

质押贷款质押率决定的期权定价方法

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Pledged Loan-to-value Ratio Determination Based on Option Pricing Method

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摘要 本文使用期权定价方法研究质押贷款质押率的确定问题。质押贷款超额收益现值可看作一个看跌期权的价值。在此框架内, 首先分析固定利率零息贷款的质押率和贷款期限、超额收益率以及质物价值波动特征的相互关系。同样的分析被扩展到付息贷款和组合质物等情形, 并针对固定利率零息贷款情形给出了数值算例。数值模拟结果给出了质押率的期限结构: 贷款期限不同, 质押率不同; 质押率是贷款期限的凸性减函数。研究结果还表明: 质押率是质物价值波动率的凹性减函数, 质物价值波动越大, 质押率越低, 这用来分析不同金属做质押物时质押率的变化; 质押率是风险溢价的凹性增函数, 风险溢价越大, 银行的风险承受能力越强, 质押率越高。

关键词: 质押贷款 质押率 看跌期权 质押率的期限结构 质物价值波动



Abstract: In this paper, the determination of pledged loan-to-value ratio under an option pricing environment is investigated. The basic idea is that the present value of pledged loan payoff is equal to a put option's value. While the interest rate is fixed and the loan is without coupon, the interrelation of pledged ratio and some factors, such as maturity, excess return and the value volatility of pledge are analyzed. Then, the same work is extended to coupon loan and portfolio pledge circumstances. For zero coupon and fixed interest rate circumstances, a numerical example is performed. The findings are as follows: firstly, the numerical result indicate that loan-to-value ratio is a convex decreasing function of maturity. Secondly, loan-to-value ratio is a concave decreasing function of value volatility of pledge. Thirdly, loan-to-value ratio is a concave increasing function of risk premium. For floating interest rate circumstances, the function form between loan interest and risk free rate should be specified.

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