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论文

基于GARCH-EWMA原理的期货交易保证金随动调整模型

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Moving Adjust Model of Margins in Futures Trade Based on GARCH-EWMA Model

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摘要 在EWMA模型和GARCH模型思想的基础上,结合SPAN系统的思想,以保证金在期货交易中可以弥补最大损失额和保证交易的正常进行等作用为考虑因素,运用数理统计和VaR等风险管理方法,建立了保证金随动调整模型。在满足给定风险系数和置信水平的前提下,制定合理的保证金的收取比例,为期货交易的保证金水平的确定提供了新的计算方法。本模型的特点一是利用GARCH模型对EWMA模型中的关键参数-衰减因子进行测定,解决了以往使用EWMA模型时,对该参数人为赋值而导致模型人为因素过强的问题。二是在模型中引入波动函数,用来确定随时点t而不断变化的波动系数值。并采用大量的历史数据对大豆、豆粕两种期货品种的波动函数进行线性拟合,得到时点t与波动系数之间的连续线性函数,以代替以往波动系数与时点t之间所采用的极为粗糙的分段函数,从而大大提高了模型的灵敏性。三是采用近4500个合约价格的历史数据,对大豆和豆粕两种期货合约价格的涨跌停情况进行统计分析,得到这两类期货品种的涨跌停情况的概率分布。并分别考虑各种可能发生的情况综合计算最终单位保证金,使得保证金的计算更具全面性。

关键词： 保证金模型 随动模型 期货交易 GARCHEWMA模型 波动函数

Abstract： In this paper,based on the idea of EWMA model and GARCH model,combined the idea of SPAN system,using the important functions of the margin in the future markets as the consideration factors which remedy the largest loss in tomorrow and guarantee the trade running normally,making use of venture administering methods of symbolic statistics and VaR,we establish the moving adjust model of margin.Consequently,under the precondition of determined venture coefficient, decrease the rate of margin to the best of our abilities and offer new computing method for the determination of the future markets.The characteristics of this model are as follows:Firstly,we make use of the GARCH model of VaR method to determine the key parameter and attenuation factor of EWMA model, this will solve the problem to assign the decay factors by person causing the model with strong factors man-made. Secondly, introduce the fluctuation functions into the model, use them to confirm the fluctuation coefficient following the time "t", and adopt a lot of data of soybeans and soy meals contracts to fit the fluctuation functions,thus get the continuous function between the fluctuation functions and the time"t".This model can be used to replace the coarse functions used in Dalian Commodity Exchange.Thirdly,adopt nearly 4500 data of the history contracts, and give statistical analysis to the futures contracts of soybeans and soy meals to get the probability distribution of the limit up/down situation of the two types of contracts.Finally,comprehend each situation to get the final margins,thus make the model more comprehensive.

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