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# An Explanation of the Unusual Behavior of Some Market Model Residuals

This research helps managers understand the market's reaction to the simultaneous release of favorable and unfavorable information.

Stock prices and their volatility have an enormous impact on the firm's ability to raise capital. This places stock price behavior at the top of any list of management concerns. Since market valuations determine rates of return, management activity that contributes to positive valuations are worthy of enhancement, while those that lead to negative valuations should be avoided. To the extent that the models used to measure the impact of management decisions are flawed, management may be encouraged to perform counterproductive activity. This research identifies one possible problem and describes a solution.

Stock price behavior is often described via the earnings response coefficient (ERC) model. In this model, a stock's return is treated as a function of: (1) a constant, reflecting a wide variety of common influences, (2) the product of reported earnings and the ERC, which reflects the relation of earnings to the market and (3) a residual term, which measures the abnormal returns available to the investor. The error term is assumed to have a mean of zero and to be normally distributed, with a constant variance. In practice, many times it does, but sometimes it does not. Often, abnormal returns have: (1) means that are significantly positive or negative, (2) distributions with high kurtosis and (3) heteroscedastic variances. This research demonstrates that these deviations may be the result of the application of a misspecified model. Specifically, when the information to which investors respond is partly favorable and partly unfavorable, the standard market model provides a distorted measure of investor behavior. This, in turn, may influence management to make inappropriate decisions.

When the market is faced with ambivalent disclosures, some investors are pessimistic while others are optimistic. The numbers of investors with different views are seldom equal. This generates four observable results. One, the mean of the cumulative abnormal returns (CARs) deviates from zero. If there are more pessimistic investors, the distribution is centered to the left of zero. If optimists are more numerous, the mean is positive. This explains why CARs are not always centered at zero. Two, by measuring bimodal abnormal returns with a unimodal model, the tails are structured to be thicker than should be the case. This helps explain the low explanatory power sometimes reported in the ERC model literature. Three, because additional time is required for further information to be received and digested, a favorable or unfavorable market consensus takes some time to develop. This explains the existence of a variable adjustment lag. Four, because the original bimodal information and the new information that finally resolves it are observation specific, variations in the dispersion of the CARs result. This explains the observation of heteroscedasticity in some market model residuals.

An empirical test is conducted using interim reports submitted to the Helsinki Stock Exchange over the period 1985–93. The bimodal model captures the price behavior of firms that concurrently report both new favorable and new unfavorable information.