An empirical study on the relevance of applying relative valuation models to investment strategies in the Japanese stock market

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Abstract

In this study, we empirically investigate the relevance of relative valuation models in the Japanese stock market. Using various multiples such as price earnings ratio (PER), price book value ratio (PBR), price sales ratio (PSR), and price cash flow ratio (PCR), we study which valuation model is the best in forecasting stock prices, and in identifying portfolios which generate higher returns. We find that in terms of prediction accuracy, PBR is the best, while in portfolio selection results vary across the industry.
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1. Introduction

In Japan, as in other advanced countries, fundamentals of corporate performance play a key role in the valuation of firms by the markets. Although the popular press has often discounted the role of fundamentals in the Japanese equity market, recent academic research demonstrates that the Japanese stock prices do react to fundamental news. These findings are consistent with the view that the globalization of Japanese financial markets has made them more efficient.[1]

Three different approaches to firm valuation are usually mentioned in the literature. They are discounted cash flow (DCF) method, relative valuation method (multiple method), and contingent claims valuation method. DCF relates the value of the asset to the present value of the expected future cash flow on that asset, and is widely used in the

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[1] See Chan et al. (1991) and Conroy et al. (1993) for details.

United States. The relative valuation model estimates the value of the asset by looking at the pricing of 'comparable' assets relative to variables like earnings, cash flow, book value or sales. The relative valuation model is easy to apply, and for that reason in Japan analysts prefer relative valuation to DCF. In the early 1990s when the Japanese stock market was at the initial stage of globalization, the accuracy of relative valuation was good enough to be accepted by market analysts. Recently, however, with increased competition in global markets, the relative valuation model is believed to be far less accurate than in early 1990s.[2]

In relative valuation, the value of an asset is compared to the value assessed by the market for comparable assets. To implement relative valuation, first we need to identify comparable assets and obtain market values for them. The next step is to convert these market values into the standardized values because absolute prices cannot be compared. This process of standardization results in price multiples. Lastly, we compare the standardized values or multiples for the asset that we are interested in to the standardized values for comparable assets, after controlling any differences between firms that may affect the multiples, and we conclude whether the asset is fairly valued.

The purpose of this paper is to test how effective the relative valuation model is in identifying undervalued or overvalued stocks in the Japanese stock market. To address the issue of predicting accuracy, we empirically analyze and compare the forecast errors calculated by various multiples.[3] By comparing the forecast errors calculated by various multiples, we can tell which multiple is the best predictor of the stock price. Since we believe that the results will be quite different across the industry we compare the forecast errors within the same industry. Furthermore, we investigate which relative valuation method is the best in generating higher returns in the Japanese stock market. We will formulate two portfolios, one undervalued and the other overvalued, and will apply a zero-net investment strategy. By comparing zero-net portfolios' returns, we can find out which multiple is related with the best investment strategy.

The remainder of the paper is organized as follows. In Section 2, we describe the sample companies and data. In Section 3, we investigate which multiple is the best predictor and gives rise to the best investment strategy. Section 4 concludes this paper.

2. The data

2.1. Sample companies

The initial sample is from the Pacific-Basin Capital (PACAP) Market Research Center database. We select non-financial companies (with March fiscal year) traded on the Japan Stock Exchange from January 1990 to December 1999. Since we need to divide firms into two groups according to the levels of multiples, we exclude industries with less than 10 firms. As a result we end up with 195 firms from 10 industries. Our sample includes construction; machinery and equipment; wholesale and retail trade; textiles and apparel;

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[2] See Park and Lee (2000) for Korean case.

[3] There are various research papers dealing with using relative valuation model in the investment strategies. They are Basu (1997), Breen (1968), Fisher (1994), Goodman and Peavy (1983), Lee and Ahn (2002), Senchack and Martin (1987) and Whitbeck and Kisor (1963).