

# **INSTITUTIONAL OWNERSHIP AND FIRM VALUATION: A MULTI-FACTORS STATISTICAL ANALYSIS**

*Steven V. Le, Department of Finance, California State University, Long Beach, 1250 Bellflower Blvd., Long Beach, CA 90840-8505, 562-985-1608, steven.le@csulb.edu*

## **ABSTRACT**

This statistical analysis, based on monthly financial data of 1,810 Value Line companies (98 industries) between January 2003 and March 2015, reveals that high percentage of outstanding shares held by institutional investors has a positive impact upon the firm's intrinsic value.

## **INTRODUCTION**

In the past, Institutional investors prefer to sell at the first sign of trouble rather than manage problems, so chief executives obsess about quarterly earnings and grab pay and power while they can. However, during the last several years, activist institutional funds launched 344 campaigns against public companies. Activist fill a governance void that afflicts today's public companies. Institutional Activists run fund with at least \$100 billion of capital, and in 2014 attracted a fifth of all flows into hedge funds. In the past five years, one company in two in the S&P 500 index has had a big activist institutional fund on its share register. Mutual & pension fund managers are being forced to engage in more intense debates about strategy with managers and activist institutional shareholders. This study examines the relationships between stock prices and institutional stock holdings. Shleifer and Vishny (1997) observe that the large premiums associated with superior-voting shares or control rights provide evidence that controlling shareholders seek to extract private benefits from the firm. Stein (1988, 1989) shows that the presence of shareholders with long investment horizons can mitigate the incentives for myopic investment decisions by managers.

While empirical studies generally have supported the hypothesis that interest rate and dividend changes affect common stock prices, no statistical study has been done to investigate the effect of institutional holdings on the valuation of publicly owned companies stocks. The objective of this study is to examine the relationship between institutional ownership (percentage of outstanding shares held by institutions) and valuation of large public firms. The remaining sections of this paper are organized as follows. Section II presents the statistical model, methodology and data. Section III discusses the empirical results. The conclusions are in Section IV.

## **DATA AND METHODOLOGY**

The statistical model constructed for this study is based on the generally accepted theory of common stock valuation. This approach is based on the principle that rational investors evaluate the expected returns and risks of securities in the financial market and set a price for a particular security which adequately compensates investors for the risks. The Discounted Cash Flow valuation approach is based on the proposition that the maximum price that a rational investor will pay for a security is an amount equal to the present value of the expected dividends plus its resale price, including capital gains. Therefore, the present market price or a stock is given by the formula:

$$P_0 = \frac{D_1}{(1+K)^1} + \frac{D_2}{(1+K)^2} + \dots + \frac{D_t}{(1+K)^t} + \frac{P_t}{(1+K)^t} \quad (1)$$

Equation (1) was simplified by Gordon (1962) as follows:

$$P_0 = \frac{D_1}{K-g} \quad (2)$$

Where  $g$  is the expected dividend growth rate.

Equation (2) can be expressed as follows:

$$\frac{P_0}{B_0} = \frac{D_1/B_0}{K-g} = f(D_1/B_0, K, g) \quad (3)$$

Where  $P_0 / B_0$  = market price-to-book ratio

$B_0$  = book value

$D_1 / B_0$  = book yield

$K$  =  $R_f$  + risk

$R_f$  = Risk-free rate

Equation (3) attempts to quantify the impact and the relationship between stock prices and a number of economic, financial and risk factors associated with each company. The ratio of market price and book values of security  $i$  can be written as a function of several explanatory variables and can be expressed as follows:

$$P_i/B_i = f(RF, \text{book yield}, g, \text{risk}) \quad (4)$$

There are four types of variables which were hypothesized to affect the market price-to-book ratio of companies:

- (1) Economic Variables: Interest rates and inflation should have an effect on market price-to-book ratio.
- (2) Dividend Policy: High book yield, retention ratio, and expected earnings growth rate should have a positive effect on market price-to-book ratio.
- (3) Risk Factors: high debt, high beta, and low Value Line Safety Rank should have a negative impact on market price-to-book ratio.
- (4) Financial Factors: High return on equity, high percent of cash to total asset, good Value Line Timeliness Rank, high sales growth, positive money flow, and high annual return should have a positive impact upon market price-to-book ratio.

In specifying (4), our intent is to construct a statistical model to quantify the changes in the market price-to-book ratio and to examine the relative importance of institutional holdings versus other economic and financial factors in the valuation of stock prices.

This empirical study is based on monthly Value Line financial and economic data from January 2003 through March 2015 of 1,810 companies (98 industries). The monthly data was obtained from Value Line and Federal Reserve Statistical Release. The dependent and independent variables were defined as follows:

**Market/book ratio ( $P_0/B_0$ ):** The month-end market price divided by book value per share.

**Book yield (BYD):** Indicated declared dividend divided by book value per share.

**Risk-free rate (I):** The interest rate of the 5-year U. S. Treasury Bonds.

**Timeliness Rank (TR)** measures probable price performance during the next 6 to 12 months, relative to all other 1700 stocks. These 1700 equities represent 94% of the trading volume on all U.S. stock exchanges. The rank of a stock's probable relative market performance in the year ahead. It is derived by a computer program using as input the long-term price and earnings history, recent price and earnings momentum, and earnings surprise. All data are known and actual. Stocks ranked 1 (Highest) and 2 (Above Average) are likely to outpace the year-ahead market. Those ranked 4 (Below Average) and 5 (Lowest) are not expected to outperform most stocks over the next 12 months.

**Safety Rank (SR):** A measurement of potential risk associated with individual common stocks. The Safety Rank is computed by averaging two other Value Line indexes – the Price Stability Index and the financial strength Rating. Safety Ranks range from 1 (Highest) to 5 (Lowest).

**Beta (B):** A relative measure of the historical sensitivity of the stock's price to overall fluctuations in the New York Stock Exchange Composite Index. The Betas are adjusted for their long-term tendency to converge toward 1.00. Additionally, Value Line shows betas computed based on monthly total returns for the trailing three year, five-year and 10-year periods.

**Relative P/E Ratio (RPE):** A stocks price-earnings ratio divided by the price-earnings ratio for a market measure.

**% Retained to Common Equity (RR):** Net profit less all common and preferred dividends divided by common equity including intangible assets, expressed as a percentage.

**Estimated Return on Shareholders Equity (ROE):** Indicator of profitability. Determined by dividing net income for the past 12 months by common stockholder equity (adjusted for stock splits). Result is shown as a percentage.

**Earning Per Share Growth 10-Year (EG)**

**Total Return 1-Year (TT):** The capital gain or loss for the stock price plus the sum of dividends reinvested at year-end for the past year, expressed as a percentage.

**Relative Strength 1 Week (RS):** The stock's price over time divided by the Value Line Composite Average over the same time span. Arising relative strength line means the stock has been outperforming the market; a declining line means just the opposite.

**1-Month Money Flow (MF)**

### Projected 3-5 Year Relative P/E (PPE)

### Projected Sales Growth Rate (PSG)

**Projected Earning Per Share Growth Rate (PEG):** The estimated growth rate in earnings expressed as a percentage.

**% Institutional Holdings (IH):** The percentage of outstanding shares held by institutionals (corporate officers and Directors).

### % Cash/Total Asset (C)

### % Debt/Capital Latest Quarter (D)

Utilizing a cross sectional time series data, this model may be expressed as follows:

$$P_{it}/B_{it} = a + b_1TR_{it} + b_2SR_{it} + b_3B_{it} + b_4RPE_{it} + b_5RR_{it} + b_6ROE_{it} + b_7EG_{it} + b_8TT_{it} + b_9RS_{it} + b_{10}MF_{it} + b_{10}PPE_{it} + b_{10}PSG_{it} + b_{10}PEG_{it} + b_{10}IH_{it} + b_{10}C_{it} + b_{10}BYD_{it} + b_{10}I_{it} + b_{10}D_{it} + e_{it} \quad (5)$$

Where: i = company i  
t = time t  
a = the intercept  
b = regression coefficient  
e<sub>it</sub> = the random error

## EMPIRICAL RESULTS

As shown in Table 1, a cross-sectional regression estimate of expression (4) and (5) yield the following result:

$$P/B = -1.938 - 0.054 TR - 0.208 SR - 0.381 B + 0.766 RPE + 0.094 RR + 0.125 ROE + 0.006 EG + 0.007 TT + 0.003 RS + 0.001 MF + 1.028 PPE + 0.003 PSG + 0.02 PEG + 0.004 IH + 0.005 C + 6.971 BYD + 0.136 I - 0.005 D + e_{it} \quad (6)$$

(-3.92) (-10.259) (-7.651) (23.836) (38.62) (43.21)  
(4.695) (21.246) (5.713) (3.778) (25.335) (1.049) (12.007)  
(3.954) (4.756) (18.619) (5.034) (-7.796)

(t-statistics in parentheses below the coefficients) (R<sup>2</sup> = 0.92)

Durbin-Watson *test* was utilized to test the hypothesis of no autoregression. As shown in Table 1, the Durbin-Watson statistic of 1.91 indicates that there is no autoregression and we can retain the statistical estimates without concerning a bias of the estimated standard error. The low correlation coefficients of the correlation matrix indicate little multicollinearity between the independent variables.

**TABLE 1**  
Statistical Results

| Dependent Variable: P/B: Market Price/Book Value |        |                     |         |
|--|--------|---------------------|---------|
| Independent Variables                            | B      | Standard Error<br>B | t       |
| TR: Timeliness Rank                              | -.054  | .014                | -3.92   |
| SR: Safety Rank                                  | -.208  | .02                 | -10.259 |
| B: Beta  | -.381  | .05                 | -7.651  |
| RPE: Relative P/E Ratio                          | .766   | .032                | 23.836  |
| RR: % Retained to Common Equity                  | .094   | .002                | 38.620  |
| ROE: Est Return on Shareholders Equity           | .125   | .003                | 43.21   |
| EG: Earning Per Share Growth 10-Year             | .006   | .001                | 4.695   |
| TT: Total Return 1-Year                          | .007   | .000                | 21.246  |
| RS: Relative Strength 1 Week                     | .003   | .000                | 5.713   |
| MF: 1-Month Money Flow                           | .001   | .000                | 3.778   |
| PPE: Proj 3-5 Yr Relative P/E                    | 1.028  | .041                | 25.335  |
| PSG: Proj Sales Growth Rate                      | .003   | .003                | 1.049   |
| PEG: Proj EPS Growth Rate                        | .020   | .002                | 12.007  |
| IH: % Institutional Holdings                     | .004   | .001                | 3.954   |
| C: %Cash/Total Asset                             | .005   | .001                | 4.756   |
| BYD: Dividend Declared/Book Value                | 6.971  | .374                | 18.619  |
| I: 5-Year Treasury                               | .136   | .027                | 5.034   |
| D: %Debt/Capital Latest Quarter                  | -.005  | .001                | -7.796  |
| (CONSTANT)                                       | -1.938 |                     |         |
| R Square   | .92    |                     |         |
| Adjusted R Square                                | .84    |                     |         |
| Durbin-Watson Statistic                          | 1.91   |                     |         |

The statistical results indicated that investors respond positively to the utility stocks with high dividend and quality earnings, which is reflected in the book yield and return on equity variables.

The results suggest that expected growth in earnings or capital appreciation is an investment objective of stockholders. This is consistent with the discounted cash flow approach in the valuation theory of common stock.

All of the financial risk factors are significantly related to the valuation of common stocks, the evidence suggests that a high percent of cash, low debt ratio, and good Timeliness and Safety Ranks would have a positive impact upon stock prices.

The empirical results indicated that high percentage of outstanding shares held by institutional investors would have a positive impact upon the company's intrinsic value.

## CONCLUSIONS

This study examines the relationships between stock prices and institutional stock holdings. The empirical results led to the following conclusions:

- The percentage of institutional holdings is seriously being taken into consideration by investors in evaluating public companies' stocks. Companies with high percentage shares held by institutional investors will have a positive impact on the companies' intrinsic value.
- The empirical evidence suggests that high projected earnings growth, return on equity, quality earnings and good balance sheet would have a positive impact upon the value of common stocks.

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