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Evaluating efficient market hypothesis with stock clustering

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EXECUTIVE SUMMARY

This study investigates the validity of Efficient Market Hypothesis (EMH) by taking clusters of firms, generated using Self-Organising Maps (SOMs), and comparing their financial performance. Clusters were generated using 10 different financial variables as inputs to SOMs of different sizes. The effectiveness of the clustering was analysed using Silhouette Width, Davies-Bouldin Index and two Dunn's Index metrics. The financial performance of the clusters was investigated using equal and value weighted returns and portfolio standard deviation. Market capitalisation was the only variable able to generate statistically significant results – in particular larger firms outperformed their smaller counterparts. It was concluded that this difference could be attributed to the volatile time frame chosen (2007-2012) which resulted in investors favouring larger firms. For future work it is recommended that researchers focus more on pre-processing the inputs, using different clustering methods (in particular fuzzy clustering) and conduct the analysis over a longer time frame.