论文

基于非线性区间数风险控制的资产负债优化模型

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Assets and Liabilities Optimization Model of the Risk Control Based on Nonlinear Interval Number

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摘要 现有研究把存、贷款利率视为常数,无法使资产配置的优化结果适应未来市场利率的变化。本文的资产负债管理优化模型通过资产与负债的区间数的持续期缺口建立了区间型利率风险免疫条件,使资产的最优配置在资产与负债的收益率变化时仍能免疫利率风险。研究表明本文引入的持效期缺口区间的偏向选择参数γ决定预留缺口是赚钱还是亏钱。γ取值0.5时缺口区间两端点的绝对值最小;γ越大于0.5时,正缺口越大,在利率下降时就越赚钱。γ越小于0.5时,负缺口越大,在利率上升时就越赚钱。而区间长度选择参数γ决定损益的大小;揭示了在积极的利率风险管理策略中,选择较小的λ会获得较多的风险收益。另一方面,本文通过相关系数组合半绝对离差建立了非线性区间型组合风险的函数表达式,改变了现有研究线性区间型算法将各笔贷款风险进行简单线性加权、进而夸大了组合信用风险的弊端。

关键词： 资产负债管理   优化模型   非线性区间数   持续期   信用风险   半绝对离差

Abstract： The unreasonable status that deposit and lending rates are considered as constants in existing literature couldn't immune future interest rate risk, in case deposit and lending rates would be changing. In our assets and liabilities optimization model, we construct the immune constrain of interval interest rate through duration gap of interval numbers of asset and liability, which makes the assets' allocation be immune to interest rate risk with a changing yield of asset and liability. The study shows that interval-biased selection parameter γ of duration gap decides whether the reserved gap makes money or loses money. The result is the interval-biased selection parameter γ of duration gap is 0.5, the absolute value of both ends of gap interval is in minimum; the more γ is greater than 0.5, the larger positive gap is, and more money is earned when interest rate declines;The more γ is less than 0.5, the larger negative gap is, and more money is earned when interest rate rises. The research shows that selection of parameter λ of the length of the interval decides the size of profit or loss and reveals that the chosen of lesser λ can get more risk-based return in positive interest rate management strategy. On the other hand, we set up the function expression of nonlinear interval-based risk portfolio through the semi-absolute deviation of the combination of correlation coefficient, chang the existing studies of linear interval-based algorithm, and simply linear weight the risk of each loan, thereby exaggerate the disadvantages of portfolio credit risk.

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