

## 基于线性学习函数的泛证券投资组合策略

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### Universal portfolio based on on-line learning of linear function

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- 摘要
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**摘要** 最优定常再调整策略所产生的收益随时间成指数速度增长, 寻找与最优定常再调整策略的收益具有相同指数增长率的在线序贯投资组合是近年来投资组合研究的一个热点. 首先提出了基于线性学习函数的在线投资组合策略, 其中线性函数的系数是一个与股票相对价格和收益有关的区间的中点. 用相对熵函数定义两个投资组合向量之间的距离, 进一步证明了基于线性函数的在线投资组合策略是泛证券投资组合. 最后, 分别在两支股票和三支股票组成的多个投资组合上进行了数值计算, 并与Cover等人提出的泛证券投资组合策略进行了比较. 结果表明这种基于线性学习函数的在线投资组合策略能获得更多的收益, 从而为投资者提供了新的在线序贯投资组合决策的方法和依据, 具有重要的现实指导意义.

**关键词:** 最优定常再调整策略 线性学习函数 相对熵函数 泛证券投资组合

**Abstract:** The return of the best constant rebalanced portfolio (BCRP) has exponential growth rate with time. It is a hot topic to research on-line sequential investment strategy that has the same growth rate as BCRP. Based on the on-line learning of linear function, we firstly present a new on-line portfolio selection strategy, where the linear coefficient is the middle of an interval. And the interval is related to price relative and the return. Using the relative entropy as the distance function of two portfolios, we further prove that the new on-line portfolio is universal. Finally, take experiment on several portfolios that consisted of two stocks or three stocks, and compare the new strategy with Cover's UP strategy. The results show that this new strategy can obtain better performance. Therefore, this paper provides a new method and basis for decision-making for on-line sequential investment, and thus has great practical significance.

**Key words:** BCRP linear learning function relative entropy function universal portfolio

收稿日期: 2010-04-30;

基金资助: 国家杰出青年科学基金 (70825005); 国家自然科学基金 (71171086); 教育部新世纪优秀人才支持计划项目 (NCET-10-0401); 教育部人文社会科学基金(11YJC630255)

引用本文:

张卫国,张永,徐维军等. 基于线性学习函数的泛证券投资组合策略[J]. 系统工程理论实践, 2012, (8): 1647-1654.

ZHANG Wei-guo,ZHANG Yong,XU Wei-jun et al. Universal portfolio based on on-line learning of linear function[J]. Systems Engineering - Theory & Practice, 2012, (8): 1647-1654.



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