

Book Review:\*

**“The Economics of Risk and Time”**

by Christian Gollier

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Elmar Mertens<sup>†</sup>

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**Christian Gollier (2001): “The Economics of Risk and Time”, Cambridge, MA: The MIT Press. 70 Sfr.**

Risk and time are key dimensions of financial decision making. In fact, stochastics and dynamics have become essential ingredients of economic modelling in many fields beyond finance – witness for instance the ubiquity of the so-called dynamic stochastic general equilibrium (DSGE) models in macroeconomics. The recent book by Christian Gollier is a comprehensive and far-reaching survey from the basic to the state-of-the-art tools in modelling risk and time. The major focus is on the economics of uncertainty.

Early on, important contributions have been made to the (modern) economics of uncertainty, for instance by Arrow (1964), Pratt (1964) – and if you followed the same average masters course on the topic as me, you might have left it with the impression that since then, science had not much more fundamental to say on the topic. (Well, except for those behavioral heretics, to which we will turn later.) In the words of Gollier, research was for some time “slow to progress”. But in the last twenty years, considerable inroads were made by extensions, for instance, to multiple sources of risk, dynamics and the role of information. Part of the achievement were also some new tools and techniques. Not one of the least contributors in this area was Christian Gollier himself. So it is not only the right time, but also the right author to distill the state-of-the-art in the economics of uncertainty and time in a textbook format and make it available to a wider audience of students and researchers in a unified manner.

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\*Forthcoming *Financial Markets and Portfolio Management*

<sup>†</sup>Email: [emt@elarmertens.org](mailto:emt@elarmertens.org)

Before turning to the contents in detail, there are two general points to be made: First, this book is written and best suited for an academic audience. Second, a cornerstone of the modelling approach is the class of expected utility (EU) models. In the context of Gollier's book, the progress alluded to above is by and large to be understood within that class of models. There is a very nice chapter on Epstein and Zin's increasingly popular version of the Non-EU model by Kreps and Porteus (1978). But what might be crucial for some readers, is that Gollier gives short shrift to behavioral variants of Non-EU preferences, in particular Prospect Theory. (The Noble Prize winning work of Kahneman and Tversky (1979) is not even referenced.). Gollier puts forward two lines of defense for sticking with the expected utility approach: On the one hand, the issue of time inconsistency when disregarding EU's independence axiom. On the other hand, the linearity in probabilities makes expected utility analytically amenable to the use of hyperplane separation theorems, which are at the heart of much in the book. Personally, I do not regard this as a deficiency of an otherwise already far-reaching book. For the expectation's management of potential readers, these two points might however be worthy to note.

The book conveys its material in 27 concise chapters. The first two parts cover the classics of expected utility, risk aversion, stochastic dominance, portfolio choice between risky and riskfree investments and their pricing (equity premium). The next part introduces some new technical tools, based on hyperplane separations, which are key for much of the book's remainder. Thereafter, the book continues with decision making in the face of multiple and background risks as well as dynamic choices, the Arrow-Debreu framework, intertemporal consumption and savings, liquidity constraints, disentangling intertemporal preferences from risk aversion (Kreps and Porteus 1978) the equilibrium prices of risk and time<sup>1</sup> as well as the role and value of information.

The book is written in a neat style. It mixes analytical sections with applied and more illustrative passages. Analytical results are mostly summarized in the form of propositions (derivations mostly interweaved with the text, detailed proofs delegated to the original papers). Applications include the cost of macroeconomics risks following Lucas (1987) and of course the equity premium puzzle. Each chapter comes with a set of problems, which often include serious extensions to the chapter's material.

All in all, this is a very exciting book. It offers a unified treatment from the classic to the state-of-the art in the (mostly EU) modelling of decision making under risk and across time. As such, it is not about mopping up and presenting some well established body of theory. It is rather a very promising toolbox, full of tricks and guidances to charter the still vastly unknown waters of intertemporal economics in the presence of uncertainty. In the words of Paul A. Samuelson's back-cover praise for the book: "Get your copy; read and reread. Keep ahead of the competitive mob."

## Notes

<sup>1</sup>I should hasten to add, that it includes also a chapter on the conditions for aggregating market behavior into a representative agent.

## References

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