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Portfolio Design

A Modern Approach to Asset Allocation

Richard Marston

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RICHARD C. MARSTON

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To Jerrilyn Greene Marston

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Preface

It is my belief that portfolio design—choosing the right mix of assets appropriate to a particular investor—is the key to successful investing. Choosing managers for individual asset classes is certainly important, but it's care in designing the asset allocation that can make or break a portfolio. Such care cannot protect an investor from losses in an economic downturn, but it can cushion the blow. Careful portfolio design will never make an investor rich, but it will help that investor accumulate wealth systematically.

It's possible to grow wealth much faster by investing in individual assets. After all, that's how family fortunes are made. Entrepreneurs bet everything on a single idea and, in at least a fraction of cases, the entrepreneur becomes wealthy enough to worry about how to invest that wealth more broadly. But most investors are not trying to make fortunes from their investments. They are trying to generate higher wealth, no doubt, but they are also trying to keep risks under control. That's true whether the investor is a foundation trying to carry out its mission or a family trying to accumulate enough wealth for retirement.

Since the early 1970s when pension law became better established under ERISA, investment advisors have become more sophisticated about their approaches to investing. Gone are the days when most advisors did their own stock selection. Investment managers are hired to do that. Advisors today worry about how to balance risk against return for the portfolio as a whole and they use sophisticated measures of performance to track portfolios. In the 1970s and 1980s, advisors who catered to institutional investors led changes in the industry, but more recently advisors to high net worth investors have applied the same methods to managing the portfolios of private clients. As a result, investors can find a variety of highly qualified investment advisors who can design portfolios that reflect all of the advances in investment theory and practice over the last 40 years.

Twenty years ago, I began teaching asset allocation in a program at the Wharton School established to train financial advisors in modern portfolio management. The program was established jointly by Wharton and the Investment Management Consulting Association (IMCA). Upon successful completion of this program, financial advisors are given the Certified

Investment Management Analyst (CIMA) designation. Today, there are more than 6,000 CIMAs in the United States and abroad, including many of the leading financial advisors at investment firms in this country. I had the privilege of training many of these advisors.

This book is based on the sessions that I developed for the CIMA program. The book is designed for investment advisors who want to provide diversified portfolios for their clients, whether they are high net worth private clients or institutional investors. The book examines all of the major asset classes that go into modern portfolios and asks how much they add to portfolio diversification.

Besides my participation in the CIMA program, I have taught in many other investment programs at the Wharton School. I have also given investment presentations on behalf of banks, brokerage firms, and insurance companies in more than a dozen countries as well as in conferences and meetings throughout this country.

My experience in asset allocation includes not only teaching the subject to professionals, but also designing portfolios for investors. For 10 years, I was a member of the asset allocation committee of one of the leading brokerage firms. We met monthly to discuss how to design portfolios for different types of clients. Today I advise a committee that has the fiduciary responsibility over portfolio design for a large number of clients, both institutions and individuals.

For the last dozen years, I have been academic director of a unique program at Wharton for ultra-high net worth investors, the Private Wealth Management Program. In this program, which Charlotte Beyer of the Institute for Private Investors and I founded in 1999, the investors themselves come to Wharton for a week to learn about how to invest their wealth. As of 2010, almost 600 ultra-high net worth investors have taken part in this program. This program has given me perspective from the investor's side of the advisor-investor relationship. I have also had extensive experience as an advisor to the family offices of ultra-high net worth investors and as a consultant to pension funds and endowments.

What I have learned is that investing isn't easy. But as shown in this book, thoughtful asset allocation provides discipline to the investment process and gives the best chance of building and safeguarding wealth. The purpose of this book then is to help guide the investment advisor through all of the major decisions in designing a portfolio.

RICHARD MARSTON
Philadelphia
May 2010

Acknowledgments

This book has been in the making since I started teaching asset allocation in the CIMA program at Wharton more than 20 years ago. More than 6,000 advisors have been through the program including many of the top institutional and high net worth consultants at the leading brokerage firms. I have had the privilege of teaching most of them, along with my colleagues in the program, Jeffrey Jaffe and Craig MacKinlay.

I want to thank the many financial advisors that I have met through the years, both in the CIMA program and in other programs at Wharton and throughout the country. Their insights have helped me to shape many of the ideas in this book about investing. A thoughtful advisor can make so much difference to the financial well-being of a family or institution. I like to think that the CIMA program has contributed to the increasing professionalism of the investment advisory business in this country.

I would like to thank two of my colleagues, Richard Herring of Wharton and Gordon Bodnar of SAIS at Johns Hopkins, for providing me with helpful comments on this book as well as on the teaching materials I use in the CIMA program. Other colleagues have been particularly helpful with specific topics in the book, including Joseph Gyourko on the topic of real estate, Andrew Metrick and Ayako Yasuda on venture capital, and Christopher Geczy on hedge funds.

One of the great pleasures of teaching at the Wharton School is to work with talented research assistants. Wharton students are best described as "scary smart", and I have known some of the best of these. I would like to thank Caroline Baniqued, Mark Klebanov, and Allyson White for their assistance with research on this book. Alex Feldman, then a student at the University of Michigan, also provided excellent research assistance.

The production of this book was immeasurably helped by assistance from Christopher Trollen, the Administrative Coordinator of the Weiss Center. To my two editors at Wiley, William Falloon and Jennifer MacDonald, I owe special thanks. Bill Falloon began to encourage me to write this book five years ago. I also want to thank my agent, John Wright, whose wise counsel is much appreciated.

The decision to join Wharton's faculty was one of the most important ones in my career. Its research environment has always been so supportive. What a splendid institution it is.

Finally, I would like to thank my spouse, Jerrilyn Greene Marston, for her lifelong support. There is nothing like having a brilliant wife to inspire you in all of your work, so I am dedicating this book to her.

About the Author

Richard C. Marston is the James R.F. Guy Professor of Finance at the Wharton School of the University of Pennsylvania. He is also Director of the George Weiss Center for International Financial Research at Wharton. He holds a BA from Yale University, a B Phil from Oxford University where he was a Rhodes Scholar, and a PhD from MIT. Marston has written or co-edited four previous books on finance, including his award-winning *International Financial Integration* (Cambridge, 1995).

Marston has taught asset allocation in the CIMA investment management certificate program at Wharton since the program was founded in 1988. He has also given investment presentations throughout this country as well as in more than a dozen countries in Europe, Latin America, and Asia. Since 1999, he has directed the Private Wealth Management Program at Wharton, a program for ultra-high net worth investors. He also serves as an advisor to several family offices and investment companies.

About the Book

This is a book designed to be read by investment advisors. The book is rich in information about individual asset classes, including both traditional assets like stocks and bonds as well as alternative investments such as hedge funds, private equity, real estate, and commodities. So it should appeal to all sophisticated advisors whether or not they are trying to qualify for one of the major investment designations. In fact, the book is designed to be read by any advisor who is as fascinated as I am by the investment process.

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Portfolio Design

CHAPTER 1

Asset Allocation

An Introduction

Asset allocation has different aims depending on the investor. A younger investor may want to build wealth over time, taking risks that would not be sensible for an older investor. Investors in retirement often want to hunker down to make sure that no unreasonable losses occur. The assets these two investors choose may not differ overall, but the relative weights given to each asset in the portfolio will surely differ a lot. For example, a younger investor will hold a higher proportion of equities than an investor nearing retirement. Institutional investors also differ in their investment strategies. One endowment, perhaps a family foundation, may want to preserve wealth if there are few opportunities to raise more funds in the future. Another endowment, perhaps a university endowment, may follow more aggressive investment policies knowing that there is a steady flow of additional funds from future donors.

This tradeoff between return and risk is central to all asset allocation. It's a genuine tradeoff even though some investors believe they can achieve returns without taking on risk. Asset allocation aims to find ways to make the tradeoff as attractive as possible. One key concept is the correlation between one asset and another. Almost every portfolio has substantial investments in both stocks and bonds because they tend to be low in correlation with one another. Many portfolios include both foreign and domestic assets for the same reason. Similarly, many portfolios include alternative investments such as real estate or commodities because they tend to have relatively low correlations with equities and bonds.

Investors should aim to form portfolios so that if one set of assets suffers low returns in a given period, perhaps another set of assets will provide higher returns. When the economy is booming, for example, equities tend

to thrive as do other investments with equity-like characteristics. When the economy turns down, bonds tend to shine. Or perhaps there are equities from other parts of the world that do well.

Since Markowitz's studies in the 1950s, portfolio management has focused on ways to maximize returns for any given level of risk.[1] Investors should try to form portfolios that have the highest returns possible for that level of risk. But it's just as important to minimize risk for a given target return. There may be several types of assets that would provide the target return, but there is usually a portfolio mixture of these assets that will minimize risk.

To develop such portfolios, it's important for investors to have well-formulated estimates of asset returns. And perhaps more important are the estimates of risk and correlation. To obtain these, it's not enough to just take long-run averages of each asset class. It's important to study each type of asset in detail to understand why it has earned those returns and in what circumstances.

To show what this means, consider the two most basic assets, stocks and bonds. Investors need to ask how much equities or bonds can earn in the long run. We can certainly calculate long-run average returns for each asset class. But these long-run averages would be very misleading if inflation has varied over the sample period. If inflation is running over 10 percent per year, should an investor be pleased with a 12 percent return? So long-run estimates of returns should be done in real, not nominal, terms. But what period should we study?

If we were to examine bond returns in the 1980s to present, we would be enamored with bonds. They are terrific assets with high real returns and relatively little risk. In the long run, by which we mean periods stretching back through the post-war period or back to 1926 (when the Ibbotson SBBI dataset begins) or stretching back to the late nineteenth century, real bond returns are much lower.[2] In those longer periods, real bond returns typically average only 2 percent to 2.5 percent per year. Should we base our estimates of future bond returns on the recent past or on longer periods of history? As explained in Chapter 2, the answer is that the last 30 years have seen a one-time capital gain on bonds as inflation has fallen from double-digits to current levels. Basing future estimates of bond returns on the recent past would be foolhardy.

What about stock returns? Again, the time period chosen is important. In Chapter 2, we will show that post-war stock returns are higher than they have been in the long run. And more importantly, stock returns have been inflated by a rise in price-earnings ratios that may not be sustainable in the long run. Asset allocation requires that the investor understand these assets enough to assess how well they will perform in the future.

INGREDIENTS OF ASSET ALLOCATION

Investing has evolved over the last few decades. First, there is the shift away from individual stock selection toward diversification of stock holdings. Instead of choosing the 10 or 20 best stocks for the portfolio, an investment advisor is more likely to make sure the portfolio is properly diversified between different types of stocks. More specifically, the advisor deliberately balances different styles of stocks, choosing both growth and value stocks and large-cap and small-cap stocks. One reason for this shift in the approach to investing is the realization that investment styles go in and out of favor. For several years or more, growth stocks may outperform value stocks and investors become enthusiastic about new technologies (as they did in the early 1970s and late 1990s). But then value stocks thrive, and investors must switch their allegiances. This shift toward style investing was also driven by the discovery that value stocks provide a value premium over growth stocks and that small-capitalization stocks provide a small-cap premium over large-cap stocks. These premiums will be analyzed in detail in Chapters 3 and 4. Chapter 3 will show how small-cap stocks fit into the overall stock market and will present evidence about whether there is a premium for small-caps. Chapter 4 will examine value and growth stocks and present evidence on the value premium.

In the 1980s, investment in foreign equities gained favor. Capital controls had been lifted making it possible for investors in the industrial countries to spread their investments to other industrial countries. In doing so, investors were able to invest in a wider variety of firms and industries than would have been possible by sticking to U.S. stocks alone. And, because correlations between U.S. and foreign stocks were relatively low, investors were able to reduce risks in the overall portfolio. By the 1990s, interest in emerging stock markets also increased. Chapters 5 and 6 will examine these investments and will show how they help to diversify U.S. portfolios.

Fixed income investments have evolved even more than stock investments. Forty years ago, Treasury and corporate bonds were dominant in fixed income portfolios (along with municipals for taxable investors). There were high yield bonds, but those were typically "fallen angels" rather than newly issued bonds. Mortgage-backed bonds didn't exist because securitization of mortgages was just beginning. Today, Treasuries represent less than 16 percent of the U.S. bond market and corporate bonds another 20 percent. Chapter 7 examines this modern fixed income market in detail.

In Chapter 8, all of these traditional assets are combined in what we call a *strategic asset allocation*, a long-run portfolio allocation based on long-run returns. Modern portfolio theory has given us optimization methods that

allow us to mix assets together in a portfolio in an optimum way. Many investors need to be able to estimate the expected return on a portfolio. For example, foundations need to estimate expected returns in order to formulate spending plans. And estimates are needed by individuals in developing their plans for saving for retirement and for spending during retirement years. This chapter will outline methods for estimating long-run returns for a diversified portfolio.

One of the themes of this book is that future capital markets are unlikely to provide investors with the high returns of the 1980s and 1990s. Bonds are likely to earn their long-run average (real) returns rather than the high returns experienced since the early 1980s, and stocks may not even reach their post-war average returns. So it's natural for investors to look to alternative investments for salvation. There are many alternative investments that might entice investors. But four have gained most attention. These are hedge funds, private equity, real estate, and commodities. Chapters 9 through 12 will study each of these asset classes.

In the last 15 years, hedge funds have become very popular among wealthier individuals as well as many institutional investors. We don't have much data on hedge fund returns and the data that we have available is not of high quality. Yet the asset class itself is fascinating to study because so many different investment strategies are represented. This is the ultimate investment for those who believe in *alpha*, the excess return attributable to investment expertise rather than systematic returns in the market or investment style. Chapter 9 will examine hedge funds.

Investors in private equity have privileged access to ownership in firms not available to the general public. By private equity, we usually mean investments in venture capital and buyout firms. Venture capital provides access to young firms with promising futures. These firms are typically in the technology or bio-technology sectors, but they can be in any industry and any part of the country. Buyout firms are partnerships that invest in older firms that have been taken private. Typically, the buyout firms take total control of the firm in contrast to the venture capital firms that take partial stakes. Chapter 10 will study both types of investments.

Real estate is the alternative investment for the ordinary investor. After all, most investors own their own homes. And many investors also own commercial real estate or other types of investable real estate either directly or indirectly through REITS. This is not to imply that residential real estate and commercial real estate are equivalent investments. In fact, it's important to contrast the returns on each of these investments. Chapter 11 will examine REIT returns as well as the returns earned by institutional investors on commercial real estate investments. But the chapter will also try to determine whether a home is a good investment.