Social innovation

Data analysis using a variety of information disclosed by companies

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Researchmap https://researchmap.jp/murarmiya?lang=en

Abstract

For investors, financial statement information is one of the most useful sources for decision-making. With this information, investors can learn about a company's future prospects to screen for desirable investments. In theory, information that affects a company's future prospects should be incorporated into its stock price in a timely manner. In reality, the stock price of a firm with specific characteristics may differ from its true fundamental value. Using financial statement information, I estimate the appropriate fundamental values of stocks and identify those that deviate from current stock prices. Thus, a trading strategy that can produce better investment performance in the stock market can be investigated.

Background & Results

Suppose that the stock prices of excellent companies are currently undervalued. If we can find those undervalued stocks by applying a fundamental analysis and invest in them, the stock prices will converge to the fundamental values eventually. As a result, the stock prices of excellent companies will increase. Consequently, these companies will be able to attract more funds and expand their businesses. In other words, the capital allocation efficiency of financial markets is promoted through this process. This study is significant because it could solve the problem of financial market inefficiency.

If more people were to acquire the skills for analyzing financial and stock price data, then a more efficient capital allocation could be achieved in financial markets. To this end, I am currently focusing on data science education, including authoring an introductory book with Professor Akitada Kasahara, an outstanding professor at Osaka University.

Significance of the research and Future perspective

In this section, I briefly introduce three subjects of the research conducted. The first is research on trading strategies in which I applied a financial statement analysis. If stock prices at any time fully reflect all publicly available information, then no trading strategy can be profitable. However, as shown in Figure 1, when companies are ranked based on specific information, a higher (lower) realized future stock return is observed for the highest (lowest) ranking group. This trading strategy is based on published financial statement information, and the results suggest that a fundamental analysis is helpful in terms of actual stock markets.

The second research is to estimate the investors' expected return for each stock. Their expected return is a hurdle rate that a company must achieve. An appropriate expected returns will help companies grasp their goals and promote improved corporate management. As shown in Figure 2, I could develop a method to estimate expected returns that also explains the movements of the actual stock market, compared to the CAPM that is frequently used in practice.

The third is a research project that I am currently working on to visualize companies' commitment to ESG and SDGs. In this project, I attempt to build a platform that allows people to make informed decisions about their investments and consumption.

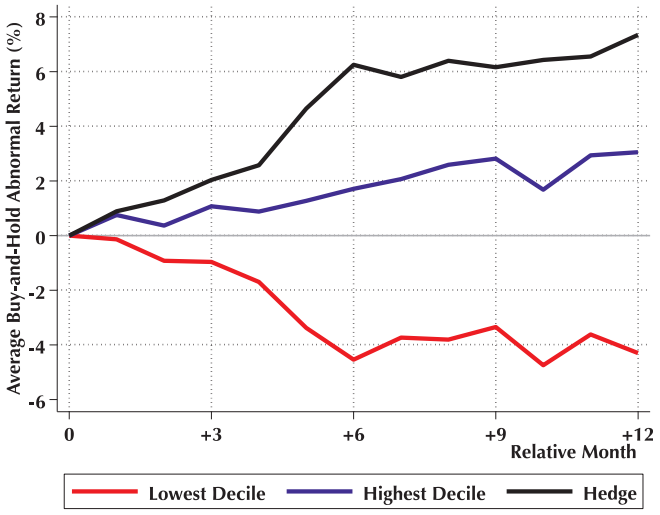

Figure 1

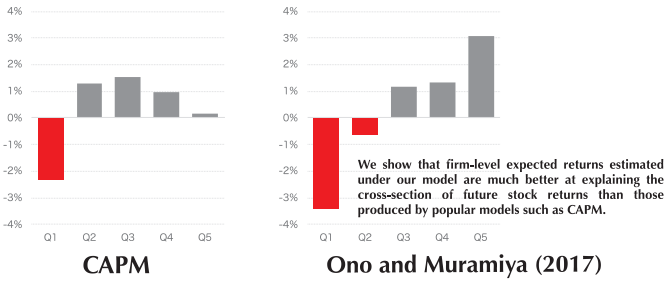

Figure 2

Patent

Treatise
Kasahara, Akitada and Katsuhiko Muramiya (2022), *Empirical Accounting and Finance in R*, Shinsei-Sha (in Japanese).
Ono, Shin-Ichiro and Katsuhiko Muramiya (2017). Estimating time-varying expected returns on equity using clean surplus relation, *Security Analysts Journal*, 55 (10), 70-81 (in Japanese).

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Keyword financial accounting, financial markets, data science