On Stock Price Prediction Methodology

Predictions are difficult, especially when they are about the future

Preface: When an individual investor logs onto the Fairfax County Library website seeking information on stocks, three sources of public information are available (Morningstar, Standard & Poor's, and Value Line). Each uses a different methodology to <u>estimate</u> the current price of a stock in relation to its future value.

Merrill Lynch: Several weeks ago, the Forum hosed an invited speaker from Merrill Lynch. The speaker described a proprietary methodology for long-term aggregate stock market price predictions developed by Merrill's former chief market strategist, Richard Bernstein. It is predicted on aggregate market sentiment of several hundred prominent stock analysts whose opinions are surveyed by Merrill. The fundamental premise behind this methodology is that popular sentiment is usually wrong and successful market timing can be based on a contrarian perspective that suggests buying when most analysts are bearish and selling when most analysts are bullish. The methodology has several decades of data to back up its claims to validity.

Value Line: Value Line was founded in 1931 by Arnold Bernhard. The "Value Line" was a line representing a multiple of cash flow that Bernhard would manually "fit" or superimpose over a stock price chart. This was a pioneering attempt to normalize the value of different companies.

In 1946, Bernhard hired Samuel Eisenstadt, a graduate of Baruch College in statistics. In 1965, Eisenstadt persuaded Bernhard to use a statistical method called "ordinary least squares regression analysis" to replace Bernhard's crude visual method of fitting cash flow to a price chart. Bernhard and Eisenstadt thus produced a stock ranking system so successful that it caught the attention of the famed academician Fischer Black at the University of Chicago. Black validated their methodology. This and further refinements over time provide the basis for 3-to-5-year stock price predictions which appear in graphical form on each Value Line stock chart to this day. It remains proprietary and somewhat of a semi-empirical "black box" to Value Line readers.

Standard & Poor's: Individual S&P stock reports usually include a "12-Month Target Price." It is a function of two parameters: a 12-month estimate of future earnings and an estimate of the P/E that the market will assign to a stock 12 months into the future. Both parameters are derived from proprietary S&P analysis methodology which is not revealed in detail to readers. However, individual analysts who compile and promulgate this type of information are frequently interviewed on cable TV broadcasts where they talk about their results but not their methods.

Morningstar: Morningstar is the newest entrant to this trio of stock investment adviser services. Morningstar does not provide stock price predictions, per se. Rather, it uses a proprietary "discounted cash flow" model to estimate the current "Fair Value" of a stock. Stocks selling significantly below fair value estimates are considered attractive for purchase. Similarly, stocks selling significantly above fair value estimates are candidates for selling. Morningstar provides guidelines on what price levels are

appropriate for considering buying or selling. Morningstar claims to focus on long-term estimates involving years into the future. Common sense suggests that the longer the time period involved, the greater the risk of error.

Discounted Cash Flow: DCF deserves some explanation. It is a valuation method used to estimate the attractiveness of an investment opportunity. DCF models are multifaceted and complex. There are many variations in use. What follows is an attempt at a fundamental explanation for users rather than practitioners.

DCF analysis is a method of valuing an investment using the concept of the time value of money. Future cash flows (usually free cash flow for a stock) are estimated and discounted back to their present value. Factors such as the cost of capital and inflation are included as well as the degree of risk associated with the estimates involved. Thus, the current value of an asset is the value of its future benefits. Advocates claim that DCF is the most fundamentally correct way of valuing an investment. DCF modeling is widely used by investment analysts. There is no way for individual investors to intelligently assess the accuracy of such analyses that are the basis for many stock price predictions. For instance, small differences in the magnitude of some inputs can result in large differences in the final valuation being calculated. The time periods over which DCF estimates are applied can vary widely. For companies with stable business models and wide economic moats, long-term predictions are a safer bet. In most instances, predictions beyond one year are suspect. For individual investors, the basic question is whether stock price predictions are better than nothing and deserve some degree of consideration, or whether they are potentially misleading and best ignored.

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