To the reader

This folder contains several types of files

1. Datasets and analysis in Excel format;
2. Investment analysis in Excel format;
3. Material in either Excel or PDF format containing additional important information that did not fit easily in the printed volume; and

The author appreciates the cooperation and assistance of the CoStar Group, providers of real estate data nationwide via [www.CoStar.com](http://www.CoStar.com). Most of the data in the text and on the CD were provided by CoStar. I hope that this book will increase the wise use of real estate data by brokers and investors. CoStar offers a rich source of information that, used correctly, can materially assist market players in their investment decisions.

Every attempt at accuracy has been made. The initial draft of the text was written using powerful symbolic software known as *Mathematica*, the computing engine behind [www.mathestate.com](http://www.mathestate.com). *Mathematica* makes possible many computations and graphics not possible in Excel. All illustrations and computations in the text and in this folder have been reconciled with the *Mathematica* output to enhance accuracy.

Because Excel and Mathematica perform some operations differently or use different floating point precision it is possible that the reader will sometimes notice small differences between the text and the electronic files. These are *de minimus* and should not affect the conclusions drawn.

Chapters 4, 10 and 13 reflect a series of transactions that grow in complexity as the book progresses. This is natural in that investors usually engage in more complex transactions as they mature and embrace the economic benefits of various tax and estate planning strategies. I have struggled with variable names and illustration numbering conventions, never completely satisfied with the result. If the reader finds the final result here confusing I take responsibility but plead for some relief in that the subject matter is complex, regardless of how it is presented.

Chapter 4 breaks investment analysis down in symbolic form, where I urge the reader to appreciate various algebraic expressions for different values. If the reader is far from his last algebra course these may seem foreign but returning to these roots pays big rewards. There is a downside to dependence on spreadsheets and their placement of mathematics behind cells, columns and rows. There are times when swift decisions are required and a spreadsheet is not handy. Such decisions made “on the fly” by professional investors evidence an understanding of the process in its seminal form. For many of today’s *senior* professional investors, this form was mastered using a #2 lead pencil in the days long before computers. The material in this chapter is foundation for the chapters that follow and appreciating how the algebraic process operates “behind spreadsheet icons” is important not only in this text but in real world transactions. The message is: You are smarter than your computer and if you find yourself in a negotiation with someone only as smart as their computer you will be glad you took the time with the symbolic logic underlying the equations.

Chapters 10 and 13 take an investor through a complex series of strategy decisions that closely emulate the real world. Does one sell or exchange? Does one incur more or less debt? Does one re-invest after tax dollars in real estate purchased at a better price because the transaction is free of exchange baggage? Does one employ the installment sale method of selling? Does one simply hold forever? What are the costs associated with each of these alternatives? These are all common questions in the real estate investment process.

The most successful investors have the ability to manage a range of complex choices. Sometimes these choices present themselves in sequence, sometimes simultaneously. Regardless, managing them means keeping a number of variables open and “in play” at a time. In the end it doesn’t matter whether they are called “Choice A and Choice B” or “dataEG2a and dataEG2b” if the fundamental decisions are the same. The illustrations of Chapters 10 and 13 are intended to address some of the most difficult *and interrelated* decisions in real estate investing. There are a lot of moving parts. This is unavoidable. Life is complex. So is real estate investing.

A note about the use of going-out or terminal capitalization rate (cro) may be useful. In the early versions of examples in Chapters 4 and 10 the sale price is determined by dividing the income for the year following the sale by the terminal capitalization rate. Thus, in Tables 4-1 and 10-1, cro appears as an input variable. After the base case example in Chapter 10, when the growth assumption is no longer monotonic, value is presumed to increase at the same rate as income and sale price is the value expanded by the modified logistic growth rate. This creates a dilemma in making up a stylized example for exposition purposes. To vary the terminal capitalization rate introduces a real world flavor because capitalization rates *do* vary, but this comes at the expense of added complexity. It was decided that the simplification used was relatively harmless. Thus cro drops out as an input variable when the modified logistic growth rate is used in later illustrations. At [www.mathestate.com](http://www.mathestate.com) I provide a tool that permits you to combine variable initial and sale capitalization rates with different holding periods and different growth functions. This process, while comparatively easy for the reader in an interactive web environment would be unwieldy in book form.

Special note should be made of the illustrations and computations in Chapter 10 that model exchanging and relate the economic value of the exchange to its cost. This is an important consideration often missed in the thicket of tax regulations and the drive to defer taxes. It is simplistic to say one should not pay for tax benefits. It is only a little more useful to say one should not pay “too much” for tax benefits. This text provides perhaps the only examples that permit investors to calculate how much tax benefits are worth. At [www.mathestate.com](http://www.mathestate.com) one can make those calculations under a large number of different assumptions and conditions.

Chapter 6 and 7 deal with, respectively, risk in general and risk in real estate. The electronic files for these two chapters, like the chapters themselves, contain the most fundamental basis for understanding how risk is viewed by humankind. The discussion of utility functions and the Excel workbook for Chapter 6 constitute widely accepted elementary micro economics. The regression primers for Chapter 7 are the beginning point for understanding conditional probability, one of the most powerful concepts man has discovered for managing an uncertain life. Taken together, these ideas move the reader a long way via some quite simple illustrations.

The regression primer is provided in both formats (Excel and Mathematica notebook) to widen its use among readers with different levels of interest in the technical aspects of regression.

The conversion of the files involved changing the chapter numbers they refer to as the chapter numbers in the 2nd edition are slightly different. I took care in making all of the references coincide with chapter numbers in the 2nd edition. There was also a conversion from an older version of Excel. This produced a harmless error message in some of the files when saving which I have as of this writing not resolved.

Finally, when I was a graduate student I delighted in combing through text books and journal articles looking for mistakes. More than once I sent an e-mail to the author calling attention to a mistake I found. It is now payback time. I am sure, despite what seems like endless editing and pouring over these worksheets until the wee hours of the morning there are still some errors. I welcome (?) the chance to learn of them and get it right in some future revision. Do check carefully, though, because in order for a mathematical error to exist in the electronic files, that error must have survived two independent and unforgiving software packages, *Mathematica* and Excel. As much as possible, text illustrations are cut-and-paste from the electronic files that computed them to minimize the possibility of typesetting or keypunch errors in the narrative portions of the book.

This book and its related software is an evolving process. It now moves out of my hands and into yours for its next evolution. I expect to build on and improve it over time with the valuable input from my readers. Updates and errata will appear in a special section of [www.mathestate.com](http://www.mathestate.com).

Most importantly, I have had fun with this stuff. I hope you will, too!!

Roger J. Brown

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Alpine, CA