Integration of ART2 Neural Network and K-means Algorithm for analyzing Performance Clustering and Performance Persistence of Mutual Funds in Taiwan

Ming-Chi Chen* Edward Yu-Hsien Lin ** Yu-Chung Chang ***

ABSTRACT

This research supply a new two-stage clustering method which integration of adaptive resonance theory II (ART2)and K-means method. By using ART2 neural network to determine the number of clusters and the starting points and then employing the K-means method to find the final solution, can provide very good solution of data clustering. We apply this two-stage clustering method ART2+K to cluster the performance of mutual funds and use Spearman rank-order correlation to study the performance persistence of mutual funds. Data is collected from January 2001 to May 2006, and the evaluation indexes of mutual funds include return, Beta coefficient, Sharp Index, Jensen index, and Treynor index. This research obtains the following conclusion after empirical study: For classification, this two-stage

* PhD Student, Graduate Institute of Industrial and Business Management, National Taipei University of Technology
Assistant Professor, Department of Accounting Information, Hsing Wu College
** Professor, Graduate Institute of Commerce Automation and Management, National Taipei University of Technology
*** Assistant Professor, Department of Finance, Hsing Wu College

clustering method ART2+K is better than ART2 or K-means method in the performance clustering of mutual funds. For persistence, in a short term, there is persistency for performance of mutual funds by Spearman rank-order correlation. But there is not persistency for performance of mutual funds in a long term.

Key words: Adaptive resonance theory II (ART2), mutual funds, performance clustering, performance persistence