

Beyond Bias and Accuracy: A Review of Analysts' Forecast Process

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Abstract

During the past few decades, accounting and finance researchers have been interested in analysts' earnings forecast accuracy and stock recommendation profitability. This survey examines articles that explore this issue to determine researchers' methods of studying of this process. This survey found that few researchers study analysts' forecast process directly. Instead, many use the indirect approach of statistical analysis. This research suggests the need to approach analysts about their forecast process directly, for example, by interview.

Introduction

In the past few decades, accounting and finance researchers have been interested in analysts' forecasts. Forecasting is the process of predicting future outcomes, usually those that occur within 1-2 years of the prediction. In accounting and finance fields, the term analysts' forecasts refer to how analysts use financial information, such as company disclosures, other analysts' forecasts, private information from managers, and major news and announcements, to estimate companies' future earnings and stock prices.

Bradshaw (2011) claims that studying analysts' forecasts helps people understand capital market's functions, its structure, the role each market participant plays, and the information flow in the market. Additionally, it provides insight to how the study of analysts' forecasts involves studying the influences of analysts' forecasts in the market,

how each market participant interprets and uses analysts' forecasts information, and how analysts' forecasts information is transferred to each market participant. However, this study is not aimed to provide an inclusive view of every perspective of analysts' forecasts due to the time constraints.

The purpose of this study is to survey literature and provide a summary of research into analysts' forecast process. In particular, we will distinguish two different approaches used to examine analysts' forecast process and discuss the advantages and limitations of both approaches. We will pay special attention to the overlooked and unaddressed questions regarding analysts' forecast process. In addition, as results of this study, we will provide direction for future studies on analysts' forecast process.

This project incorporates the results of literature that has been conducted on different perspectives of analysts' forecasts. For example, Keskek, Myers, Omer & Shelley (2011) discuss forecast characteristics and forecast accuracy. Ramnath, Rock & Shane (2008) explore the taxonomy of research that examines the roles financial analysts play in capital market. Beyer, Cohen, Lys & Walther (2010) summarize the financial reporting environment and company disclosures. This study is based primarily upon Bradshaw's (2011) and Schipper's (1991) studies on analysts' forecast process, which we will revisit later.

This project contains five sections. The first section provides descriptive information on analysts' forecasts. The following section discusses details of analysts' forecast process and the importance of studying this process. In the third and fourth sections, we analyze how researchers have examined analysts' forecast process and what still needs to be done. The final section concludes what we have discussed and provides direction for future research.

What do we know about analysts' forecasts?

Analysts play an important role in the capital market. They serve as "market information intermediaries" by both receiving and transferring financial accounting information to capital market participants, which include clients, investors, and company management (Bradshaw, 2011; Schipper, 1991). The relationship between analysts and capital market participants influences both the participants' trading decisions and the development of an analyst's forecasts. Typically, investors and market clients have access to less information than analysts do. Therefore, Bradshaw (2011) and Keskek, Myers, Omer & Shelley (2011) claim that analysts' forecasts are the basis for some investors' trading decisions, which in turn affect stock prices.

On the other hand, many analysts depend on company managers' insider perspectives to construct their forecasts. If analysts do not communicate with the managers of publicly traded companies, these companies' stock prices may be either adversely or favorably affected by analysts' inaccurate forecasts. Therefore, Bradshaw (2011) and Beyer, Cohen, Lys & Walther (2010) propose that managers from publicly traded companies need to communicate with analysts and provide them with the information they need to make forecasts. For example, managers usually provide forecast guidance to analysts, who can then more accurately forecast the future outcomes

of the managers' companies. In general, both analysts and capital market participants benefit from exchanging private and public information. Analysts receive information from investors and managers in generating forecasts. Managers receive information from analysts and investors in making management decisions. Investors receive information from analysts in making trading decisions.

There occurs an interesting phenomenon of managers' disclosures in the capital market: managers from publicly traded companies tend to disclose bad news about their companies' earnings more often than they disclose good news although the public might expect good and bad news to be equally likely. Skinner (2008) conducted a research to examine reasons behind this phenomenon. According to Skinner (2008), managers run the risk of being sued for holding bad earnings news if the announcements of disappointing actual earnings is a surprise to analysts and investors. In contrast, analysts and investors are pleased with unexpected announcements of positive earnings. In sum, managers would only be punished for holding bad earnings news. As a result, managers feel encouraged to disclose bad earnings news to avoid the risk of being sued. Furthermore, if managers fail to disclose enough bad earnings news and investors are disappointed with manager companies' earnings announcements, managers' reputation suffers. As a result, investors and analysts will not favor their companies' stocks because of the risks associated with holding these stocks.

Analysts usually pick or are assigned to a list of companies for which they regularly provide earnings forecasts and stock recommendations. There are two types of analysts in the capital market: the buy-side analyst and the sell-side analyst. A buy-side analyst typically works for a mutual fund or a pension fund to provide recommendations of which stocks to hold in the portfolio for their respective fund. In contrast, a sell-side analyst usually works for a brokerage firm to evaluate companies' future earnings and offer stock recommendations to the market clients. Previous studies have primarily focused on discussing sell-side analysts since buy-side analysts' recommendations are not publicly disclosed. Additionally, there have been more issues concerning sell-side analysts' earnings forecasts and stock recommendations as well as sell-side analysts' roles in capital market. For example, Groysberg, Healy, Chapman, Shanthikumar, & Gui (2007) claim that sell-side analysts, who are facing more conflicts of interest than buy-side analysts, make more biased stock recommendations. However, only few studies have examined this hypothesis.

Sell-side analysts consist of both affiliated and unaffiliated analysts. By definition, an affiliated analyst works for a firm that has an investment banking relationship with a company that is covered by the analyst. However, an unaffiliated analyst works for a firm that does not have such relationship with companies he covered. Recent scandals on Wall Street concerning sell-side analysts have directed researchers' attention to sell-side analysts. Lin & McNichols (1998), Fang & Yasuda (2005), and Bradley, Jordan & Ritter (2005) argue that affiliated analysts may face a conflict of interest and feel pressured to provide overly optimistic recommendations. Lin & McNichols (1998) found that affiliated and unaffiliated analysts' "Strong buy" and "Buy" recommendations have same profitability. However, stocks that affiliated analysts recommend usually perform poorer than stocks that unaffiliated analysts recommend to

hold. In addition, Lin & McNichols (1998) note that IPOs (Initial Public Offering) recommended by affiliated analysts generally perform worse than IPOs recommended by unaffiliated analysts. Based on these findings, Lin & McNichols (2005) make a logical inference that affiliated analysts have pressure from their employer to offer optimistic recommendations for the benefit of the companies they cover.

Moreover, Schipper (1991) and Bradshaw (2011) also indicate that most analysts' forecasts are optimistic based on observations from hundreds of studies of analysts' forecasts. Almost all of those studies report that analysts' earnings forecasts are higher than actual earnings disclosures on average. Researchers refer to this as the bias in analysts' forecast.

Forecast bias does not destroy the usefulness of forecasts as long as the recipient of the forecasts is able to correct for the bias. For example, if we know earnings forecasts and stock recommendations that analysts have made for a typical company are always higher than actual earnings and stock prices, and we are able to find out the difference between the forecast values and actual values. Then, we can simply take the forecast values and subtract from the difference to get accurate information. Suppose we know 50% of earnings forecasts and stock recommendations that analysts have made for a typical company are higher than actual earnings and stock prices, and the remaining 50% are lower than actual earnings and stock prices. We also know that the absolute difference between the forecast values and actual values are the same among all the earnings forecasts and stock recommendations. Then, we can simply take the average of all the forecasts analysts have made for this company to get accurate information. However, the problem is investors are not able to distinguish between an upward forecasts bias and a downward forecasts bias. Additionally, investors are not able to detect the difference between the biased forecasts and actual earnings and stock prices before they make a trading decision since earnings announcements and changes in stock prices are usually available after investors have already made a decision. Because of this, it becomes very important for us to be able to examine analysts' decision-making process to find out how analysts generate bias in their forecasts.

Investors and individual market clients make their decisions based on analysts' forecasts. Therefore, Myers, Omer & Shelley (2011) indicate that it is important for investors and individual market clients to get accurate forecast information. Desalvo (1970) states that one of the most common ways used by researchers to assess analysts' forecast accuracy is to calculate analysts' forecast errors. Analysts' forecast errors are defined as the difference between actual values and analysts' forecast value. Lapidé (2007) suggests that it is also important for analysts to study their forecasts errors, because analysts should be able to detect and learn from their mistakes to improve their forecasts.

Numerous studies have been done to measure analysts' forecast errors and their distribution, most of those studies use the multiple regression model (Desalvo 1970). The input of these studies is a set of an analyst's forecasts errors. However, the possible occurrence of heteroskedasticity is a major concern in the application of regression analysis. Heteroskedasticity occurs when a list of forecasts errors of the companies covered by an analyst are measured in different scales. For example, consider a company

in which the annual earnings are reported in millions, the forecasts errors of this company would be measured in millions. Nevertheless, for companies in which the annual earnings are reported in thousands, the forecasts errors of this company would be measured in thousands. The unequal scales used to measure different companies' forecasts errors create a statistical issue for using multiple regression model. The most common way to solve this problem is to change the magnitude of forecasts error scales to the same level by multiplying or dividing the variables. The test results of an analyst's forecast errors generally provide researchers with a detailed statistical analysis, such as the distribution and standard deviation of this analyst's forecast errors. Those results help us understand each analyst's performance in forecasting. For example, a low standard deviation and a small range of an analyst's forecast errors signifies that this analyst has a consistent forecast performance. The smaller the analyst's forecasts errors are indicates the higher accuracy of this analyst's forecasts.

Bradshaw (2011) and Schipper (1991) indicate that researchers are interested in comparing analysts' earnings forecasts to time-series modeling of earnings. Analysts' earnings forecasts cost thousands of times more than time-series modeling of earnings. Financial and accounting researchers are interested in knowing whether the money spent on analysts is worthwhile since a software model can also perform analysts' tasks. For this reason, a significant amount of research on time-series modeling of earnings has been produced. The null hypothesis in this case is that analysts' earnings forecasts and time-series modeling of earnings perform equally well in predicting earnings. Bradshaw (2011) and Schipper (1991) found that most statistical studies successfully reject this null hypothesis and conclude that analysts are better at predicting earnings than time-series models, which is not a surprise since analysts are able to assess additional information. For example, Schipper (1991) concludes in her paper that many studies found "a stronger association between the market response to earnings and forecast errors based on analysts' forecasts than between the market response to earnings and forecast errors generated from time-series models." However, if those studies fail to reject the null hypothesis, we have to conclude that analysts are as good as time-series models in forecasting earnings. From an economic point of view, this is not an optimal outcome because it would be an allocative inefficiency of using resources on the analysts. Alternatively, we could use those resources to produce other types of goods and services that are more desirable in the society.

According to Bradshaw (2011) and Schipper (1991), the difference in performance between analysts and time-series models is not big, usually between 3-4%. Bradshaw (2011) and Schipper (1991) conclude that with the extra time and information analysts spend to make forecasts, analysts' performance has been considered inefficient up to this point, which is considered as a waste of resources in economic point of view. This is because the resources that analysts spend to make forecasts could have a higher opportunity costs. Such investigation leads researchers to question such as whether the increasing tendency for managers to disclose more information, which includes earnings guidance and earnings preannouncements, would increase analysts' superiority over time-series models. However, Beyer, Cohen, Lys & Walther (2010), Bradshaw (2011), and Schipper (1991) found that few research studies have attempted to examine this area. At this point, Schipper (1991) and Bradshaw (2011) strongly encourage future research on

analyst decision processes such as studies on how analysts actually use financial information, along with what information helps analysts make forecasts that are more accurate.

Since accounting researchers are interested in how financial accounting information is used, it would also be useful to study analyst decision processes because analysts are the primary users of financial accounting information. In addition, Schipper (1991) indicates that knowing how financial accounting information is used should make accounting and finance academics more knowledgeable professors and thus more able to teach future students.

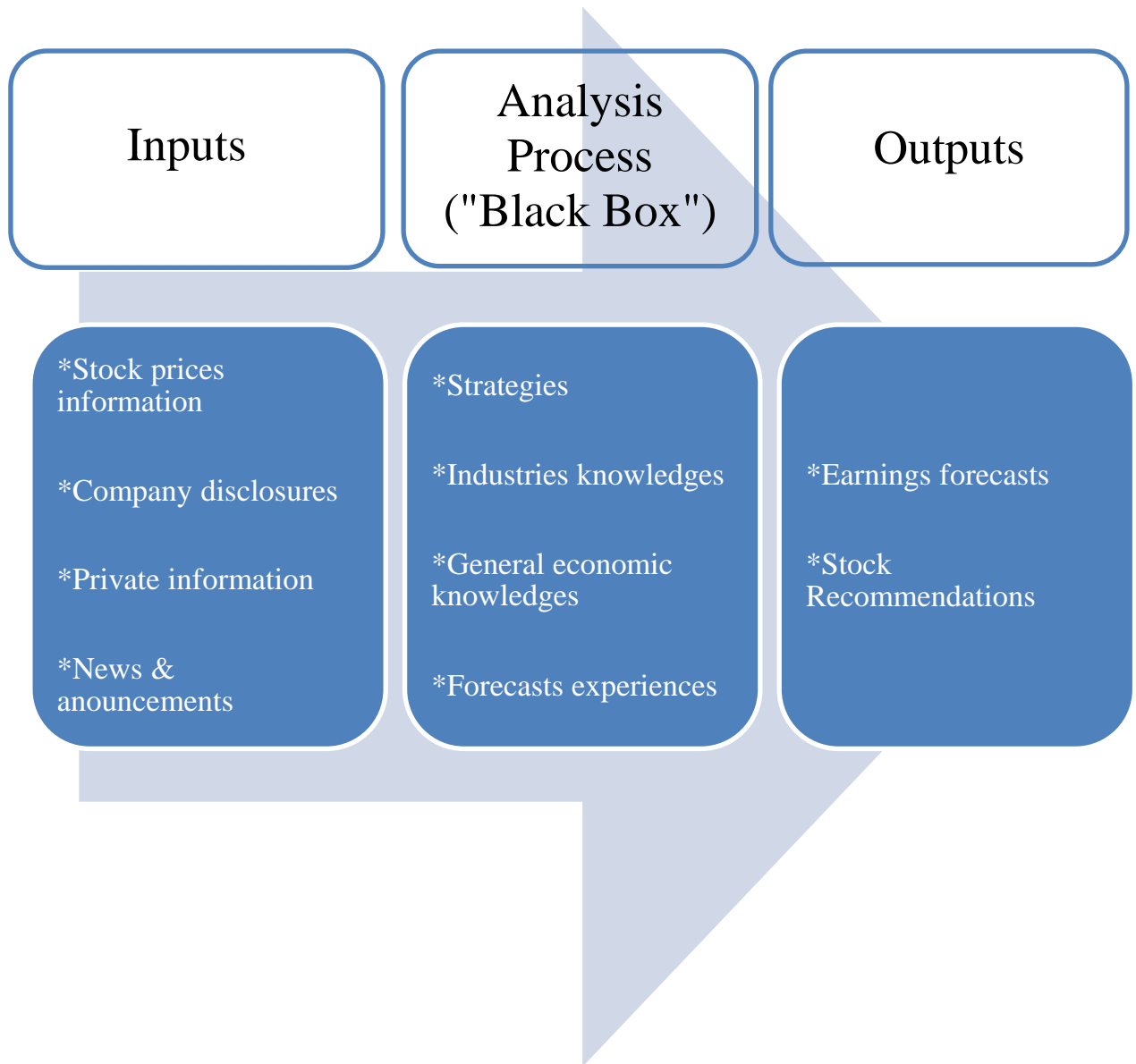
Analysts' forecast process

As mentioned above, even though analysts are able to gather more information than time-series models, they are only slightly better forecasters than the models. Because of this, researchers are curious to know whether the additional information analysts have is useful in the forecast process. Is this additional information fully used by analysts to generate forecasts? If yes, why do analysts not perform significantly better than time-series models? These questions require an examination of analysts' forecast process to solve.

Besides that, some researchers such as Bradshaw (2011), Ramnath, Rock & Shane (2008), and Schipper (1991) assume that there might occur certain factors that have an influence on analysts' forecast process. Those factors include that analysts face conflicts of interest, which affect the way they use to generate forecasts and offer stock recommendations. Moreover, analysts' forecasts process generates bias, like the cases with optimistic earnings forecasts and stock recommendations we discussed previously. Therefore, questions regarding forecasts bias have been raised, inquiring topics like why analysts' forecasts tend to be optimistic. Does an analyst do this to please managers so that they would be able to maintain a consistent relationship with managers? All of those questions require an examination of analysts' forecast process to get answers.

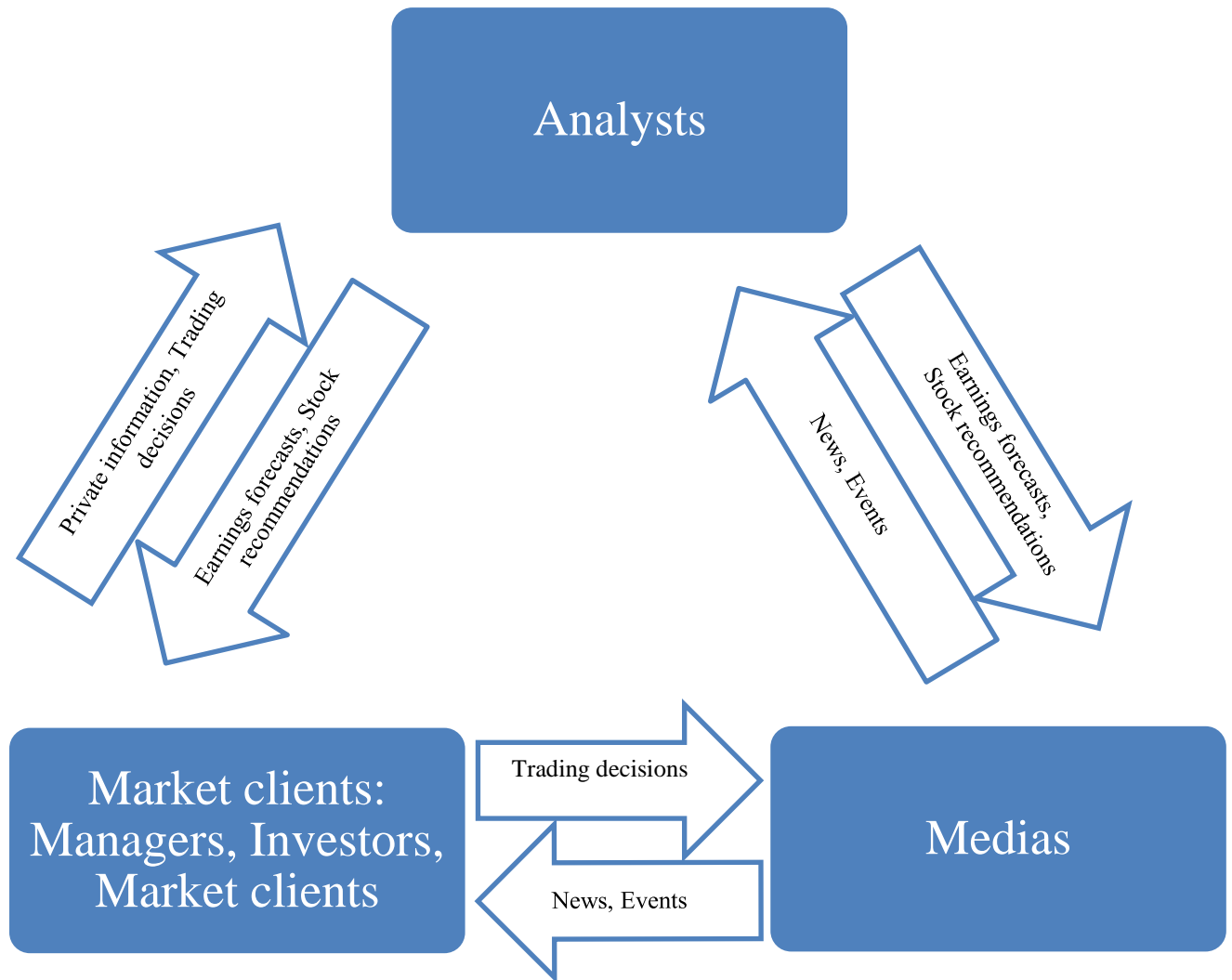
In fact, analysts' forecasts process involves studying what strategies and information analysts use to make forecasts, and what affects analysts' decisions in forecasts and stock recommendations. Since the biggest part of this process remains hidden, researchers refer to this process as a "black box" that requires further study. According to Schipper (1991), analysts' forecast process is a complex process. Analysts' earnings forecasts are only a portion within this process. The ultimate goal of this process is to provide stock recommendations to their clients. These recommendations include which stocks to buy, which stocks to sell, and which stocks to hold. The purpose of generating earnings forecasts is to evaluate the expected future return of each stock. Figures 1a and 1b on the following page provide us with a brief view of analysts' forecasts process.

Figure 1a Analysts' forecast process



Analysts use information listed in the left column as inputs to combine with their strategies, knowledge, and experiences to generate earnings forecasts and stock recommendations, which are considered as outputs from the analysts' forecast process. The analysis process is the "black box."

Figure 1b Analysts' forecast transaction process



The three groups are interconnected, as they interact each other in a multitude of ways. Analysts transfer their earnings forecasts and stock recommendations to both market clients and the media; analysts also receive information from market clients and the media to help generate forecasts. Likewise, market clients transfer information to both analysts and the media; they also receive information from analysts and the media for making trading decisions. The media, on the other hand, receive and report information from and to both market clients and analysts.

Indirect approach

According to Schipper (1991), analysts have an incentive to affect investors' reaction in replying to the stock recommendations they offered. Based on this, we can make a hypothesis that analysts tend to generate biased earnings forecasts to convince investors to follow their stock recommendations. For example, analysts might forecast higher earnings when they offer "Buy" recommendation and forecast lower when their recommendation is "Sell." Numerous studies have used correlational research to examine whether analysts' earnings forecasts and stock recommendations affect stock prices. Conversely, they have also surveyed whether changes and news in stock prices affect analysts' earnings forecasts and stock recommendations. Schipper (1991) found that previous studies examine a positive relationship between analysts' earnings forecasts and stock prices; an increase in a company's earnings forecasts increases that company's stock price. However, Schipper argues that the use of statistical examination is not sufficient to draw conclusions on whether analysts' incentives affect forecasts. Because it is possible that analysts try to positively affect companies' stock prices for the sake of maintaining a good relationship with managers in order to get more private information from managers or analysts might feel pressure from their employer to generate biased forecasts. Schipper states that "understanding analysts' incentives in forecasting earnings requires placing the forecasting task within the context of what the analyst does." According to Schipper, study that directly observes analysts' forecast process is necessary to examine how analysts' incentives affect analysts' forecasts.

Many studies have attempted to determine the factors that affect analysts' forecast accuracy. Most of these studies examine the correlations between analysts' forecast accuracy and analyst characteristics, which researchers consider may influence analysts' forecast accuracy. Myers, Omer & Shelley (2011), Groyberg, Healy, Nohria & Serafeim (2011), and Brown (2001) conclude that analysts' forecast accuracy are affected by observable analyst characteristics such as company-specific and general experience, size of brokerage house, past accuracy, number of industries, and number of companies followed. Myers, Omer & Shelley (2011), Groyberg, Healy, Nohria & Serafeim (2011), Brown (2001) report that analysts' forecast accuracy is positively associated with company-specific and general experience, size of brokerage house, and past accuracy. However, it was found to be negatively associated with number of industries and companies followed.

According to Schipper (1991), researchers investigate analysts and brokerage firms they work with and find that managers of publicly-traded companies tend to cooperate with analysts that had followed and generated forecasts for their company before. Based on this investigation, researchers assume that analysts who have more forecasts experience with a specific company are able to get more information that is private from managers, thus making their stock recommendations more profitable. Based on this assumption, researchers examine the relationship between number of years of analysts' forecasts experience with a specific company and the analysts' stock recommendations profitability. The test results show a positive relationship between the two variables: more experience associates with higher profitability; however, the relationship is not strong. Because of this, researchers cannot draw a strong conclusion

on the assumption. Since researchers did not directly observe whether managers provide more information to analysts with more forecasts experience with their company, they used statistical tests to examine the relationship, this kind of approach is referred to as an indirect approach used to study analysts' forecasts process. Since this approach does not provide enough evidence for researchers to draw conclusion on the information that analysts are able to get from managers in making forecasts, it is necessary for researchers to use a different approach, such as interviewing or surveying analysts for direct observation. In this project, we consider this type of approach to as a direct approach used to study analysts' forecasts process.

Direct Approach

There are several ways a researcher can adopt to directly study analysts' forecast process. They include administering surveys, laboratory experiments, and interviews. However, few studies have attempted to use such direct approach to observe analysts' forecast process. Block's (1999) survey study is one of those few studied that can be found. He surveyed members of the Association for Investment Management and Research (AIMR) regarding their uses of valuation models, importance of financial inputs, and bases for recommendations. As results of the surveys, he found that analysts rarely consider dividend policy when making stock recommendations. He also found that analysts' forecasts usually focus more on companies' long-term prospects when making stock recommendations.

Michael, Glover & Kennedy (2006) conducted a laboratory experiment to study how analysts' incentives affect their forecasts. They invited participants to participate in different forecast tasks that they designed and controlled. As results of this experiment, Michael, Glover & Kennedy (2006) found that without interaction of managers and analysts' employer, analysts' earnings forecasts are still optimistic when the recommendation is "Buy" and that analysts' earnings forecasts tend to be lower than actual earnings when the recommendation is "Sell." Because of this, Michael, Glover & Kennedy (2006) concludes that analysts have incentive to generate forecast bias to affect investors' trading decisions.

As we can see, studies using direct approach are able to provide us with more helpful information in studying analysts' forecasts that we cannot get from using an indirect approach. Those information can help us to address issues such as how do analysts use financial information to generate forecasts and stock recommendations; how does analysts' incentive affects forecasts and stock recommendation. However, we still need to consider limitations that the direct approach has. For example, the response bias (analysts do not tell the truth) and non-response bias (analysts do not answer/return the survey) are major concerns for survey studies. In addition, geographic limitations (researchers are not able to survey/interview analysts of different locations) of using a direct method can affect the extent to which the conclusion is representative. Furthermore, we did not find any study that uses interview as a method to examine the forecast process. The possible explanation of having no researcher uses this method is that the costs of interviewing analysts are too high for researchers to afford. In addition, interviewing analysts is a complex and time-consuming process. Besides that, it is

difficult to find analysts that are willing to cooperate with researchers to go through the interview process.

Conclusion/Discussion

In conclusion, we have learned a lot about analysts' forecast process. We are now able to differentiate the indirect and direct approaches used to study analysts' forecast process. We also addressed the advantages and limitations associated with both indirect and direct approaches. As results of our study, we conclude that both approaches are helpful in examining analysts' forecast process and are required for studying analysts' forecast process; using only one of the two approaches is not enough for us to have a clear understand of analysts' forecast process.

To date, researchers have conducted a considerable amount of studies with an indirect approach. Researchers are encouraged to switch their focuses to the use of direct approach in examining analysts' forecast process. For those that are going to directly observe analysts' forecast process, a few more methods that have not yet been practiced may be considered. They are include: locating information from analysts' TV shows, analysts' presentations, and analysts' autobiographies; and interviewing analysts regarding their decision making process. In particular, any effort from researchers into improving the limitations that previous studies have encountered, such as geographic concerns, is strongly encouraged.

Furthermore, the hypothesis of which sell-side analysts, who are facing more conflicts of interest than buy-side analysts, make more biased stock recommendations still remain unproved. Issues concerning bias also need to be addressed in future studies. Any information from future examinations of using a direct approach that help addresses those unsolved areas would increase our understanding of analysts' forecasts as well as the capital market, which may eventually contributed to the improvement of a more efficient capital market.

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