key to the bidding war for STRP was found toward the end of this document in "Item 8.01 Other Events."

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 8-K

CURRENT REPORT
Pursuant to Section 13 or 15(d)
of the Securities Exchange Act of 1934
Date of Report (Date of earliest event reported): April 9, 2017

STRAIGHT PATH COMMUNICATIONS INC.

(Exact name of registrant as specified in its charter)

Delaware	1-36015	46-2457757
(State or other jurisdiction of incorporation)	**(Commission File No.)**	**(IRS Employer Identification No.)**

5300 Hickory Park Drive, Suite 218

Glen Allen, Virginia, 23059

(Address of principal executive offices and zip code)

Registrant's telephone number, including area code: (804) 433-1522

Not applicable

(Former name or former address, if changed since last report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

- ☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
- ☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
- ☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
- ☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Item 1.01 Entry into a Material Definitive Agreement.

On April 9, 2017, Straight Path Communications Inc., a Delaware corporation ("Straight Path"), entered into an Agreement and Plan of Merger (the "Merger Agreement") with AT&T Inc., a Delaware corporation ("AT&T"), and Switchback Merger Sub Inc., a Delaware corporation and a direct, wholly owned subsidiary of AT&T ("Merger Sub"). Pursuant to the Merger Agreement, among other things, Merger Sub will be merged with and into Straight Path (the "Merger") with Straight Path being the surviving corporation of the Merger.

At the effective time of the Merger (the "Effective Time"), each share of Class A common stock, par value $0.01 per share, of Straight Path and each share of Class B common stock, par value $0.01 per share, of Straight Path (collectively, the "Shares") issued and outstanding immediately prior to the Effective Time (other than Shares owned by AT&T, Merger Sub or any other direct or indirect Subsidiary of AT&T, and Shares owned by Straight Path or any direct or indirect Subsidiary of Straight Path, and in each case not held on behalf of third parties) will be converted into the right to receive a number of validly issued, fully paid in and nonassessable shares of common stock of AT&T ("AT&T Shares") equal to the quotient determined by dividing $95.63 by the five (5)-day volume-weighted average per share price ending on the second full trading day prior to the Effective Time, rounded to two decimal points, of AT&T Shares on the New York Stock Exchange (the "AT&T Share Value") and rounded to the nearest ten-thousandth of a share (collectively and in the aggregate, the "Merger Consideration"). It is Straight Path's intention that (i) the Merger shall qualify as a "reorganization" within the meaning of Section 368(a) of the Internal Revenue Code of 1986, as amended, and the Treasury regulations promulgated thereunder, and (ii) the Merger Agreement shall constitute a plan of reorganization within the meaning of Treasury Regulation Section 1.368-2(g), as noted in the Merger Agreement.

The board of directors (the "Board") of Straight Path has unanimously approved the Merger Agreement and determined that the Merger Agreement and the transactions contemplated thereby, including the Merger, are fair to, and in the best interests of, Straight Path and its stockholders, and has resolved to recommend that Straight Path's stockholders approve the Merger Agreement.

Straight Path has agreed, subject to certain exceptions with respect to unsolicited proposals, not to directly or indirectly solicit competing acquisition proposals or to participate in any discussions concerning, or provide non-public information in connection with, any unsolicited acquisition proposals. However, the Board may, subject to certain conditions, change its recommendation in favor of approval of the Merger Agreement if, in connection with receipt of a superior proposal or an event occurring after the date of the Merger Agreement with respect to Straight Path, it determines in good faith, after consultation with its financial advisors and outside legal counsel, that the failure to take such action would be inconsistent with its fiduciary duties to Straight Path's stockholders under applicable law.

The completion of the Merger is subject to the satisfaction or waiver of customary closing conditions, including: (i) approval of the Merger Agreement by Straight Path's stockholders; (ii) receipt of regulatory approvals, including receipt of consent to the Merger from the Federal Communications Commission ("FCC") and the expiration or termination of any waiting period under the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended ("HSR"); (iii) there being no law or injunction prohibiting consummation of the transactions contemplated under the Merger Agreement; (iv) the effectiveness of a registration statement on Form S-4 relating to the Merger; (v) subject to specified materiality standards, the continuing accuracy of certain representations and warranties of each party; (vi) continued compliance by each party in all material respects with its covenants; (vii) no event having occurred that has had, or would reasonably likely to have, a Material Adverse Effect (as defined in the Merger Agreement) on Straight Path; (viii) receipt by Straight Path of an opinion from its tax counsel to the effect that the Merger will qualify as a "reorganization" for United States federal income tax purposes within the meaning of Section 368(a) of the Internal Revenue Code of 1986, as amended; (ix) receipt of approval for listing the AT&T Shares on the New York Stock Exchange, subject to official notice of issuance; and (x) the FCC consent referred to in (ii) of this paragraph having become a Final Order (as defined in the Merger Agreement).

Straight Path has made customary representations and warranties in the Merger Agreement. The Merger Agreement also contains customary covenants and agreements, including covenants and agreements relating to the conduct of Straight Path's business between the date of the signing of the Merger Agreement and the closing of the transactions contemplated under the Merger Agreement. The representations and warranties made by Straight Path are qualified by disclosures made in its disclosure schedules and Securities and Exchange Commission ("SEC") filings. None of the representations and warranties in the Merger Agreement survives the closing of the transactions contemplated by the Merger Agreement.

The Merger Agreement contains certain termination rights for both Straight Path and AT&T including upon (i) an uncured breach by the other party which results in the failure of a closing condition, (ii) the failure to receive the approval of the Merger Agreement by Straight Path's stockholders, and (iii) Straight Path's Board changing its recommendation in favor of the Merger Agreement. The Merger Agreement further provides that, upon termination of the Merger Agreement, under certain circumstances following a change in recommendation by Straight Path in connection with its receipt of a superior proposal or due to an Intervening Event (as defined in the Merger Agreement), Straight Path may be required to pay AT&T a termination fee equal to $38 million. In addition, AT&T is required to pay Straight Path an aggregate amount equal to $85 million in the event that the Merger has not closed by July 9, 2018 (the "Termination Date"), and all conditions to closing other than receipt of FCC consent or HSR approval (or expiration of the waiting period under the HSR) have been satisfied or waived. Either Straight Path or AT&T may terminate the Merger Agreement if the closing of the Merger has not occurred on or before January 9, 2018; provided, however, that if regulatory approvals have not been obtained and all other conditions to closing have been satisfied or waived, the date until which Straight Path or AT&T may terminate will automatically be extended for an additional one hundred and eighty days.

The Merger Agreement has been attached as an exhibit to this report to provide investors and security holders with information regarding its terms. It is not intended to provide any other factual information about Straight Path, AT&T or Merger Sub, or to modify or supplement any factual disclosures about Straight Path or AT&T in their public reports filed with the SEC. The Merger Agreement includes representations, warranties and covenants of Straight Path, AT&T and Merger Sub made solely for purposes of the Merger Agreement and which may be subject to important qualifications and limitations agreed to by Straight Path, AT&T and Merger Sub in connection with the negotiated terms of the Merger Agreement. Moreover, some of those representations and warranties may not be accurate or complete as of any specified date, may be subject to a contractual standard of materiality different from those generally applicable to Straight Path's or AT&T's SEC filings or may have been used for purposes of allocating risk among Straight Path, AT&T and Merger Sub rather than establishing matters as facts.

The foregoing summary of the Merger Agreement and the transactions contemplated thereby does not purport to be complete and is subject to, and qualified in its entirety by, the full text of the Merger Agreement, which is attached to this report as Exhibit 2.1 and is incorporated herein by reference.

In addition, Straight Path's majority shareholder, Howard Jonas, has entered into a voting agreement with AT&T concurrently with the entry into the execution of the Merger Agreement (the "Voting Agreement"). The Voting Agreement provides that Mr. Jonas (holding his shares through a trust) will vote his shares in Straight Path in favor of the Merger and the other transactions contemplated in the Merger Agreement, on the terms and subject to the conditions set forth in the Voting Agreement. The Voting Agreement will terminate automatically upon the earliest to occur of (i) the effective time of the Merger, (ii) the valid termination of the Merger Agreement pursuant to Article VII thereof, (iii) a change of recommendation by the Board in the event of a Superior Proposal or Intervening Event, (iv) any change being made to the terms of the Merger Agreement that would terminate the Trust's or Mr. Jonas's obligation to vote in favor of the Merger (on the terms and subject to the conditions in the Merger Agreement) or (v) the Termination Date. Straight Path is not a party to the Voting Agreement.

The foregoing summary of the Voting Agreement and the transactions contemplated thereby does not purport to be complete and is subject to, and qualified in its entirety by, the full text of the form of Voting Agreement, which is attached as Exhibit B to the Merger Agreement, which is attached to this report as Exhibit 2.1 and is incorporated herein by reference.

Item 5.02 Departure of Directors or Certain Officers; Election of Directors; Appointment of Certain Officers; Compensatory Arrangements of Certain Officers.

In connection with its entry into the Merger Agreement, Straight Path approved severance arrangements for Davidi Jonas, Jonathan Rand, Zhouyue Pi and David Breau (each an "Executive", and collectively, the "Executives"). The severance arrangements provide that if, within two years following the consummation of the Merger, Straight Path terminates an Executive's employment without "Cause" or an Executive resigns for "Good Reason" (each such term to be defined in the severance agreements to be entered into prior to the consummation of the Merger), the Executive shall be entitled to receive a lump sum payment equal to one and one-half times (1.5×) (two and one-half times (2.5×) for Mr. Jonas) the sum of the Executive's annual base salary and target bonus, subject to the execution of a release of claims.

Straight Path also approved retention bonus payments for Davidi Jonas, Jonathan Rand and David Breau in the amounts of $1,800,000, $1,000,000 and $1,000,000, respectively. Subject to continued employment through the consummation of the Merger, such individuals shall be entitled to receive their retention bonus payment in a lump sum within thirty days following the consummation of the Merger.

In addition, Davidi Jonas was granted 60,000 shares of restricted stock of Straight Path that shall vest on the earlier to occur of (i) December 31, 2018 and (ii) the consummation of the Merger.

Item 5.03 Amendments to Articles of Incorporation or Bylaws.

On April 9, 2017, the Board determined that it was in the best interests of Straight Path and its stockholders to amend the By-laws of Straight Path (the "Bylaws") and by resolution authorized, approved and adopted an amendment to the Bylaws (the "Bylaw Amendment"). The Bylaw Amendment became effective upon the date of the Merger Agreement.

Pursuant to the Bylaw Amendment, a new Article XI was added to the Bylaws to provide that, unless Straight Path consents in writing to the selection of an alternative forum, the sole and exclusive forum for (i) any derivative action or proceeding brought on behalf of Straight Path, (ii) any action asserting a claim of breach of a fiduciary duty owed by any director, officer or other employee of Straight Path to Straight Path or Straight Path's stockholders, (iii) any action asserting a claim arising pursuant to any provision of the Delaware General Corporation Law or Straight Path's Certificate of Incorporation or Bylaws (as either may be amended from time to time), (iv) any action to interpret, apply, enforce or determine the validity of Straight Path's Certificate of Incorporation or Bylaws, or (v) any action asserting a claim against Straight Path or any director of officer or other employee of Straight Path governed by the internal affairs doctrine, shall be a state court located within the State of Delaware (or, if no state court located within the State of Delaware has jurisdiction, the federal district court for the District of Delaware).

A copy of the Bylaw Amendment is attached as Exhibit 3.1 to this report and is incorporated herein by reference.

> *POINT 2: The most important part of the 8-K was buried at the end of the document and is shown below. This was the key for arbitrageurs to act. If they already didn't own STRP shares, this was the opportunity to get on board on one of the most profitable bidding wars in recent corporate history.*

Item 8.01 Other Events.

On April 13, 2017, the Company and Evercore Group LLC, the Company's financial advisor, received a letter from a third party that had been bidding to acquire the Company before the Company entered into the Merger Agreement. The letter indicated that such third party continues to be interested in a transaction with the Company and that it currently is "evaluating a topping bid that it believes would be more favorable to your shareholders than your current transaction." There can be no assurances that any such offer will be received or, if received, that the Board will determine that such offer constitutes a Superior Proposal within the meaning of the Merger Agreement. In any event, the Company's rights and obligations with respect to any such offer will be governed by the Merger Agreement.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits:

Exhibit Number	Description
2.1	Agreement and Plan of Merger, dated as of April 9, 2017, by and among Straight Path Communications Inc., a Delaware corporation, AT&T Inc., a Delaware corporation, and Switchback Merger Sub Inc.
3.1	Amendment to By-Laws of Straight Path Communications Inc.

Acknowledgments

I owe thanks to my wife, Ginny, and to all my family, for their love and support.

There are so many friends and colleagues I would like to thank, that it is difficult to come up with a complete list.

Over the years, I have been fortunate to have had the opportunity to meet and work with a tremendous group of professionals. Albert Cohen and Marty Sklar introduced me to, and taught me, the risk arbitrage business. Other arbitrageurs have also been great friends, including Jeff Cohen and John Wagner, who have helped me throughout my career.

I also want to thank Professor Edward I. Altman, who encouraged me to write the book and helped me get the project started. Without his guidance and encouragement, the book would likely never have happened.

I owe a special thanks to all my editors at Wiley for their patience with this project, and to Ruth Mills for assisting me along the way.

There are many others who have been kind enough to help me over the years, and who have helped me on this book.

Thank you all . . .

KMM

Risk Arbitrage: An Investor's Guide, Second Edition. Keith M. Moore.

Index

Page references followed by *e* indicate an exhibit.

Risk Arbitrage: An Investor's Guide, Second Edition. Keith M. Moore.