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## 財務分析師對公開訊息之群集行為

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## 摘要

過去的文獻著重於研究財務分析師對有顯著影響力之出版品之群集行為 (herding behavior)，且暗示性地假設財務分析師對公開訊息之輕忽與對內部訊息之重視。針對財務分析師對於公開訊息之群集行為之研究，特別是當他們的工作體系誘發如此行為時，則是相對短缺。此一研究探討財務分析師是否有整體性與持續性地對公開訊息之群集。公開訊息則被區分為好消息與壞消息；好消息與壞消息則由股價之表現來代理。由財務分析師與公開訊息之連結性探討群集行為有兩個原理支撐。第一為對內部訊息之運用不易衡量。第二為公開訊息包含數量龐大之因子，而股價被視為一前瞻因子 (forward-looking factor)，能迅速反映這些公開因子中之訊息。本研究由此探討財務分析師之整體盈餘預測 (consensus earnings forecasts) 對股票盈餘修正期間 (revision period) 之股票報酬率與波動之反映。樣本再依據分析師對股票之涵蓋範圍 (analyst coverage) 與對股票盈餘之修正期間做分組。研究發現，財務分析師之整體盈餘預測與股票報酬有正相關，而先前之盈餘修正亦有正面之解釋能力。但股價之波動與先前分析師意見之分歧則與整體盈餘預測有逆向關係。我們可以因此建議：公開資訊對分析師來說是具價值之資訊來源。

關鍵詞：群集行為，財務分析師，盈餘預測修正

## Abstract

Past studies lay much emphasis on financial analysts' herding behavior on reputable publications and implicitly assume that financial analysts place less or no weight on public information. What seems to be missing, however, is that financial analysts can herd on publicly available information when the incentive system they work under invites such behavior. This study is to examine whether financial analysts consistently and systematically herd on public information. Public information is characterized by good or bad news detected from stock price changes. Market-adjusted stock returns are used to represent good or bad news. The reasons to address herding behavior by measuring the connection between news and analysts' responses have two perspectives. The first one is that it is very complicated to evaluate the use of inside information by any market participant. The other rationale is that public information contains a large numbers of variables and stock prices are assumed to instantaneously reflect the information incorporated in these variables. The results show that consensus earnings forecast revisions are positively associated with prior stock returns and prior consensus earnings forecast revisions. However, they are negatively correlated to stock price volatility and divergence of prior analysts' opinions. It is suggested that such public information is valuable in financial analysts' information collection.

Keywords: herding behavior, financial analysts, earnings forecast revisions

## I. Introduction

Financial analysts gather firm and market information and provide investors a wide variety of research reports. One of the important piece of information released by financial analysts is earnings forecast that projects a firm's future performance. Past studies in finance and accounting literature have provided an abundant assessment on financial analysts' actions and opinions with respect to a variety of variables. For instance, to estimate over-reaction or under-reaction, DeBondt and Thaler (1990) analyze whether a propensity of excessive earnings forecasts exist. They find that financial analysts' projected one- (two-) year changes of earnings per share are 35% (54%) more than the realized changes. Eastwood and Nutt (1999) examine analysts' forecast errors and report that financial analysts underreact to both the earnings changes and abnormal negative forecast error in the prior year. Jegadeesh et al. (2001) add another piece of work addressing the connection between firm characteristics and analysts' stock recommendations. They observe that analysts prefer stocks with high momentum in price and trading volume, low price-to-earnings, high price-to-book value, and high growth indicators. Brennan and Hughes (1991) study the influence of stock splits on financial analysts' forecasting activities. They report that more private information is emitted in the post-split period with increased analyst coverage. Also shown is that analyst coverage is inversely associated with stock prices.

Although the empirical evidence provides that externalities shape analysts' opinions, analysts' ability or reputation is also shown to be a crucial factor determining their performance. Mikhail, Walther, and Willis (1998), for instance, study whether forecast accuracy is associated with industry volatility, analyst turnover, or prosperity from positive stock recommendations. They document that generally there is no significant link between the probability of analyst turnover and forecast accuracy. Analyst turnover, however, is negatively associated with forecast accuracy in the industries with relatively stable accomplishment in earnings. Focusing on the issues of analysts' herding behavior, Graham (1999) finds that analysts are probable to herd on Value Line's stock recommendations, which is considered a benchmark newsletter, if their ability (reputation) is relatively low (high).

Another widely investigated subject centers on the market responses to financial analysts' public releases of information. Barber et al. (2001), for instance, observe significant positive (negative) abnormal stock returns in response to the most (least) positive stock recommendations. Womack (1996) reports large and significant stock returns over the three-day stock recommendation horizon, and excess returns last longer for added-to-sell than for added-to-buy recommendations in the post-recommendation period. These studies seem to provide firm support for that analysts' research reports have a considerable effect on stock price changes. They, however, do not allow for the possibility that stock prices reveal signals to analysts who then change their earnings forecasts or investment opinions. Furthermore, even if the majority of financial analysts are skilled and experienced in

analyzing information, there is substantial reason to conjecture that financial analysts may condition their research reports on public information that is expected to reflect a certain amount of information in a timely fashion. In other words, public information should be included in financial analysts' information set as well the private information.

This study examines whether financial analysts consistently and systematically herd on public information. Public information is characterized by good or bad news. I use market-adjusted stock returns to represent good or bad news. The reasons to address the research question on herding behavior by using good and bad news to represent public information have two perspectives. The first one is that it is very complicated to evaluate the use of inside information by financial analysts in terms of quality and quantity. The other rationale is that public information contains a large numbers of variables and stock prices are assumed to instantaneously reflect the information incorporated in these variables.

Past research relied on the data compiled from fixed frequency sources establishes a static connection between earnings forecasts and a group of selected variables. Analysts, however, irregularly revise their earnings forecasts over time when they aggregate and evaluate information. To overcome such drawback caused by static data selections that capture no dynamic flows of information, a relatively sizeable and complete database comprising all US earnings forecast revisions contributed in the First Call's data compilation system is employed. Furthermore, consensus earnings forecast revisions, rather than individual earnings forecast revisions, are examined for studying analysts' herding behavior. I identify the event dates of consensus earnings forecast revisions when there are individual analysts' releases of earnings forecast revisions.

I compute abnormal market-adjusted stock returns and stock volatility over the revision period. Then regression models are established to test if consensus earnings forecast revisions are significantly associated with abnormal market-adjusted stock returns and stock volatility, providing insight on analysts' herding behavior by considering stock price movements. The results help investors develop investment decisions: there is strong evidence of herding on stock price movements, and investors are encouraged to also follow stock returns that seem to reflect important information. Also signified is that financial analysts place a weight on stock returns, providing that share price appears to be a prominent variable for creating information.

## **II. Literature Review**

For financial-analyst-related research, there are approximately five sub-areas explored fairly well. Several selected studies from each sub-area are presented as follows. The first sub-area covers the market response to analysts' release of information. To examine the market reaction to financial analysts' reports, Womack (1996) uses 14 highest-ranked U.S. brokerage houses' daily stock recommendation collected by the First Call Corporation and finds that three-day recommendation-period returns are large and

significant. New buy recommendations are counted seven times more than sell recommendations, providing that brokerage houses are more reluctant to report sell recommendations than to report buy recommendations. Ho also documents that excess returns happen in the first post-recommendation month for added-to-buy observations and they last about six months for added-to-sell observations. New sell recommendations show significant effect on stock prices in the three-day event period and post-event period. Also found is that smaller size firms react more significantly to stock recommendations than do larger size firms.

Davies and Canes (1978) and Beneish (1991) study the information contents released by Wall Street Journal's "Heard on the Street" column. They document that the information reflected in analysts' reports reveals inside information. Barber and Loeffler (1993) establish the connection between stock prices and trading volume and the recommendations released by Wall Street Journal's monthly "Dartboard" column. The average two-day event period abnormal return following the publication is 4% and is partly inverted within 25 trading days. The average trading volume increases double amount in the two-day post-publication period. They conclude that the recommendations deliver buying stress and new information to investors. When valuing analysts' recommendations, Elton, Gruber, and Grossman (1986) detect excess returns in the month when a stock recommendation is revised. Selecting a broker randomly, they report that buying the stocks ranked 1 and selling those ranked 4 and 5 yields 0.8% (0.57%) excess monthly returns in event month (time 1). Those stocks earn insignificant excess returns before the publications of the recommendations.

Barber, Lehavy, McNichols, and Trueman (2001) initiate the perception of net and gross of transaction costs to examine the investment value using analysts' stock recommendations. Even though the portfolio that comprises the most positive recommended stocks performs better than the portfolio with adversely recommended stocks, these investment approaches earn insignificant abnormal returns by controlling for transaction costs. Desai and Jain (1995) query the stock performance suggested by Barron Annual Roundtable's money managers. "Buy" recommendations make significant abnormal returns from the day of recommendation to the publication date, but it appears no significant abnormal return following the publication date. Beneish (1991) explores investors' reaction to financial analysts' opinions released in the Wall Street Journal's "Heard on the Street" over the time period of 1978-1979. He uses "prediction error" to assess the influence of recommendations on stock returns. He documents significant positive (negative) abnormal returns from "buy" ("sell") recommendations on event day and two trading days before the event. Furthermore, it takes a median (mean) of eight (11) trading days for financial analysts' recommendations to be released. He thus assumes that the information included in "Heard on the Street" can be the first-hand information.

The second sub-area turns the light on the association between financial analysts' opinions and corporate news events or accounting disclosures. For example, Brennan and Hughes (1991) study the association between analysts' reports and stock price changes by using an equilibrium model in

which stock splits is treated as a significant signal. The model projects that stock splits will be pursued by a growing discharge of information since financial analysts tend to communicate with investors more frequently to speed up trades for more commissions. Financial analysts' coverage and the number of working analysts are growing following the events. However, the number of analysts is conversely correlated to the stock prices. Jegadeesh et al. (2001) consider the association between stock recommendations and firm characteristics. They conclude that stock recommendations have analytical inspiration on succeeding stock returns. More (less) favorable recommendations are associated with higher (lower) market adjusted returns for the following 6 to 12 months. They also report that financial analysts' coverage converges to the stocks with high momentum, high trading volume, high earnings-to-price ratio, high price-to-book value, high long-term growth in earnings, high sales growth rate, and high cash flows from investments.

Brous (1992) researches analysts' earnings forecast amendments for the events of common stock offerings. Analysts' earnings forecasts are downgraded for the firms with announcements of common stock offerings. The degree of downgrading associates with abnormal returns in the announcement period, but analysts' forecasts for the upcoming five-year growth rate are unchanged. He thus concludes that the events of common stock offerings only affect short-term earnings. Ederington and Goh (1998) document a causal relation between bond ratings and earnings forecasts: a downgrade in bond Granger-cause descending earnings forecast amendments and inferior real earnings, whereas a decline in real and projected earnings triggers downgrades in bond. They further report that there is insignificant influence of bond upgrades on real earnings, but financial analysts will raise their earning forecasts subsequent to the bond upgrades. Moreover, Jain (1992) shows the evidence that earnings forecast amendments significantly react to abnormal returns in the period of equity issue announcement. His work strengthens the theory created by Myers and Majluf (1984) and Miller and Rock (1985) in which the equity issue announcements incorporate useful information concerning firms' upcoming earnings.

The third sub-area is centering on financial analysts' reputation, ability, or their coverage. By using Institutional Investor All-American Research Team (IIAART) as the reference analyst, Stickel (1992) evaluates other analysts' performance relative to IIAART. IIAART is treated as a proxy of reputation in the financial service industry. Forecast bias, forecast frequency, and forecast revisions' effect on stock returns are used to evaluate analysts' performance. He finds that IIAART estimates earnings per share more precisely, more frequently, and has larger effect on stock price movements. Barber, Lehavy, and Trueman (1999) investigate the relationship between brokerage houses' performance and abnormal stock returns. They find no support to persistent performance from past buy or sell recommendations. Abnormal stock returns associated with buy or sell recommendations by top-ranked brokerages emerge no significant variation from those by bottom-ranked houses. Their study concludes that investors can not earn

better returns by simply following top-ranked brokers' reports.

Hong, Lim, and Stein (2000) use stock performance and analyst coverage and develop momentum strategies and portfolios. They find that momentum strategies work better with low analyst coverage. In addition, analyst coverage seems to be more informative for poorly performing firms because those firms rarely report bad news. Nevertheless, loser stocks display higher momentum when analyst coverage increases. Brennan, Jegadeesh, and Swaminathan (1993) classify analyst coverage into "many analysts" or "few analysts" and obtain that "many analysts" firms respond sooner to information than do "few analysts" firms. Besides, they construct zero investment portfolios by buying "many analysts" firms and selling "few analysts" firms and find that firm size, turnover of equity shares, and analyst coverage significantly explain the lag beta. Clement (1999) documents that earnings forecasts will be more precise when analysts have high ability, when brokerage size is large, and when analysts analyze fewer firms and industries. His analysis illustrates that these variables are useful to estimate forecast accuracy.

Lin and McNichols (1998) research if underwriter relationships affect financial analysts' stock recommendations. They state that underwriting analysts' recommendations are more optimistic than those estimated by non-underwriting analysts. Both "Strong Buy" and "Buy" recommendations generate comparable effects on stock price changes. However, stock returns over the post-announcement period with these recommendations are invariable. Abarbanell (1991) utilizes Value Line's Investment Survey to analyze whether stock price changes affect forecast bias and earnings forecast revisions. He states that financial analysts' reports cannot incorporate the entire information reflected in prior stock returns.

The forth sub-area sheds some light on financial analysts' under-reaction or over-reaction. Abarbanell and Bernard (1992) make use of Value Line's reports and find that stocks underreact more to prior earnings changes than do Value Line analysts. Furthermore, Value Line's forecast bias is autocorrelated positively in falling degree with the first three lags. Eastwood and Nutt (1999) study whether or not analysts under- or over-react to information by assessing analysts' forecast accuracy. From their forecast error model, they find that analysts under-react to the information reflected in the earnings changes in prior-year. Additionally, financial analysts overvalue the current earnings changes reacting to strong prior-year performance. Also concluded is that analysts under- (over-) react to abnormal negative (positive) forecast errors.

DeBondt and Thaler (1990) examine if analysts' earnings forecasts are too extreme or not. If uncertainty grows, forecast bias is assumed to be bigger and it is more possible to cause earnings forecast revisions. They document that earnings forecasts appear too extreme because the real earnings changes are 65% (46%) of the projected one-year (two-year) changes. Lim (2001) finds that analyst's forecast bias is negatively correlated to firm scale and analysts' coverage. Also analysts underreact for the firms with inferior performance or with higher uncertainty. Analysts in smaller brokerage houses or with less experience have a tendency to generate more

optimistic projections.

The last sub-area related to financial analysts is in the filed of herding behavior. Several selected studies are presented as follows. Welch (2000) examines if the likelihood of herding subject to a target is higher when the target is approved correct subsequently. He verifies that when prior consensus presents precise forecasts, financial analysts are more possible to herd. A positive connection between existing and succeeding buy or sell recommendations is established. The extent to which the information is discharged shapes the degree of herding. Besides, duration of revision, degree of optimism, preceding stock price movements, and the diffusion among analysts' estimates are the candidates affecting herding behavior. Lastly, he shows that the quality of a brokerage house is not an explanatory factor to herding. Graham (1999) establishes a Reputational Herding Model that deals with the association among analysts' reputation, analysts' ability, and analysts' signal correlation. Herding behavior can be perceived when (a) the follower's skill is not strong, (b) private informative is exceedingly correlated, (c) the follower's reputation is superior, and (d) prior information is strong and confirms the leader's publication. Value Line's investment reports are considered as the reference of reputation. Confirming the model's conjecture, Graham documents that it is probable for financial analysts to herd on Value Line's recommendations. Cooper, Day, and Lewis (2001) group financial analysts into lead and follower financial analysts by the timeliness of their forecasts. They assert that lead analysts generate superior information and follower analysts have a propensity to remain and discharge their forecasts subsequent to the lead analysts. They acquire that earnings estimates produced by lead analysts have a larger impact on stock price changes than do those estimates compiled by follower analysts.

### III. Methodology

The regression model created in this study is shown as follow:

$$\Delta\omega_t^\theta = \beta_0 + \beta_1 CAR_{DR} + \beta_2 \phi_{DR}^r + \beta_3 \Delta\omega_{t-\tau}^\theta + \beta_4 \phi_{t-\tau}^\theta + \varepsilon_t$$

Where  $\Delta\omega_t^\theta = \frac{\omega_t^\theta - \omega_{t-\tau}^\theta}{\omega_{t-\tau}^\theta}$  stands for the percentage change of consensus

earnings forecast revisions over the revision period from  $t-\tau+1$  to  $t-1$ . The dependent variable is the magnitude of earnings forecast revisions and the explanatory variables are market-adjusted stock returns over the revision period, stock price volatility over the revisions period, the prior change of earnings forecast, and the prior disagreement of earnings forecasts. The samples are further grouped by analyst coverage (characterized by the number of cumulative earnings forecasts for a stock).

### IV. Empirical Results

The results fail to accept that explanatory variables have zero association



with the response variable. Prior stock returns over the revision periods and percentage change of consensus earnings forecasts do offer significantly positive influence on the magnitude of consensus earnings forecast revisions. Stock volatility and the disagreement among earnings forecasts, however, are significantly inversely correlated to the response variable. For the sub-samples grouped by the number of earnings forecasts, analysts react significantly stronger to the explanatory variables when analyst coverage is less. As analyst coverage increases, the information regarding firms' performance is supposed to be published more frequently and thus the extent of earnings forecast revisions is not as much as that with less analyst coverage. The results show that the magnitude of the forecast revisions can be explained by these explanatory factors. In other words, gathering no firm-specific events or fundamental changes, analysts can follow publicly available information characterized by prior stock performance and prior analysts' opinions. The same logic may be applied to the common investors: share prices can be considered as a decent resource for that analysts' research reports or other important information are unattainable.

## **V. Self Evaluation**

The finance and accounting literature has limited study for the issues of herding behavior on news that is characterized by stock price changes. This research documents a fine piece of academic work to this field of research and should offer a solid basis for future research. Furthermore, this study should have provided important implications for common investors who would like to identify the usefulness of such type of information released by financial analysts when they are making investment decisions and asset allocations.

This research will be kept on going and will seek for a publishable chance in an international finance journal. It is very beneficial for all members in this research project to gain much training in experiencing different financial database, organizing large number of samples, identifying useful research methodology, and building a firm link to international research circle and financial industry.

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