

Kenneth J. Singleton: Empirical Dynamic Asset Pricing: Model Specification and Econometric Assessment

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Writing a treatise about empirical asset pricing is as much art as it is science. Professor Singleton intertwines these two dimensions with remarkable skill to provide a critical review of the field. As such, “Empirical Dynamic Asset Pricing” extends far beyond a textbook treatment of the subject. It gives the reader a unique opportunity to look at dynamic asset pricing models (DAPMs) through the eyes of a researcher who has shaped their development during 25 years of his influential work.

At the heart of Singleton’s exposition is the interplay between the specification and the econometric methodology employed in estimation and testing of model restrictions. Combining theoretical rigor with a great deal of intuition about the underlying assumptions, the book accentuates various tradeoffs and pragmatic choices in empirical asset pricing. The theory is extensively illustrated with portions of empirical evidence, some of which has not appeared in print before or has been updated from the author’s earlier research. As the text develops, the reader is provided with a menu of challenges to be taken up in future research.

The book accomplishes the goal of great clarity without compromising on the depth of the treatment. Thus, it has an appeal to both graduate students and researchers in asset pricing. The understanding of the subject is facilitated by a concise statement of the key theoretical results; however, familiarity with fundamental notions of asset pricing in continuous and discrete time as well as with basic probability and econometrics may be useful.

The text is organized in three modules, which—while self-contained—combine into a coherent structure. Part I introduces econometric methods for the

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analysis of DAPMs. First, it discusses how different distributional assumptions are reflected in the choice of an estimation strategy, and it explores the large sample properties of extremum estimators along with principles of hypothesis testing. The module proceeds with a review of affine processes—the workhorse approach to modeling financial time series—highlighting their analytical tractability and limitations. Finally, it extends to the estimation of latent processes with simulation-based techniques. A thorough account of technicalities sprinkled throughout the text alerts the reader to the economic implications and potential restrictiveness of various modeling assumptions.

Part II shifts the focus towards the fundamental concepts in asset pricing. The general idea of the pricing kernel is specialized to both preference-based and no-arbitrage models of asset prices. The author establishes intuitive links between risk-neutral and arbitrage-free pricing in discrete and continuous time. Starting from the fundamental pricing restrictions, he investigates the theoretical and empirical properties of expected returns in equity and bond markets. The review of challenges in consumption-based models motivates the discussion of various refinements to the basic setup which have been suggested in the literature, e.g. non-separable preferences (durable goods, habit) and violations of the expected utility axioms. The concluding chapter relates pricing kernels to beta representation of returns and summarizes the evolution of the empirical research on factor models.

Parts I and II prepare the ground for a more in-depth treatment of no-arbitrage DAPMs in the remainder of the book. In Part III, the reader is guided through the main aspects in design and estimation of the dynamic term structure models (DTSMs). Even though the accent is put on affine continuous-time models of non-defaultable bonds, due attention is paid to other (related) approaches as well. In particular, different payoffs from employing discrete-time affine specifications, quadratic Gaussian models as well as models with unspanned stochastic volatility or regime-shifts are emphasized. Based on the empirical analysis of the yield curve, the author sets criteria for assessing the goodness-of-fit of DTSMs and elicits the tensions between the richness of the theoretical formulation and its tractability. The extensive background gained from previous sections permits even less experienced readers to follow specialized topics of credit risk modeling and empirical derivative pricing that conclude the book.

By the scope and clarity of his exposition, Kenneth Singleton bridges the gap in the empirical finance literature. The author deserves special praise for encouraging the reader to perceive various compromises involved in financial modeling. The text provides a road map for novices and inspiration for seasoned researchers in the field. As such, it is certain to become a classic of empirical asset pricing.