This article develops a three factor defaultable term structure model for the pricing of a wide range of risky debt contracts and derivatives which combines structural and reduced-form models. One of the factors that determine the credit spread is the so-called uncertainty process which can be understood as an aggregation of all information on the quality of the firm currently available. We assume the underlying short rate to follow either a mean-reverting Hull-White process or a mean-reverting square root process with time-dependent mean reversion level; the uncertainty process is assumed to follow a mean-reverting square root process; in addition, we directly model the short rate spread process: we assume that the spread between a defaultable and a nondefaultable bond is considerably driven by the uncertainty index but that there may be additional factors which influence the level of the spreads: at least the contractual provisions, liquidity and the premium demanded in the market for similar instruments have a great impact on credit spreads. We can easily relate credit spreads to business cycles by replacing the uncertainty index by some index of macroeconomic variables without any change of our theoretical framework. The analytical solution obtained for defaultable bonds can be implemented easily in
practice, as all the variables and parameters can be implied from market data. We show and prove
the strengths of the model by applying our framework to the pricing of a great variety of default
related instruments such as credit derivatives.

Intellectual Contribution:
Discipline-based Research

Zeitschriftentitel:
The Journal of Fixed Income

Jahr:
2000

Band:
10

Heft / Issue:
2

Seiten:
63-79

Sprache:
en

Key publication:
Nein

Peer reviewed:
Ja

International:
Ja

Book review:
Nein

commissioned:
not commissioned

Professional Journal:
Nein

Occurences:
- Einrichtungen > Fakultäten > Fakultät für Mathematik > Zentrum Mathematik > M13 Lehrstuhl für
  Finanzmathematik (Prof. Zagst) > Journal Papers
- Einrichtungen > Fakultäten > Fakultät für Mathematik > Zentrum Mathematik > M13 Lehrstuhl für
  Finanzmathematik (Prof. Zagst) > Journal Papers > Zagst, R.

entries: