Available online at www.sciencedirect.com

ScienceDirect

Procedia Computer Science 108C (2017) 1271–1280

Procedia Computer Science

International Conference on Computational Science, ICCS 2017, 12-14 June 2017, Zurich, Switzerland

Relationship between Capital Operation and Market Value Management of Listed Companies Based on Random Forest Algorithm

Wen Long[1,2,3], Linqiu Song[1,2,3] and Lingxiao Cui[1,2,3*]

[1]*Research Center on Fictitious Economy & Data Science, CAS, Beijing, China*

[2]*School of Economics and Management, UCAS, Beijing, China*

[3]*Key Laboratory of Big Data Mining and Knowledge Management, CAS, Beijing, China*

* Corresponding *author: clxdsjyx@163.com*

Abstract

This paper analyzes the influence of capital operations on the performance of listed companies under different market conditions by combining various capital operations with market value management. Random Forest algorithm is adopted and other machine learning methods are used to compare. We find that capital operation is significantly related to market value management and different capital operations have different effects on companies in various conditions. The result shows Random Forest algorithm has the highest classification accuracy and is more stable under different thresholds. Our findings will help to establish a market or industry benchmark which provides a scientific basis and decision support to the target companies when they operate their capitals.

Peer-review under responsibility of the scientific committee of the International Conference on Computational Science

Keywords: Random Forest, capital operation, market value management, financial strategy

1877-0509 © 2017 The Authors. Published by Elsevier B.V.
Peer-review under responsibility of the scientific committee of the International Conference on Computational Science
10.1016/j.procs.2017.05.111

1. Introduction

Today the capital market situation is complex. Different capital operations will have different effects on enterprises' performance. By studying this kind of problems, we can understand the law of financial market better, strengthen the regulation of listed companies' behaviors. More important, we can provide experiences for listed companies to help them choose suitable financial strategies. From the investment point, it is helpful to identify favorable investment opportunities, and create profits.

Many scholars have studied capital operations of enterprises and the influences of these operations. In the study of corporate investment strategy, Chen Shihua et al (2013) study the connection between the directors and target companies from the perspective of information asymmetry between the two sides. It is found that the connection has no significant effect on short-term performance, but a positive impact on long-term performance. Yu Pengyi and Wang Mansi (2014) study the impact of cross-border mergers and acquisitions of listed companies. They build a comprehensive system by selecting multiple financial indicators and find that cash payments and the acquisition of the company's largest shareholder shareholding ratio have positive impact on business performance; while other factors have different effects according to short or long periods.

From the financial point of view, K. H. Wruck, Y. L. Wu (2009) think that when the private placement led to increased control and improve the governance structure: it will increase the company's value. Xu Shoufu et al (2011) hold the view that private placement will lead to a declining long-term performance. In recent years, behavioral finance theory based on heterogeneous beliefs has become an important research frontier in international academic circles. Deng Lu and Wang Huacheng (2014) examine the relationship between private placement and long-term stock market performance from heterogeneous beliefs. The results show that the greater the heterogeneity of investors is, the worse the long-term market performance of listed companies is after the private placement.

For equity incentives, Aboody et al. (2010) conducted a sample study of 1364 companies that implemented equity incentives in 1990-1996 and whose stock price fell more than 30 percent from the previous year. Their findings suggest employee stock options provide sufficiently incentive effects to the firms' performance. Sun Jian and Lu Chuang (2012) study the influence of executive power of equity incentive and the response of the market. It was found that the market would respond positively to equity incentive plan of most companies. But the negative correlation between the intensity of stock option incentive and the market reaction shows that investors may think that the high grant ratio is caused by the self-interest behavior of executives.

From the research above, it can be noted that the current academic researches mostly start from the theoretical point of view and research content is constructed based on one specific problem. We plan to explore the financial strategy model from the capital operations of listed companies with market value management. It is beneficial to establish market or industry benchmarks and guide the target companies to better operate their capitals.