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Dimson, Marsh, and Staunton: Triumph of the Optimists

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Chapter 1 Introduction and overview

The year 2001 was scarred by terrorism, and financial markets were beset by turmoil. As we look to the future, investors have more cause than ever to ask: Where are the markets heading? What returns can be expected from equities, bonds, and bills around the world? What are the long-term risks of stock and bond market investment? What are the likely long-term rewards?

Corporations also need answers to these questions to understand what returns their stockholders and bondholders require, and to ensure they raise and use capital to best effect. Similarly, these are crucial issues for governments, since market returns provide the yardsticks for judging the worth of public sector projects, and for raising and managing government debt. Regulators, too, need to know the cost of capital to set appropriate rates of return for regulated industries.

It is hard to form a judgment about future prospects, or about required or allowable rates of return, without making comparisons with the past. Recent market returns are widely publicized. But it has hitherto been difficult to get a reliable impression of what investors have achieved over the long-term. Accurate historical records are available for the United States. However, the US economy has been remarkably successful. It would be dangerous for investors to extrapolate into the future from the US experience. We need to also look outside of the United States.

We also need to look long-term. Brief snippets of stock market history are not very helpful, unless our principal focus is on short-term volatility. For example, if we were interested in the volatility that can be anticipated over the next five years, the variability of the last 60 one-month returns or 260 one-week returns might be informative. But if we wish to say something about the expected return over the next five years, we cannot extract much information from the last five years. Further, the annual rate of return estimated from the last 60 months or 260 weeks is the same as the annual rate of return estimated over a single five-year interval. To estimate the expected return, we need a long run of data. We cannot improve estimates of the expected return by subdividing an interval into many short subperiods. While there are also benefits to looking at risk over the long haul, the need for long-term data is especially great when we are interested in expected returns.

To answer the key central questions about markets and investment prospects, we therefore need evidence that spans time and spans the world. The purpose of this book is to provide this evidence, and to point readers toward analysis that can help answer their questions.

1.1 Need for an international perspective

This book provides a comprehensive record of past investment returns around the world. It aims to help readers understand the historical record so that they can make informed judgments about the future. It does this by documenting the returns from equities, bonds, and bills, as well as inflation rates and currency movements, in four continents and sixteen

countries, over the whole of the 101-year period from 1900–2000. We also have century-long evidence on the small-firm and value/growth phenomena. We have put significant effort into compiling complete financial market histories, so that we can present consistent and comparable records for different countries. But *Triumph of the Optimists* is about much more than just data, since it has description and analysis at its core.

There is an obvious need for a reliable and truly international dataset for the investment industry as it continues relentlessly toward full market globalization. One of the many changes taking place in the investment business is the increasing demand for locally sourced research placed in a global context. Another innovation is the growing number of truly global mandates being given to fund managers. Globalization may be a cliché, but for portfolio managers it is fast becoming a reality. Access to a properly constituted and rigorously maintained international database is a sine qua non for the start of any investment process.

The period since spring 2000 has come as a shock to those who had become used to the bull market conditions of previous years. The bursting of the technology bubble, the rapid decline in economic growth rates, especially in the United States, and the advent of international terrorism raised questions about what we can expect for the future. We assert in this book that the single most important variable for making investment decisions is the equity risk premium, and we argue that high long-term returns on equities, relative to bonds, are unlikely to persist. Even after the setbacks of 2000–01, it is necessary to justify the relatively high rating of today's stock markets in terms of a historically low forward-looking equity risk premium. For the investment strategist this raises the most fundamental question of all: Do investors realize that returns are likely to revert to more normal levels, or do current valuations embody exaggerated expectations based on an imperfect understanding of history?

Good data is the key to understanding history. With this as our guiding principle, assembling the data for this book was a major task. For the United Kingdom, ABN AMRO supported us in compiling an authoritative record of UK equity market performance over the last 101 years. We did this because we were not satisfied with the data that previously existed, and there was anyway no comprehensive record of equity returns extending back to 1900. To construct our UK indexes, we devoted intensive efforts to financial archaeology. This involved transcribing original source data from dusty newspaper archives and ancient reference books into our database. A resulting benefit is that we have not simply assembled an index, but we also have the underlying stock-by-stock data, so we can now study the performance of segments of the market, such as industry sectors and market-capitalization bands. We also compiled a series of UK government bond indexes especially for this study.

For the other fifteen countries covered in this book, we have linked together the best quality indexes and returns data available from previous studies and other sources, a number of which are previously unpublished, and some of which are still work in progress. In addition to the United Kingdom, we cover two North American markets, the United States and Canada; ten other European markets, namely, Belgium, Denmark, France, Germany, Ireland, Italy, The Netherlands, Spain, Sweden and Switzerland; two Asia-Pacific markets, Australia

and Japan; and one African market, namely, South Africa. Taken together, these sixteen countries make up over 88 percent of today's world market capitalization, and were also dominant at the start of the twentieth century. We estimate that in 1900 these countries represented at least as high a proportion of the world equity market as they do today.

In each country we cover the same asset classes: equities, bonds, bills, inflation, and the local currency. We are therefore able to make comparisons between the investment performance of different asset classes, in different economic and political environments while focusing on whichever time period is of interest. We also have annual gross domestic product (GDP) data for all sixteen countries over the entire period.

Unlike most previous long-term studies of global markets, our investment returns all include reinvested income as well as capital gains. Our new indexes are more representative than those used in any previous study, and cover a longer time span for a larger number of countries. Furthermore, the common start date of 1900 facilitates cross-country comparisons. We can now set the US data alongside comparable length series for the same asset classes for fifteen other countries, and make international comparisons that help set the US experience in perspective.

Measuring what has happened in the past is only the starting point for assessing the future. Interpretation of the data and being able to apply it to a modern-day canvas are as important. Throughout this book, therefore, our emphasis is not simply on describing the past, but also on interpreting what has happened, with an eye to what it tells us about the future.

1.2 The historical record

Our story opens in the following chapter, not at the beginning but at the end of our 101-year period. We look in chapter 2 at world markets as they stand today—their overall size and significance and the split between markets and countries. Global league tables set in perspective the importance of the sixteen countries covered in this study. We look back to the beginning of our period to review what stock markets looked like 101 years ago, at the start of the twentieth century, and at how, and why, they had evolved since their origins several centuries before.

Using the detailed stock-by-stock data that we have assembled for the United Kingdom, together with comparable data for the United States, we provide some snapshots of how the corporate landscape has changed over the twentieth century. In particular, our analysis of industrial composition reveals some major contrasts—and some surprising similarities—between the structure of the US and UK equity markets today and 101 years ago. We also show how stock exchange concentration has increased in recent years, while showing that markets have several times in the past been even more concentrated than today.

In chapter 3, we begin by considering the guiding principles that underpin measures of long-term investment performance. Even with good index construction, an index is only as

reliable as the underlying data and sample, so we also discuss the coverage of indexes, both across securities and over time. We highlight the dangers of survivorship and success bias. Taking the United Kingdom as an example, we show how these biases have in the past exaggerated the historical attractiveness of investing in common stocks.

Turning to the international evidence, when making comparisons across markets there has been a reliance on index series for countries that have not experienced a material break in trading. Even more marked, however, is the impact of initiating an index series after unrest, or wars, and their aftermath have been resolved. We show that this “easy data bias,” the tendency by researchers and index compilers to limit their research and indexes to easily obtained data, has provided investors with a misleadingly favorable impression of long-term equity performance.

The remainder of the book is therefore devoted to a detailed examination of stocks, bonds, bills, inflation, and currencies over the period since 1900. Chapter 4 provides an overview of international capital market history, focusing on our 101-year study of the United States, the United Kingdom and fourteen other markets. We quantify the impact of inflation on the total return from US and UK equities, and then examine real and nominal stock market performance across our full sample of international capital markets. We show the extent to which rates of return on equities have been higher than the return on government bills and bonds, though this is by a smaller margin than many investors have perceived.

We report on the volatility of equity and bond returns, and show the extent to which diversification across stocks reduces the risk of a domestic equity portfolio. We examine how risk varies across asset classes and countries. We find that while equities were riskier than bonds, which in turn were riskier than bills, these risks were rewarded. Equities performed better than bonds in every single country, while bonds beat bills almost everywhere.

The next two chapters deal with the returns from investing in short-term deposits (treasury bills) and long-term bonds. Chapter 5 describes the historical record on interest rates and inflation. Chapter 6 presents the evidence on bond returns and bond maturity premia—the reward from investing in long- rather than short-term bonds. We compare bond maturity premia across different time periods and national markets. We also analyze inflation-indexed government bonds and corporate bonds for countries that present a sufficiently long history for these assets. In chapters 5 and 6, we see the twentieth century through the lens of the financial markets. The financial data reveals the turbulence of the past—inflation and hyperinflation, extreme periods when even bond and bill investors lost everything, deflation, and the Great Depression, as well as two world wars and their legacies.

For the international investor, currency movements matter since investment returns need to be converted from local currencies into the investor’s reference currency. Exchange rate changes thus impact performance, and are critical for measuring and comparing the returns from different countries. In chapter 7, we report on the exchange rate fluctuations that were experienced by our sixteen countries over the course of the 101 years from 1900–2000.

Chapter 7 also examines the extent to which purchasing power parity has held over the long run. Purchasing power parity implies that goods and services will have a similar price experience in different countries, but this is a poor description of year-to-year foreign exchange fluctuations. Over the long run, however, we find that changing relative price levels do tend to be reflected in changes in exchange rates, and that real exchange rates are relatively stable. This means that when we compute the common-currency returns on equities and bonds across our sixteen countries, and compare these with the earlier rankings from chapter 4 based on the real, inflation-adjusted returns within each country, we find a very similar picture.

Chapter 8 focuses on international investment, addressing the question of how investors from around the world, including the United States, would have fared from foreign investment. In doing this, we recognize that international investors are concerned not just with the returns from investing abroad, but also the risks. We examine the impact of exchange risk, and the risk reduction benefits from international diversification.

We create benchmarks for assessing the risk and return from international diversification by constructing a sixteen-country, twentieth century world index for both equities and bonds. We find that investors in most countries would have been better off investing worldwide rather than restricting their portfolios to domestic securities. International diversification reduces risk because different countries' markets and currencies are less than perfectly correlated. We report the pairwise correlations between national market indexes, and find that correlations based on recent periods are higher than when based on long-term history. The potential gains from international diversification are thus lower than they once were.

Nevertheless, there are discernable and worthwhile gains from diversifying internationally. Despite this, investors in most countries still hold portfolios that are heavily weighted toward domestic assets. We document this "home bias" puzzle, and discuss the costs and impediments to international investment that existed at various stages during the twentieth century, some of which remain in place today.

1.3 Inside the markets

For some markets, we have access to the underlying security-level data that underpins the index series. Using this data, we can look in depth at stock market attributes within a national market. This is the focus of the next three chapters.

In chapter 9 we return to the equity markets to focus on two particular aspects of investment in stocks, namely, the effects of size and seasonality. Over the last twenty years, the small-firm premium, or the tendency for smaller companies to outperform larger ones, has become the best-documented stock market anomaly around the world. In this chapter, we review the international evidence, starting with the well-known record of smaller companies in the United States. We then draw comparisons with corresponding research for the United Kingdom, and extend to reviewing the relative performance of small companies around the

world. A frustrating feature of the size effect is that soon after its discovery the size premium went into reverse, with smaller companies subsequently underperforming their larger counterparts. We show that this reversal was a worldwide phenomenon.

Chapter 9 also touches on stock market seasonality, briefly reviewing the calendar-related anomalies that have been noted in the world's stock markets. While a fuller analysis is beyond the scope of this book, we single out the January effect for closer attention. There are two reasons for this. First, of all the calendar anomalies, the January effect is the best known and most important. Second, it is closely intertwined with the size effect since in the United States, the entire historical outperformance of smaller stocks is attributable to their returns in January. Intriguingly, however, when we seek to replicate the US findings for the United Kingdom, we find no evidence of a size-based seasonal in January, or any other month.

In chapter 10 we turn to another aspect of equity investment: the performance of value and growth stocks. We confirm the superior long-term performance in the United States of value stocks, namely, those with a high dividend yield and/or a high ratio of book to market value of equity. Value stocks have performed markedly better than their growth-stock counterparts, that is, shares that sell at a low yield and/or a low book-to-market ratio.

The US evidence covers three-quarters of a century but the United States is hitherto the only country for which there is long-run data. We present new value and growth indexes for the United Kingdom, based on a comprehensive sample of companies and data that spans a century. The United Kingdom provides further support for the superior results, over the long haul, from following a value strategy. International evidence for other countries covers a shorter period but supports the claim that value investing has tended to provide higher returns in almost all countries that we consider in this book.

The above discussion highlights the importance of dividends, and these are discussed in chapter 11. This chapter shows the crucial contribution that dividends make to long-term stock market performance. We look at dividend growth over the last century in the United States, the United Kingdom and around the world, and draw comparisons with growth rates in national GDP. Real dividends have grown more slowly than per capita GDP in all countries, a fact that puts in context the debate about the likelihood of dividend growth outstripping GDP. We quantify the recent decline in dividend payments in the United States and the United Kingdom, and emphasize the need to consider the total payout as well as cash dividend payments.

1.4 The equity premium

Investment in equities over the twentieth century has proved rewarding, but has been accompanied by correspondingly greater risks. In chapter 12, we examine the historical rewards that investors have enjoyed for bearing this risk. We do this by comparing the return on equities with the return from risk free investments. When measured over a sufficiently long period, the difference between these two returns is called the equity risk premium.

In chapter 12, we provide evidence on the long-run magnitude of the equity risk premium, estimated relative to both bills and bonds. Our risk premia are lower than those that have been reported in previous studies of US and UK stock market performance. The differences arise from previous biases in index construction (for the United Kingdom), and (for both countries) from the use of a rather longer time frame, extending back to 1900.

The equity risk premium is a very important economic variable. An estimate of the premium is central to projecting future investment returns, calculating the cost of equity capital, valuing companies and stocks, appraising capital investment projects, and determining fair rates of return. All these applications need an estimate of the prospective risk premium, whereas the only premium we can measure is the historical premium. The prospective risk premium forms the subject of chapter 13.

Many people argue that the historical risk premium, if measured over a long enough time span, gives an unbiased estimate of the prospective premium. We review evidence that suggests that academic experts typically subscribe to this view, and that their own forecasts are heavily influenced by the historical record. The research conducted for this book, however, leads us to question whether the historical risk premium really does provide a reasonable estimate of the prospective premium. Our belief is that historical equity returns have almost certainly exceeded investors' *ex ante* risk premium requirements, and also that the required risk premium has itself fallen over time. We use evidence from historical dividend growth to back up these assertions, and to suggest an alternative, rather lower, estimate of the future risk premium.

The final two chapters in Part One of this book use our new international database to look toward the future. Chapter 14 explores the implications of our findings for investors. We examine the evidence that supports the thesis that stocks are a (relatively) safe investment over the long run. In the United States and the United Kingdom stocks have historically equalled or beaten risk free investment over holding periods of approximately twenty years or longer. We discover that this is not the usual pattern. For equity investors to have beaten bond investors, it would often have been necessary to have an investment horizon of forty years or more.

We discuss some of the investment implications of our findings. We emphasize how we should alter our judgments in the light of a reduced estimate for the future equity risk premium. There are strong inferences that can be drawn about the role for active management, the case for index funds, levels of management fees, tax management, asset allocation, international diversification, and strategies for exploiting anomalies and regularities. Chapter 14 summarizes the implications of our research for investors and investment institutions.

In chapter 15 we extend this discussion to the cost of capital and the impact of an attenuated equity premium on real investment decisions. We express a concern that companies may themselves be seeking too high a rate of return, and if so, that they run the risk of under-investing. We again explore a range of implications, with an accent on the valuation of

shares and companies, and on corporate financing decisions. We conclude Part One of the book with chapter 16, which provides a summary of *Triumph of the Optimists*, and a review of conclusions based on our international dataset and on the analysis presented in this book.

1.5 Sixteen countries, one world

Part Two of the book commences with chapter 17, which provides an overview of the following sixteen chapters, each of which describes the individual database for a particular country, and presents a 101-year study of risk and return in that national market. We explain the common features of each country study, and how our results are presented. Readers who are interested in a particular country are urged to read this chapter first.

Chapters 18–33 provide highlights of the research results for each individual market, listed in successive chapters in alphabetical order. We explain our data sources and the specifics of the research methodology for the country in question. In each chapter we include a record of nominal and real (inflation adjusted) returns and of risk premia, estimated over a variety of recent and long-term intervals, and presented in both tabular and graphical formats.

Finally, in chapter 34, we bring together our results for individual countries by assembling a world index. This presents the performance of a sixteen-country portfolio, weighted by market capitalization (or, in the early decades, by relative GDP). As with the individual countries, we record returns and equity premia over various intervals. This index series is to date the most accurate estimate of the long-run total return, including reinvested dividends, from investing in stocks and bonds around the world.

A feature of our research is that we make extensive use of long-term rate-of-return studies undertaken by scholars in a variety of countries. These individuals are identified in the relevant chapters, and their contributions are listed among the references at the end of the book. The research effort that underpins our database therefore embodies many months and years spent by our contributors (and by us) in library vaults and archives. The reason for these efforts is the importance each researcher attaches to the markets we cover in this book. In the next chapter, we describe global financial markets, and put our sixteen countries in perspective on the world stage.