A Novel Model of Stock Selection

Tsai Chin Lin\textsuperscript{1}, Nan Shih Hwang\textsuperscript{2}, and Ching Wang Chuang\textsuperscript{3}

Graduate School of Management Science, Ming Chuan University\textsuperscript{1,2}  
cctlin@mail.yust.edu.tw\textsuperscript{1}, snhwang@mcu.edu.tw\textsuperscript{2}
Graduate School of Management Science, Ming Chuan University and Department of Business Administration, Kang Ning Junior College\textsuperscript{3}, dchuang@knjc.edu.tw\textsuperscript{3}

ABSTRACT
This paper has offered a new and simple model of selecting stocks to assist individual investors and security analysts with making investment decisions. This model we propose, in addition to improve decision quality in stock selection, coincidently boost the validity and reliability in practical operation for stock assessment. Through the methodologies of data envelopment analysis (DEA) and analytic hierarchy process (AHP), we evaluate and compare two dimensions with each company in certain industry, which are operating performance and market valuation respectively, which form the main framework of this research. However, operating efficiency and profitability are assembled into operating performance. Through these dimensions, the model has been decomposed into four attributions of investment objectives, which are “keep”, “attend”, “speculate” and “avoid”. We attempt to find proper investment strategy by investigating different attributions of stocks in face of different periods.

INTRODUCTION

Individual investors put their money into stock market primarily pursuit maximizing the rate of return on their investment. All the investors concern the issues, which investing indices should be adopted as bases in selecting stocks in order to maximize their wealth. According to the need, the paper attempt to construct a stock-selecting model, which possesses the properties of simplicity and availability to valuate individual securities. The model provides individual investors and those professionals work full time in this field one approach, which could help choice appropriate investing strategy in face of different periods, especially for the purpose in decreasing the investing risks.

Valuation multiples remain the most commonly used measures of relative value, which were thought, could reflect the intrinsic value of firm. Investing value exists in the distance of real value and market value. Investors should have chosen the stocks undervalued and have avoided the stocks overvalued. This paper exploits two dimensions, which are operating performance and market valuation, as measures to select stocks, particularly find the gap between the intrinsic value and market value of firm.

Due to variant industries carry with different industry risks, we can’t compare each other directly with distinctly characteristic companies, lest resulting in misjudgment. We compared two dimensions on firms in the same business.

DSI & APDSI Shanghai 2003(China)
LITERATURE

Since a company’s performance is a complex phenomenon requiring more than a single criterion to characterize it. The paper adopted the technology of data envelopment analysis (Charnes et al., 1978) and analytic hierarchy process (Saaty, 1980). The former is employed can determine a multi-factor financial performance model which inherently reconcile diverse measures. (Zhu, 2000) The latter is exploited can help get weights to combine different criteria.

In practice, the use of relative valuation is widespread. In relative valuation, the objective is to value assets based on how similar assets are currently priced in the market. Price-earning ratio and price-book value ratio are the most commonly used measures of relative value. Basu (1977) reported that low-P/E stocks outperform high-P/E stocks, which means that firms with low stock prices relative to earnings have higher stock returns. Fama and French (1998) find the book-price effect within several international markets, which means that firms with high book-price ratio have higher stock returns than low one does. Schadler and Eakins (2001) added P/E and P/B ratio into a new index as base to classify the attributions of stocks. We employ DEA to combine relative variables into a composite index name it ‘market valuation’.

It is possible to define a great variety of indices measuring the performance of an enterprise. The most crucial aspects on which many analysts focus to evaluate the firm’s operations are profitability, productivity, long-term solvency, short-term solvency and growth. Diakoulaki et al. (1992) confirmed that profitability constitutes the most representative measure for the differentiation and ranking of company on performance. Labor productivity and market share are the most relevant indicators of the business success. As to long and short term solvency are good indicators of the business failure, but they do not provide information about their relative success.

We ignore growth dimension owing to high-tech industry we choice as a research sector, change fast, past growth record may mean nothing. That is why we just combine the dimensions of operating efficiency and profitability into an index as operating performance.
METHODOLOGY

Fig.1 Flow chart illustrating the structure of DEA performance procedure

Fig 2. Diagram of investing attributions

Stocks are divided into quadrants according to operating performance (high/low) and market valuation (high/low) that may be used to classify risks:

- **Hold** (low market valuation/high operating performance): We suggest ‘hold’ those stocks belong to this quadrant, which indicates those stocks price possess great potentiality may go high for future.
- **Attend** (high market valuation/high operating performance): We suggest ‘attend’ those stocks belong to this quadrant, which indicates those stocks price either will go higher or has fully reflected their value so that less potentially go higher.
- **Speculate** (low market valuation/low operating performance): We suggest

DSI & APDSI Shanghai 2003(China)
‘speculate’ those stocks belong to this quadrant, which perform bad regularly, but as economic turn better they may get more growth ratio on earning than the others. So situation like that indicates that investment rate of returns on them vary dramatically, exhibiting the property of high risk.

- Avoid (high market valuation/low operating performance): We suggest ‘avoid’ those stocks belong to this quadrant, just like bubble will go blow at any time.

Indices definition

- Operating performance: firm globe performance that includes operating efficiency and profitability.
- Market valuation: this index assembles price-earning ratio and price-book ratio, which indicates the extent of firm real value reflected on stock price. Lower market valuation express that those stock prices may be undervalued or felt hesitate about future by investors. Higher market valuation express that those stock prices may be overvalued or felt better about future by investors.
- Operating efficiency: combines cost control and ratio of utilizing assets capacity.
- Profitability: combines labor productivity and financial rate of return.

We chose TFT-LCD industry to identify whether selecting firms from these cells could present variant stock returns between each other. In fact, we use last year’s financial data to classify stocks into different attribution groups and prove their stock returns significantly different between each other by actual investing returns next year.

CONCLUSIONS

This paper has attempted to build a novel model of selecting stocks. The empirical results have shown that the model we propose possesses the power of judgment for selecting stocks.

REFERENCES


