Retirement Income Analysis
with scenario matrices

William F. Sharpe

Preface

When one sits down to write a textbook or monograph, it is useful to create a picture of the type of reader for whom it is designed. This is relatively easy in some cases. One could, for example, write a text for the first course on Investments at the MBA level. Or a monograph designed to influence those who teach Financial Economics at the PhD level. Or possibly a book targeted at the individual investor with no formal coursework in finance. With target audience firmly in mind, the author can decide what to include or exclude, the assumed level of prior knowledge in various areas, whether to be pedantic or argumentative, controlled or vitriolic, and so on.

So – for whom have I written this book? The most honest answer is: myself. In an act of self-indulgence I have focused on a set of issues that I believe are of major social importance and a set of techniques that I believe might help society deal with them. The methods are not simple. The reader will need to focus on procedures for dealing efficiently with uncertainty by employing large sets of information about potential future outcomes. There will be mathematics and computer algorithms. But I will try to provided sufficient background en route to make the journey reasonably comfortable for those with limited backgrounds in either or both areas.

Could the book be used in a college course? Perhaps. I can envision an elective in a Master's level Program in Financial Engineering for which it might serve as a text. However, I departed the halls of academe many years ago, so claim no expertise concerning appropriate curricula in today's world.

Might this material be useful for those who advise individual investors about their financial decisions in retirement? I certainly hope so. But it might need to be filtered through individuals or firms that provide tools that financial advisors use when helping clients. To be frank, I have worried relatively little about the market for the book. I just had to write it. I certainly hope people will read it, then apply and extend its ideas. But that is not for me to decide.

The book is available online, accompanied by a suite of software written in the Matlab programming language. Both the book and the software are available for any use conforming with its license, a link for which is given in the table of contents. Since the book is intended to be read on an electronic device, I have chosen to format it so that no paragraphs continue over page breaks, descriptions of figures are generally on the same page as the figures themselves, and so on. In short, I have been profligate with what used to be termed "white space" since it costs nothing online.

A few of the chapters contain links to videos of graphs, some of which are "animated", showing a series of plots in sequence. The software provides many alternatives for displaying relevant information, some of which can be voluminous. Users will undoubtedly prefer some approaches over others, but I have tried to provide a large set from which to choose.

At this point in the preface to an academic book, one expects a list of friends and colleagues of the author whose advice and comments were instrumental in the successful completion of the work. I include no list, since no one else read this book in its original form. I live away from Stanford and my nearby friends and colleagues are mostly doctors, lawyers, architects, reporters, biologists, musicians and such. I do want to thank my wife Kathy Sharpe, an artist and gallery owner, for indulging and encouraging me during the period it took to complete this work and over several decades of a marvelous marriage.

The title of the book has changed since it was first posted in 2017. Then I called it *Retirement Income Scenario Matrices*. This was accurate enough, but frightened many prospective readers. In a brazen attempt to attract a wider audience, I changed the title to *Retirement Income Analysis with Scenario Matrices* (using smaller type for the subtitle) in the hope that it might join tomes on *Security Analysis*, *Portfolio Analysis* and the like. In time there might even be professional *Retirement Income Analysts*, as well as *Security Analysts* and *Portfolio Analysts*. Perhaps, but at least the seed has been sown.

Finally, it is my hope that this material and/or those who read it will help retirees make better choices among the many possible alternative approaches for the provision of future income. The need is great, and the stakes are high.

WFS

January, 2019