

CALLABLE RISKY PERPETUAL DEBT: OPTIONS, PRICING AND BANKRUPTCY IMPLICATIONS

AKSEL MJØS AND SVEIN-ARNE PERSSON

ABSTRACT. Issuances of *perpetual* risky debt are often motivated by capital requirements for financial institutions. However, observed market practice indicates that actual maturity equals first possible call date. We analyze callable risky perpetual debt including an initial protection period before the debt may be called. To this end we develop European barrier option pricing formulas in a Black and Cox (1976) environment.

The total market value of debt including the call option is expressed as a portfolio of barrier options and perpetual debt with a time dependent barrier. We analyze how the issuer's optimal bankruptcy decision is affected by the existence of the call option using closed-form approximations. In accordance with intuition, our model quantifies the increased coupon and the decreased bankruptcy level caused by the embedded option. We show that the option will be exercised even at fairly low asset levels at the time of expiry.

E-mail address, Aksel Mjøs: `aksel.mjøs@nhh.no`

E-mail address, Svein-Arne Persson: `svein-arne.persson@nhh.no`

DEPARTMENT OF FINANCE AND MANAGEMENT SCIENCE, THE NORWEGIAN
SCHOOL OF ECONOMICS AND BUSINESS ADMINISTRATION, HELLEVEIEN 30, N-
5045 BERGEN, NORWAY

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