

BOOK REVIEW

THE ECONOMETRICS OF FINANCIAL MARKETS

John Y. Campbell, Andrew W. Lo, & A. Craig MacKinlay
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This book is an ambitious effort by three well-known and well-respected scholars to fill an acknowledged void in the literature—a text covering the burgeoning field of empirical finance. As the authors note in the preface, there are several excellent books covering financial theory at a level suitable for a Ph.D. class or as a reference for academics and practitioners, but there is little or nothing similar that covers econometric methods and applications. Perhaps the closest existing text is the recent addition to the Wiley *Series in Financial and Quantitative Analysis* written by Cuthbertson (1996). The major difference between the books is that Cuthbertson focuses exclusively on asset pricing in the stock, bond, and foreign exchange markets, whereas Campbell, Lo, and MacKinlay (henceforth CLM) consider empirical applications throughout the field of finance, including corporate finance, derivatives markets, and market microstructure. The level of anticipation preceding publication can be partly measured by the fact that at least three reviews (including this one) have appeared since the book arrived. Moreover, in their reviews, both Harvey (1998) and Tiso (1998) comment on the need for such a text, a sentiment that has been echoed by numerous finance academics.

So, does the book live up to its advance billing? For the most part, the answer is yes. The book is comprehensive and up to date, yet also relatively accessible and self-contained. As such, it no doubt will serve as the basic text for Ph.D. courses in empirical finance throughout the country. It also will find a role as an invaluable reference for academics and practitioners in the field. Finally, those interested in learning more about the study of financial markets will find it an excellent introduction to the relevant issues, applications, and methodologies.

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From a coverage standpoint, the title of the book is slightly misleading. To be as self-contained as possible, CLM contains much more than econometrics. It is organized around 11 major topics in empirical finance, each of which is covered in a separate chapter. There is also an introductory chapter.

The first seven chapters, excluding the introduction, are devoted mostly to the stock market. The main body of the text begins in Chapter 2 with the univariate predictability of returns (i.e., tests of the random-walk model). As with many of the topics that follow, the theoretical underpinnings are developed first. In this case, however, they are actually to be found at the end of the previous chapter, which introduces the concept of market efficiency. The chapter then covers the testing and/or estimation methodology and finally presents and summarizes the relevant empirical results. Throughout, there are references to the major papers in the literature, with all references collected at the back of the book rather than chapter by chapter, as is sometimes the case. Chapters 3 and 4 present digressions on market microstructure (e.g., modeling bid-ask spreads and nonsynchronous trading) and event-study analysis, respectively, before returning to the CAPM in Chapter 5, multifactor pricing models in Chapter 6, and the dividend discount model in Chapter 7. Finally, intertemporal equilibrium models are discussed in Chapter 8. This latter chapter differs from the prior chapters in that the focus is much more theoretical. There are two tables that present empirical evidence on the relation between consumption and asset returns, but the majority of the material derives and discusses implications from various models. For example, the Hansen-Jagannathan bounds are derived, as are implications from consumption-based models for power utility and habit formation.

The latter part of the book includes two chapters on fixed-income securities and the term structure of interest rates (Chapters 10 and 11, respectively) and two chapters that cover a broad array of topics within two separate areas—derivative pricing models (Chapter 9) and nonlinearities in financial data (Chapter 12). Chapters 10 and 11 cover most of the expected topics, including testing the expectations hypothesis and affine term structure models. Note that interest rate modeling is discussed principally in the context of the discrete-time, pricing kernel approach. Chapters 9 and 12 are essentially self-contained and somewhat independent of the rest of the book. The material on derivative securities starts with a review of continuous-time mathematics, proceeds to parametric option pricing models (e.g., Black-Scholes), and ends with pricing via Monte Carlo simulation. The chapter on nonlinearities covers such unrelated topics as modeling time-varying volatility and nonparametric estimation techniques.

Although there are many positive features, it must also be acknowledged that the book suffers from a number of problems. These problems arise partly from the way in which the book is put together. For a number of years, various chapters have been circulating separately. Although the concept and execution of the book as a whole was no doubt a joint effort of the three authors, it was obvious at the time, and it is equally so when looking at the finished text, that each author was primarily responsible for a number of the topics. This arrangement makes

some sense because the interests and expertise of the authors are complementary. Moreover, separately and jointly they have written some of the most heavily cited articles in several of the topic areas. Nevertheless, this approach has led to some deficiencies in coverage and organization.

From an organizational standpoint, the text wavers between being organized around applications and methodologies. Both approaches have their merits, but a combination of the two leads to problems. The former approach is predominant, with chapters on the capital asset pricing model, multifactor pricing models, intertemporal equilibrium models, and so on. The result is that the reader gains a good appreciation for the development of the literature in these areas and how different methodologies have been applied to address the same issue. At the same time, however, there are chapters on event-study analysis and nonlinearities in financial data. These chapters are organized around techniques, with various examples cited as representative applications. The overall result is that the book loses coherence, and it is difficult to predict where to find any particular topic. For example, one might expect to find the discussion of ARCH models of stock returns in one of the chapters on stock return predictability. Instead, it is found just prior to kernel regression in the chapter on nonlinearities. Similarly, estimation of continuous-time models, which is associated primarily with interest-rate modeling, is not in the fixed-income/term-structure chapters but in the derivative pricing chapter.

A related issue is that the focus on applications in the empirical literature can lead to a structure that is suboptimal for a textbook. Whereas current Ph.D. courses in empirical finance revolve around a reading list and tend to follow the development of topics as they occur in the literature, a book such as this one is free to take a broader view. Unfortunately, the authors have not fully availed themselves of this option. For example, the literature on the univariate and multivariate predictability of stock returns evolved somewhat independently, but from a broader perspective, these topics are closely related. Nevertheless, CLM deal with them separately in Chapters 1 and 7, respectively. In the end, the book reads perhaps too much like a survey of the literature.

From a coverage standpoint, there are some troubling omissions. Of course, it is unreasonable to expect a book of this length to provide complete coverage of every topic; however, there are times when the material focuses on one or two papers to the exclusion of the rest of the literature. For example, much of the chapter on market microstructure revolves around Lo and MacKinlay (1990) and Hausman et al. (1992). I don't question the contribution of these papers, but there is a wealth of other empirical literature that is slighted by omission. Similarly, is Lo and Wang (1995) the most important paper in the area of derivative pricing? Judging by the space allocation in Chapter 9, the authors appear to think so. Also, it is somewhat surprising that more space is not devoted to the results of GMM-based, Euler equation tests of the various equilibrium models, which play a prominent role in the literature. Finally, the lack of coverage of continuous-time interest-rate models and the estimation thereof does not coincide with my perception of their importance in the literature.

Overall, I would not hesitate to recommend this book to anyone interested in the field of empirical finance because it covers important territory and fills a pressing need. At the same time, there is still room for a definitive text in the area. Perhaps the next edition will achieve this lofty goal.

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