Foundations for Scientific Investing:
Capital Markets Intuition and Critical Thinking Skills (6th Ed)

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I wrote this book because none of the 50+ investments books on my bookshelf met my needs in the undergraduate applied investments course I teach. My course is both a capstone course (i.e., bringing together and reinforcing core courses in finance, economics, accounting, statistics, algebra, calculus, and numerical methods), as well as being a required third-year applied investments course. So, I needed a book that combines these introductory elements, but at the same time, focuses on high-level practical applications. I could not find a suitable book, so, I ended up writing it.

About 20% of the book is too advanced for my undergraduate course. I exclude this material from my course, but I could easily include it if giving a taught master's course. Note also that the book serves as a foundation for PhD students in finance who don't have a strong finance background (I cover the basics very clearly, I give plenty of advanced material, and I provide literature reviews on topics like the CAPM, price momentum, post-earnings announcement drift, etc.). It also provides basic material for advanced practitioners. So, there are multiple clienteles. There is also an accompanying Q&A book (ISBN 978-0-9941386-1-3) with 400 multiple-choice questions and 125 short-answer questions.

Here is a selection of some of the things that make my book different from other investments books.

FOUNDATIONS OF FINANCE

1. I keep coming back to Figures 4.6, 4.7, and 4.8 (pp. 414-416) for stocks and bonds. I had not seen the log plot in Figure 4.7 before and it contrasts strikingly with the raw plot in Figure 4.6. Also, I had no idea that there were such long-term trends in interest rates before seeing Figure 4.8. It is difficult to look at Figure 4.8 and predict anything other than a 20-year secular rise in interest rates starting soon.
2. I like the "Be the Coin" classroom experiment on pp. 116-118 b/c it allows me to extract information from students' brains and contrast it with the underlying statistics. It has direct implications for behavioral biases and momentum trading.
3. I give "15 Facts about the P/E Ratio" on pp. 160-165. I was surprised at how difficult it was to collect these facts and put this section together. It is all basic stuff that every finance student or practitioner needs to know, but I have never seen it all in one place before, and some of it I have never seen before at all.
4. The practical discussion of personal FX transactions on p. 191. This is much appreciated by students.
5. The long-short quant quiz on p. 196. Students love this simple but rich example.
6. The entire section on retirement: pp. 271-287. I have been collecting this information for many years. Students really appreciate it—especially the survey results.

7. The “In Defense of Active Equity” section appearing pp. 305-311. For example, I have not found any other book that gives practical examples to show why you should invest in active funds even if you expect them to underperform their benchmarks.
8. The discussion of factor-based investing that ties it to passive investing on the one hand, and to a defense of the CAPM on the other. This appears in several places including point #5 on pp. 307-308 and pp. 434-435.
9. My discussion of the efficient markets hypothesis on pp. 341-346. I think that this topic is often confusing/confused in investments books.
10. My discussion of ETFs on pp. 375-385 goes well beyond what I normally see in any text book. I try to fill in a number of significant gaps in intuition I see elsewhere without getting bogged down in too much institutional detail.
11. Figures 4.1, 4.2, 4.3 and 4.4 (pp. 376, 382-384) on investment companies and on the distribution of global managed money. I had to cobble this information together from multiple sources and make some estimates.
12. On pp. 445-447, I discuss “Who Controls the Prices?” in a way I have not seen elsewhere.

STATISTICS

13. The constructive intuition for *Z*, chi-square, *F*, and *t* random variables on pp. 46-49, 51 was much appreciated by students.
14. My students are always surprised by the three correlation examples on pp. 66-74.
15. Section 1.3.16 (pp. 78-83) shows how to build a *t*-stat for the mean. It really helps students to understand what they are doing when they run a *t*-test of the mean.
16. The discussion of time series predictability and skewness of returns on pp. 328-341. Several older results are overturned. There are several master’s theses or a PhD hiding in there.
17. At a higher level, the discussion of the conditional heteroskedasticity (CH) model on pp. 319-326. I like the discussion of joint, marginal, and conditional distributions. It is a bridge between casual discussion of these notions in some introductory statistics course, and applications of applied ARCH/GARCH models in the real world. I have not seen this bridging example given anywhere else.
18. At a higher level still, the discussion of degrees of freedom on pp. 92-102 brings together multiple competing definitions of degrees of freedom. This section was added in response to repeated questions from students, but it is too advanced to be examinable in my course.

TIME VALUE OF MONEY

19. The use of TVM to extract BEARs and PEARs on pp. 133-141. It shows students how to push TVM math beyond the basic FINC101-type course and get something with real implications for how you should think about matches in an investment product or fees in a financing contract. I have not seen this anywhere else.

APPLIED ACTIVE INVESTMENT TOPICS

20. I guide the reader through a Grinold-Kahn type active alpha optimization in EXCEL (Exercise B.2.2-B.2.6 on p. 476-488). The Web site has several accompanying EXCEL sheets. Grinold and Kahn’s well-known practitioner book has been criticized for not having worked examples. Here it is in easy-to-understand EXCEL.

21. The comparison of Black-Litterman (BL) and Grinold-Kahn (GK) approaches on pp. 259-262. Discussion of BL seems to be confused in the literature, and I have not seen this careful BL derivation, BL explanation, or comparison with GK anywhere else.
22. Figures 3.7 and 3.8 on pp. 334 and 335. This is revisiting one chapter of my PhD thesis 20 years later. The change over time in the shape of the cross-sectional distribution of first-order auto-correlation of daily returns to stocks is striking. I have never seen this illustrated anywhere else. I think decimal pricing and electronic trading explain much of this.
23. My discussion of "What is the correlation between the returns to stocks and bonds?" On pp. 395-398, I discuss this and propose an explanation for why we should not know the answer to this question.

PURE MATH

24. The simple intuitive discussion of differentiation on pp. 20-24 and the simple intuitive discussion of integration on pp. 29-31. My students go from not understanding differentiation and integration to understanding them within one hour for each of them.

LIERATURE REVIEWS

25. At the end of Chapter 3, there are summaries of the price momentum and earnings momentum literature, and discussions of Fama-MacBeth and Black-Jensen-Scholes, and the Fama-French research. Sure enough you can find this elsewhere, but I took great care in making my explanations very clear and pointing out why the latter papers say nothing against the CAPM. I appeal to the often-overlooked Ferguson-Shockley JF 2003 errors-in-variables argument.

THESIS TOPICS

26. Look up "thesis topic" in the index and it points you to 25+ research questions that could be a master's thesis or a chapter of a PhD. I plan to revise the book often enough to keep this list current. I think this provides a service that no other book provides.

OTHER ASPECTS OF THE BOOK

- I pay particular attention to transaction costs ("t-costs") throughout the book.
- Dividends are discussed carefully throughout the book.
- Short selling is discussed carefully throughout the book.
- I give an extensive discussion of kurtosis (pp. 55-66).
- My discussion of the Roll critique goes well beyond its normal presentation with a high-level algebraic discussion of its limitations (pp. 230-234).
- I discuss Warren Buffett and I compare and contrast his investing style with his mentor Benjamin Graham. There is also a Bloomberg professional service exercise implementing Graham's equity screens (pp. 488-489), but you need Graham's *The Intelligent Investor* beside you to execute it.
- Although the book is mostly US-focused, I also give a half-dozen NZ based examples that involve unique elements of the NZ markets, making it suitable for an advanced NZ audience.

- There is an accompanying Q&A book with 400 multiple-choice and 125 short-answer questions (and answers). This book can stand alone as a test bank or accompany the text.
- I give an extensive list of references (more than 900 items) to both academic and practitioner literature.
- I give an extensive index (more than 7,000 entries on over 3,900 lines).

TFC
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