Modelling default-risky bonds

By

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0.1 Declaration

I, the undersigned, hereby declare that the dissertation submitted herewith for the degree Magister Scientiae to the University of Pretoria contains my own, independent work and has not been submitted for any degree at any other university.

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Signature of Candidate

Date: 2002-10-31

0.2 Acknowledgements

0.3   Abstract

In this dissertation, we examine current models used to value default-risky bonds. These models include both the *structural* and the *reduced-form* approaches. We begin by examining various issues involved in modelling credit risk and pricing credit derivatives. We then explore the various dimensions of structural models and reduced-form models and we provide an overview of four models presented in the literature on credit risk modelling. Both the theoretical and empirical research on default-risky bond valuation is summarized. Finally, we make suggestions for improving on the credit risk models discussed.

0.4   Preface

Building and implementing a model of credit risk requires choices along a variety
of dimensions. To clarify these dimensions, this dissertation will examine, in
detail, several existing credit risk models.

This dissertation is divided into six chapters. The first presents an overview
of credit risk and credit derivatives. The second chapter studies the fundamen-
tals of credit modelling. In essence, this describes the various dimensions of
a credit risk model and categorizes credit risk models into two groups: *tradi-
tional credit models* and *market based models*. Market based models are then
further divided into two groups: *structural models* and *reduced-form models*.
The third chapter presents the fundamentals of interest rate modelling. The
fourth chapter studies two structural models in the area of default-risky bond
pricing: Merton (1974) and Longstaff and Schwartz (1995). A special section in
the fourth chapter provides a comparison of these two models. The fifth chap-
ter studies two reduced-form models in the area of default-risky bond pricing:
Jarrow, Lando and Turnbull (1997) and Duffie and Singleton (1999). A compar-
ison of structural and reduced-form models is provided in Chapter 6. Finally,
Chapter 7 gives conclusions and suggests a few directions for further research.

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