

Book Review:^{*}

Danthine and Donaldson (2002)

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Jean-Pierre Danthine, John B. Donaldson: “Intermediate Financial Theory”, Upper Saddle River, NJ: Prentice Hall, 2002, 324 pages, SFr. 95.-.

In the last couple of years, numerous new textbooks were published which reflect the advances in financial theory and asset pricing over the last two decades. Most of them are aimed at Ph.D. and advanced graduate students (for example Cochrane 2001, Gollier 2001 and LeRoy and Werner 2001). The “Intermediate Financial Theory” textbook of Danthine and Donaldson is geared at master levels students with a professional orientation who are not only interested in a rigorous, yet accessible review of classic financial concepts (vNM utility, MPT, CAPM, APT) but who also want to be introduced to the “new”¹ frontiers in financial modelling (Arrow-Debreu equilibrium, risk-neutral pricing, C-CAPM, incomplete

markets). In particular the treatments of the latter by examples makes the book valuable for entering Ph.D. candidates, too.

With some 300, pages the book has a rather compact format (which is good!). Still, it conveys many angles on classic finance usually not covered when teaching finance classes at this level (for example the inconsistency of mean-variance and state-by-state ranking of payoffs or that beta-pricing relies solely on the identification of an efficient portfolio), not to speak of the second half of the book which is entirely devoted to topics often only left for Ph.D. classes. As claimed in the preface, the authors achieve more depth and rigor than introductory texts. The beginning students will likely not miss detailed proofs and technicalities of which there are plenty in advanced books. What is important at this level, is that the authors do prepare the ground for further studies by presenting the essential concepts in a sound way which will hold up in the light of more advanced models (a counterexample in place is how Elton and Gruber 1995 derive a CAPM based on arbitrage, see their chapter 13) and by providing many leads for further

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extensions (for example the introduction to non-vNM utility functions like in Kreps and Porteus 1978 or Kahneman and Tversky 1979).

As already mentioned, the contents of the book can be divided in two halves. After an extensive review of classic theory of choice under uncertainty (with some non-classic extensions) as well as the ensuing investment decisions and their separation properties, follows the MPT and the CAPM. Before other classics like the APT or the efficient market hypothesis are taken up in later chapters, the authors interweave Arrow-Debreu pricing, options and market completeness, martingale measures and the Consumption-CAPM in their presentation. The book is rounded off by considering the role and value of financial structure in incomplete markets and how differential information can be integrated in market prices of a fully revealing Rational Expectations Equilibrium. Arrow-Debreu pricing and risk-neutral valuation can be found in some other intermediate textbooks (for example Copeland and Weston 1988 or - more likely - a derivatives book like Hull 2000). But issues like options and market completeness (Ross 1976) or the equity premium puzzle and Hansen-Jagannathan bounds are rarely found at this level. The authors' aim for practical relevance is probably best - but not solely! - mirrored by chapter 13 showing how market incompleteness matters for firm value and security issuance.

In their presentation the authors stress the use of examples with whom they bring life to formal expressions of quantities such as "changes in utility", "risk-neutral probabilities" or the

"welfare effects of security issuance in incomplete markets". The analytical requirements to follow the text do not go beyond standard undergraduate mathematics (calculus, matrix algebra and basic statistics). Some introductory knowledge in finance is required by the authors, but it can be argued whether the book could also be used as a first reading in finance for analytically minded students. All models are presented in discrete time². (There is a nice and intuitive appendix on the methods of continuous time finance, too.)

Some critical arguments might be at order. But honestly, as an otherwise critically minded reader, I cannot offer many. Conceptually, I am most worried about the presentation of factor models as a prelude to the APT in chapter 12. Not unlike other textbooks (for example Elton and Gruber 1995), Danthine and Donaldson hypothesize that the Market Model might describe a strict factor structure of security returns³. Alas, since long it has been shown by simple arithmetics that the market model implies a linear dependence across security returns which makes the market return definitely unsuitable as a single factor which completely describes the correlation structure of security returns (Fama 1973) - at least for the full set of securities. The overall quality of the presentations and numerical examples is very good. There are some minor typos which can easily be pruned in subsequent printings. Chapter 8 leaves some potential for confusion owing to rather obviously conflicting statements⁴.

In recent years, a growing divide could be observed between the financial paradigms taught in finance classes at

the intermediate and the Ph.D. level. While intermediate classes remained stuck with their classic range of seemingly disparate models (CAPM, APT, Black-Scholes), it was most often only to Ph.D. students that lectures on the recent revolution in financial economics were confined to. It will be intriguing to introduce the intuitions behind the new frontiers in finance to a wider audience at the intermediate level. The book of Danthine and Donaldson provides a host of illuminative treatments for that purpose.

Notes

¹Arguably, the concept of Arrow-Debreu securities, C-CAPM and the like are not much younger than “Modern” Portfolio Theory and beta-pricing models (in particular CAPM and APT). Still I deem it fair to say, that it was only over the last two decades when the focus of financial research shifted to the former.

²By the way, LeRoy and Werner (2001) relate the use of continuous time methods in financial economics to issues of product differentiation and entry deterrence between scholars of finance and economics.

³Meaning that the residuals of two different securities are not correlated.

⁴Page 153: First the authors add (in parentheses) a clarification that markets can be completed by portfolios of puts and calls. Then they insist “portfolios of options are not required”, before they return to their initial statement on p. 155 by saying that “portfolios of which will be used to replicate our state-contingent payoffs”.

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