Management Earnings Forecast and the Impact of Forecast Specificity: Evidence from Chinese Stock Market

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　　　　　　　　　　における実証研究）

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論 文 内 容 の 要 旨

1　Background and Test Purpose

　This paper discusses short-window market reactions to management earnings forecasts and the impact of management earnings forecast specificity. Prior researches suggest that managers disclose relevant value information to market in order to reduce information asymmetry (Diamond, 1985; King et al., 1990), and this behavior can increases liquidity in the firm's stock and reduces the cost of capital (Diamond and Verrecchia, 1991). As earnings signaling, management earnings forecast called MEF as following, can convey manager's belief about future earnings and has been used as one of important information to estimate firm's performance by market participants.

　MEFs are issued voluntarily at any time before final financial announcement on mature stock market, such as the US stock market. Ajinkya and Gift (1984) find that managers forecast earnings is try to move prevailing market expectations toward

management beliefs about future earnings, and an investor's beliefs or actions may be affected by the disclosure of a MEFs. A recent study (Klliott et al., 2011) suggests that investor's earnings fixation is reduced when they initially observe a disaggregated MEF and its component versus when they observe an aggregated MEF.

According to the theory of Efficient Market Hypothesis, after information is issued, it is reacted into share price at once, and the trend of share price only associates with new information. Then, effect of share price reaction is equal for good news and bad news if information is issued equally by managers. However, numbers of empirical studies confirmed that managers reveal MEFs asymmetrically for good news and bad news. They argue that good news MEFs are issued voluntarily by managers in order to distinguish themselves from firms with bad news MEFs (Lev and Penman, 1990), bad news MEFs are issued voluntarily by managers in order to avoid litigation and reputational costs when the large decreases change in earnings occurs at final financial announcement day without any firm's warnings (Skinner, 1994; Francis et al, 1994; Miller, 2002; Kothari, 2009; Roychowdhury et al, 2012). This paper argues that there is asymmetric share price reaction to bad news MEFs and good news MEFs because of such manager's asymmetric MEFs issue behavior. Further, according to the argument that managers withhold and accumulated information when they sufferance worse performance (Kothari et al, 2009), so unexpected bad news may be withheld and saved up together, whereas good news are frequently leaked to the market, the share price reaction to bad news is expected to be larger than that to good news.

The discussion of forecast specificity of MEFs is a very hot topic. Generally, there are five kinds of MEFs' forms issued by managers on stock market. That means managers can select point estimate, closed-interval estimate (range), open-interval estimate (minimum and maximum value) or qualitative estimate in their words to describe earnings predicted by them. Prior psychology researches (King et al, 1990; Libby et al, 2006) suggest that management will choose a guidance form to match the precision of their own information about firm's future, and management earnings forecast form matters to both investors and analysts. However, there are no consistent findings for the effect of forecast specificity of MEFs on asymmetric share price reaction. Some psychology literatures support the possible interaction between the forms of MEFs specificity and the precision of the signal, and their impact on share price. On the contrary, accounting literatures find no significant difference in market reaction between forecast forms of MEFs specificity. This paper makes a "conditional specificity" hypothesis similar to prior literature (Chan et al., 2009) for the lack of consistent empirical results in the prior literatures.

The purpose of this paper is to investigate short-window share price reaction to the particular MEFs policy on Chinese stock market. Chinese stock market is a growing emerging market, and the phenomenon of information asymmetry between managers and investors also exist confirmed by local researchers. However, different from mature stock market, the MEFs policy of Chinese stock market is characteristic, and a combination form of voluntary and mandatory is adopted. At present, there is little study on MEFs forecast approaches on mature stock market, while there are a lot of researches on information disclosure policy. They support voluntary disclosure policy for the informative content, whereas support mandatory disclosure policy for avoiding managers' insider trading. China Securities Regulatory Commission (CSRC) requires the firms who suffered a larger earnings change to issue MEFs to the market in order to warn investors. However, the MEFs on Chinese stock market are usually revealed only for net profit or earnings per share data. Based on different development background for MEFs, there may be different empirical research conclusions about MEFs on Chinese stock market.

2　Data and Research Method

The sample comprises of Chinese listed companies which are followed by financial analysts, over the period 2005 to 2011. The annual MEFs are made by A share firms listed in Shanghai and Shenzhen stock exchanges covering period from June 2005 to April 2012. MEFs restricted by followed analysts' earnings forecast are because that the analysis in this paper focuses on using analysts' earnings forecast as news benchmark for classifying the types of news for MEFs. In addition, I choose annual MEFs because of limitation of analysts annual earnings forecast. The daily stock return, financial ratios which are used in regression model and the information of MEFs and analyst earnings forecast data are from CSMAR database developed by GTA. Because forecast specificity information of MEFs is contained in CSMAR database is only from 2005 to 2009, so two years (2010, 2011) of forecast specificity information of MEFs are manually checked and read from website: http://www.eastmoney.com.

I test asymmetric share price to MEFs from two aspects. First, whether the forecast approaches of MEFs affects share price reaction to the different sign of MEFs news or not is investigated. Equation (1) examine the different share price effect in magnitude for good news and bad news without forecast approach effect, using the analyst forecast basis of assessing news content. The regression equation (2) is conducted to examine that after controlling forecast approach (news content), the share price effect to different news content (forecast approach) as stated in H1 and H2. The regression equation (3.4) and

(3.5) are shown as follow:

$$car_{j,t} = \alpha + \beta_1 D_{bad,j,t} + \beta_2 D_{good,j,t} + \beta_3 Size_{j,t} + \beta_4 MB_{j,t} + \varepsilon_{j,t} \qquad (1)$$

$$car_{j,t} = \alpha + \gamma_1 D_{bad,j,t} * D_{v,j,t} + \gamma_2 D_{bad,j,t} * D_{m,j,t} + \gamma_3 D_{good,j,t} * D_{v,j,t} + \gamma_4 D_{good,j,t} D_{m,j,t}$$
$$+ \gamma_5 Size_{j,t} + \gamma_6 MB_{j,t} + \varepsilon_{j,t} \qquad (2)$$

Where

$car_{j,t}$. Independent variable used to measure share price reaction to event window (-2, 0), (0, 1) and (-2, +2), respectively.

$D_{bad,j,t}$. Dummy variable set to 1 when MEFs are deemed to be bad news for firm j in year t, relative to the benchmark (mean analysts forecast earnings), and 0 otherwise.

$D_{good,j,t}$. Dummy variable set to 1 when MEFs are deemed to be good news for firm j in year t, relative to the benchmark (mean analysts forecast earnings), and 0 otherwise.

$D_{v,j,t}$. Dummy variable set to 1 when MEFs are issued voluntarily by manager for firm j in year t, and 0 otherwise.

$D_{m,j,t}$. Dummy variable set to 1 when MEFs are issued mandatorily by manager for firm j in year t, and 0 otherwise.

$Size_{j,t}$. The natural logarithm transformation of size, the firm's market value of equity before MEFs announced.

$MB_{j,t}$. The market to book value of firm j before MEFs announced.

Second, I test "conditional specificity" hypothesis. In this topic, firstly, i want to confirm whether the point forecast form of MEFs is issued asymmetrically by managers to forecast different sign of MEFs news. I conduct descriptive statistics for forecast forms, forecast approach, and news signalling to test whether point forecast is issued asymmetrically for bad news and good news. Further, logistic regression model (3) shown as follow is used to strengthen the results of descriptive statistics.

$$ln\left(\frac{p_{j,t}}{1-p_{j,t}}\right) = \alpha + \theta_1 D_{bad,j,t} + \theta_2 D_{good,j,t} + \theta_3 Size_{j,t} + \theta_4 MB_{j,t} + \varepsilon_{j,t} \qquad (3)$$

$p_{j,t}$. The probability of firm j disclose point forecast in year t.

$D_{bad,j,t}$. Dummy variable set to 1 when MEFs are deemed bad news for firm j in year t, relative to the benchmark (mean analysts forecast earnings), and 0 otherwise.

$D_{good,j,t}$. Dummy variable set to 1 when MEFs are deemed good news for firm j in year t. relative to the benchmark (mean analysts forecast earnings), and 0 otherwise.

$Size_{j,t}$. The natural logarithm transformation of size, the firm's market value of

equity before MEFs announced.

$MB_{j,t}$. The market to book value of firm j before MEFs announced.

Under the "conditional specificity" hypothesis, I also test the share price reaction to different forecast specificities (point, range, minimum and maximum) of MEFs. In order to test whether share price effect on point forecast form is larger than that on other forecast forms after controlling the sign of news, regression model (4) is designed for analyzing the impact of forecast specificity of MEFs (Chan et al., 2009).

$$car_{j,t} = \alpha + \sum_{\substack{i=\{point, range \\ min, max\}}} \beta_{bad,j,t} D_{bad,j,t} * D_{i,j,t} + \sum_{\substack{i=\{point, range \\ min, max\}}} \beta_{good,j,t} D_{good,j,t} * D_{i,j,t} + \beta_{size} Size_{j,t} + \beta_{mb} MB_{j,t} + \varepsilon_{j,t}$$

(4)

Where

$car_{j,t}$. Independent variable used to measure share price reaction to event window $(-2, 0)$, $(0, 1)$ and $(-2, +2)$, respectively.

$D_{bad,j,t}$. Dummy variable set to 1 when MEFs are deemed bad news for firm j in year t relative to the benchmark (mean analysts forecast earnings), and 0 otherwise.

$D_{good,j,t}$. Dummy variable set to 1 when MEFs are deemed good news for firm j in year t relative to the benchmark (mean analysts forecast earnings), and 0 otherwise.

$D_{i,j,t}$. Dummy variable set to 1 when MEFs are issued by manager using forecast form of i, and 0 otherwise, where i equals to point, range, minimum or maximum, respectively.

$Size_{j,t}$. The natural logarithm transformation of size, the firm's market value of equity before MEFs announced.

$MB_{j,t}$. The market to book value of firm j before MEFs announced.

Notably, the sign of MEFs is specified using analysts forecast benchmark, and forecast approaches are specified based on requirement of China MEFs' policy. Forecast forms of MEFs' specificity are defined in the light of managers' descriptions of net profit or earnings per share. Point forecast make a precise single numerical figure of net profit or earnings per share. (e.g. "we expect net profit to be 100,000 CNY this year" or "we expect net profit to be increase (decrease) of 20% over last year."). A range forecast contains a precise numeric range of net profit or earnings per share. (e.g. "net profit is predicted in the range of 70,000 CNY and 100,000 CNY this year" or "net profit is predicted increase (decrease) in the range of 10% and 30% over last year."). Minimum forecasts set to a minimum or lower bound to net profit or earnings per share. (e.g. "we expect net profit to be at least 70,000 CNY this year." or "we expect net profit to be increase

(decrease) at least (at largest) 20% over last year."). Maximum forecasts set a maximum or upper bound to net profit or earnings per share. (e.g. "we expect net profit to be at largest 100,000CNY this year." or "we expect net profit to be increase (decrease) at largest (at least) 20% over last year.") Qualitative forecasts provide a general statement that is not capable of any precise numeric interpretation.

3 Hypotheses and Empirical Results

Hypothesis 1 and Hypothesis 2: Asymmetric Information Test

Based on managers' asymmetric disclosure behavior argument (Lev and Penman, 1990; Sinner, 1994; Francis et al, 1994; Miller, 2002; Kothari, 2009; Roychowdhury et al, 2012), I assume that negative share price effect to manager's bad earnings forecast is larger in absolute magnitude than the positive share price effect to manager's good earnings forecast, when the forecast is released by manager voluntarily or mandatorily respectively. It can be argued that because be withheld and accumulated bad news may be more likely to be exhibited greater asymmetric reactions because of grater information content. Then I propose the following hypothesis 1:

H1. The negative share price reaction to manager's bad earnings forecast is larger in absolute magnitude than the positive share price reaction to manager's good earnings forecast, when the manager's forecast is issued voluntarily or mandatorily, respectively.

I assume that the market reaction to all the types of new information disclosure depend on the circumstances surrounding the release of the earnings forecast. China Securities Exchanges state that the firms, whose net profit increase or decrease more than 50% over the same period of previous year, have to release management earnings forecast to the market to warn investors. Others not included in this case, release disclosure management earnings forecast for voluntary. Based on environment of MEFs' policy on Chinese stock market, hypothesis 2 is proposed.

H2. The share price reaction to bad or good news in mandatory MEFs is significantly larger in absolute magnitude than the bad or good news in voluntary MEFs.

According to univariate regression results for MEFs news without forecast approach

effect, I find no different share price reaction to bad MEFs and to good MEFs at various selected event windows, inconsistent with prior empirical studies (Skinner, 1994; Kasznik and Lev, 1995; Kothari et al., 2009; Chan et al, 2009). And when adding the effect of forecast approaches of MEFs, the same results are also found for both forecast approaches at various event windows. These results can be interpreted by the managers' motivations of forecasting earnings. On China stock market, the policy of analysts forecast just experience more than 10 years. It is imperfect, and the relationship between managers and financial analyst is not close unlike that on mature stock market. Therefore, managers of China stock market forecast earnings to correct "unrealistic" analysts' forecast frequently. As a result, a relatively "full" or symmetric disclosure of private information is made, and then bad MEFs and good MEFs are expected to be unbiased. However, I find an interesting result at event window (-2, 0). Before MEFs disclosure day good news are leaked to stock market, and this large good news effect on share price comes from mandatory good MEFs.

Hypothesis 3: Manager's Choice of Forecast Form of MEFs Specificity

Hypothesis 3 is inspired by the argument that managers are impelled to be more precise and careful with their estimates when they disclose bad news (Roychowdhury, 2012). Because bad news earnings forecasts are associated with greater uncertainty in a firm's operations (Li, 2006; Bloomfield, 2008; Brown et al., 2009; Ertimur et al., 2011), and tend to be scrutinized more closely by stock market participants. Further, according to the argument that manager withhold bad news for reducing strong implications for stakeholders, managers may be not reluctant to disclose the bad news until they are able to provide a precise estimate of the effect of bad news on earnings. Then, I propose hypothesis 3:

H3. The point forecast is more likely to be issued in MEFs forecasting bad news than forecasting good news.

Based on descriptive statistics of forecast news and forecast specificities after controlling forecast approaches, I find that managers tend to issue maximum forecast in voluntary MEFs case relative to in mandatory MEFs case. Moreover, managers tend to use relatively accurate range forecast form to issue bad news, especially in the case of voluntary MEFs. This result is further strengthened by the results of logistic regression

model, showing that point forecast form is issued asymmetrically by managers to bad news and good news, and is often used to forecast bad news than to forecast good news, supporting *H3*.

Hypothesis 4: "conditional specificity" Hypothesis Test

Libby et al. (2006) and some evidence from psychology literatures (Wallsten et al., 1986; Highhouse, 1994;) argued that point forecasts are perceived to be more precise than other forecast forms and thus they should evoke stronger share price responses than range or minimum or maximum forecast. Moreover, based on hypothesis 3, point forecast is more likely to be issued by manager to forecast bad news than to forecast good news because of the precision of point forecast form. Therefore, I assume that if the point forecast form is considered to be more precise than others forecast forms by market participants, the stronger market reaction will be evoked for point forecast form. Then, I propose hypothesis 4:

H4. After controlling the news types, the share price reaction to point MEFs is greater than the share price reaction to range, minimum, maximum MEFs.

First, using the univariate approach, I consider each form of forecast specificity separately and do not combine all forms of forecast specificity with all news outcomes in a single regression model. Based on benchmark of analysts' earnings forecast, share price reacts equally to bad news and good news for each forecast form of MEFs specificity except for maximum forecast form at various event windows and minimum forecast form at event window (-2, 0). This result indicate that for minimum forecast form, good news are more preemptive than bad news. I also find the same result for range forecast form at the period before MEFs disclosure day. I document that before MEFs disclosure day, good news are leaked to stock market using range forecast form usually. This result is new observation not mentioned in prior empirical studies. Different from prior empirical study's findings, I find no asymmetric market reaction to bad news and good news for point MEFs and range MEFs, which are considered as more precise by market participants.

Second, even though some different findings are found in the days before MEFs disclosure day, the stock market reacts equally to point forecast form and other forecast forms at event windows (0, 1) and (-2, +2). At event window (-2, 0), maximum forecast

form drives a specificity result in bad news case, differing from prior empirical studies based on mature stock market, which find that the minimum forecast form is some different with other forecast forms. After controlling bad news, market reacts stronger to maximum forecast form than range and minimum forecast forms. After controlling good news, market reacts stronger to minimum forecast form than range and point forecast forms, Moreover, from pair-wise test results, I find no evidence on supporting "conditional hypothesis" that the point forecast form can evoke a stronger market reaction than other forecast forms after controlling the sign of MEFs news.

Notably, the results of this paper are based on Chinese stock market, which has a particular background of MEFs policy differing from other countries. Further, the test results of forecast form of MEFs specificity may be affected by restrictive sample date. CSMAR database only contains MEFs specificity information covering period from 2005 to 2009. Specificity information of MEFs over two years (2010, 2011) were manually checked and read from website. These results may be affected by using analysts' earnings forecasts as proxy for market expectations.

4 Innovations

This study extends prior studies from several aspects. First, different from prior MEFs studies on mature stock market under a unitary system of voluntary forecast approach, this paper is fist time to investigate asymmetric share price reaction to the particular MEFs policy based on Chinese stock market. On US stock market, there are a series of forming analyst forecast system, and managers and analysts compete with each other. Even if MEFs are not issued by mandatory, there will be enough earnings information in stock market. On the contrary, there are not so many competitive analysts' forecasts for all the listed firms in China stock market that it is very difficult for investors to get earnings information from market alone. Therefore, to warn investors, CSRC requires the firms who suffered a larger earnings change to issue MEFs.

Second, this paper fills the gaps of empirical evidence on MEFs specificity hypothesis in the growing emerging market, Chinese stock market. For lacking of researches on forecast specificity and forecast approach of MEFs, this study's results provide some evidences on this field.

Third, different from using symmetric interval as the study event window selected by prior empirical studies, three sub-intervals around MEFs' disclosure day are chosen in this paper to test share price reaction at the period before MEFs disclosure day, after MEFs

disclosure day and through MEFs disclosure day. Based on the results of various event windows, I got some new findings.

Finally, this paper also contributes to an important research issue of using analysts' forecast as benchmark to classify the sign of news on Chinese stock market, where the policy of analysts' forecast just experience more than 10 years. And the results of this paper confirm that analyst forecast is a developing system, and there are not enough competitive analyst forecasts on Chinese stock market, which is unlike US mature stock market.

論 文 審 査 結 果 の 要 旨

　本論文は、企業経営者による今期の利益予想の公表（以下、MEF）が当該企業の株価に与える影響を公表日前後の平均異常収益率（以下、CAR）を用いて計測し、MEFが事前のアナリスト予想の平均よりも良いニュースか悪いニュースかという情報がCARに与える影響の分析を行う実証研究である。中国株式市場の特徴である強制的なMEFか自主的なMEFかによる市場の反応の違いを分析している点とMEFの表現方法による市場の反応の違いを中国株市場において分析している点は、本研究における独自な点として評価できる。なお、MEFの表現には、1つの数字、範囲、最小値、最大値、ことばによる表現の5通りがある。分析期間はアナリスト予想データが入手可能な2005年度から2011年度、総標本数は2522である。

　まず、CARは良いニュースに対しては統計的に有意に正の値を取り、悪いニュースに対しては有意に負の値となることが確認される。次に、理論的そして実証的な先行研究を基に立てられた複数の仮説の検証が行われる。仮説1「悪いニュースに対する反応は、良いニュースよりも大きい」は、本研究では否定された。仮説2「強制的MEFへの反応は、自主的MEFへの反応よりも大きい」は、公表日の2日前から公表日までの期間の良いニュースに関するCARにだけ見られたが、他の期間及び悪いニュースのCARについては確認できなかった。仮説3「1つの数字によるMEFは、良いニュースより悪いニュースの場合に、より選択される」は、ロジスティック回帰で分析がなされ、仮説が成立することが示された。仮説4「悪いニュースと良いニュースに分けた上で、1つの数字によるMEFに対するCARの大きさは、範囲、最小値、最大値で示されたMEFよりも大きい」に関する実証結果は以下の通りである。まず、悪いニュースに対する反応は、最小値による公表以外では、すべて有意に負となったが、良いニュースに対する反応は、最小値による公表でのみ有意に正となった。また、最小値による公表では良いニュースに対する反応の大きさが悪いニュースに対する反応の大きさを有意に上回った。対して、最大値による公表では悪いニュースに対する反応の大きさが良いニュースに対する反応の大きさを有意に上回った。仮説4について

は、悪いニュースでも良いニュースでも1つの数字による公表が他の方法による公表よりCARの大きさが大きいという結果は、得られなかった。ただし、悪いニュースに関しては、最大値の公表に対する反応が範囲または最小値の公表より有意に大きいことと、良いニュースに関しては、最小値による公表に対する反応が1つの数字または範囲による公表より有意に大きいという興味深い事実を発見した。以上の2つのケースは、経営者は、最も控えめな悪い予想あるいは良い予想を公表することに相当し、投資家の反応として大きい反応を示すことは、合理的と解釈できる。

　本研究は、中国株式市場における経営者の利益予想の公表が株式市場に与える影響を分析したものである。複数の仮説の検証を行った結果、利益予想の表現方法による市場の反応の違いなど興味深い新しい知見を得ている。

　以上より本論文は博士（経営学）論文として「合格」であると判定する。