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Analyst valuation and corporate value discovery

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ABSTRACT

This paper examines firm-level valuations by financial analysts and by the market, using a traditional vector error-correction model (VECM) or threshold vector error-correction model (TVECM) to obtain the information shares of the two parties. While investors' valuations lead financial analysts' valuations in most firms, the reverse is not uncommon. A cross-sectional analysis reveals that analyst forecasts are more valuable for firms with less trading, less uncertainty, and weaker association between prices and earnings.

1. Introduction

This paper examines firm-level value discovery between analyst-forecast-based and market valuations. Similar to price discovery in financial markets for gathering and interpreting news (Baillie, Booth, Tse, & Zabotina, 2002), value discovery incorporates the news to determine the value of the firm.

A firm's stock price theoretically reflects both supply and demand sides in the market and is usually regarded as investors' viewpoints of corporate valuation. If the capital market is efficient in reflecting all available information, then nobody can outperform the market in assessing a firm's value. However, given the fact that information collection is costly, it is possible that a certain group of people may value the firm better than the market (Grossman & Stiglitz, 1980).

This paper focuses on the interplay between the financial analysts' and market valuations. Financial analysts are important information intermediaries in capital markets. They provide information that investors value, as demonstrated in a substantial body of research. Like other market participants, they learn from the market valuation. Examining the interactions between analysts and the market is useful in understanding how the financial industry operates.

There is an abundant amount of literature on the relationship between stock market prices and analyst forecasts or recommendations. Barber, Lehavy, Mcnichols, and Trueman (2001) and Jegadeesh, Kim, Krische, and Lee (2004) show that trading according to analysts' consensus recommendations yields significant returns. Chung and Kryzanowski (2001) find that investor demands are related to the number of analysts following. Diether, Malloy, and Scherbina (2002) investigate the relationship between earnings forecast dispersion and subsequent stock returns. Elgers, Lo, and Pfeiffer (2003), Clement and Tse (2003), Gleason and Lee (2003), and

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Frankel, Kothari, and Weber (2006) examine the market's response to earnings forecast revisions. These research papers often examine the market reaction in rather short time periods; Altınkılıç and Hansen (2009) and Altınkılıç, Balashov, and Hansen (2009) even use intradaily windows. Our work differs with them in that we use a cointegration model to see whether the market can still learn from the analysts in the long term.

Another similar line of research is to examine dividend-based equity valuation models. Early works are primarily developed for valuing aggregate market indices (Bakshi & Chen, 1996, 1997; Bekaert & Grenadier, 2000; Campbell & Shiller, 2001; Chen, 2012). There is also a substantial body of literature measuring whether changes in earnings can predict future stock returns at the aggregate level (Ang & Bekaert, 2007; Kryzanowski & Mohsni, 2013; Lamont, 1998; Lee, Myers, & Swaminathan, 1999). Asset pricing research has focused largely on the portfolio level, but not on stock valuation per se. Only a few papers look at valuing individual stocks (Bakshi & Chen, 2005; Vuolteenaho, 2002; Wei & Yang, 2012). Our work, on the other hand, focuses on the relationship between firm-level market value and analyst forecast earnings rather than realized earnings.

We study value discovery for 736 U.S. firms with available data since 1983. We use Lee et al. (1999) multi-stage residual income model (hereafter LMS) to estimate the analyst valuation. The model is capable of reflecting a firm's fundamentals through analysts' earnings forecasts.[1] We then model the relationship between analyst and market valuations as a cointegrated system. Our approach herein does not assert that price be equal to value at all times, but rather that they should converge to the intrinsic value over the long term. Transaction costs, market friction, information asymmetry, and psychological bias will break the long-run equilibrium between these two valuations, and the short-run dynamic between the price and value depends on the distinct level of costs from market imperfections.

The traditional linear vector error-correction model (VECM) is often applied to estimate a smooth time series, but it is unable to consider the asymmetric adjustment of the long-term relationship among the variables in the model. In this study, we try to apply the linear VECM to sample firms whenever possible. For those samples which does not pass the linear cointegration test propose by Johansen (1988), we employ the Hansen and Seo (2002) two-regime threshold vector error-correction model (TVECM) with the intercept term as the threshold variable, in which there could be an asymmetric adjustment to long-run equilibrium, depending on whether the deviation from the equilibrium exceeds a critical threshold. There are two advantages from using the TVECM in our study. First, the model isolates the periods during which the two valuations diverge, which may indicate the existence of asset price bubbles. For all the firms fitted with TVECM in our sample, one of the regimes converges and the other diverges. Second, Enders and Siklos (2001) argue that the powers of unit-root and co-integration tests will be low if asymmetric effects exist in the underlying time series, and so it is necessary to consider other models when the traditional VECM does not fit the data well; see also Balke and Fomby (1997) and Enders and Granger (1998). Although TVECM may not be the best model, it serves as an alternative to detecting the properties that cannot be done by the traditional models.

Our value discovery analysis leads to several interesting findings. Firstly, convergent linear cointegration relationship exists between analyst and market valuations in the majority (415 out of 736) of firms. TVECM is applied to another 37 firms. Thus, the speed of the adjustment to the long-run equilibrium values is symmetric for most of the firms. For the long-run cointegrating relationship, the two valuations do not move closely together. Over-extrapolation or over-confidence often exists in the market valuation relative to the analyst valuation for this kind of firms, which is consistent with the findings in Frankel and Lee (1998), Ali, Hwang, and Trombley (2003) and other studies that the analyst valuation predicts future returns. Secondly, according to the sizes of the adjustment coefficients from VECM, analyst valuations, rather than prices, do most of the adjustment in bringing the deviation back toward the long-run equilibrium level. The firm-level stock return generally predicts valuation changes. However, short-run Granger causality results show that investor and analyst valuations disconnect in most of the regimes, that is, changes in market valuations do not predict changes in analyst valuation and vice versa.

Thirdly, following common factor weights' methodology in Gonzalo and Granger (1995), we find that market valuations have marginal "information dominance" in contributing to a firm's intrinsic value, with the median of common factor weights being 54.3%, and that of analysts is 44.10%. In an efficient market, the price fully reflects available information, so the theoretical common factor weight of market valuation is 100% and analysts always follow the market. By contrast, Gervais and Odean (2001) and Seru, Shumway, and Stoffman (2010) suggest that individual investors have difficulty learning from their experiences, and if they learn, this is a slow process. Our findings are more consistent with the behavioral than the efficient market argument. Using quarterly data, we still find that the contributions by analysts are substantial for some firms, which indicates that it may take a very long time for the market to adjust to the analyst valuation.

Lastly, we examine the common factor weights of analyst valuations in a cross-sectional analysis. The relative importance of analyst valuation may be determined by several factors. First, if there is more information coming out of the market, then analysts may play less important roles in leading the market. We find that this is indeed the case: analysts' common factor weight is inversely related to market information proxies such as firm sizes and turnover ratio. Second, we would like to know whether the more uncertain the environment for the firm, the more analysts lead the market. The results show that it is the other way round; analysts lead the market for those firms with low idiosyncratic risk, low return-on-asset volatility and low payout-yield variability. Third, for the firms with large difference between analyst and market valuations, or for the firms for which the associations between earnings and prices are weak, the common factor weights of analyst valuations tend to be large.

[1] Lee et al. (1999) show that the ratio of the average V/P, where V is the firm's intrinsic value constructed by the residual income model, and P is the stock price, predicts future returns. However, they do not consider the possibility that stock prices may affect analyst forecast revisions. Subsequent papers using the LMS technique include D'Mello and Shroff (2000), Dong, Hirshleifer, Richardson, and Teoh (2006), Lin, Chou, and Cheng (2011), and Ma, Whidbee, and Zhang (2011).